

3005-0605020002



CH2M HILL
Mound, Inc.
1 Mound Road
P.O. Box 3030
Miamisburg, OH
45343-3030

SMO-125/05
May 31, 2005

U. S. Department of Energy
Miamisburg Closure Project
Ms. Margaret L. Marks, Director
1075 Mound Road
Miamisburg, OH 45342

ATTENTION: Paul Lucas

SUBJECT: **Contract No. DE-AC24-03OH20152: Deliverable #39 Potential release site and removal action documentation; Section C.2.3.1.3 Remaining Response Actions; PRS 76 OSC Report, Final**

Dear Ms. Marks:

Attached is the following Final document for your records:

- PRS 76 OSC Report, Final

If you or members of your staff have any questions regarding the document, or if additional support is needed, please contact Dave Rakel at 937-865-4203.

Sincerely,



John Lehew
Site Manager

JL/ms

Enclosures

- cc: T. Fischer, USEPA, (1) w/attachments
- B. Nickel, OEPA, (1) w/attachments
- R. Vandegrift, ODH, (1) w/attachments
- M. Wojciechowski, Tetra Tech, (1) w/attachs
- C. White, DOE/MCP, (1) w/attachments
- L. Rawls, MCP, w/o attachments
- R. Tormey, DOE/OH, (1) w/attachments
- G. Desai, DOE/HQ, (1) w/attachments
- F. Bullock, MMCIC, (2) w/attachments
- Public Reading Room, (4) w/attachments
- Admin. Record, (2) w/attachments
- DCC (1) w/attachments

- ER Records, (1) w/attachments
- K. Arthur, (1) w/ attachments
- B. Ransbottom, (1) w/attachments
- J. Lehew, w/o attachments
- K. Armstrong, w/o attachments
- D. Rakel, w/o attachments
- V. Darnell, w/o attachments
- J. Fontaine, w/o attachments
- MOAT Coordinator, w/o attachments
- W. Webb, w/o attachments
- M. McDougal, w/o attachments
- file, w/o attachments

**PRS 76
REMOVAL ACTION**

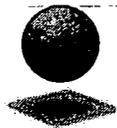
OSC REPORT

May 2005

Final



**Department of Energy
Miamisburg Closure Project**



CH2MHILL

PRS 76

PRS 76

Authorization

PRS Package
PRS 76

COMPLETE

Action Memo
PRS 76

COMPLETE

Planning & Execution

Work Plan
PRS 76

COMPLETE

Pre-Excavation
SUD
PRS 76

COMPLETE

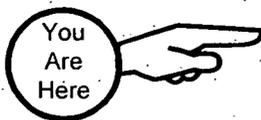
Post-Excavation
SUD
PRS 76

COMPLETE

Completion

Data Report

OSC Report
PRS 76



SUD = Survey Unit
Design per Std VSAP

4May05vkd

TABLE OF CONTENTS

Section	Page
RECOMMENDATION.....	ii
1.0 SUMMARY OF EVENTS	1
1.1 Site Conditions and Background	1
1.2 Organization of the Removal Actions	1
1.3 Objectives	2
1.4 Chronological Narrative of the Removal Actions	3
2.0 EFFECTIVENESS OF THE REMOVAL ACTIONS	3
2.1 Actions Taken by Mound Personnel.....	3
2.2 Actions Taken by Local, State, and Federal Agencies	3
2.3 Actions Taken by Subcontractors.....	3
3.0 DIFFICULTIES ENCOUNTERED	4
3.1 Items that Affect the Removal Actions	4
3.2 Issues of Intergovernmental Coordination.....	4
4.0 RECOMMENDATIONS.....	4
4.1 Means to Prevent a Recurrence.....	4

Tables

Table 1: Organization of the Removal Action.....	1
Table 2: Materials and Disposition	2
Table 3: Removal Cost.....	2
Table 4: Cleanup Criteria	2
Table 5: Chronology of RA.....	3

Appendices

Appendix A	Data Report
Appendix B	General Media Information
Appendix C	Photograph Documentation

Acronyms

CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CO	cleanup objective
COC	contaminant of concern
DCE	cis-, 1,2, dichloroethene
DOE	Department of Energy
HI	hazard index
MCL	maximum contaminant level
OEPA	Ohio Environmental Protection Agency
OSC	On-Scene Coordinator
PCE	tetrachloroethene
PRS	Potential Release Site
RA	Removal Action
RCRA	Resource Conservation and Recovery Act
SUD	Survey Unit Design
SSL	Soil Screening Level
TCE	trichloroethene
TSD	treatment, storage, and disposal
USEPA	United States Environmental Protection Agency
VC	vinyl chloride
VOC	volatile organic compound

RECOMMENDATION

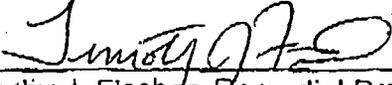
Potential Release Site (PRS) 76 is the location of former Warehouse 9, built as part of the original Mound facility in 1947 and demolished by the early 1960s. Warehouse 9 was a wooden structure with an elevated wooden floor. Prior soil sampling confirms radionuclides are not present at levels above cleanup objectives (COs); however, one volatile organic compound (VOC) was detected above its soil CO and several exhibited the potential to leach to groundwater above their respective maximum contaminant level (MCL). This potential to leach was the basis of the removal action (RA). The COs for these RAs are the Soil Screening Level (SSL), the value that, if exceeded, could afford the contaminants the potential to leach to groundwater above acceptable levels.

Per the associated Action Memorandum (PRS 76 Action Memo, Removal of Volatile Organic Compound (VOC) Contaminated Soil, authorized November 16, 2004, Final, February 2005), the contaminated soil was excavated. Verification sampling was performed as documented in the PRS 76 Removal Action Post-Excavation Survey Unit Design (SUD) Final, March 2005. The RA was successfully completed and resulted in the excavation and disposal of approximately 600 cubic yards of soil from December 8, 2004 through January 4, 2005. The material was shipped via truck to Environmental Quality Company, Michigan disposal facility between January 12, 2005 and February 8, 2005. The contaminants of concern (COCs) for PRS 76 were tetrachloroethene (PCE), trichloroethene (TCE), cis-,1,2, dichloroethene (DCE), and vinyl chloride (VC) with COs accounting for the potential to leach to groundwater at unacceptable levels of: 7,860 ug/kg, 6,310 ug/kg, 27,340 ug/kg, and 1,300 ug/kg, respectively. All final verification results for PRS 76 were below the SSL COs with the exception of one sample result for TCE at 9,520 ug/kg. This result, however, was less than the calculated hot spot criteria of 18,910 ug/kg. Also, additional depth excavation at verification sample location 17 (initial verification location 8) poses a significant risk of penetrating the confining clay unit and exposing the underlying sand aquifer.

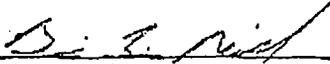
After a thorough review of the PRS 76 On-Scene Coordinator (OSC) Report, the Core Team agrees that the PRS 76 Removal Action is complete, and that all previously existing environmental issues associated with PRS 76 have been resolved.


 Paul Lucas, OSC
 U.S. Department of Energy
 Miamisburg, Ohio

5/25/05


 Timothy J. Fischer, Remedial Project Manager
 USEPA
 Chicago, Illinois

5/25/05


 Brian K. Nickel, Project Manager
 OEPA, Dayton, Ohio

5/25/05

1.0 SUMMARY OF EVENTS

This section describes the site background and events leading up to the RA, parties involved in responding to the RA, COC determination, chronological narrative of the RA, and resources committed to complete the project.

1.1 Site Conditions and Background

Background. PRS 76, location of former Warehouse 9, is located as shown on Figure 1 of Appendix A (A16/32).

The PRS 76 RA was authorized by the Core Team (November 16, 2004) as documented in the associated Action Memo (PRS 76 Action Memo, Removal of Volatile Organic Compound (VOC) Contaminated Soil, Final, February 2005).

The level of soil VOC contamination present warranted a RA under CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act). This OSC Report documents the completion of all aspects of the Removal Action activities authorized via the Action Memo, including removal of soil contaminated above the CO and verification sampling and analysis to demonstrate that the remaining soil meets the Cleanup Criteria.

Removal Action. PRS 76 consisted of an area of soil excavation approximately 20 feet by 40 feet by 16 feet to 23 feet deep. Verification sampling was performed on December 14, 2004 and December 21, 2004 in accordance with the Standard Verification Sampling & Analysis Plan, Final, August 2004, as documented in the PRS 76 Removal Action Post-Excavation SUD Final, March 2005. Final verification samples were collected from 13 locations and analyzed offsite for VOCs.

1.2 Organization of the Removal Actions

Table 1 lists the parties responding to the removal action, and their responsibilities.

Table 1: Organization of the Removal Action

US Environmental Protection Agency SFR-5J 77 W. Jackson Street Chicago, IL 60604 312-353-2000	Timothy J. Fischer	Federal agency responsible for oversight
Ohio Environmental Protection Agency 401 E. Fifth Street Dayton, OH 45402-2911 937-285-6357	Brian K. Nickel	State agency responsible for oversight
Department of Energy, Miamisburg Closure Project 1075 Mound Road Miamisburg, OH 45342 937-847-8350 x-314	Paul Lucas	On-scene Coordinator (OSC) responsible for oversight and success
CH2M HILL Mound, Inc., Environmental Restoration Project 1 Mound Road, P. O. Box 3030 Miamisburg, OH 45342-3030 937-608-8220	Jim Fontaine	Provide OSC with technical assistance, administrative support, field oversight, sample management, site safety, photo, site documentation, and preparation of the OSC Report

1.3 Objectives

Documentation Objective. The objectives of this OSC Report are to describe the RA fieldwork and document successful completion of the project. Material quantities and disposition locations are presented in Table 2. The cost breakdown of the RA is presented in Table 3.

Table 2: Materials and Disposition

Type of Material	Date	Quantity	Disposal Method	Disposal Location
Contaminated soil and asphalt (waste code D043)	1-8-05 through 2-12-05	600 yd ³	Resource Conservation and Recovery Act (RCRA) Treatment, Storage, and Disposal (TSD) Facility	Environmental Quality Company (Michigan)

Table 3: Removal Cost

Cost Category	Cost
Fieldwork, Transportation of Contaminated Material, Disposal of Contaminated Material, Verification Sampling & Analyses, Restoration	\$250,000
CH2M Hill support including Sample Plan and Data Validation	\$50,000
Estimated Total Project Cost	\$300,000

Cleanup Objective. Contaminants and COs identified in the Action Memo are as follows:

Table 4: Cleanup Criteria

COC	CO (ug/kg)
Tetrachloroethene (PCE)	7,860
Trichloroethene (TCE)	6,310
Cis-,1,2, dichloroethene (DCE)	27,340
Vinyl chloride (VC)	1,300

All final verification results (see A9/32) for PRS 76 were below their respective CO, with the exception of one sample result for TCE at 9,520 ug/kg. This result, however, was less than the calculated hot spot criteria of 18,910 ug/kg (details in Appendix A, A20/32).

Removal Action Objectives: The objectives of the removal action included:

- Project Planning,
- Public Notification,
- Site Preparation,
- Excavation,
- Verification,
- Site Restoration, and
- Documentation of Completion.

1.4 Chronological Narrative of the Removal Actions

The following is a chronological narrative of events surrounding the PRS 76 RA:

Table 5: Chronology of RA

Timeframe	Activity
November 2004	Removal Action authorized.
November 2004	Pre-Excavation SUD issued as final with Work Plan.
December 2004	Removal action (12/08/04 through 12/21/04) and verification sampling (12/14/04 and 12/21/04) performed.
March 2005	Post-Excavation SUD approved.
March 2005	PRS 76 OSC Report issued.

2.0 EFFECTIVENESS OF THE REMOVAL ACTION

Verification sample results for PRS 76 are presented in Appendix A. All results except one are below their respective COs. All results are below hot spot criteria.

2.1 Actions Taken by Site Contractor

CH2M Hill Mound, Inc. performed oversight, monitoring, validation, and documentation.

Photographic documentation is presented in Appendix C, C1/1.

The project met the removal action objectives as outlined in the approved Action Memo (Final dated February 2005). CH2M Hill Mound, Inc. personnel prepared this OSC Report, which shows that the Removal Action objectives were achieved.

2.2 Actions Taken by Local, State, and Federal Agencies

The Department of Energy (DOE)/MCP, the United States Environmental Protection Agency (USEPA), and Ohio EPA (OEPA) had oversight responsibility for the removal action. The DOE/MCP was the lead agency for the RA and provided the funding and oversight for the RA. The USEPA and OEPA had oversight responsibility for the RA and review of the Action Memorandum and OSC Report to ensure that the objectives were met.

2.3 Actions Taken by Subcontractors

Subcontractors involved in the project included the following:

- Clean Harbors (Cincinnati, OH) performed the excavation, staging (adjacent to dig site), transportation of contaminated soil and debris offsite, sampling, and management of analyses.

- GEL Laboratories (Cincinnati, OH) performed analysis of verification samples (DOE Laboratory Accreditation Program (LAP) Facility).
- Environmental Quality Company (Belleville, MI), approved RCRA TSD facility, received waste via truck.

3.0 DIFFICULTIES ENCOUNTERED

3.1 Items that Affect the Removal Actions

No difficulties were encountered during the removal.

3.2 Issues of Intergovernmental Coordination

All DOE/USEPA/OEPA interactions were good. The agencies were updated informally on a regular basis, and formally at monthly Core Team meetings. The Mound 2000 Process worked well.

4.0 RECOMMENDATIONS

4.1 Means to Prevent a Recurrence

The contaminated soil was removed and therefore spread of contamination is prevented. This area will be transferred from federal to private ownership. All State and Federal disposal rules will apply.

APPENDIX A

DATA REPORT

DATA REPORT

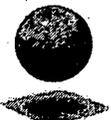
PRS 76

May 2005

Rev. 1



**Department of Energy
Miamisburg Closure Project**



CH2MHILL

This Data Report is Appendix A
to the PRS 76 OSC Report

A 1/32

Table of Contents

Section	Page
1.0 PURPOSE	A3/32
2.0 FIELD ACTIVITIES / VARIANCES	A3/32
2.1 Sample Locations	A3/32
2.2 Sample Summary	A3/32
2.3 Variances	A3/32
3.0 RESULTS	A4/32
3.1 Data Review and Validation	A4/32

Figures

Figure 1: Location of PRS 76	A4/32
Figure 2: Sample Locations	A8/32

Tables

Table 1: Sample Coordinates	A23/32
Table 2: Sample and QC Summary	A23/32

Attachments

Attachment A Standard VSAP Backfill Information	A5/32
Attachment B Tables	A22/32
Attachment C Data Review and Validation	A24/32

Acronyms

MDA	minimum detectable activity
PRS	Potential Release Site
SUD	Survey Unit Design
VSAP	Verification Sampling and Analysis Plan

1.0 PURPOSE

This Data Report documents the verification activities of Potential Release Site (PRS) 76 (location shown on Figure 1, A4/32).

The purposes of this Data Report are to:

- document the verification of PRS 76,
- describe any variances to the required sampling, and
- present the analytical results.

2.0 FIELD ACTIVITIES / VARIANCES

Verification sampling activities occurred in December of 2004 in accordance with the Standard Verification Sampling and Analysis Plan (VSAP), Final, August 2004 and as documented in the Core Team-approved PRS 76 Post-Excavation Survey Unit Design (SUD), Final, March 2005. Reporting requirements per the VSAP (final graphic, sample results, recalculation of N, and retrospective power curve) are provided in Appendix A (A5/32 – A21/32).

2.1 SAMPLE LOCATIONS

Thirteen soil samples were collected from locations shown on Figure 2 (A8/32). Coordinates are presented in Table 1 (A23/32).

2.2 SAMPLE SUMMARY

Table 2 (A23/32) documents the total number of verification and quality control samples collected during the investigation for each target analysis. The required quality control collection frequencies were not met; however the usability of the data was not impacted (Ref section 2, A26/32).

2.3 VARIANCES

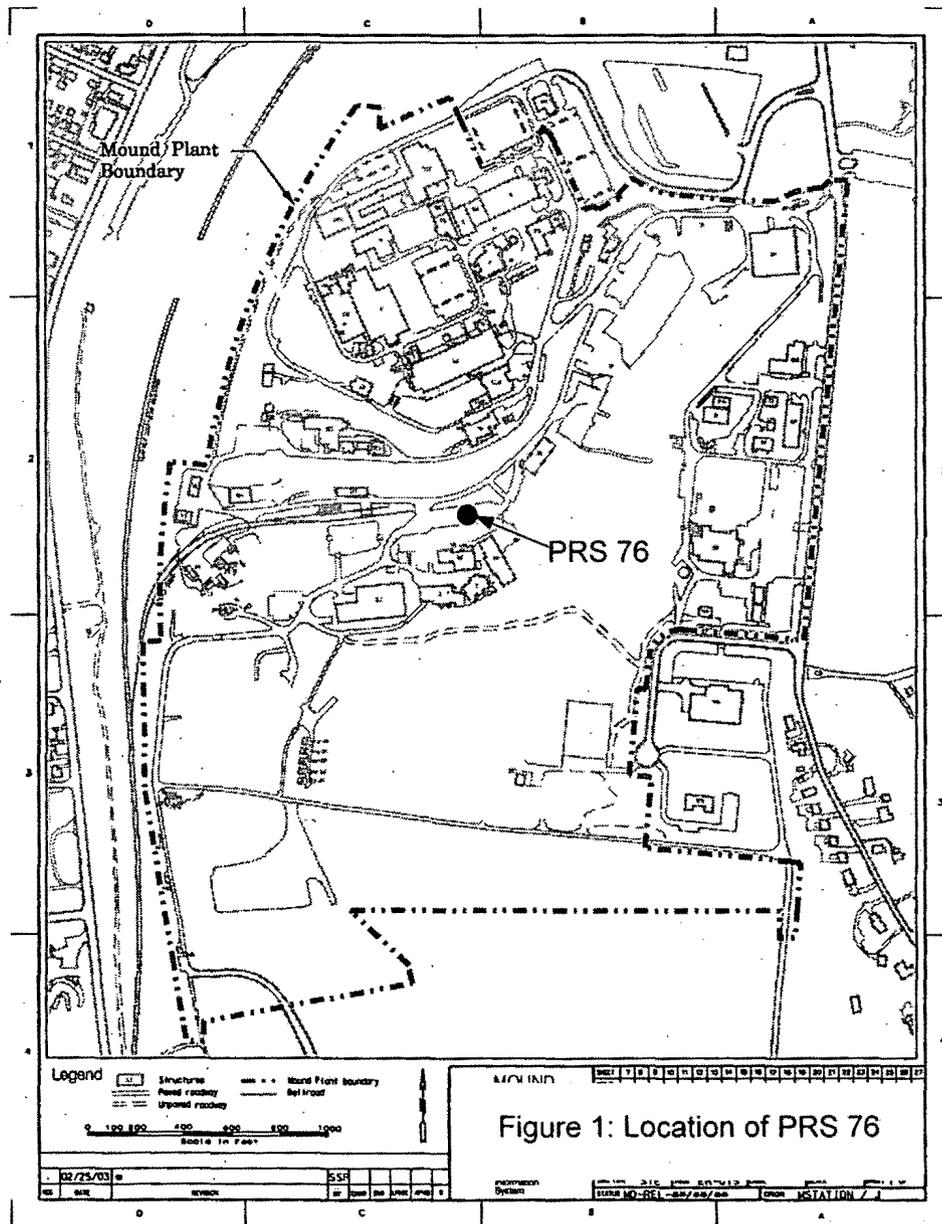
Due to the contaminants being volatile in nature, a leachability evaluation (A15/32 – A21/32) was performed in lieu of the sign test.

3.0 RESULTS

Samples for final verification of this PRS were processed offsite at GEL of Ohio. All final verification results (see A9/32) for PRS 76 were below their respective CO, with the exception of one sample result for TCE at 9,520 ug/kg. This result, however, was less than the calculated hot spot criteria of 18,910 ug/kg (details in Appendix A, A20/32).

3.1 DATA REVIEW & VALIDATION

Data review and validation is reported in Appendix C (see A24/32).



ATTACHMENT A

Standard VSAP Backfill Information

STD VSAP BACKFILL INFO

This information will be represented in the Data Report.

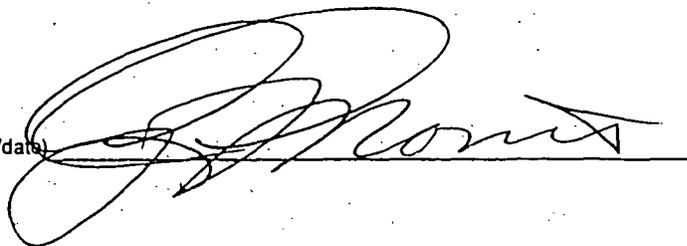
For: PRS 76

Checklist:

(per Section 5.6 of Std VSAP, Final, Aug 04)

- final Graphic
(show sample locations & note any >CO and/or >HS)
- sample results
(show DLs, HS, COs, and COC std deviation(s))
- recalc of N MARSSIM Sheet
- Data Review & Validation
- ~~Sign test~~ Soil Verification Data Analysis for leaching
(not required if all results <CO, see pg 19/21 of VSAP)
- retro curve
(not required if all results <CO [null hypothesis is rejected, MARSSIM])

From: (sign/data)



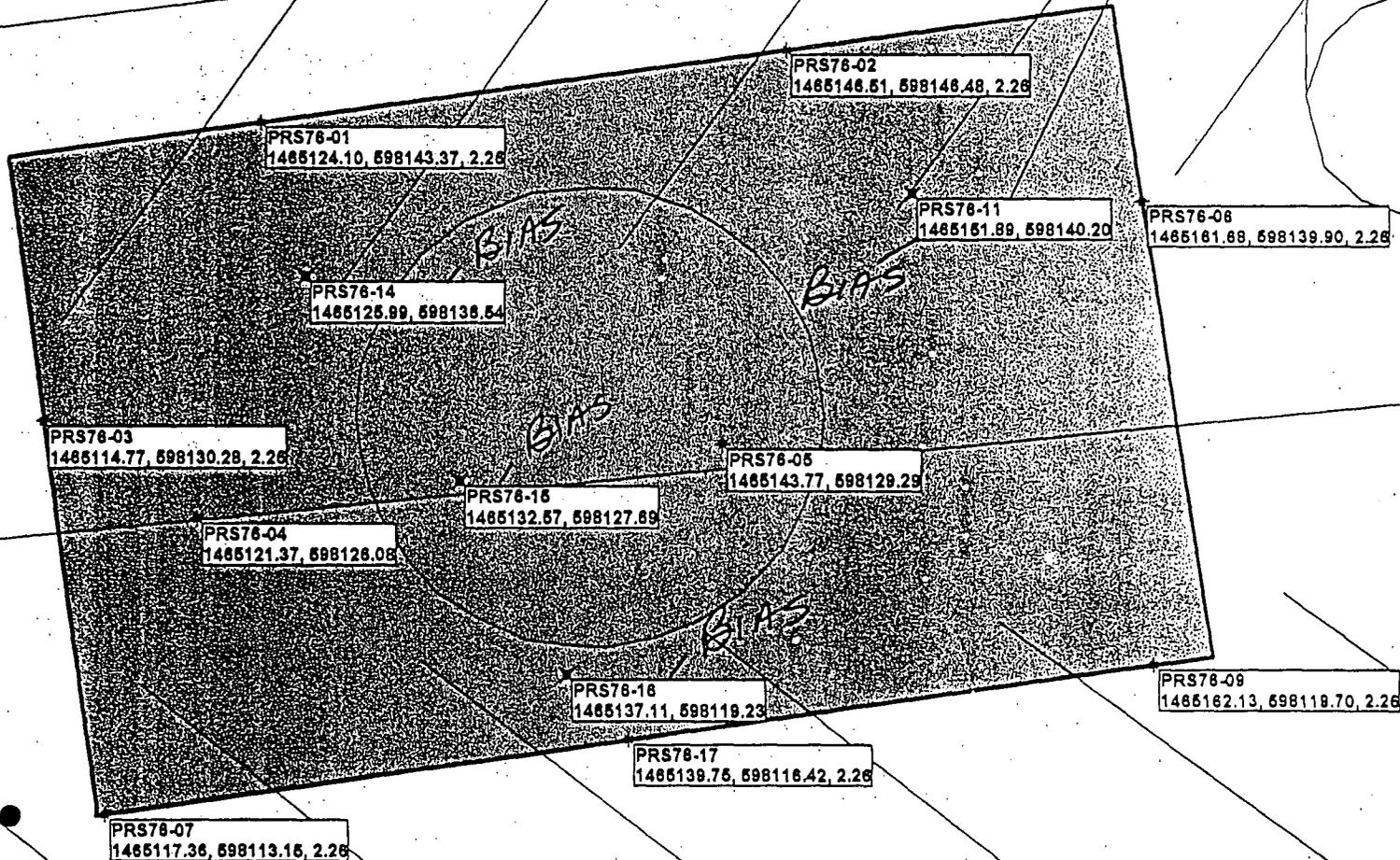
NOTE:

This Backfill Info Packet has been supplemented with additional hand markups for clarification purposes. *WJZmar5*

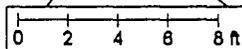
A 6/32

PRS 76

Sample locations - Post-EX SUD

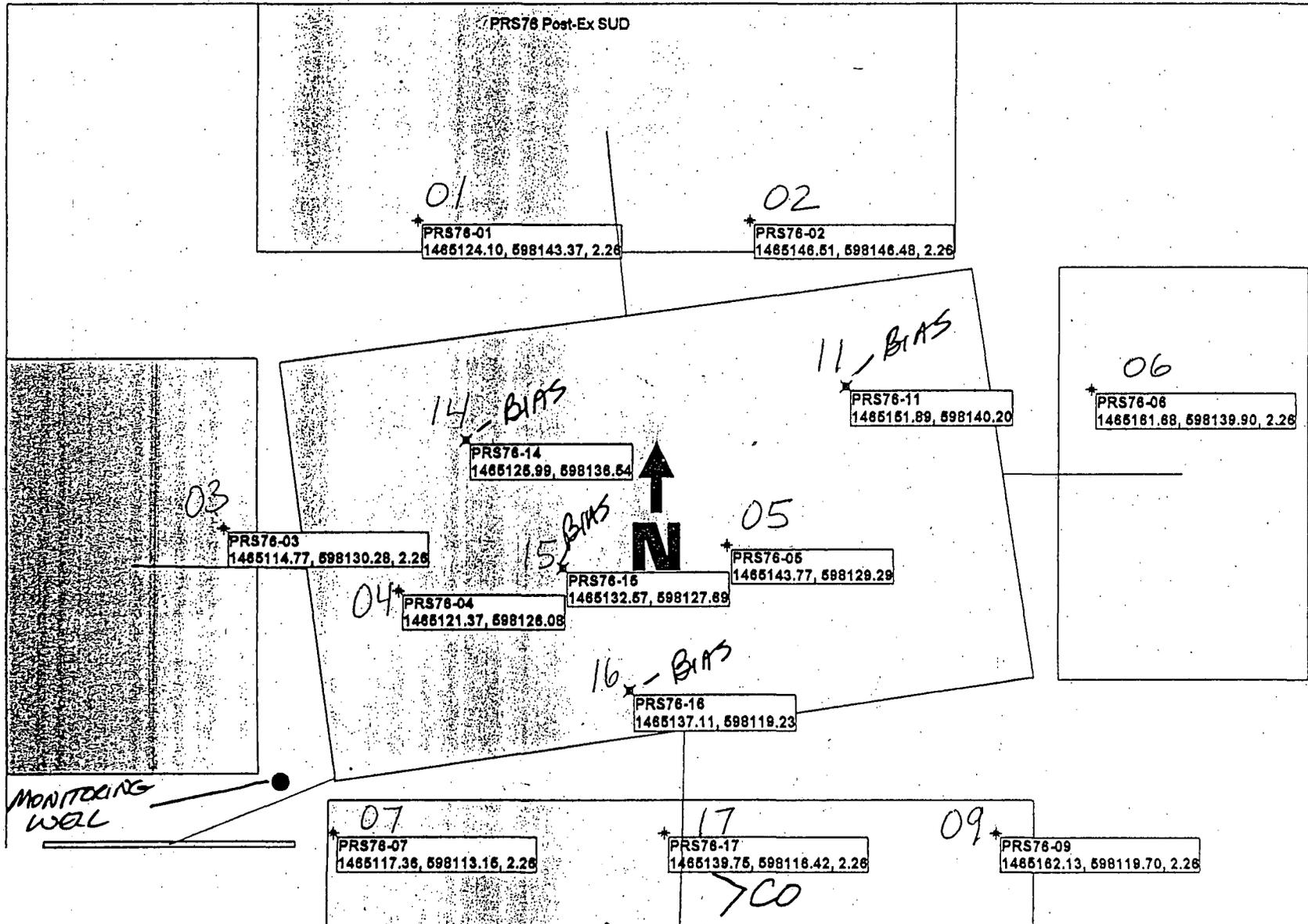


monitoring well



A 7/32

DMF 9 Feb 05



Final
Figure 2 Sample Locations

* sample location

DMF 2mar05

A
8/32

PRS76 FSS Data (011705)

Sample ID	total DCE (ug/kg)	DL (ug/kg)	Lab Qual	PCE (ug/kg)	DL (ug/kg)	Lab Qual	TCE (ug/kg)	DL (ug/kg)	Lab Qual	VC (ug/kg)	DL (ug/kg)	Lab Qual
PRS76-01				0.725	0.198	BJ	0.281	0.175	J		0.155	U
PRS76-02	1.23	0.421	J	0.604	0.2	BJ	1.21	0.177				
PRS76-03				836	10.2	B	2840	9.03				
PRS76-04				0.468	0.202	BJ	0.368	0.178	J			
PRS76-05	34.6	22.3	J	2540	10.6	B	715	9.37				
PRS76-06				1.01	0.2	BJ	0.804	0.177	J			
PRS76-07	63.3	20.8	J	681	9.92	B	300	8.76				
PRS76-09	70.4	0.416		39.7	0.198	B	438	0.874	E	1.67	0.155	
PRS76-17	1160	20.8		1410	9.89		9520	8.73		33	7.73	J
Max Val	1160			2540			9520			33		
Cleanup Objective*	81940			23550			18910			3910		
Standard Deviation	500.56			882.55			3128.12			22.15		
Cleanup Objective	27340			7860			6310			1300		
Bias Samples:												
PRS76-11	0.433	0.429	J	1.68	0.204	B	0.872	0.18	J			
PRS76-14	2	0.442	J				0.788	0.186	J	1.15	0.164	
PRS76-15	2.6	0.417		1.24	0.199		1.23	0.175				
PRS76-16	0.966	0.417	J	0.258	0.198	J	0.423	0.175	J	0.386	0.155	J
Notes:				DCE: Cis-1,2, dichloroethene			PCE: Tetrachloroethene			TCE: Trichloroethene		
				VC: vinyl chloride			Known as "hot spot"					
* Revised Cleanup Objective based on Analysis of Volatile Organic Compound (VOC) Soil Verification. See attachment A												
B = Target analyte was detected in the sample as well as the associated blank.												
E = Concentration of the target analyte exceeds the instrument calibration range.												
J = The result was greater than the MDL, but less than the RL and is an estimated value. Values below CRDL are also flagged.												
U = Non-detect sample result.												

HOT SPOT*

← Hot Spot
← CO

DL = detection limit

all 2/2/05

A 9/32

From: Eugene Jendrek
To: Morris, Gary
Date: 1/11/05 4:39PM
Subject: Re: PRS Data validation

Gary,

I have reviewed the analytical data and analytical QC results received thus far from GEL of Ohio for PRS 76. The second round of sampling indicates that the further remediation has resolved the contamination uncovered in the first round of sampling with the exception to PRS 76-17 (formerly PRS 76-08) whose measured trichloroethylene value of 9,520 ug/kg still exceeds the SSL leaching value 6,310 ug/kg cited in the SUD.

The only other observation I would make is that this soil matrix appears to effect the analysis of Tetrachloroethylene. The matrix spikes and matrix spike duplicates all give a recovery for this analyte of slightly more than 50%. However, even doubling the measured analytical results of this analyte still gives a value below the SSL leaching value of 7,860 ug/kg. The rest of the QC data indicates that no other qualifications of the analytical data need to made.

Note: For PRS 76, the SSL is the CO. *UMA 2man5*

>>> Gary Morris 01/11/05 04:24PM >>>

Gene:

I'm still bugging CHES for the GEL data. Brian said he would check with them again. They are suppose to fed-ex the data tomorrow.

In the mean time, could you send me an e-mail confirmation that the data we have been given is conditionally acceptable ? (Similiar to our phone conversation).

Thanks,

Gary

A 10/32

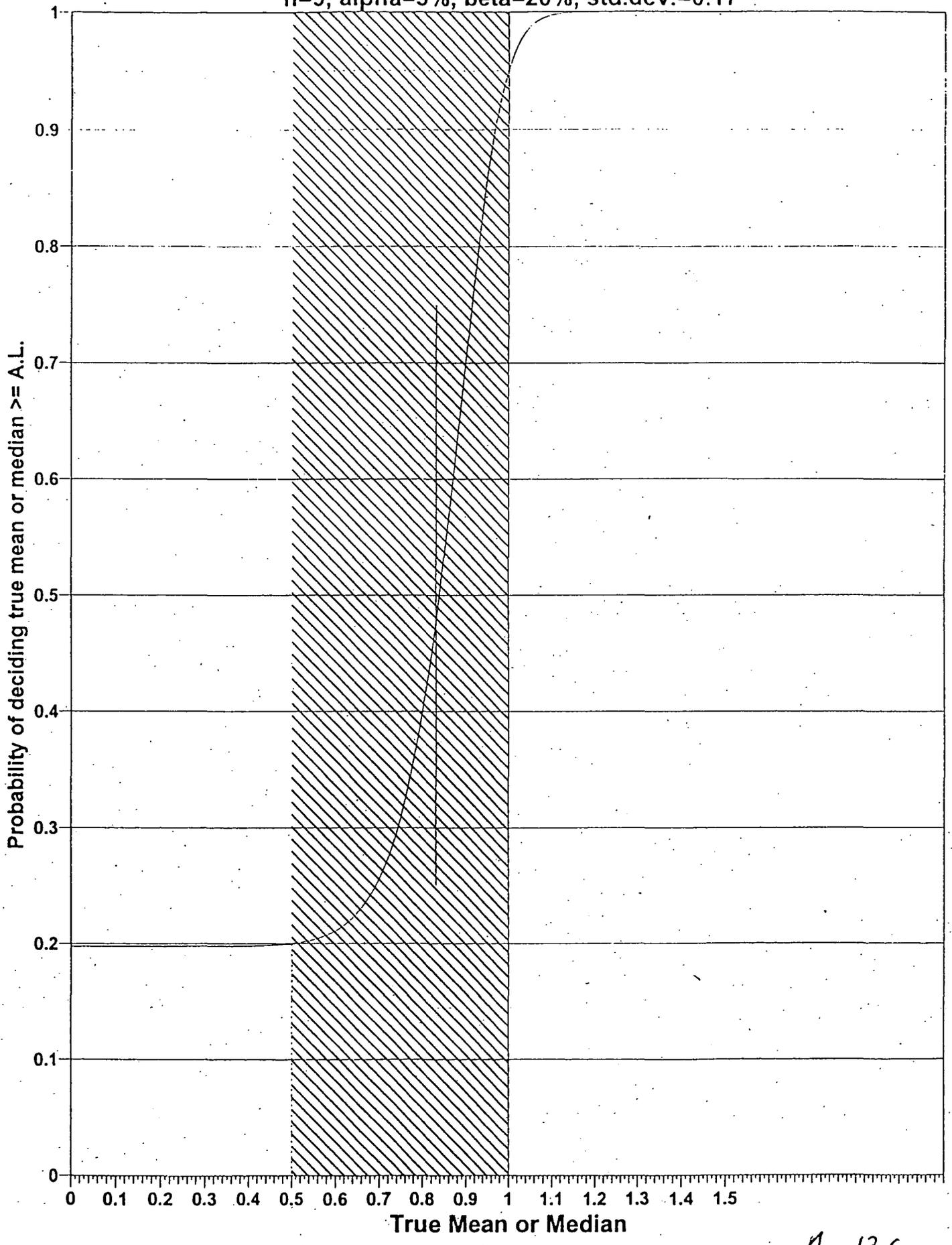
PRS 76 TFV
VOA Results

Sample ID (ug/kg)	DF	1,2-Dichloroethylene (total)	Tetrachloroethylene	Trichloroethylene	Vinyl Chloride	cis-1,2 Dichloroethylene	trans- Dichloroethylene	1,2-Dichloroethane- d4	Bromofluorobenzene	Dibromofluoromethane	Toluene-d8
PQL		2.11	1.05	1.05	1.05	1.05	1.05	SMC	SMC	SMC	SMC
DL		0.416	0.198	0.175	0.155	0.195	0.221	%	%	%	%
SSL		27,340	7,860	6,310	1,300						
PRS 76-01			0.73	0.28				105	111	96	102
PRS 76-02		1.23	0.60	1.21		1.23		106	111	98	102
PRS 76-03	25		836	2,840		13.7		107	104	97	97
PRS 76-04			0.468	0.37				106	111	97	103
PRS 76-05	25	34.6	2,540	715		34.6		103	105	96	97
PRS 76-06			1.01	0.80		0.24		104	111	97	103
PRS 76-07	25	63.3	681	300		63.3		107	108	97	98
PRS 76-08	50	462	52,800	3,720		462		98	113	95	96
PRS 76-09		70.4	39.7	438	1.67	68.2	2.26	105	110	99	101
PRS 76-10	25	86.2	8,660	1,850		86.2		101	112	95	96
PRS 76-11		0.43	1.68	0.87		0.43		106	131	99	106
PRS 76-12	25	300	41,400	1,670		300		100	110	95	96
PRS 76-13	5	90.3	242	455		90.3		102	110	97	102
LCS		86	81	85	88	86	86	102	103	100	100
Blank			0.686					101	109	97	101
PRS 76-01MS		70	51	60	85	71	70	93	109	100	102
PRS 76-01MSD		73	55	65	84	74	72	93	108	99	103
PRS 76-14(10)		2.0		0.79	1.15	2.0		105	110	98	100
PRS 76-15		2.60	1.24	1.23		2.60		105	109	98	102
PRS 76-16(12)		0.97	0.26	0.42	0.39	0.97		105	107	98	102
PRS 76-17(08)	25	1,160	1,410	9,520	33	1,120	36	105	112	95	96
PRS 76-18(08)		7.99	6.37	6.51	1.08	7.99		106	107	98	101

A
11/32

MARSSIM Sign Test (Retro Power Curve)

$n=9$, $\alpha=5\%$, $\beta=20\%$, $\text{std.dev.}=0.17$



A 13/32

Attachment A
TO BACKFILL INFO

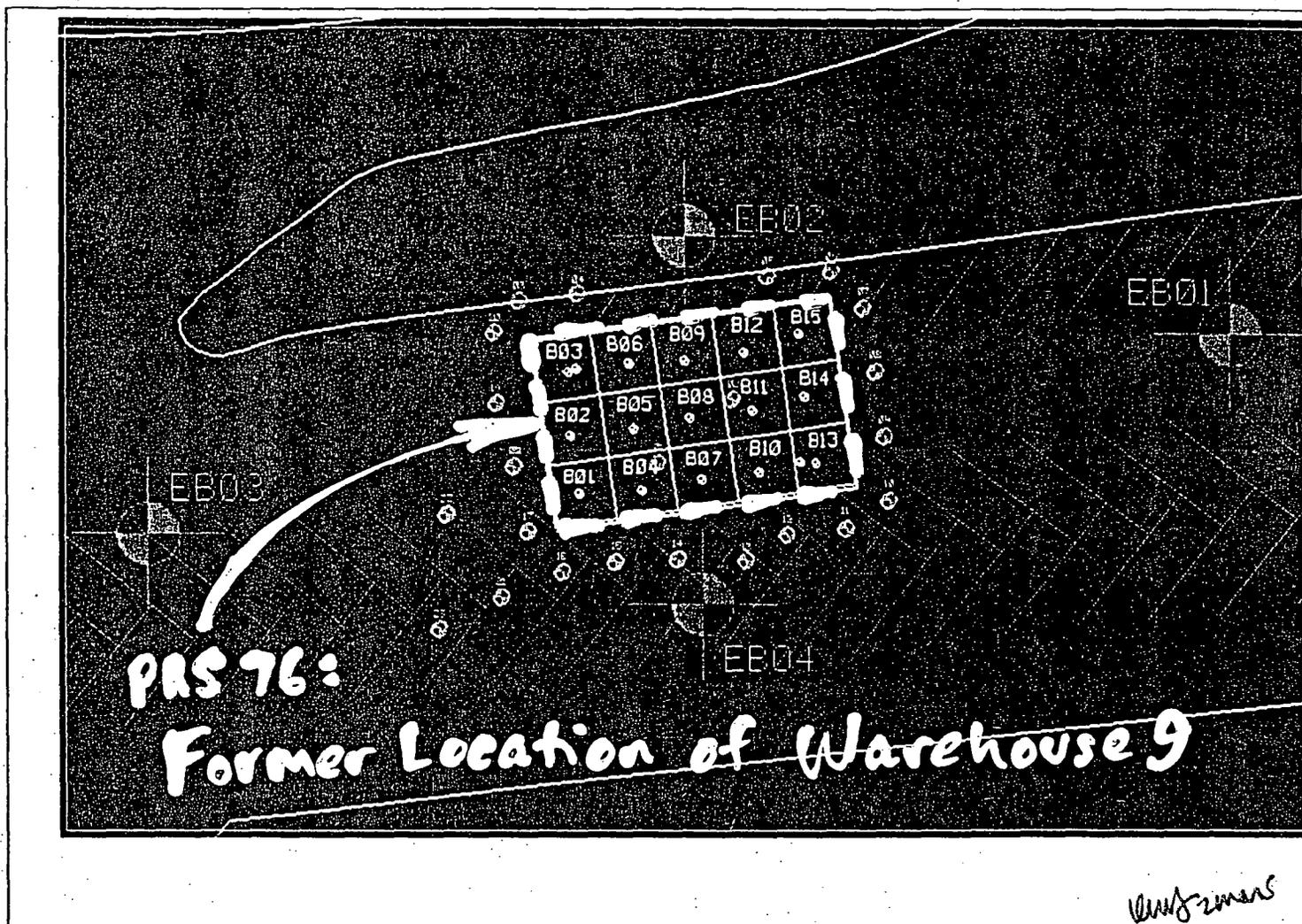
A 14/32

Analysis of Volatile Organic Compound (VOC) Soil Verification Data From PRS 76

PRS 76 VOC contaminated soils have been removed and staged adjacent to the excavation. The soils were excavated according to the field plan in order to remove all soils exceeding soil screening level guideline cleanup levels (see the PRS 76 Action Memo, August 5, 2004). Figure 1 shows the location of the original PRS 76 sampling grid (soil sampling conducted in 1999) as well as locations of further assessment samples collected in mid 2004). The further assessment samples were collected to determine the extent of contaminated soils above cleanup guidelines. The further characterization samples results showed no soils contaminated above the cleanup guidelines (TCE @ 6,310 ug/kg, PCE @ 7,860 ug/kg, DCE @ 27,340 ug/kg and VC @ 1,300 ug/kg) exist outside the boundary of the original 1999 sampling grid.

A 15/32

Figure 1 Location of Original Sample Grid and Further Characterization Samples



A. 16/
132

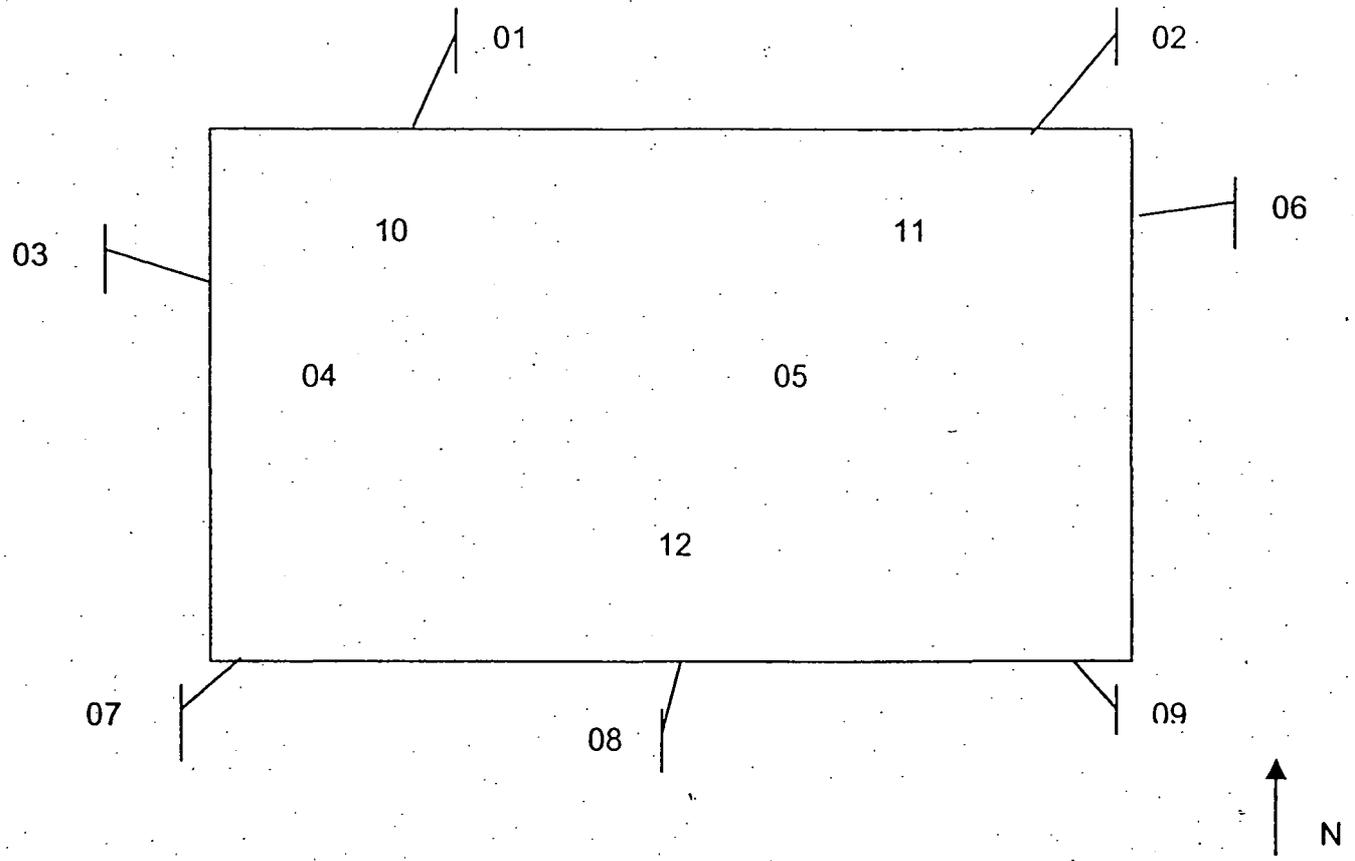
14 Jm

(below)

Initial verification samples were collected December 15, 2004. Figure 2 shows the location of the initial verification samples. Results are shown in Table

(see A 18/32)

Figure 2. Initial Verification Sample Location Identifications PRS 76



A 17/32

Table 1 Initial Verification Results

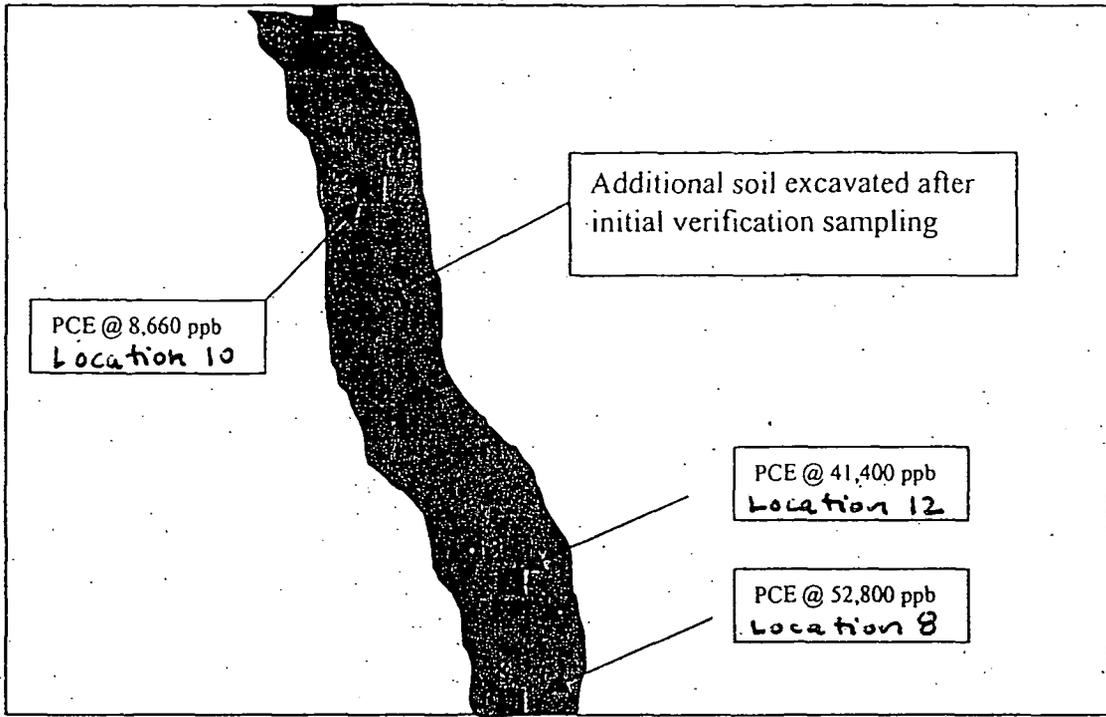
Location	Depth (ft)	TCE (ug/kg)	PCE (ug/kg)	DCE (ug/kg)	VC (ug/kg)
1		0.28	0.72	ND	ND
2		1.2	0.6	1.2	ND
3		2840	836	13.7	ND
4		0.36	0.46	ND	ND
5		715	2540	* 34.6	ND
6		0.80	1.01	0.237	ND
7		300	681	63.3	ND
7 Duplicate		455	242	90.3	ND
8	17	3720		462	ND
9		438	39.7	68.2	1.67
10	17	1850		86.2	ND
11		0.872	1.68	0.433	ND
12	17	1670		300	ND
			41,400*	8,660*	

Note : Red bold indicates sample result exceeds soil cleanup guideline value

Based on the initial verification results a decision was made to excavate an additional 3-4 feet at the base of the excavation along a north south trending line from verification sample 1 towards verification sample 8 (see sketch 1 outlining general excavation pattern).

* values from A11/32 UNW 2mas

A 18/32



Note: ppb = ug/kg

After the additional excavation a second set of verification samples were collected in those locations previously showing VOC levels in excess of cleanup guideline values.

The second set of verification sample results are shown in Table 2 (below)

Table 2 Second Verification Results

Location	Depth (ft)	TCE (ug/kg)	PCE (ug/kg)	DCE (ug/kg)	VC (ug/kg)
14 (10)*	21	0.78 (1850)*	ND (8660)*	2 (86.2)*	1.15 (ND)*
15-bias	21	1.23	1.24	2.6	ND
15 duplicate	21	6.51	6.37	7.99	1.08
16 (12)*	21	0.425 (1670)*	0.25 (41,400)*	0.96 (300)*	0.38 (ND)*
17 (8)*	21	9,520 (3720)*	1410 (52800)*	1120 (462)*	33 (ND)*

* indicates corresponding sample location from initial verification sampling, with the second sample taken immediately below the first. Location 15 is an intermediate location selected between sample 10 and 12.

^ (bias)

9,520 (from A 11/32)

WJZmas

With the exception of second verification sample number 17, samples 14 and 16 show dramatic decreases in VOC concentrations relative to the corresponding initial verification samples. Sample 15 and the duplicate show VOC concentrations well below the soil cleanup objective.

A 19/32

Additional depth excavation at verification sample location 17 (initial verification location 8) poses a significant risk of penetrating the confining clay unit and exposing the underlying sand aquifer. Previous geologic characterization using rotasonic drilling shows the sand unit between approximately 25 to 30 feet below the surface. Groundwater monitoring data at well 0346, (located immediately downgradient of PRS 76) shows no VOC detections with sample results as recently as summer 2004. With the excavation of a large percentage of the contaminated soil volume, PRS 76 has been reduced from a volumetric soil problem to essentially a "hot spot" problem. Verification sampling confirms this statement.

The risk posed to the underlying groundwater system due to the hot spot can be assessed by utilizing the soil screening equation. The inputs can remain identical with the exception of the source length parallel to groundwater flow. The source length can be modeled as approximately 10 meters (the source length was previously modeled as 30 meters to derive the original cleanup objectives) to represent the hot spot. A source length of 10 meters is considered conservative as it represents 30 % of the original modeled source length (which itself was conservative) and it represents a soil volume that extends from sample location 17 downgradient through sample 7 and out into the zone previously characterized by the summer 2004 sampling event. Or alternatively it can be viewed to represent the volume of soil parallel to groundwater flow between verification samples 9, 17 and 7. Tables 3 and 4 show the input parameters used for the hot spot evaluation and the resulting soil screening guideline values.

Table 3 Input Parameters for Evaluating Impact of VOC Hot Spot

Parameters for soil leaching calculation:			
Definition	Parameter	Main Hilltop soil	Units
source length parallel to ground water flow	L		10m
aquifer thickness (DOE 1994)	da		4m
hydraulic conductivity (Tributary Valley, DOE 1994)	K		5000m/y
hydraulic gradient at the source (BVA wells 0345 and 0379)	i		0.05m/m
horizontal distance to receptor	xr		200m
infiltration rate (estimated OEPA soils screening level guidance)	in		0.043m/y
soil-water partition coefficient (Koc * foc for organic chemicals)	Kd	chemical specific	L/kg
saturated porosity	Ow		0.15
air filled porosity	Oa		0.28
Henry's Law constant * 41 (0 for metals and radionuclides)	H	chemical specific	
dry soil bulk density	B		1.6kg/L
soil organic carbon/water partition coefficient	Koc	chemical specific	L/kg
fraction organic carbon in soil (tills at well 0345)	foc		0.013
mixing zone depth	d		4m
dilution factor (used to multiply the target concentration)	df=		2326

Table 4 SOIL SCREENING LEVELS (SSL) FOR CONTAMINANTS OF CONCERN
(acronyms defined on prior page)

CHEMICAL NAME	H ₂ O	K _{oc}	f _{oc}	K _d	MCL	Acceptable Concentration	Gw	SSL
		L/kg		L/kg	mg/L		mg/L	ug/kg
cis-1,2 Dichloroethylene	0.185	29	0.013	0.377	0.07	0.07	162	81,940
Tetrachloroethylene	0.709	139	0.013	1.807	0.005	0.005	11.63	23,550
Trichloroethylene	0.435	112	0.013	1.456	0.005	0.005	11.63	18,910
Vinyl chloride	3.45	11	0.013	0.143	0.002	0.002	4.65	3,910

Table 5 shows a comparison of the hot spot soil guideline values relative to the second verification sample results.

Table 5

Location	DCE Verification (ug/kg)	DCE SSL (ug/kg)	TCE Verification (ug/kg)	TCE SSL (ug/kg)	PCE Verification (ug/kg)	PCE SSL (ug/kg)	VC Verification (ug/kg)	VC SSL (ug/kg)
14	2	81,940	0.78	18,910	ND	23,550	1.15	3,910
15	2.6	81,940	1.23	18,910	1.24	23,550	ND	3,910
15 duplicate	7.9	81,940	6.51	18,910	6.37	23,550	1.08	3,910
16	0.96	81,940	0.425	18,910	0.25	23,550	0.38	3,910
17	1120	81,940	9520	18,910	1410	23,550	33	3,910

As can be seen from the results of the hot spot evaluation, with a large percentage of the original contaminated soil removed, the remaining residual hot spot does not pose a risk to the underlying groundwater system. All second verification sample results are below the calculated soil screening levels.

^ (hot spot value).

WMA 2/20/05

In light of the risk posed in attempting to excavate additional soil at location 17 and given the results of the hot spot leaching analysis the soil excavation at PRS 76 can be considered complete.

ATTACHMENT B

Tables

A22/32

Table 1: Sample Coordinates

sample location	X coordinate	Y coordinate
76-01	1465124.102	598143.368
76-02	1465146.512	598146.482
76-03	1465114.77	598130.283
76-04	1465121.372	598126.081
76-05	1465143.769	598129.29
76-06	1465161.683	598139.905
76-07 & 76-13	1465117.36	598113.149
76-09	1465162.134	598119.698
76-11	1465151.887	598140.202
76-14	1465125.991	598136.536
76-15 & 76-18	1465132.571	598127.685
76-16	1465137.106	598119.234
76-17	1465139.747	598113.423

Table 2: Sample and QC Summary

Analysis	verification samples (soil)	field duplicates (soil)	samples identified for MS/MSD (soil)	equipment rinsates (water)	trip blanks
VOA	18*	2	2	0	0

* QC frequency based on total number of samples collected (18), even though only 13 results were used for final verification purposes, the difference due to sample locations excavated and resampled and two being duplicates.

ATTACHMENT C

Data Review & Validation

A 24/32

1.0 Introduction

Analytical data assessment can be performed on many quality control levels. On the most basic level the data can be reviewed for completeness. Does the reported data cover the intended samples? Were the samples analyzed for the planned analyses? Does the data package contain all the information called for by the SOW and/or SAP?

A Data Review involves an assessment of the quality controls used by the laboratory during the performance of the analysis. These include such things as laboratory blanks, system monitoring compound (surrogate) recoveries, matrix spikes, etc. Were the correct QC controls used, and does the QC data indicate the analyses were performed acceptably? Which quality controls are assessed and what criteria are applied depend on the analysis performed. The results of field quality control measures such as field duplicates and trip blanks may also be evaluated. Data Review is normally performed on 100% of the analytical data.

A full Data Validation is a much more detailed review of the entire laboratory data package. It includes all the elements of the Data Review plus verification of such things as proper instrument calibration, proper use of standards and correct performance of data calculations. Data Validation is used to identify systemic problems with the way the laboratory performs and reports analyses.

2.0 Description of the Data Set

The data being evaluated was collected on December 14, 2004 and December 21, 2004 in accordance with the "PRS 76 Removal Action SUD" (Nov. 2004). PRS 76 is the location of former warehouse 9, built as part of the original Mound Facility in 1947 and demolished in the early 1960s. Warehouse 9 was a wooden structure with an elevated wooden floor. Prior soil sampling in the area affirms radionuclides are not present at levels above cleanup objectives. One volatile organic compound (Tetrachloroethylene) was detected above its cleanup objective. Several other VOC compounds were also detected (Trichloroethylene, Dichloroethylene, & Vinyl Chloride). The potential for these compounds to leach into the groundwater is the basis for this cleanup operation. The action level for the contaminants of concern are their Soil Screening Levels.

Contaminants of concern were picked based upon process knowledge and previous sampling performed in the area. Details of previous samplings and the selection of contaminants of concern are contained in the SUD.

The removal action was performed by Clean Harbors. This current data evaluation is being performed to support the verification of successful completion of the removal action; however, this report does not speak to the efficacy of the removal action only to the usability of the analytical data as part of the assessment of the success of the removal action.

The initial verification sampling on December 14th indicated that three locations showed VOA contamination above the action levels. Additional soil was removed and the three of original locations plus one new location were re-sampled.

One field duplicate was collected for each sampling event.

Samples were collected from all locations as planned. An excavator shovel was used to collect soil from the sampling locations due to the depth and steepness of the pit created by the removal action.

Equipment rinsates were not collected. The purpose of equipment rinsates are to indicate that field decontamination of the sample equipment was adequate to prevent cross contamination between samples. During the PRS 76 sampling events some samples showed high concentrations of the contaminants of concern. If decontamination of the sample equipment was insufficient you would expect samples immediately following the high concentration samples to also show appreciable contamination. This is not present in the data sets evaluated here.

Trip Blanks were not packaged and analyzed with the samples. The purpose of trip blanks is to indicate whether cross contamination of the samples occurred during transport of the samples from the field to the laboratory. The samples were transported directly from Mound to the laboratory not by commercial transport reducing the risk that the sample containers might suffer cross contamination due to mishandling. The laboratory received no open or broken sample containers. If cross contamination occurred during transport it would be expected to be widespread. In these data sets some samples showed little to no contaminants of concern while others were quite high.

Offsite chemical sample analyses were performed at GEL of Ohio.

There were no problems associated with the documentation, shipment, or chain of custody of the samples. There were no problems in achieving the analyte detection goals.

A 26/32

Table 1. Sample Identification

Sample Date	LSDG	Number of Samples	Mound Sample IDs
12/14/04	127426	13	PRS76-01 PRS76-02 PRS76-03 PRS76-04 PRS76-05 PRS76-06 PRS76-07 PRS76-08 PRS76-09 PRS76-10 PRS76-11 PRS76-12 PRS76-13
12/21/04	127862	5	PRS76-14 PRS76-15 PRS76-16 PRS76-17 PRS76-18

LSDG – Laboratory Sample Delivery Group

3.0 Data Completeness

The correct samples were submitted and analyzed for the analyses requested in the SUD. Three additional sample locations were added as biased samples by CH2M Hill in the first sampling. One additional bias sample was added in the second sampling. The data packages received back from the laboratory were complete.

4.0 Data Review

The quality control data submitted with the analytical data packages were reviewed and assessed. The results of the assessment are presented in this section. The following qualification flags are used to indicate data quality problems identified during the data review process.

Table 2. Data Review Qualifications

Flag	Description
J	Estimated sample result
U	Non-detect sample result
UJ	Estimated non-detected sample result
R	Rejected (unusable) sample result

4.1 Holding Times

There is no EPA mandated technical hold time for VOA analysis of soils. The recommended hold time for soil samples is 14 days.

All samples in these LSDGs were analyzed for VOA within 14 days.

A 27/32

Data Review & Validation

PRS 76 VOA

4.2 GC/MS Instrument Performance Check

The successful analysis of the Instrument Performance Check of Bromofluorobenzene (IPC-BFB) solution must be performed at the beginning of each 12-hour period during which samples or standards are analyzed.

Successful IPC-BFB instrument tunings were run within 12 hours of the sample analyses and associated QC analyses.

4.3 Initial Calibration

Initial calibration (IC) standards containing both volatile target compounds and system monitoring compounds are analyzed at concentrations of 10, 20, 50, 100, and 200 µg/L at the beginning of each analytical sequence or as necessary if the continuing acceptance criteria are not met. The IC must be analyzed within 12 hours of the associated IPC-BFB. All Relative Response Factors (RRF) must be ≥ 0.05 . The Percent Relative Standard Deviation (%RSD) for given standard concentration must be $\leq 30\%$.

The ICs were performed within 12 hours of an IPC-BFB. All IC RFFs were greater than 0.05 and the RSD%s were less than 30%

4.4 Continuing Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable quantitative data. Continuing Calibration Verifications (CCV) establishes the 12-hour RRF on which the quantitations are based and checks the satisfactory performance of the instrument on a day-to-day basis. All Relative Response Factors (RRF) must be ≥ 0.05 . The Percent Difference (%D) for between the IC RRF and the CCV RRF must be within $\pm 20\%$.

The CCVs were performed within 12 hours of an IPC-BFB. All CCV RFFs were greater than 0.05 and the %Ds were less than 20%.

4.5 Blanks

The laboratory analyzes one method blank for every 20 samples or LSDG. Laboratory blanks are analyzed to determine if laboratory or field processes are contributing to the detected sample contamination. A method blank must be performed after the calibration standards.

Trace levels (i.e., less than the Practical Quantitation Level) of Tetrachloroethylene were found in the method blank in LSDG 127426. No qualification of the results is warranted.

For all other analytes the method blank associated with the verification samples met QC criteria.

All initial and continuing calibration blanks met QC criteria.

A 28/32

4.6. System Monitoring Compounds

Laboratory performance on individual samples is established by means of spiking activities. All samples are spiked with System Monitoring Compounds (SMC) just prior to sample purging. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the evaluation and review of the data based on specific sample results is frequently subjective and demands analytical experience and professional judgment.

SMC recovery for Bromofluorobenzene was slightly high on sample PRS76-11 (131% limit 128%). This SMC is not associated with any of the target analytes. There were no other problems associated with the SMC recoveries.

4.7 Internal Standards

Internal Standards (IS) are spike compounds added to every sample and used to compute the measured analytes. IS performance criteria ensure that GC/MS sensitivity and response are stable during each analysis. IS area counts must not vary by more than a factor of 2 from the associated 12hr. calibration standard. Retention time of each IS must not vary more than ± 30 seconds from the retention time of the associated 12hr. calibration standard.

All IS passed QC criteria.

4.8 Matrix Spike

A matrix spike (MS) and a matrix spike duplicate (MSD) analysis are performed to assess the precision and accuracy of the laboratory analysis on the sample matrix at the time of the sample analysis. One MS/MSD spike is performed for every 20 samples or LSDG. It also may indicate analysis bias due to sample matrix effects. These data alone cannot be used to evaluate the precision and accuracy of individual samples. However, when exercising professional judgment, this data should be used in conjunction with other QC information.

The MS/MSD recoveries were low (51/55, 46/46) for Tetrachloroethylene for both LSDG's. The percent relative difference between the MS and MSD however, were in good agreement. This suggests that the results for Tetrachloroethylene are biased low. For this reason all of the measured values of this analyte are qualified as "estimates".

This qualification should not call in to question the success of the removal action for this analyte. The highest final value obtained for Tetrachloroethylene is still 3 times less than the stated Soil Screening Level.

4.9 Laboratory Control Sample

The Laboratory Control Sample (LCS) is a standard sample with a known quantity of the analyte(s) of concern. The LCS recovery is an indication of whether the analytical process was in control during the analysis. One LCS should be analyzed for every 20 samples or each LSDG.

All LCS recoveries were within QC requirements.

A 29/32

Data Review & Validation

PRS 76 VOA

4.10 Equipment Rinsates

Equipment rinsates are used to ensure efficacy of equipment field decontamination procedures, and that the sample collection process is not causing cross contamination.

No equipment rinsates were collected.

4.11 Field Duplicates

Field Duplicates give an indication of the degree of homogeneity within the sample material. As with Laboratory duplicates they are reported as RPD.

One field duplicate was collected for each data set. The field duplicate results are not in particularly good agreement. This may be an artifact of the difficulty of performing VOA sampling.

5.0 Data Validation

The results of LSDG 127426 were fully data validated. In addition to the items discussed above, the following items were evaluated:

1. Instrument calibration calculations
2. Spike recovery calculations.
3. Sample run logs
4. Compound quantification calculations

No additional qualification resulted from this assessment. There was no indication of a systemic deficiency.

6.0 Certification

Based upon this review the VOA analysis data may be used as presented with no further qualifications than stated above.

A 30/32

Table 3 PRS 76 VOA Analyses

Sample ID (ug/kg)	Sample Location	DF	1,2-Dichloroethylene (total)	Tetrachloroethylene	Qualification	Trichloroethylene	Vinyl Chloride	cis-1,2 Dichloroethylene	trans-Dichloroethylene	1,2-Dichloroethane-d4	Bromofluorobenzene	Dibromofluoromethane	Toluene-d8
PQL			2.11	1.05		1.05	1.05	1.05	1.05	SMC	SMC	SMC	SMC
DL			0.416	0.198		0.175	0.155	0.195	0.221	%	%	%	%
SSL			27,340	7,860		6,310	1,300						
PRS 76-01	1			0.73	J	0.28				105	111	96	102
PRS 76-02	2		1.23	0.60	J	1.21		1.23		106	111	98	102
PRS 76-03	3	25		836	J	2,840		13.7		107	104	97	97
PRS 76-04	4			0.468	J	0.37				106	111	97	103
PRS 76-05	5	25	34.6	2,540	J	715		34.6		103	105	96	97
PRS 76-06	6			1.01	J	0.80		0.24		104	111	97	103
PRS 76-07	7	25	63.3	681	J	300		63.3		107	108	97	98
PRS 76-08	8	50	462	52,800	J	3,720		462		98	113	95	96
PRS 76-09	9		70.4	39.7	J	438	1.67	68.2	2.26	105	110	99	101
PRS 76-10	10	25	86.2	8,660	J	1,850		86.2		101	112	95	96
PRS 76-11	11		0.43	1.68	J	0.87		0.43		106	131	99	106
PRS 76-12	12	25	300	41,400	J	1,670		300		100	110	95	96
PRS 76-13	13	5	90.3	242	J	455		90.3		102	110	97	102
LCS			86	81		85	88	86	86	102	103	100	100
Blank				0.69						101	109	97	101
PRS 76-01MS	1		70	51		60	85	71	70	93	109	100	102
PRS 76-01MSD	1		73	55		65	84	74	72	93	108	99	103
PRS 76-14	10	1	2.0		UJ	0.79	1.15	2.00		105	110	98	100
PRS 76-15	15	1	2.60	1.24	J	1.23		2.60		105	109	98	102
PRS 76-16	12	1	0.97	0.26	J	0.42	0.39	0.97		105	107	98	102
PRS 76-17	8	25	1,160	1,410	J	9,520	33	1,120	36	105	112	95	96
PRS 76-18	8	1	7.99	6.37	J	6.51	1.08	7.99		106	107	98	101
LCS		1	95	91		90	91	96	94	101	103	99	99

A 31/32

Data Review & Validation

PRS 76 VOA

Sample ID (ug/kg)	Sample Location	DF	1,2-Dichloroethylene (total)	Tetrachloroethylene	Qualification	Trichloroethylene	Vinyl Chloride	cis-1,2 Dichloroethylene	trans-Dichloroethylene	1,2-Dichloroethane-d4	Bromofluorobenzene	Dibromofluoromethane	Toluene-d8
PQL			2.11	1.05		1.05	1.05	1.05	1.05	SMC	SMC	SMC	SMC
DL			0.416	0.198		0.175	0.155	0.195	0.221	%	%	%	%
SSL			27,340	7,860		6,310	1,300						
Blank										105	105	99	99
PRS 76-14MS	10	1	64	46		51	76	65	63	92	104	98	103
PRS 76-14MSD	10	1	65	46		52	81	65	64	95	104	98	103

PQL – Practical Quantitation Limit

DL Detection Limit

SSL – Soil Screening Limit

DF – Dilution Factor

LCS – Laboratory Control Sample (% recovery)

MS/MSD – Matrix Spike/Matrix Spike Duplicate (% recovery)

J indicate analytes that were detected but are below Practical Quantitation Levels (PQL).

U indicates non-detects at the listed detection levels.

B indicates analytes that were also detected in the method blank.

A 32/32

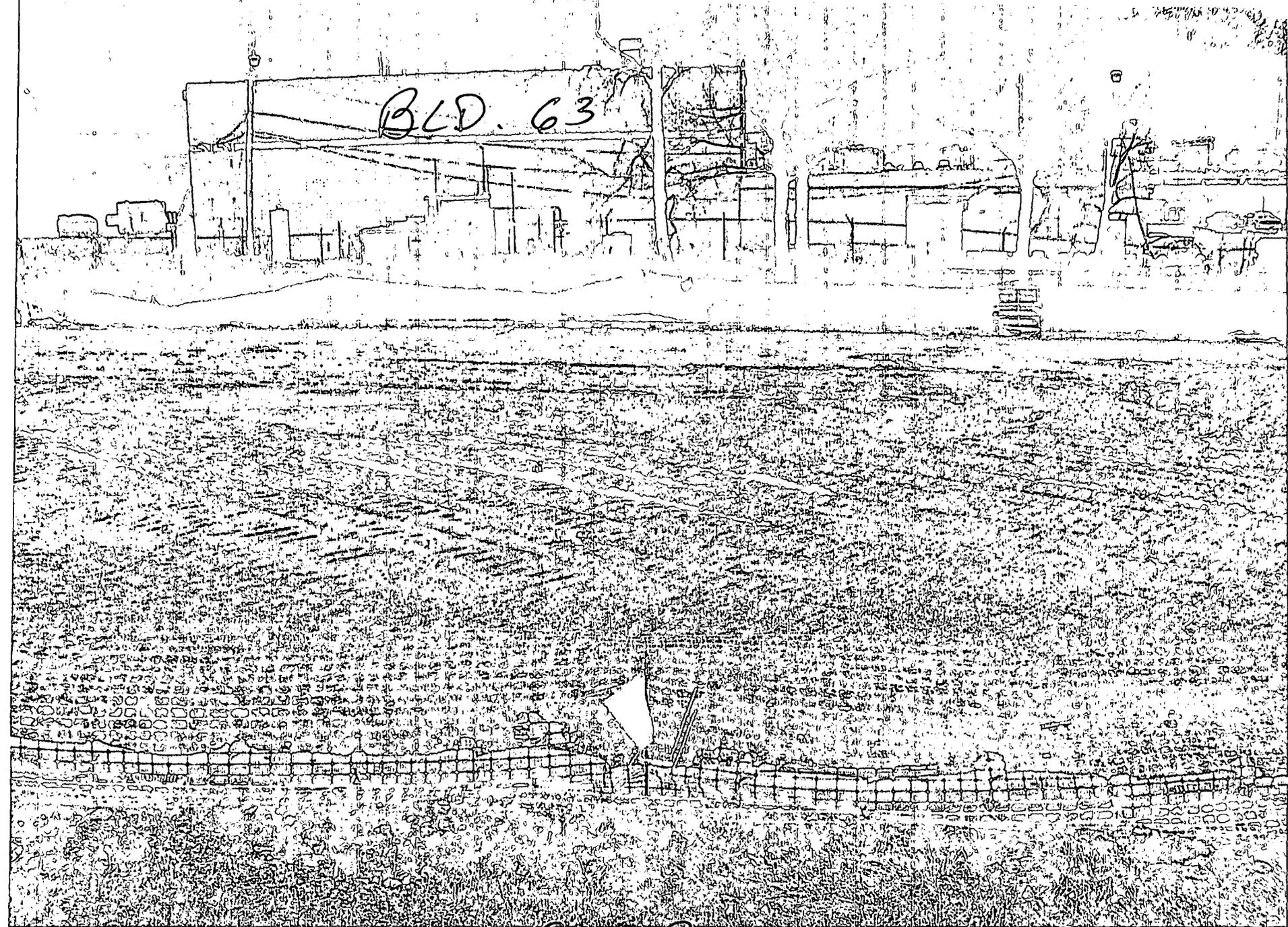
APPENDIX B

GENERAL MEDIA INFORMATION

(There was no information released
to the media regarding PRS 76)

APPENDIX C

PHOTOGRAPH DOCUMENTATION



PRS 76 RA + RESTORATION CONCRETE
(PITOTO FACING SOUTH)

C 1/1