

3006-0605040004



**CH2MHILL**

CH2M HILL Mound, Inc.

1075 Mound Road

P.O. Box 750

Miamisburg, OH 45343-0750

SMO-158/06  
March 6, 2006

Mr. Don Pfister, Director  
Miamisburg Closure Project  
U. S. Department of Energy  
175 Tri-County Parkway  
Springdale, OH 45246

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 87 OSC Report, Final

Dear Mr. Pfister:

Attached is the following Final document for your records:

- PRS 87 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,

Michael D. Ebben  
Site Manager

JL/jg

Enclosures

cc: T. Fischer, USEPA, (1) w/attachments  
B. Nickel, OEPA, (1) w/attachments  
R. Vandegrift, ODH, (1) w/attachments  
J. Webb, ODH, (1) w/attachments  
M. Wojciechowski, Tetra Tech, (1) w/attach  
G. Gorsuch, DOE/MCP, (1) w/attachments  
R. Tormey, DOE/OH, (1) w/attachments  
G. Desai, DOE/HQ, (1) w/attachments  
C. Kline, CH2M Hill, (1) w/attachments  
F. Bullock, MMCIC (2) w/attachments  
Public Reading Room (1) w/attachments  
Admin Records, CH2M Hill, (2) w/attachs

ER Records, CH2M Hill, (1) w/attachs  
DCC (1) w/attachments  
M. Ebben, CH2M Hill, w/o attachments  
K. Armstrong, CH2M Hill, w/o attachments  
D. Rakel, CH2M Hill, w/o attachments  
D. Kramer, CH2M Hill, w/o attachments  
J. Fontaine, CH2M Hill, w/o attachments  
MOAT Coordinator, CH2M Hill, w/o attachs  
S. Barr, CH2M Hill, w/o attachments  
M. McDougal, CH2M Hill, w/o attachments  
file, CH2M Hill, w/o attachments

**PRS 87  
REMOVAL ACTION**

**OSC REPORT**

**June 2005**

**Final**



**Department of Energy  
Miamisburg Closure Project**



**CH2MHILL**

# PRS 87

PRS 87

Authorization

PRS Package  
PRS 87

COMPLETE

Action Memo  
PRS 87

COMPLETE

Planning & Execution

Work Plan  
PRS 87

COMPLETE

Pre-Excavation  
SUD  
PRS 87

COMPLETE

Post-Excavation  
SUD  
PRS 87

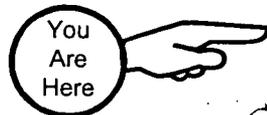
COMPLETE

Completion

Data Report

OSC Report  
PRS 87

COMPLETE



SUD = Survey Unit  
Design per Std VSAP

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(continued)

## Acronyms

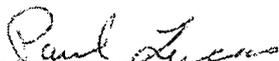
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CO	cleanup objective
COC	contaminant of concern
DCE	cis-1,2 dichloroethene
DOE	Department of Energy
LAP	Laboratory Accreditation Program
MCL	maximum contaminant level
OEPA	Ohio Environmental Protection Agency
OSC	On-Scene Coordinator
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
ug/kg	micrograms per kilogram
USEPA	United States Environmental Protection Agency
VC	vinyl chloride
VOC	volatile organic compound

## RECOMMENDATION

Potential Release Site (PRS) 87 refers to two former solvent storage sheds (known as west and east sheds) that supported operations in the former Building 49. All three structures have been demolished. Characterization sampling conducted prior to demolition of Building 49 (see PRS 87 Further Assessment Data Report, Rev. 0, June 2003) confirmed radionuclides are not present at levels above cleanup objectives (COs) at either shed location and no volatile organic compounds (VOCs) are present at the east shed; however, one (VOC) was detected (at the west shed only) above its soil CO, and several VOCs exhibited the potential to leach to groundwater above their respective maximum contaminant levels (MCLs). This potential to leach was the basis of the removal action (RA). The COs for this RA are the Soil Screening Level (SSL), the value that, if exceeded, could afford the contaminants the potential to leach to groundwater above acceptable levels. The PRS 87 RA and associated Data Report relate to the west shed only. The east shed did not require an RA.

Per the associated Action Memorandum (PRS 87 Action Memo, Removal of Volatile Organic Compound [VOC] Contaminated Soil, authorized November 16, 2004), the contaminated soil was excavated. Verification sampling was performed as documented in the PRS 87 Removal Action Post-Excavation Survey Unit Design (SUD). The RA was successfully completed and resulted in the excavation and disposal of approximately 801 cubic yards of soil. The material was shipped via truck to Environmental Quality Company, Michigan disposal facility. The contaminants of concern (COCs) for PRS 87 were 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: 6,310 ug/kg, 27,340 ug/kg, and 1,300 ug/kg, respectively. All final verification results for PRS 87 were below the SSL COs.

After a thorough review of the PRS 87 On-Scene Coordinator (OSC) Report, the Core Team agrees that the PRS 87 Removal Action is complete, and that all previously existing environmental issues associated with PRS 87 have been resolved.



6/28/05

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

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



6/28/05

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Brian K. Nickel, Project Manager  
OEPA  
Dayton, Ohio

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

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

6/28/05

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Brian K. Nickel, Project Manager  
OEPA  
Dayton, Ohio

## 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 87 includes two locations at the former Building 49 solvent storage sheds; the locations (referred to as the west shed and east shed) are shown on Figure 1 of Attachment A (A4/25).

The PRS 87 Further Assessment Data Report, Rev. 0, June 2003 reported that VOCs were not present at the east shed, but were present above acceptable levels at the west shed. The west shed was the basis for the PRS 87 RA, and the results reported in the PRS 87 RA Data Report refer to the west shed. The east shed did not require an RA.

The PRS 87 RA was authorized by the Core Team (November 16, 2004) as documented in the associated Action Memo (PRS 87 Action Memo, Removal of Volatile Organic Compound (VOC) Contaminated Soil, Public Review Draft, November 2004).

The level of soil VOC contamination present at the west shed warranted an RA under CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act). This OSC Report documents the completion of all aspects of the RA 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 87 RA consisted of the excavation of a volume of soil approximately 45 feet by 36 feet by 12 feet deep. Verification sampling was performed in accordance with the Standard Verification Sampling & Analysis Plan, Final, August 2004, as documented in the PRS 87 RA Post-Excavation SUD. Final verification samples were collected from 18 locations (five bias samples were also collected) 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	Quantity	Disposal Method	Disposal Location
Contaminated soil	801 cubic yards	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	Itemization not available
CH2M Hill support including Sample Plan and Data Validation	
<b>Estimated Total Project Cost</b>	<b>\$400,000</b>

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

**Table 4: Cleanup Criteria**

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

All final verification results (see A14/25) for PRS 87 were below their respective CO.

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

- Project Planning,
- Public Notification,
- Establish work zones,
- Removal of soil,
- 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 87 RA:

**Table 5: Chronology of RA**

Timeframe	Activity
November 2004	Removal Action authorized.
November 2004	Pre-Excavation SUD issued as final with Work Plan.
January – March 2005	Removal action and verification sampling performed.
May 2005	Post-Excavation SUD approved.
May 2005	PRS 87 OSC Report prepared.

## 2.0 EFFECTIVENESS OF THE REMOVAL ACTION

Verification sample results for PRS 87 are presented in Attachment A. All results are below their respective COs.

### 2.1 Actions Taken by Site Contractor

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

Photographic documentation is presented in Attachment C.

The project met the RA objectives as outlined in the approved Action Memo. 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. After the RA and the CERCLA process for the parcel is complete, the area will be transferred from Federal to private ownership. All State and Federal disposal rules will apply.

# **ATTACHMENT A**

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## **DATA REPORT**

# DATA REPORT

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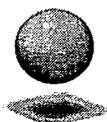
**PRS 87**

**May 2005**

**Rev. 0**



**Department of Energy**  
**Miamisburg Closure Project**



**CH2MHILL**

This Data Report is Attachment A  
to the PRS 87 OSC Report

**A 1/25**

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## 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) 87 (location of west shed shown on Figure 1, A4/25).

The purposes of this Data Report are to:

- document the verification of PRS 87,
- describe any variances to the required sampling, and
- present the analytical results.

## 2.0 FIELD ACTIVITIES / VARIANCES

Verification sampling activities occurred in March of 2005 in accordance with the Standard Verification Sampling and Analysis Plan (VSAP), Final, August 2004 and as documented in the Core Team-approved PRS 87 Post-Excavation Survey Unit Design (SUD). Reporting requirements per the VSAP (final graphic, sample results, recalculation of N, and retrospective power curve) are provided in Appendix A (A6/25 – A12/25).

### 2.1 SAMPLE LOCATIONS

Eighteen soil samples (and five bias samples) were collected from locations shown on Figure 2 (A7/25). Coordinates are presented in Table 1 (A14/25).

### 2.2 VARIANCES

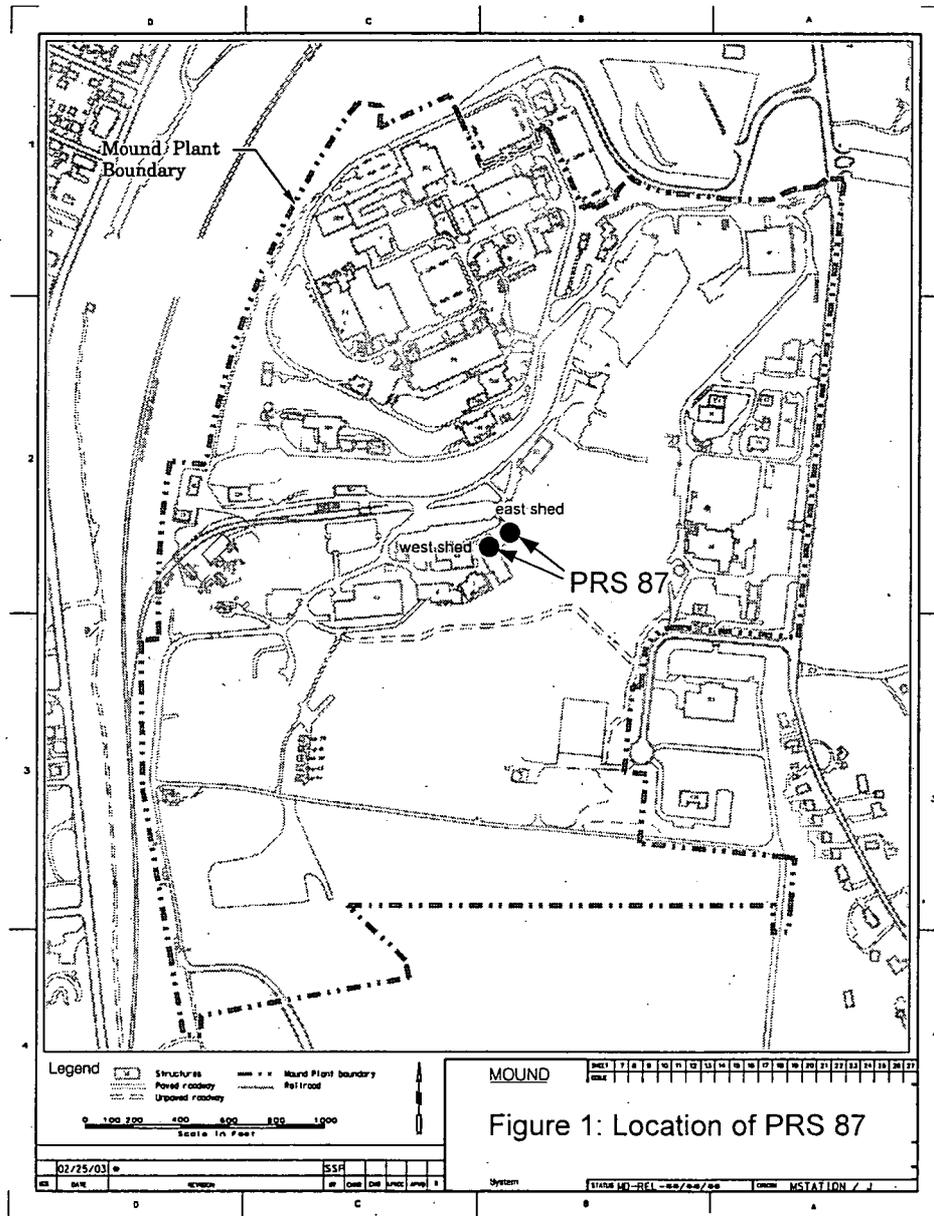
Due to the contaminants being below CO, the sign test was not performed.

## 3.0 RESULTS

Samples for final verification of this PRS were processed offsite at GEL of Ohio. All final verification results (see A14/25) for PRS 87 were below their respective CO.

### 3.1 DATA REVIEW & VALIDATION

Verification and quality control samples collected during the investigation for each target analysis are discussed in Appendix C. Data review and validation is reported in Appendix C (see A17/25).



# APPENDIX A

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## Standard VSAP Backfill Information

# STD VSAP BACKFILL INFO

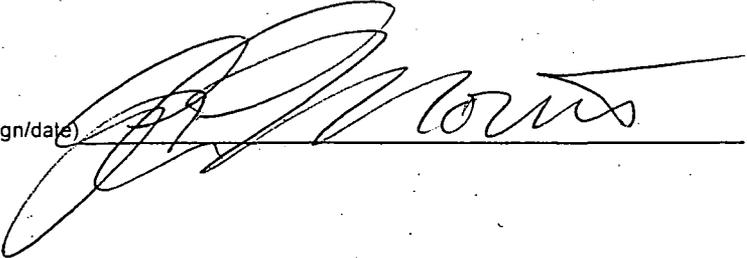
This information will be represented in the Data Report.

For: PRS 87

## Checklist:

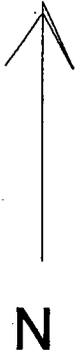
(per Section 5.6 of Std VSAP, Final, Aug 04)

- 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
- Data Review & Validation (see A17/25-A25/25)
- ~~N/A~~ Sign test WMM 026 MAY 05  
(not required if all results <CO, see pg 19/21 of VSAP)
- ~~N/A~~ retro curve *included - g*  
(not required if all results <CO [null hypothesis is rejected, MARSSIM])

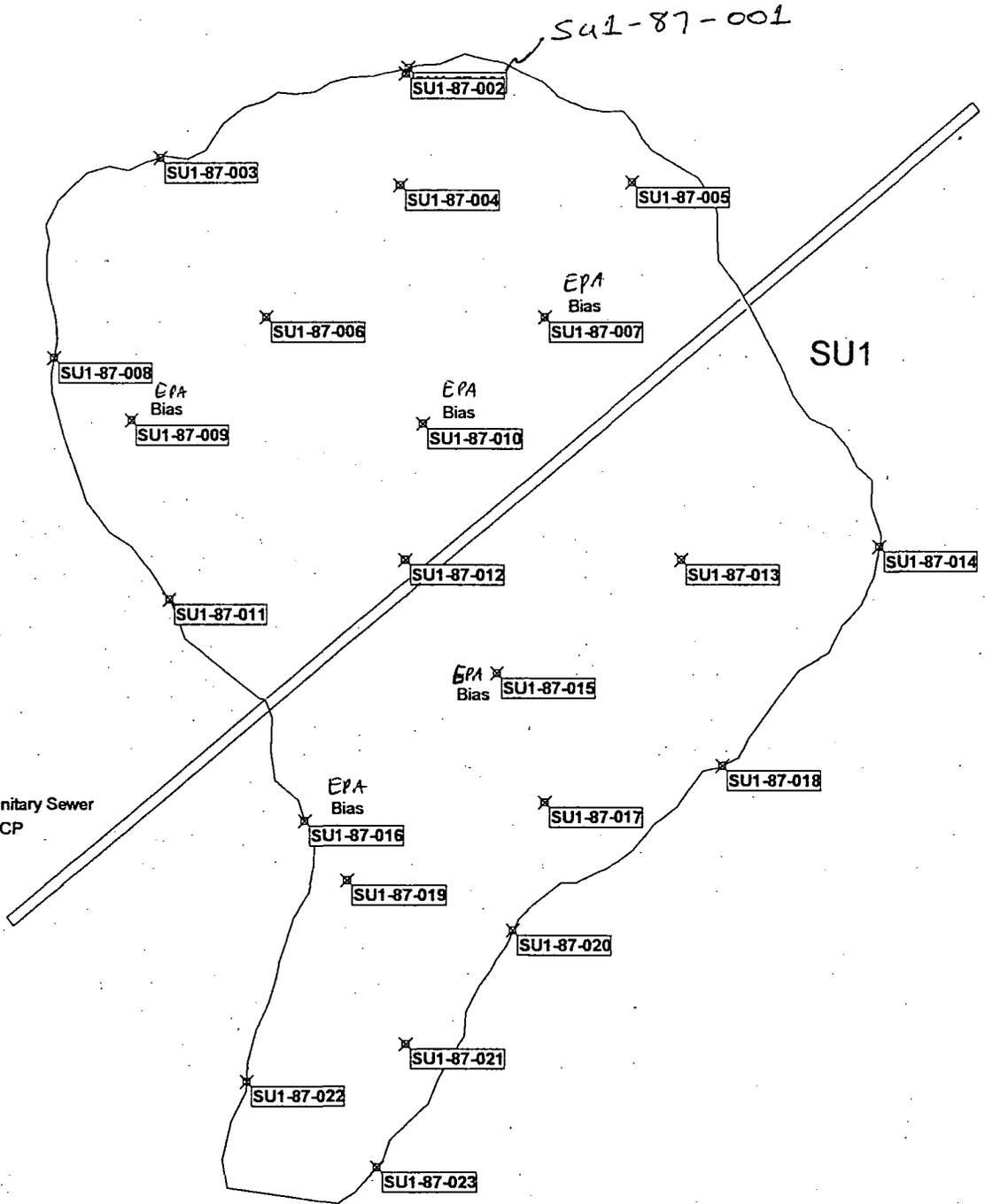
From:   
(sign/date)

# PRS 87 Post -Ex

SU1-87-001



Existing Sanitary Sewer  
8 inch VCP

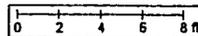


Note: Sample points that fall on the excavation boundary line are side wall samples.  
Excavation depth is approximately 12 feet deep.

Final Verification Sample Locations :

Figure 2

A7/25



*Went*

Area: SU1

<u>X Coord</u>	<u>Y Coord</u>	<u>Label</u>	<u>Value</u>	<u>Type</u>	<u>Historical</u>
1465309.7550	597995.5410	SU1-87-001	0	Manual	
1465309.6270	597995.2510	SU1-87-002	0	Manual	
1465296.3250	597990.8020	SU1-87-003	0	Manual	
1465309.3720	597989.3070	SU1-87-004	0	Manual	
1465321.9160	597989.4650	SU1-87-005 A	0	Manual	
1465302.1270	597982.2610	SU1-87-006	0	Manual	
1465317.1270	597982.2610	SU1-87-007	0	Manual	
1465290.5380	597980.0860	SU1-87-008	0	Manual	
1465294.7300	597976.7570	SU1-87-009 A	0	Manual	
1465310.5830	597976.5360	SU1-87-010 A	0	Manual	
1465296.7990	597967.1570	SU1-87-011	0	Manual	
1465309.6270	597969.2700	SU1-87-012 A	0	Manual	
1465324.6270	597969.2700	SU1-87-013	0	Manual	
1465335.3340	597969.9800	SU1-87-014	0	Manual	
1465314.5460	597963.2150	SU1-87-015	0	Manual	
1465304.2110	597955.2920	SU1-87-016	0	Manual	
1465317.1270	597956.2800	SU1-87-017	0	Manual	
1465326.8430	597958.2270	SU1-87-018	0	Manual	
1465306.5090	597952.0960	SU1-87-019	0	Manual	
1465315.4040	597949.3960	SU1-87-020	0	Manual	
1465309.6270	597943.2890	SU1-87-021	0	Manual	
1465301.0430	597941.2620	SU1-87-022	0	Manual	
1465308.1000	597936.6590	SU1-87-023	0	Manual	

*Wing 20 maps*



PRS 87 TFV VOA Verification  
 Sampled 3/7/05 and 3/16/05

µg/kg		1,2-DCE (Total)		TCE		VC	
SSL		27,340	Flag	6,310	Flag	1,300	Flag
Reporting Limit	dilution	11		5.6		5.6	
Label							
PRS 87-001	50	2,600	D	3,800	D	< 560	D
PRS 87-002	1	*		32		*	
PRS 87-002	50	350	JD	**		< 280	D
PRS 87-003	1	*		*		44	
PRS 87-003	50	920	D	670	D	**	
PRS 87-004	50	2,900	D	340	D	330	D
PRS 87-005A	1	< 11	U	1	J	4	J
PRS 87-006	50	630	D	830	D	98	
PRS 87-008	1	20		200		< 5.0	
PRS 87-011	1	100		210		1	J
PRS 87-012A	1	44		43		3	J
PRS 87-013	1	9	J	43		2	J
PRS 87-014	1	21		58		< 5	
PRS 87-017	1	91	D	36		440	D
PRS 87-018	1	190		44		9	
PRS 87-019	1	360	JD	37		40	
PRS 87-020	1	90		61		25	
PRS 87-021	1	24		26		2	J
PRS 87-022	1	2	J	< 5		2	J
PRS 87-023	1	8	J	9		4	J
Std. Deviation		869		891		174	
<b>Bias Samples:</b>							
PRS 87-007	50	3,200	D	550	D	400	D
PRS 87-009A	1	< 11	U	< 5.6	U	< 5.6	U
PRS 87-010A	1	*		180		17	
PRS 87-010A	5	630	D	**		**	
PRS 87-015	1	750	D	89		< 250	
PRS 87-016	1	2,600	E	190		21	
<b>Field Duplicates (FD):</b>							
PRS 87-002 FD	1	*		35		100.00	
PRS 87-002 FD	5	700	D	**		**	
PRS 87-012AFD	1	14		7		< 6	U
* = Dilution Required    ** = Dilution Not Required							
J - Estimated result. Result was less than the Practical Quantitation Limit							
E - Estimated result. Result concentration exceeds the calibration range.							
D - Results have been obtained by the analysis of a diluted sample.							
U - Non detect							
The results have been corrected to dry weight.							
Reporting Limits are for undiluted samples							

**From:** Eugene Jendrek  
**To:** Morris, Gary  
**Date:** 3/29/05 10:43AM  
**Subject:** Re: PRS 87 Preliminary Results

Gary,

See amended attachment. I have listed the Reporting Limit. This is the higher than the detection level. It is also called the Practical Quantitation Limit or the level (above the instrument detection level) at which the lab is confident of reporting actual numbers.

The reporting limits are for undiluted samples. For samples that were diluted the reporting limit is multiplied by the dilution factor (i.e., a dilution of 20 raises the reporting limit by 20).

Gene

>>> Gary Morris 03/29/05 09:59AM >>>

Gene:

For the sample results, can we add the detection limits for each? If we can I think we can submit the backfill plan prior to complete validation.

Thanks,

Gary

>>> Eugene Jendrek 03/23/05 04:27PM >>>

Gary,

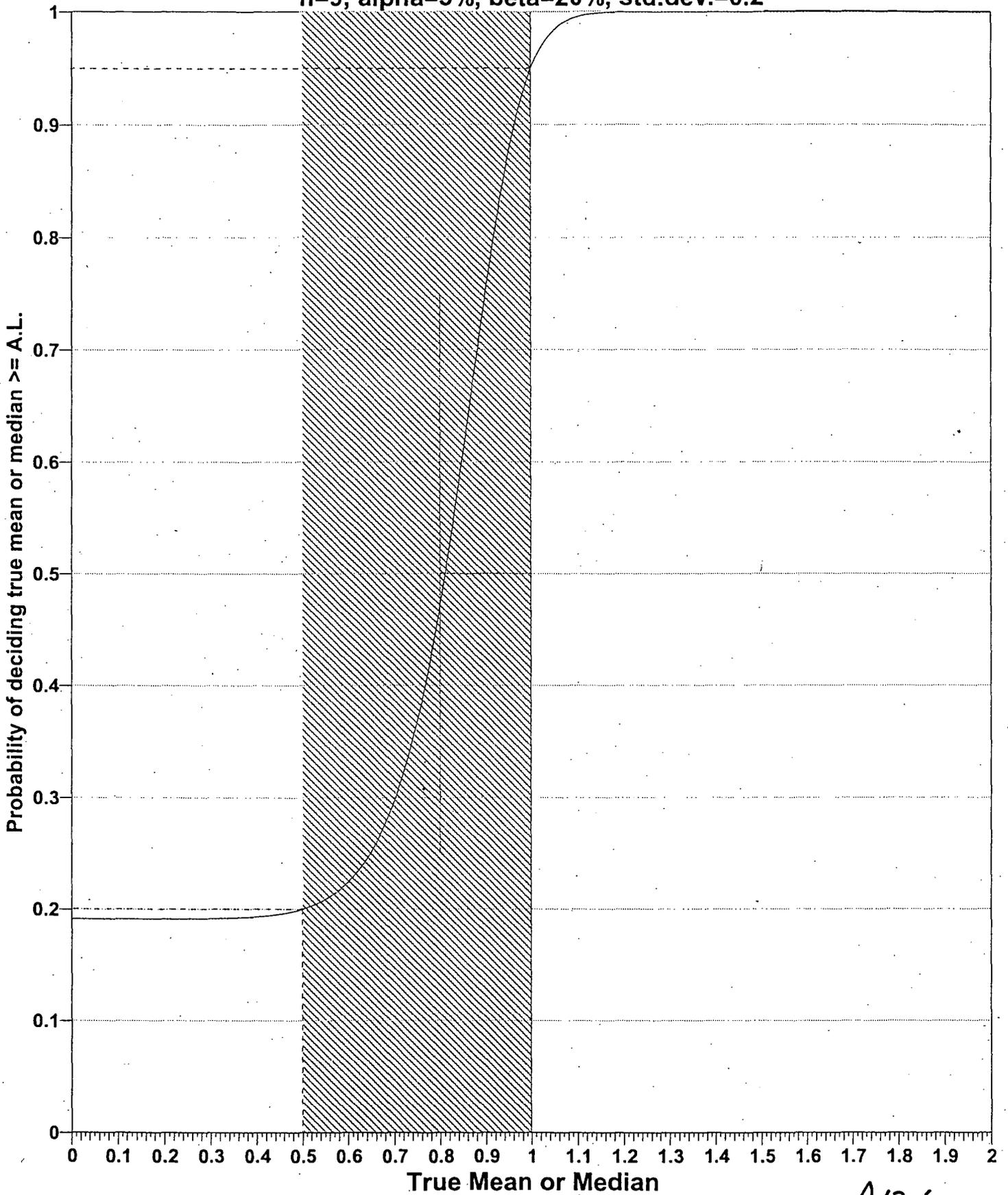
Attached are the preliminary results on the PRS 87 samples. The latest samples are highlighted in yellow.

Gene

A11/25

# MARSSIM Sign Test

$n=9$ ,  $\alpha=5\%$ ,  $\beta=20\%$ ,  $\text{std.dev.}=0.2$



A12/25

# APPENDIX B

---

Tables

Table 1: Analytical Results (ug/kg)

Project Code	Station	Date Collected	Sample Id.	Analyte	Results	DL	Lab Qual	Data Qual.	X Coord	Y Coord
PRS87VS	1-87-017	03/07/2005	87-017	DCE	91.00	55	D		1465317.127	597956.280
PRS87VS	1-87-005	03/07/2005	87-006	DCE	630.00	550	D		1465321.916	597989.465
PRS87VS	1-87-016	03/07/2005	87-016	DCE	1900.00	550	E		1465304.211	597955.292
PRS87VS	1-87-022	03/07/2005	87-022	DCE	2.00	11	UJ		1465301.043	597941.262
PRS87VS	1-87-003	03/07/2005	87-003	DCE	920.00	550	D		1465296.325	597990.802
PRS87VS	1-87-015	03/07/2005	87-015	DCE	750.00	550	D		1465314.546	597963.215
PRS87VS	1-87-005	03/07/2005	87-005A	DCE	11.00	11	U		1465321.916	597989.465
PRS87VS	1-87-018	03/07/2005	87-018	DCE	190.00	11			1465326.843	597958.227
PRS87VS	1-87-004	03/07/2005	87-004	DCE	2900.00	550	D		1465309.372	597989.307
PRS87VS	1-87-002	03/07/2005	87-002FD	DCE	700.00	55			1465309.627	597995.251
PRS87VS	1-87-023	03/07/2005	87-023	DCE	8.00	11	UJ		1465308.100	597936.659
PRS87VS	1-87-014	03/07/2005	87-014	DCE	21.00	11			1465335.335	597969.980
PRS87VS	1-87-002	03/07/2005	87-002	DCE	350.00	5500	UJD		1465309.627	597995.251
PRS87VS	1-87-006	03/07/2005	87-007	DCE	3200.00	550	D		1465302.127	597982.261
PRS87VS	1-87-001	03/07/2005	87-001	DCE	2600.00	11000	UD		1465309.755	597995.541
PRS87VS	1-87-020	03/07/2005	87-020	DCE	90.00	11			1465315.404	597949.396
PRS87VS	1-87-021	03/07/2005	87-021	DCE	24.00	11			1465309.627	597943.289
PRS87VS	1-87-012	03/07/2005	87-012AFD	DCE	14.00	11			1465309.627	597969.270
PRS87VS	1-87-010	03/07/2005	87-011	DCE	100.00	11			1465310.583	597976.536
PRS87VS	1-87-009	03/07/2005	87-010A	DCE	630.00	55	D		1465294.730	597976.757
PRS87VS	1-87-008	03/07/2005	87-009A	DCE	11.00	11	U		1465290.538	597980.086
PRS87VS	1-87-013	03/07/2005	87-013	DCE	9.00	11	UJ		1465324.627	597969.270
PRS87VS	1-87-019	03/07/2005	87-019	DCE	360.00	550	UJD		1465306.509	597952.096
PRS87VS	1-87-011	03/07/2005	87-012A	DCE	44.00	11			1465296.799	597967.157
PRS87VS	1-87-007	03/07/2005	87-008	DCE	20.00	11			1465317.127	597982.261
PRS87VS	1-87-023	03/07/2005	87-023	VC	4.00	5.6	UJ		1465308.100	597936.659
PRS87VS	1-87-019	03/07/2005	87-019	VC	40.00	5.6			1465306.509	597952.096
PRS87VS	1-87-022	03/07/2005	87-022	VC	2.00	5.6	UJ		1465301.043	597941.262
PRS87VS	1-87-021	03/07/2005	87-021	VC	2.00	5.6	UJ		1465309.627	597943.289
PRS87VS	1-87-020	03/07/2005	87-020	VC	25.00	5.6			1465315.404	597949.396
PRS87VS	1-87-018	03/07/2005	87-018	VC	9.00	5.6			1465326.843	597958.227
PRS87VS	1-87-012	03/07/2005	87-012AFD	VC	6.00	5.6	U		1465309.627	597969.270
PRS87VS	1-87-017	03/07/2005	87-017	VC	440.00	28	D		1465317.127	597956.280
PRS87VS	1-87-007	03/07/2005	87-008	VC	5.00	5.6	U		1465317.127	597982.261
PRS87VS	1-87-009	03/07/2005	87-010A	VC	17.00	5.6			1465294.730	597976.757
PRS87VS	1-87-010	03/07/2005	87-011	VC	1.00	5.6	UJ		1465310.583	597976.536
PRS87VS	1-87-013	03/07/2005	87-013	VC	2.00	5.6	UJ		1465324.627	597969.270
PRS87VS	1-87-011	03/07/2005	87-012A	VC	3.00	5.6	UJ		1465296.799	597967.157
PRS87VS	1-87-006	03/07/2005	87-007	VC	400.00	280	D		1465302.127	597982.261
PRS87VS	1-87-005	03/07/2005	87-006	VC	98.00	5.6			1465321.916	597989.465
PRS87VS	1-87-002	03/07/2005	87-002	VC	280.00	280	UD		1465309.627	597995.251
PRS87VS	1-87-001	03/07/2005	87-001	VC	560.00	5600	UD		1465309.755	597995.541
PRS87VS	1-87-002	03/07/2005	87-002FD	VC	100.00	5.6			1465309.627	597995.251
PRS87VS	1-87-003	03/07/2005	87-003	VC	44.00	5.6			1465296.325	597990.802
PRS87VS	1-87-005	03/07/2005	87-005A	VC	4.00	5.6	UJ		1465321.916	597989.465
PRS87VS	1-87-004	03/07/2005	87-004	VC	330.00	280	D		1465309.372	597989.307
PRS87VS	1-87-014	03/07/2005	87-014	VC	5.00	5.6	U		1465335.335	597969.980
PRS87VS	1-87-008	03/07/2005	87-009A	VC	5.60	5.6	U		1465290.538	597980.086
PRS87VS	1-87-015	03/07/2005	87-015	VC	280.00	280	UD		1465314.546	597963.215
PRS87VS	1-87-016	03/07/2005	87-016	VC	21.00	5.6			1465304.211	597955.292
PRS87VS	1-87-016	03/07/2005	87-016	TCE	190.00	5.6			1465304.211	597955.292
PRS87VS	1-87-022	03/07/2005	87-022	TCE	5.00	5.6	U		1465301.043	597941.262
PRS87VS	1-87-018	03/07/2005	87-018	TCE	44.00	5.6			1465326.843	597958.227
PRS87VS	1-87-006	03/07/2005	87-007	TCE	550.00	280	D		1465302.127	597982.261
PRS87VS	1-87-009	03/07/2005	87-010A	TCE	180.00	5.6			1465294.730	597976.757
PRS87VS	1-87-021	03/07/2005	87-021	TCE	26.00	5.6			1465309.627	597943.289
PRS87VS	1-87-008	03/07/2005	87-009A	TCE	5.60	5.6	U		1465290.538	597980.086
PRS87VS	1-87-005	03/07/2005	87-005A	TCE	1.00	5.6	UJ		1465321.916	597989.465
PRS87VS	1-87-005	03/07/2005	87-006	TCE	830.00	280	D		1465321.916	597989.465
PRS87VS	1-87-002	03/07/2005	87-002	TCE	32.00	5.6			1465309.627	597995.251
PRS87VS	1-87-001	03/07/2005	87-001	TCE	3800.00	5600	UD		1465309.755	597995.541
PRS87VS	1-87-017	03/07/2005	87-017	TCE	36.00	5.6			1465317.127	597956.280
PRS87VS	1-87-002	03/07/2005	87-002FD	TCE	35.00	5.6			1465309.627	597995.251
PRS87VS	1-87-004	03/07/2005	87-004	TCE	340.00	280	D		1465309.372	597989.307
PRS87VS	1-87-003	03/07/2005	87-003	TCE	670.00	280	D		1465296.325	597990.802
PRS87VS	1-87-023	03/07/2005	87-023	TCE	9.00	5.6			1465308.100	597936.659
PRS87VS	1-87-007	03/07/2005	87-008	TCE	200.00	5.6			1465317.127	597982.261
PRS87VS	1-87-010	03/07/2005	87-011	TCE	210.00	5.6			1465310.583	597976.536
PRS87VS	1-87-013	03/07/2005	87-013	TCE	43.00	5.6			1465324.627	597969.270

Table 1: Analytical Results (ug/kg)

Project Code	Station	Date Collected	Sample Id	Analyte	Results	DL	Lab Qual	Data Qual	X-Coord	Y-Coord
PRS87VS	1-87-012	03/07/2005	87-012AFD	TCE	7.00	5.6			1465309.627	597969.270
PRS87VS	1-87-011	03/07/2005	87-012A	TCE	43.00	5.6			1465296.799	597967.157
PRS87VS	1-87-020	03/07/2005	87-020	TCE	61.00	5.6			1465315.404	597949.396
PRS87VS	1-87-019	03/07/2005	87-019	TCE	37.00	5.6			1465306.509	597952.096
PRS87VS	1-87-015	03/07/2005	87-015	TCE	89.00	5.6			1465314.546	597963.215
PRS87VS	1-87-014	03/07/2005	87-014	TCE	58.00	5.6			1465335.335	597969.980

Trichloroethylene (TCE)  
 1,2-cis-Dichloroethene (DCE)  
 Vinyl Chloride (VC)  
 DL: detection limit  
 D: dilution required  
 U: not detected  
 J: estimate  
 E: exceeded calibration range

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# APPENDIX C

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## Data Review & Validation

## 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 support that the analyses were performed correctly? 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, appropriate 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 remediation verification samples were initially collected for PRS 87 on 3/7/05 in accordance with the "PRS 87 Removal Action SUD" (March 2005). PRS 87 is the location of a former solvent shed that supported activities in Building 49. The solvent shed was demolished when Building 49 was expanded several decades ago.

Prior soil sampling in the area shows radionuclides are not present at levels above cleanup objectives. Several volatile organic compounds (Tetrachloroethylene, Dichloroethylene, & Vinyl Chloride) were detected below their cleanup objectives; however, when evaluated further, they presented the potential to leach into groundwater above their respective contaminant levels. 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, the selection of contaminants of concern, and the establishment of action levels are contained in the SUD.

The removal action was performed by Clean Harbors. The 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 itself only to the usability of the analytical data as part of the assessment of the success of the removal action.

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The initial verification sampling on March 7, 2005 indicated that four locations showed VOA contamination above the SSL action levels. Additional soil was removed and the four original locations were re-sampled on March 16, 2005.

One field duplicate was collected for each sampling event.

Samples were collected from all locations as planned. The final verification sample set includes samples from both sampling event. 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 collected during the initial sampling event when both VOA and gamma spectroscopy samples were collected. During the second sampling event only VOA samples were collected. No field decontamination of sampling equipment was performed during the second sampling event and therefore no equipment rinsate samples were 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 87 sampling events some samples showed high concentrations of the contaminants of concern hence an initial sampling event rinsate sample was collected. 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 packaged and analyzed with each shipment of 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 laboratory received no open or broken sample containers.

All samples in the initial sampling event were run for a long count screening at the Mound Soil Screening Laboratory (Gamma Spectroscopy) prior to off site analysis. Offsite chemical sample analyses were performed at Severn Trent Laboratories, St. Louis.

There was a wide variation in analyte concentration within the sample sets. When an analyte result exceeded the calibration range, the sample was diluted and rerun for that analyte. The optimal analyte results reflect their analysis at the least diluted concentration that is still within the calibration range. It should be further noted that there are only 3 VOA analytes of interest and only QC directly or indirectly related to these 3 analytes is being evaluated.

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.

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Table 1. Sample Identification

Sample Date	LSDG	Number of Samples	Mound Sample IDs
3/7/05	F5C090129	24	PRS 87-01 PRS 87-02 PRS 87-02FD PRS 87-03 PRS 87-04 PRS 87-05 PRS 87-06 PRS 87-07 PRS 87-08 PRS 87-09 PRS 87-10 PRS 87-11 PRS 87-12 PRS 87-13 PRS 87-14 PRS 87-15 PRS 87-16 PRS 87-17 PRS 87-18 PRS 87-19 PRS 87-20 PRS 87-21 PRS 87-22 PRS 87-23 PRS 87-24
3/16/05	F5C180178	5	PRS 87-05A PRS 87-09A PRS 87-10A PRS 87-12A PRS 87-12AFD

LSDG – Laboratory Sample Delivery Group

**3.0 Data Completeness**

The correct samples were submitted and analyzed for the analyses requested in the SUD. Additional sample locations were added as biased samples by the OHEPA in the first 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

# Data Review & Validation

PRS 87 VOA

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
E	Measured Analyte result exceeds calibration range
D(dil)	Analyte was determined from a diluted sample. Sample dilution appears in parentheses.

## 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.

## 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  $\geq 0.05$ . The Percent Relative Standard Deviation (%RSD) for given standard concentration must be  $\leq 30\%$ .

The ICs for the target analytes were performed within 12 hours of an IPC-BFB. All IC RRFs for the target analytes 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 that there is no significant drift in the 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

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$\geq 0.05$ . 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 RRFs 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 processes are contributing to the detected sample measurements. A method blank must be performed after the calibration standards.

All analytes of concern in the blanks associated with the verification samples met QC criteria.

All initial and continuing calibration blanks met QC criteria.

## 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 4-Bromofluorobenzene exceeded QC criteria on 6 samples (169% to 195%). This SMC is not associated with any of the three 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. The measured analytes are computed in relation to the recovered IS. 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  $\pm 30$  seconds from the retention time of the associated 12hr. calibration standard.

There were a number of problems initially with the measurements of the internal standards. In the first batch of samples a number of samples exhibited unacceptably low internal standard peak areas. It should be noted that this would tend to bias the samples high. All of the samples that failed the IS QC were later rerun anyways because of exceeding the calibration range. Therefore, no data qualification was invoked.

## 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

# Data Review & Validation

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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 for the two Mound samples used as MS/MSDs (a number of other MS/MSDs were run not using Mound samples). However the amount of target analyte spiked in the MS/MSDs was relatively small compared to the amount of target analyte already present in the samples. The low recoveries are deemed insignificant for this reason.

## 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 of the target analytes were within QC requirements.

## 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.

There was no detection of the target analytes in the equipment rinsate.

## 4.11 Trip Blanks

Trip Blanks are used to ensure no cross contamination of the samples occurred during shipment to the laboratory.

There was no detection of the target analytes in the trip blanks.

## 4.12 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.

Two field duplicates were collected for each data set. The field duplicate results are only in fair agreement. This may be an artifact of the difficulty of performing VOA sampling.

## 5.0 Data Validation

The results of LSDG F5C090129 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.

# Data Review & Validation

PRS 87 VOA

Table 3 PRS 87 VOA Analyses

µg/kg		1,2-DCE (Total)		TCE		VC	
	SSL	27,340	Flag	6,310	Flag	1,300	Flag
	Reporting Limit dilution	11		5.6		5.6	
PRS 87-001	1	5,800	E	4,900	E	370	E
	100	2,600	D(100)	3,800	D(100)	< 560	D(100)
PRS 87-002	1	1100	E	32		610	E
	50	350	JD(50)			< 280	D(50)
PRS 87-002 FD	1	230	E	35		100	
	5	700	D(5)				
PRS 87-003	1	2,100	E	1,200	E	44	
	50	920	D(50)	670	D(50)		
PRS 87-004	1	4,600	E	650	E	1,900	E
	50	2,900	D(50)	340	D(50)	330	D(50)
PRS 87-005	1	710	E	4,500	E	1	J
	50	210	JD(50)	11,000	D(50)E		
	250			22,000	D(250)		
PRS 87-005A	1	< 11	U	1	J	4	J
PRS 87-006	1	1,200	E	940	E	98	
	50	630	D(50)	830	D(50)		
PRS 87-007	1	3,700	E	250	E	1,100	E
	50	3,200	D(50)	550	D(50)	400	D(50)
PRS 87-008	1	20		200		< 5.0	
PRS 87-009	1	1,400	E	5,600	E	30	
	50	650	D(50)	6,100	D(50)		
PRS 87-009A	1	< 11	U	< 5.6	U	< 5.6	U
PRS 87-010	1	6,600	E	6,000	E	200	
	50	6,500	D(50)	23,000	D(50)E		
	500			2,900	JD(500)		
	500			58,000	D(500)		
PRS 87-010A	1	600	E	180		17	
PRS 87-010A	5	630	D(5)				
PRS 87-011	1	100		210		1	J
PRS 87-012	1	3,600	E	5,400	E	12	
	500	4,500	JD(500)	42,000	D(500)		
PRS 87-012A	1	44		43		3	J
PRS 87-012AFD	1	14		7		< 6	U
PRS 87-013	1	9	J	43		2	J
PRS 87-014	1	21		58		< 5	
PRS 87-015	1	2,600	E	89		570	E
	50	750	D(50)			< 280	D(50)
PRS 87-016	1	2,600	E	190		21	
	50	1,900	E				
PRS 87-017	1	590	E	36		670	E
	5	91	D(5)			440	D(5)
PRS 87-018	1	190		44		9	
PRS 87-019	1	360	E	37		40	
	50	360	JD(50)				

E. Jendrek \* location was excavated & resampled (see "A")  
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PRS 87 VOA

$\mu\text{g}/\text{kg}$		1,2-DCE (Total)		TCE		VC	
SSL		27,340	Flag	6,310	Flag	1,300	Flag
Reporting Limit	dilution	11		5.6		5.6	
PRS 87-020	1	90		61		25	
PRS 87-021	1	24		26		2	J
PRS 87-022	1	2	J	< 5		2	J
PRS 87-023	1	8	J	9		4	J
TB 3/7		< 10 $\mu\text{g}/\text{L}$		< 5.0 $\mu\text{g}/\text{L}$		< 5.0 $\mu\text{g}/\text{L}$	
TB 3/16		< 10 $\mu\text{g}/\text{L}$		< 5.0 $\mu\text{g}/\text{L}$		< 5.0 $\mu\text{g}/\text{L}$	
ER 3/7		< 10 $\mu\text{g}/\text{L}$		< 5.0 $\mu\text{g}/\text{L}$		< 5.0 $\mu\text{g}/\text{L}$	
Blank 3/10		< 10 $\mu\text{g}/\text{L}$		< 5.0 $\mu\text{g}/\text{L}$		< 5.0 $\mu\text{g}/\text{L}$	
Blank 3/11 A		< 10 $\mu\text{g}/\text{L}$		< 5.0 $\mu\text{g}/\text{L}$		< 5.0 $\mu\text{g}/\text{L}$	
Blank 3/11 B		< 10 $\mu\text{g}/\text{L}$		< 5.0 $\mu\text{g}/\text{L}$		< 5.0 $\mu\text{g}/\text{L}$	
Blank 3/12		< 10 $\mu\text{g}/\text{L}$		< 5.0 $\mu\text{g}/\text{L}$		< 5.0 $\mu\text{g}/\text{L}$	
Blank 3/14		< 10 $\mu\text{g}/\text{L}$		< 5.0 $\mu\text{g}/\text{L}$		< 5.0 $\mu\text{g}/\text{L}$	
Blank 3/19		< 10 $\mu\text{g}/\text{L}$		< 5.0 $\mu\text{g}/\text{L}$		< 5.0 $\mu\text{g}/\text{L}$	
Blank 3/21		< 10 $\mu\text{g}/\text{L}$		< 5.0 $\mu\text{g}/\text{L}$		< 5.0 $\mu\text{g}/\text{L}$	
Blank 3/23		< 10 $\mu\text{g}/\text{L}$		< 5.0 $\mu\text{g}/\text{L}$		< 5.0 $\mu\text{g}/\text{L}$	
<b>% Recovery</b>							
LCS 3/10		88		89		99	
LCS 3/11A		74		74		88	
LCS 3/11B		97		91		98	
LCS 3/12		90		93		96	
LCS 3/14		101		91		78	
LCS 3/19		96		96		84	
LCS 3/21		91		89		88	
LCS 3/23		96		84		89	
PRS 87-001 MS		0		0		20	
PRS 87-001 MSD		0		0		0	
PRS 87-002 MS		51		54		51	
PRS 87-002 MSD		52		55		52	

1,2-DCE (Total) – 1,2-Dichloroethene

TCE – Trichloroethene

VC – Vinyl Chloride

Samples with appended "A" represent resample after further remediation.

Appended "FD" indicates a Field Duplicate sample.

TB – Trip Blank

EQ – Equipment Rinsate

LCS – Laboratory Control Sample

MS – Matrix Spike

MSD – Matrix Spike Duplicate

*Flags are defined on A 20/25*

# **ATTACHMENT B**

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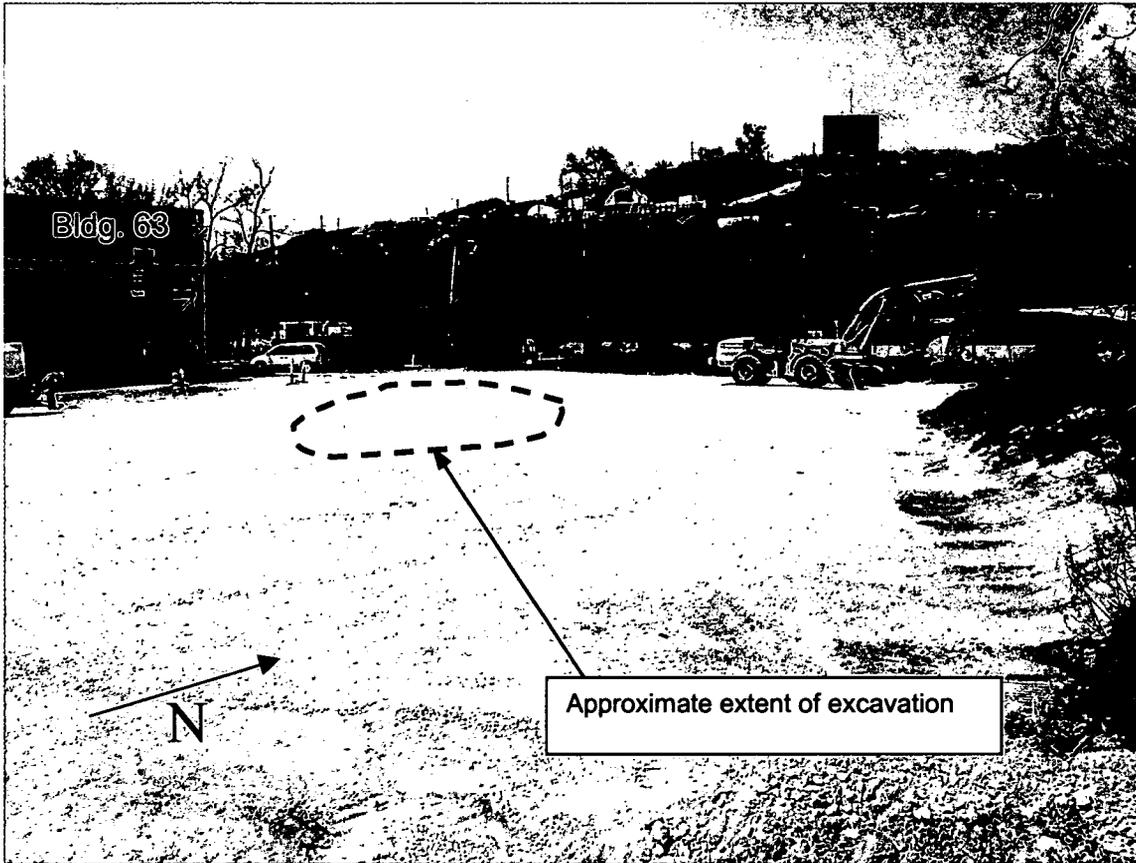
## **GENERAL MEDIA INFORMATION**

(There was no information released  
to the media regarding PRS 87)

# **ATTACHMENT C**

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## **PHOTOGRAPH DOCUMENTATION**



PRS 87 Area following RA, backfill, & restoration