



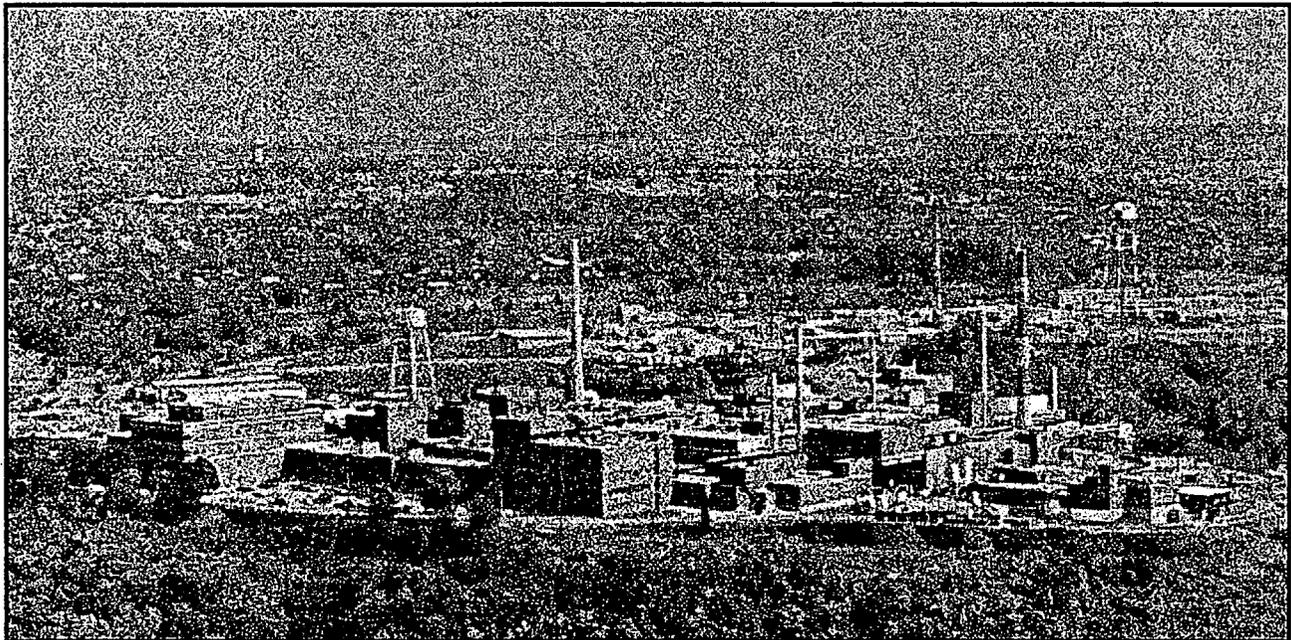
**Environmental
Restoration
Program**



OhioEPA

Miamisburg Closure Project Potential Release Site Package PRS 409 Addendum 1

Final
February 2006



30030402 - 0605100013



CH2M HILL Mound, Inc.
1075 Mound Road
P.O. Box 750
Miamisburg, OH 45343-0750

SMO-084/06
February 2, 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 409 PRS Package Addendum 1, Final**

Dear Mr. Pfister:

Attached is the following Final document for your records:

- PRS 409 PRS Package Addendum 1, 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

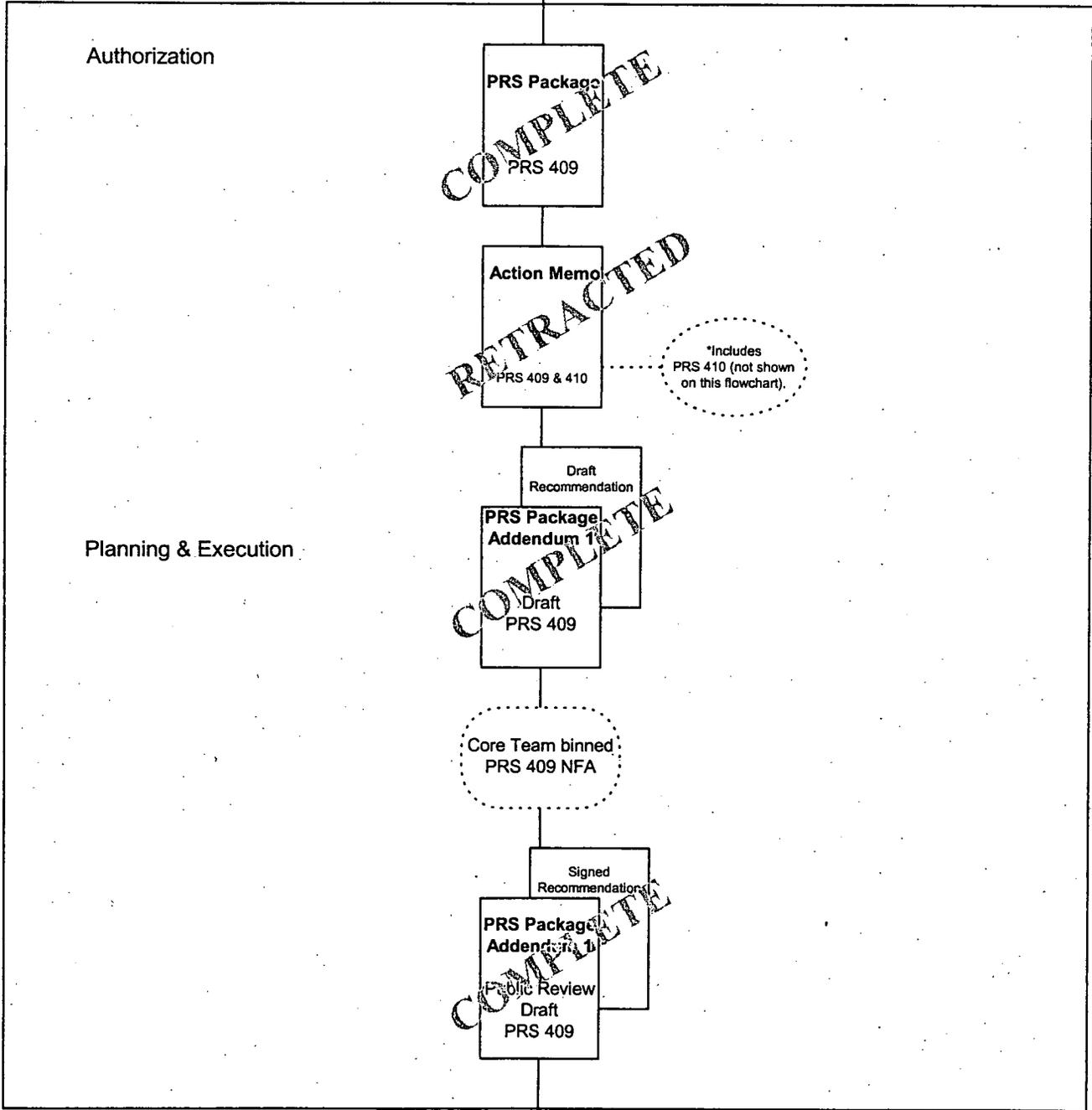
Enclosures

- 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
F. Bullock, MMCIC, (3) w/attachments
Public Reading Room, (1) w/attachments
C. Kline, CH2M Hill, (1) w/attachments

- Admin Record, (2) w/attachments
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
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 409

PRS 409



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The Mound Core Team
500 Capstone Circle
Miamisburg, OH 45342

September 2005

Mr. Frank Bullock, PE
Director of Operations
Miamisburg Mound Community Improvement Corporation
720 Mound Road
COS Bldg. 4221
Miamisburg, Ohio 45342-6714

Dear Mr. Bullock:

The Core Team, consisting of the U.S. Department of Energy Miamisburg Closure Project (DOE-MCP), U.S. Environmental Protection Agency (USEPA), and the Ohio Environmental Protection Agency (OEPA), appreciates your concurrence with the PRS 409 PRS Package, Public Review Draft, August 2005.

Should the responses to comments require additional detail, please contact Paul Lucas at (513) 246-0071, and we will gladly arrange a meeting or telephone conference.

Sincerely,

DOE/MCP:	<i>Paul Lucas</i>	<i>10/11/05</i>
	Paul Lucas, Remedial Project Manager	date
USEPA:	<i>Timothy J. Fischer</i>	<i>10/18/05</i>
	Timothy J. Fischer, Remedial Project Manager	date
OEPA:	<i>Brian K. Nickel</i>	<i>10/12/05</i>
	Brian K. Nickel, Project Manager	date

Technical Review of the Mound Site

Summary

by EHS TECHNOLOGY GROUP, LLC

Reference Document: Potential Release Site 409 Addendum 1: Soil Contamination Stoddard Solvent; Public Review Draft, August 2005

Purpose: The purpose of this document is to notify the public of the No Further Assessment recommendation for Potential Release Site 409: Soil Contamination of Stoddard Solvent.

Assessment of Review: EHS has had the opportunity to review and comment on this Potential Release Site Data Package. We concur with the No Further Assessment recommendation for the Potential Release Site 409: Soil Contamination with Stoddard Solvent. This addendum to the original data package was prepared in accordance with the requirements specified in the *Work Plan for Environmental Restoration (ER) of the DOE Mound Site, The Mound 2000 Approach*. As such, all appropriate inquiry was made into the condition of the Potential Release Site.

Technical Analysis: Potential Release Site 409 is the site of a former chemical (Stoddard Solvent) concrete pad staging area. This area was encountered and remediated during the installation of a storm water drainage pipe in 1996. Although following remediation the PRS package documented that the area was verified to be below the Bureau of Underground Storage Tank Regulations (BUSTR) action limits, the package also stated that contamination and a portion of the concrete pad remained. The PRS was binned a response action (RA) in 1997 to address the remaining contamination.

In 2004, sampling was performed to determine the extent of contamination. The characterization included sampling in a 15 foot rectangular grid with a total of 20 sample locations completed. Sample depths ranged from surface to 16 feet, which is at least 6 feet below the depth of the concrete pad. Samples were analyzed on-site for BTEX (Benzene, Toluene, Ethylbenzene, and Xylene) and DROs (Diesel Range Organics), since both parameters represent the two major chemical components of Stoddard solvent. Results indicated the parameters analyzed were at levels well below the cleanup objectives for soils. The soil leaching equation model results indicate that these soils will not adversely impact groundwater via leaching of VOCs.

Additional sampling confirmed that the concrete pad and the full extent of contamination had been removed. Samples were collected at a depth below the level of the former pad and along the length of the former eastern edge of the concrete pad. All sample results were again below cleanup objectives.

Substantive Comments: EHS concurs with the No Further Assessment recommendation for these PRS. We understand that this Potential Release Site was verified as non-contaminated through sampling activities. It was confirmed that the concrete pad had been removed in its entirety and no contamination remained in the soils.

Coordination between CH2M Hill, the DOE and MMCIC is important to ensure that the PRS 409 area be left in a condition consistent with the Mound Reuse Plan.

From: "Frank Bullock" <FBullock@mound.com>
To: "Paul Lucas (E-mail)" <Paul.Lucas@ohio.doe.gov>, "David Rakel (E-mail)" <RAKEDA@doe-md.gov>
Date: 9/23/05 11:26AM
Subject: PRS 409 Comments

MMCIC concurs the attached comments from EHS & appreciates the opportunity to review this documents.

If you have any questions, please feel free to contact me.

Respectfully,

Frank Bullock, PE
MMCIC
Director of Operations
Miamisburg, Oh 45342
(937) 865-4052
www.Mound.com

<<Expericenter - PRS 409 Addendum - Sept 05.pdf>>

CC: "Tim Fischer (E-mail)" <fischer.timothy@epa.gov>, "Brian. Nickel (E-mail)" <brian.nickel@epa.state.oh.us>, "Becky Burrell (E-mail)" <bburrell@expericenter.com>, "Ellen Stanifer (E-mail)" <estanifer@ehstech.com>, "Beth Moore (E-mail 2)" <beth.moore@cityofmiamisburg.com>

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MIAMISBURG CLOSURE PROJECT

POTENTIAL RELEASE SITE PACKAGE

The following document is available
(August 25, 2005) for public information in the
CERCLA Public Reading Room, 305 E. Central
Ave., Miamisburg, Ohio.

**PRS Package Addendum 1, PRS 409:
Soil Contamination Stoddard Solvent**

Questions can be referred to Paul Lucas at
(513) 246-0071

U.S. Department of Energy
U.S. Environmental Protection Agency
Ohio Environmental Protection Agency

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PRS HISTORY:

Potential Release Site (PRS) 409, located in the southern portion of the plant site (Figure 1, in Appendix A), is the site of a former chemical (Stoddard solvent) concrete pad staging area that was encountered and remediated during the installation of a storm water drainage pipe in 1996. A portion of the concrete pad was subsurface due to the build up of the adjacent roadway. Following remediation, the area was verified to be below Bureau of Underground Storage Tank Regulations (BUSTR) action limits. The PRS Package stated that contamination and a portion of the concrete pad remained. However, there was no data available to determine whether contamination and/or the concrete pad potentially extended under the adjacent roadway. The PRS was binned a response action (RA) in 1997 to address the remaining contamination. (Reference: PRS 409 Package, Page 3). The Core Team put the review of the action memorandum on hold until new information obtained about PRS 409 could be evaluated.

Two further assessment activities were conducted in support of RA work planning.

FURTHER ASSESSMENT ACTIVITY #1:

In the spring of 2004, sampling was conducted to obtain information about the extent of contamination (if any) in support of development of the PRS 409 removal action work package.

Characterization sampling included a total of 20 sample locations (Figure 2, in Appendix A), spaced approximately 15 feet apart on a triangular grid, covering an area significantly larger than the original identified area of contaminated soil, including the adjacent roadway. This sampling effort was performed to determine the extent and boundaries of residual contamination (if any). The characterization samples were collected at four-foot intervals of depth to a maximum of 16 feet; which is below the level where the concrete pad would have been located (pad was less than 10 feet below grade).

Oak Ridge National Laboratory (Chemical Sciences Division) personnel analyzed the samples onsite using a Direct Sampling Ion Trap Mass Spectrometer (DSITMS) -Environmental Protection Agency (EPA) Method 8265. Parameters analyzed and maximum results are listed in Table 1 of Appendix A. Diesel fuel consists of three indicator parameters:

- BTEX: Benzene, Toluene, Ethylbenzene, and Xylene
- PAHs: Polynuclear Aromatic Hydrocarbons
- DRO: Diesel Range Organics

While the analytical method used for the characterization sampling captured the two major chemical components of Stoddard solvent (BTEX and DRO), PAHs were not analyzed with this EPA method. Proportionately PAHs are a small fraction of the total makeup of Stoddard solvent. Therefore, if the levels of the two major parameters are low then the levels of the PAHs will be proportionately low as well.

The following quality assurance and quality control measures ensure that the results produced quality and defensible data:

- Each sample was run with an internal standard of 1,4 - difluorobenzene at 5 parts per million.
- Duplicate samples were run for any samples where the results were outside the optimum response range of the instrument.

- Random duplicate samples were also run on samples whose results were within the optimum response range of the instrument.
- Every ten to fifteen samples, a mid-range spiked check standard was run which complied with the requirements of EPA Method 8265.
- The characterization results for parameters analyzed (including BETX and DRO) indicated levels that were orders of magnitude lower than the cleanup objectives for soil. (See Appendix A, Table 1) Soil Screening Levels were calculated for Volatile Organic Compounds (VOCs) detected during the characterization sampling. In all cases the highest detected soil concentration for VOCs were below the calculated corresponding soil screening levels. Soil leaching equation model results therefore indicate that soils located at PRS 409 will not adversely impact the underlying groundwater via leaching of VOCs (See Appendix A, Tables 6 & 7). BTEX levels within nearby groundwater wells are all well below maximum contaminant levels (Table 5 of Appendix A).

However, the extent could not be determined because of four drilling refusals (identified on Figure 2 in Appendix A), which were thought to be a result of the remaining concrete pad.

FURTHER ASSESSMENT ACTIVITY #2:

In September 2004, using upgraded equipment to surpass the refusals, it was confirmed that both the concrete pad and the full extent of contamination had been removed. This substantiates recent interviews with all of the heavy-duty operators involved in the 1996 installation of the 90-inch storm water line who said they had removed the entire pad during those activities.

Samples were collected at a depth below the level of the former pad and spaced approximately five-feet apart along the length of the former eastern edge of the concrete pad. The samples were analyzed offsite for Volatile Organic Analysis using Gas Chromatography/Mass Spectrometry (GC/MS) and EPA Method 8015M, Total Recoverable Petrol Hydrocarbons. Parameters analyzed and maximum results are listed in Table 2 of Appendix A.

The contaminant of concern was Stoddard solvent, so samples were analyzed for benzene, toluene, ethyl benzene, and xylene (BTEX), and total petroleum hydrocarbon/diesel range organics (TPH/DRO). A Stoddard solvent standard was used in the analysis. All samples were sent to the onsite gamma-spec lab for a long count analysis prior to shipping offsite for chemical analysis.

- **All Gamma Spec results were below cleanup objectives (COs).**
- **All chemical sample results from the offsite laboratory were non-detects or estimated. (See Appendix A, Tables 2 and 4)**

APPENDIX A

Figure 1: Location of PRS 409

Figure 2: Further Assessment #1 & #2 Sample Locations

Table 1: Maximum Sampling Results for Further Assessment #1

Table 2: Maximum Sampling Results for Further Assessment #2

Table 3: Further Assessment #1- Full Data Set

Table 4: Further Assessment #2- Full Data Set

Table 5: Maximum BTEX Groundwater Levels

Figure 3: Groundwater Wells Down Gradient of PRS409

Table 6: Soil Leaching Equation Screening Evaluation

Table 7: Soil Screening Level Model Input Parameters

PREPARED BY:

Dennis Gault, ER Project Engineer

Karen Arthur, ER Project Engineer

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MIAMISBURG CLOSURE PROJECT

PRS 409

RECOMMENDATION:

PRS 409, located in the southern portion of the plant site, is the site of a former chemical (Stoddard solvent) concrete pad staging area that was encountered and remediated during the installation of a storm water drainage pipe in 1996. A portion of the concrete pad was subsurface due to the build up of the adjacent roadway. Following remediation, the area was verified to be below BUSTR action limits. The PRS Package stated that contamination and a portion of the concrete pad remained. However, there was no data available to determine whether contamination and/or the concrete pad potentially extended under the adjacent roadway. The PRS was binned a response action (RA) in 1997 to address the remaining contamination.

In September 2004, it was confirmed that both the concrete pad and the full extent of contamination had been removed. This substantiates recent interviews with all of the heavy-duty operators involved in the 1996 installation of the 90-inch storm water line who said they had removed the entire pad during those activities. Recent characterization performed in support of work planning for the Removal Action revealed no contamination in excess of cleanup objectives. Soil leaching equations were applied to detected VOCs and all results showed that detected VOCs do not have the potential to leach to the ground water at unacceptable levels. BTEX levels within nearby groundwater wells are all well below maximum contaminant levels.

Therefore, the Core Team recommends No Further Assessment for PRS 409.

A PRS Package with an NFA recommendation signed by the Core Team will be placed in the Public Reading Room for a 30-day review period. Upon closure of the public review comments, if any, the PRS Package will be issued as a final document and made available in the Public Reading Room.

CONCURRENCE:

DOE/MCP:	<i>Paul Lucas</i>	<i>1/11/05</i>
	Paul Lucas, Remedial Project Manager	(date)
USEPA:	<i>Timothy J. Fischer</i>	<i>1/11/05</i>
	Timothy J. Fischer, Remedial Project Manager	(date)
OEPA:	<i>Kathy Lee Fox - for -</i>	<i>1/11/05</i>
	Brian K. Nickel, Project Manager	(date)

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APPENDIX A
Figures and Tables

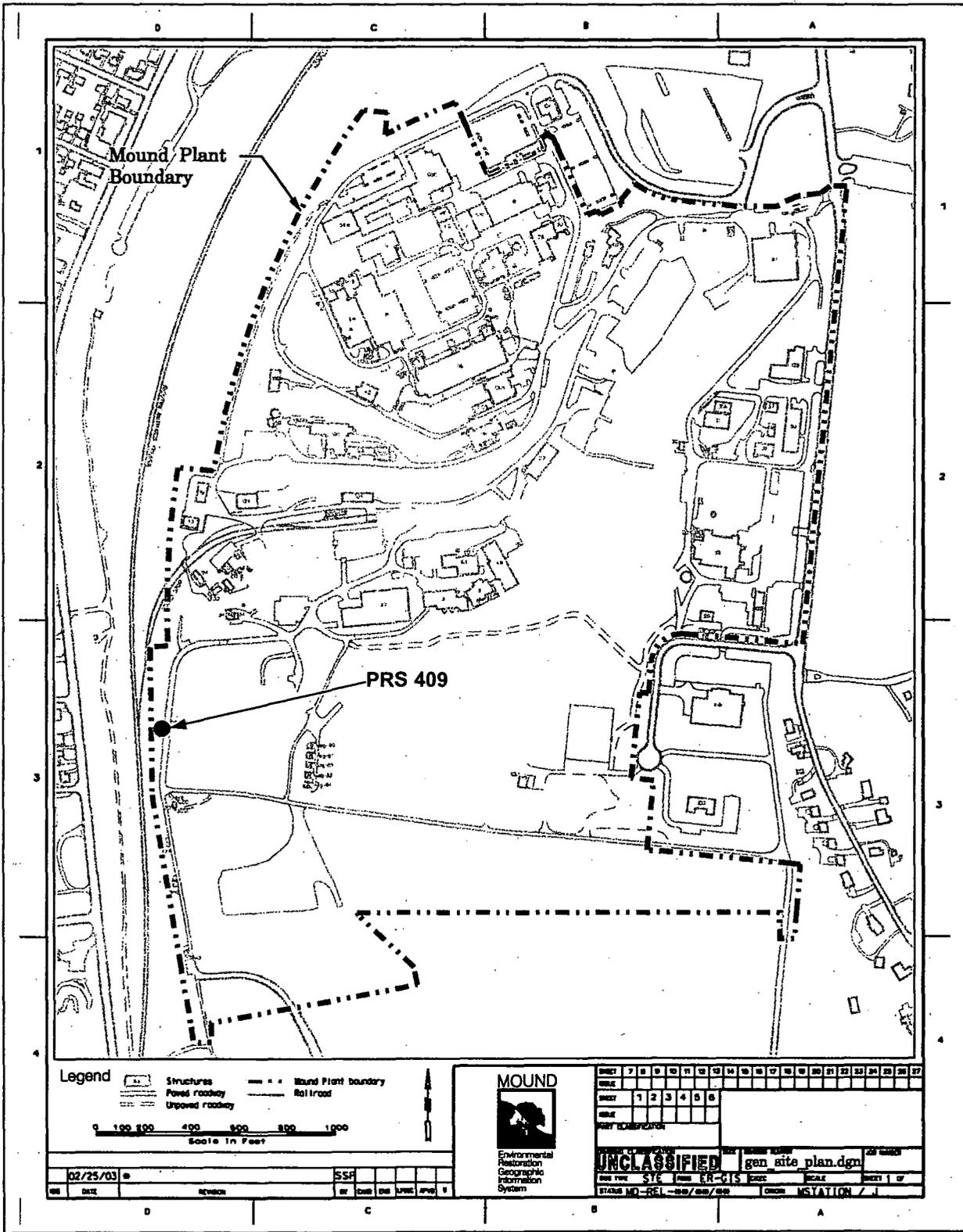


Figure 1: Location of PRS 409

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FURTHER ASSESSMENT #1 RESULTS:

TABLE 1: Maximum Sampling Results for Further Assessment #1

Parameter	Cleanup Objective* (ug/kg)	Location & depth below ground surface	Max Result (ug/kg)
Alkyl Aromatics	NA	409-06@04'	17
Benzene	490,000	409-04@04'	9.5
Chloroform (CHCl3)	5,150	all	ND
Dichloroethene (DCE)	102,000,000	409-06@16'	4.2
Stoddard Solvent	NA	409-05@12'	3.8
Tetrachloroethene (PCE)	187,000	409-06@16'	12
Trichloroethene (TCE)	52,500	409-11@04'	15
Vinyl Chloride	4,140	all	ND

NA: not available

ND: not detected

*: Cleanup Objectives are the more restrictive of the RBGV 10^{-5} + background or HI=1.

FURTHER ASSESSMENT #2 RESULTS:

TABLE 2: Maximum Sampling Results for Further Assessment #2

	Indicator Parameters	Cleanup Objective* (ug/kg)	Location and Depth	Maximum Results (ug/kg)
BETX	Benzene	490,000	all	ND
	Ethyl benzene	480	all	ND
	Toluene	250,000	BH12 @ 12'	4J
	Total Xylenes	42,600,000	all	ND
TPH	Diesel Range Organics (DRO)***	105,000**	all	ND

ND: not detected

J: estimated quantity

*: Cleanup Objectives are the more restrictive of RBGV 10^{-5} + Background or HI=1. All cleanup objectives in Table 2 are HI=1.

** : Bioremediation level approved by USEPA with OEPA concurrence as documented in Appendix A of the Removal Site Evaluation Action Memorandum, Fuel Oil Storage Removal Action (FOSRA), Release Block O, Potential Release Sites 114-117, May 1996, Final (Revision 0)

***: Inclusive of Stoddard solvent standard

TABLE 3: Further Assessment #1 - Full Data Set
 Mound Site - DOE, PRS 409, DSITMS Analysis, May 11 - 14, 2004
 soil results presented as "ug analyte/kg soil (wet)"

Location and Depth	TCE	DCE	PCE	Vinyl Chloride	CHCl3	Bz	Alkyl Aromatics	Stoddard Solvent
409-01@04'	ND	ND	ND	ND	ND	ND	ND	ND
409-01@08'	6.7	ND	ND	ND	ND	ND	ND	ND
409-01@10'	ND	ND	ND	ND	ND	ND	ND	ND
409-02@04'	ND	ND	ND	ND	ND	ND	3.5	ND
409-02@08'	3.2	ND	ND	ND	ND	ND	0.6	ND
409-02@12'	ND	ND	ND	ND	ND	ND	ND	ND
409-04@04'	ND	ND	ND	ND	ND	9.5	ND	ND
409-04@08'	ND	ND	ND	ND	ND	ND	ND	ND
409-04@12'	ND	ND	ND	ND	ND	ND	ND	ND
409-04@16'	2.7	2.7	ND	ND	ND	2.6	ND	ND
409-05@04'	ND	ND	ND	ND	ND	ND	ND	ND
409-05@08'	ND	ND	ND	ND	ND	ND	ND	ND
409-05@12'	ND	ND	ND	ND	ND	ND	ND	3.8
409-05@16'	ND	ND	ND	ND	ND	ND	ND	ND
409-06@04'	ND	ND	ND	ND	ND	2.2	17	ND
409-06@08'	ND	ND	ND	ND	ND	ND	ND	ND
409-06@12'	ND	ND	ND	ND	ND	ND	ND	ND
409-06@16'	4.2	4.2	12	ND	ND	ND	ND	ND
409-08@04'	ND	ND	ND	ND	ND	ND	ND	ND
409-08@08'	ND	ND	ND	ND	ND	ND	ND	ND
409-09@08'	ND	ND	ND	ND	ND	ND	ND	ND
409-09@12'	ND	ND	ND	ND	ND	ND	ND	ND
409-11@04'	15	ND	ND	ND	ND	ND	ND	ND
409-11@07'	ND	ND	ND	ND	ND	ND	ND	ND
409-12@04'	ND	ND	ND	ND	ND	ND	ND	ND
409-12@08'	ND	ND	ND	ND	ND	ND	ND	ND
409-12@12'	ND	ND	ND	ND	ND	ND	ND	ND
409-12@16'	ND	ND	ND	ND	ND	ND	ND	ND
409-13@04'	ND	ND	ND	ND	ND	ND	ND	ND
409-13@08'	ND	ND	ND	ND	ND	ND	ND	ND

TCE: Trichloroethene
 DCE: Dichloroethene
 PCE: Tetrachloroethene
 CHCl3: Trichloroethane
 Bz: Benzene
 ND: none detected

Bold numbers are maximum results for that analyte summarized in Table 1.

TABLE 3: Further Assessment #1 - Full Data Set (cont.)

Mound Site - DOE, PRS 409, DSITMS Analysis, May 11 - 14, 2004
 soil results presented as "ug analyte/kg soil (wet)"

Location and Depth	TCE	DCE	PCE	Vinyl Chloride	CHCl3	Bz	Alkyl Aromatics	Stoddard Solvent
409-13@12'	ND	ND	ND	ND	ND	ND	2.1	ND
409-13@16'	ND	ND	ND	ND	ND	ND	ND	ND
409-14@04'	ND	ND	ND	ND	ND	ND	ND	ND
409-14@08'	ND	ND	ND	ND	ND	ND	ND	ND
409-14@11'	ND	ND	ND	ND	ND	ND	ND	ND
409-15@04'	ND	ND	ND	ND	ND	ND	ND	ND
409-15@08'	ND	ND	ND	ND	ND	ND	ND	ND
409-15@12'	ND	ND	ND	ND	ND	ND	ND	ND
409-15@12'	ND	ND	ND	ND	ND	ND	ND	ND
409-15@16'	ND	ND	ND	ND	ND	ND	ND	ND
409-16@04'	ND	ND	ND	ND	ND	ND	3.8	ND
409-16@08'	ND	ND	ND	ND	ND	ND	1.1	ND
409-16@12'	ND	ND	ND	ND	ND	ND	ND	ND
409-18@04'	ND	ND	ND	ND	ND	ND	ND	ND
409-18@07'	ND	ND	ND	ND	ND	ND	ND	ND
409-19@04'	ND	ND	ND	ND	ND	ND	ND	ND
409-19@08'	ND	ND	ND	ND	ND	ND	ND	ND
409-19@12'	ND	ND	ND	ND	ND	ND	ND	ND
409-19@16'	ND	ND	ND	ND	ND	ND	ND	ND
409-22@04'	ND	ND	ND	ND	ND	ND	ND	ND
409-22@08'	ND	ND	ND	ND	ND	ND	ND	ND
409-22@12'	ND	ND	ND	ND	ND	ND	ND	ND
409-22@16'	ND	ND	ND	ND	ND	ND	ND	ND
409-23@04'	ND	ND	ND	ND	ND	ND	3.8	ND
409-23@08'	ND	ND	ND	ND	ND	ND	1.1	ND
409-23@12'	ND	ND	ND	ND	ND	ND	ND	ND
409-24@04'	ND	ND	ND	ND	ND	ND	2.4	ND
409-24@08'	ND	ND	ND	ND	ND	ND	ND	ND
409-24@12'	ND	ND	ND	ND	ND	ND	ND	ND
409-24@16'	ND	ND	ND	ND	ND	ND	ND	ND

TCE: Trichloroethene
 DCE: Dichloroethene
 PCE: Tetrachloroethene
 CHCl3: Trichloroethane
 Bz: Benzene
 ND: none detected

TABLE 3: Further Assessment #1 - Full Data Set (cont.)

Mound Site - DOE, PRS 409, DSITMS Analysis, May 11 - 14, 2004
soil results presented as "ug analyte/kg soil (wet)"

Location and Depth	TCE	DCE	PCE	Vinyl Chloride	CHCl3	Bz	Alkyl Aromatics	Stoddard Solvent
409-25@04'	ND	ND	ND	ND	ND	ND	ND	ND
409-25@08'	ND	ND	ND	ND	ND	ND	ND	ND
409-25@12'	ND	ND	ND	ND	ND	ND	ND	ND
409-25@16'	ND	ND	ND	ND	ND	ND	1.8	ND
409-26@04'	ND	ND	ND	ND	ND	ND	ND	ND
409-26@08'	ND	ND	ND	ND	ND	ND	ND	ND
409-26@12'	ND	ND	ND	ND	ND	ND	ND	ND

TCE: Trichloroethene
DCE: Dichloroethene
PCE: Tetrachloroethene
CHCl3: Trichloroethane
Bz: Benzene
ND: none detected

TABLE 4: Further Assessment #2 - Full Data Set
(units of ug/kg)

Location and Depth	Benzene	Ethylbenzene	m-Xylene	o-Xylene	Stoddard Solvent	Toluene	Xylenes, Total
B01 @ 12'	ND	ND	ND	ND	ND	ND	ND
B02 @ 12'	ND	ND	ND	ND	ND	ND	ND
B03 @ 12'	ND	ND	ND	ND	ND	ND	ND
B04 @ 12'	ND	ND	ND	ND	ND	ND	ND
B05 @ 12'	ND	ND	ND	ND	ND	2J	ND
B06 @ 12'	ND	ND	ND	ND	ND	1J	ND
B07 @ 12'	ND	ND	ND	ND	ND	2J	ND
B08 @ 12'	ND	ND	ND	ND	ND	ND	ND
B09 @ 12'	ND	ND	ND	ND	ND	3J	ND
B10 @ 12'	ND	ND	ND	ND	ND	3J	ND
B11 @ 12'	ND	ND	ND	ND	ND	3J	ND
B12 @ 12'	ND	ND	ND	ND	ND	4J	ND
B13 @ 12'	ND	ND	ND	ND	ND	ND	ND
B14 @ 12'	ND	ND	ND	ND	ND	3J	ND
B15 @ 12'	ND	ND _s	ND	ND	ND	1J	ND
B16 @ 12'	ND	ND	ND	ND	ND	ND	ND

ND: none detected
J: estimated quantity
Bold numbers are maximum results for that analyte presented in Table 2

TABLE 5: Maximum BTEX Groundwater Levels

Measurement of BTEX levels from groundwater wells down gradient of PRS 409 (excludes non-detects)

Analyte	Location	Collection Date	Result	MCL	Units
Benzene	0402	3/26/90	2.5	5	UG/L
Toluene	0063	3/8/88	7	100	UG/L
Ethylbenzene	0071	2/28/92	2.9	70	UG/L
Xylenes, Total	0071	2/28/92	15.5	10,000	UG/L

ABBREVIATIONS

MCL: Maximum Contaminant Level

UG/L: micrograms per liter

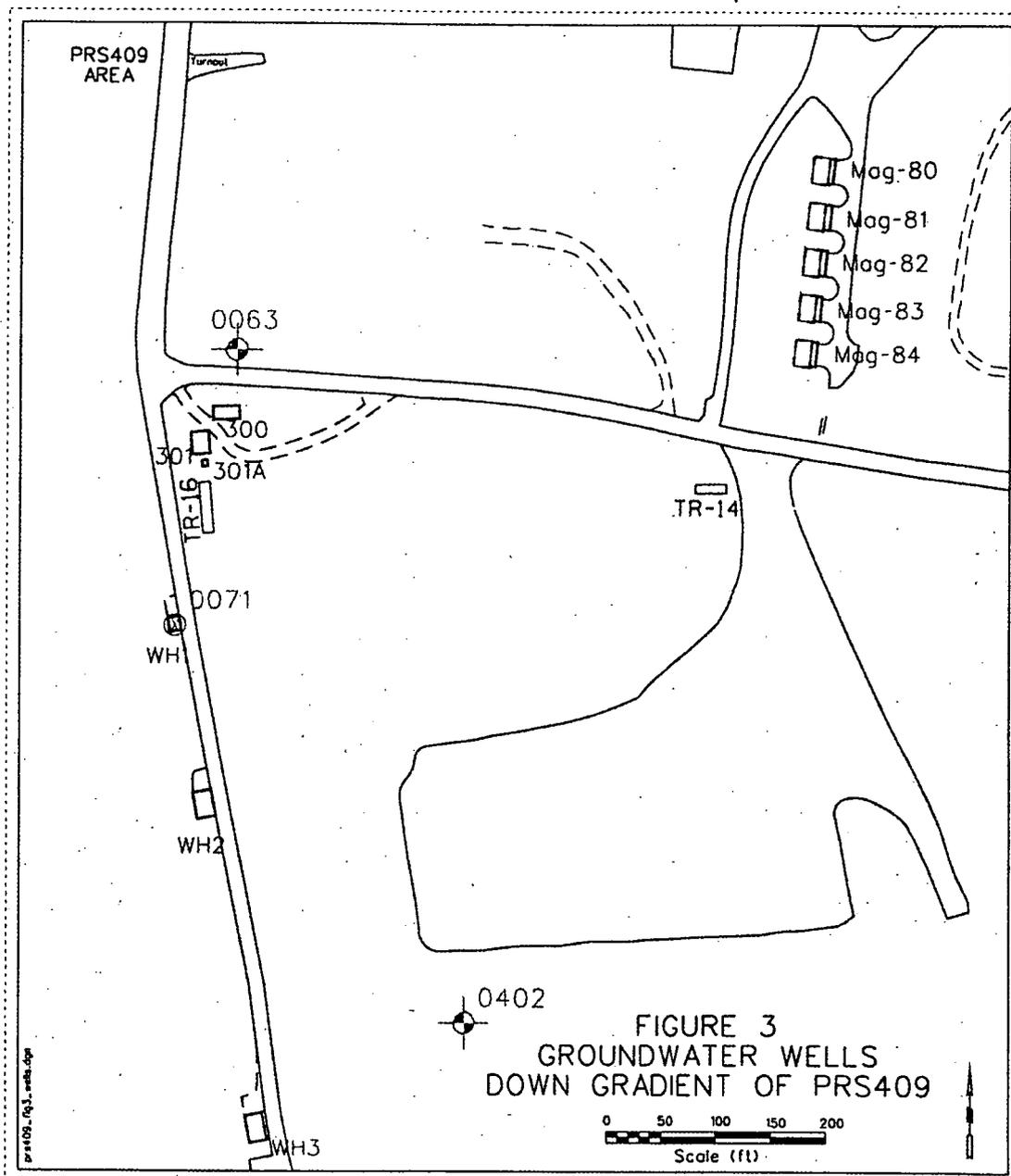


TABLE 6: Soil Leaching Equation Screening Evaluation

Parameter	Highest Detected Soil Concentration	Soil Screening Level
Trichloroethene	15 ug/kg	70 ug/kg
Dichloroethene	4.2 ug/kg	320 ug/kg
Benzene/Ethyl Benzene	9.5 ug/kg	70 ug/kg
Tetrachloroethene	12 ug/kg	90 ug/kg

TABLE 7: Soil Screening Level Model Input Parameters

Parameters for soil leaching calculation:			
Definition	Parameter	Main Hilltop soil	Units
source length parallel to ground water flow	L	30m	
aquifer thickness	da	5m	
hydraulic conductivity (DOE 1994)	K	10000	m/y
hydraulic gradient at the source	i	0.001	m/m
horizontal distance to receptor	xr	0m	
infiltration rate (Schairbaum & Frost 1988)	in	0.15	m/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	none
dry soil bulk density	B	1.6	kg/L
soil organic carbon/water partition coefficient	Koc	chemical specific	L/kg
fraction organic carbon in soil (DOE Mound Plant Data Base)	foc	0.02	%
mixing zone depth	d	3.6	m
dilution factor (used to multiply the target concentration)	df=	9.03	none

Site Specific Input Parameters

Source Length Parallel to Groundwater Flow: 30 meters based on the width of the PRS parallel to the direction of groundwater flow.

Aquifer Thickness: 5 meters based on geologic logs from wells located adjacent to the PRS.

Hydraulic Conductivity: 10,000 meters per year based on hydraulic conductivity data taken from OU-9 Buried Valley Aquifer (BVA) Report, DOE 1994.
 Note: The value of 10,000 meters/year is extremely conservative.

Hydraulic gradient at the Source: 0.001 meters/meters based on average hydraulic gradient data in the BVA near Operable Unit 1 taken from OU-9 BVA Report, DOE 1994.

Horizontal Distance to Receptor: 0 meters as the PRS lies directly above the BVA.