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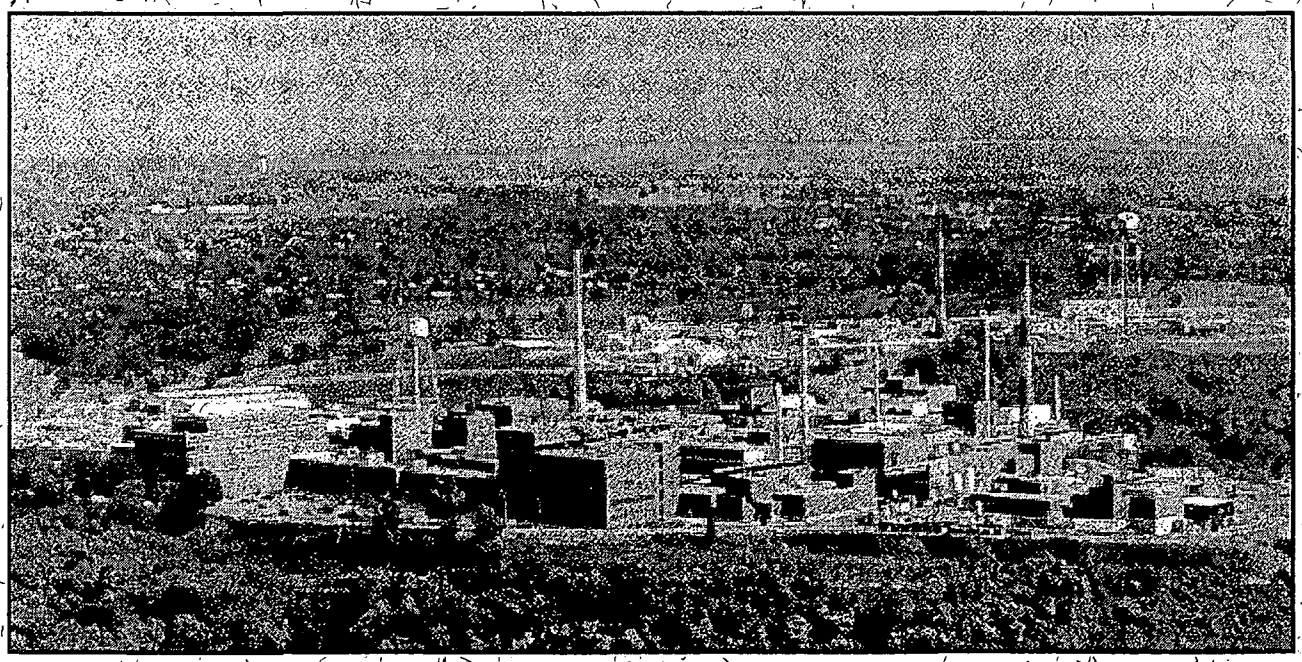
Environmental
Restoration
Program

Miamisburg Closure Project
Potential Release Site Package
PRS 64

Public Review Draft
February 2003



Environmental Restoration Program

MIAMISBURG CLOSURE PROJECT
POTENTIAL RELEASE SITE PACKAGE
Notice of Public Review Period

The following Potential Release Site (PRS) packages are available for public review in the CERCLA Public Reading Room, 305 E. Central Ave., Miamisburg, Ohio. Public comment on these documents will be accepted 26 February 2003 through 27 March 2003.

PRS 41: Area 3 Thorium Drum Storage/Redrum
PRS 64: Building 19 Historic Gasoline Tank
PRS 397: Soil Contamination

Questions can be referred to Paul Lucas at (937) 865-4578

PRS 64 Package Tracking Sheet

REVISION	DESCRIPTION	DATE
Working Draft (to DOE)	Binned FA on 2 October 1996.	
Draft (to Core Team)		
Draft Proposed Final	Addendum 1 submitted to CT to summarize FA results. USEPA comment was add table of max detects. OEPA comments included TPH explanation of calculations. PRS binned NFA on February 19, 2003. Added Addendum 1 to original package and submitted as public review draft.	**January 2003**
Public Review Draft	Public review period: 26 Feb to 27 Mar 03	**February 2003**
Final		

ADDENDUM 1

SUPPORTING NFA RECOMMENDATION

Environmental
Restoration
Program

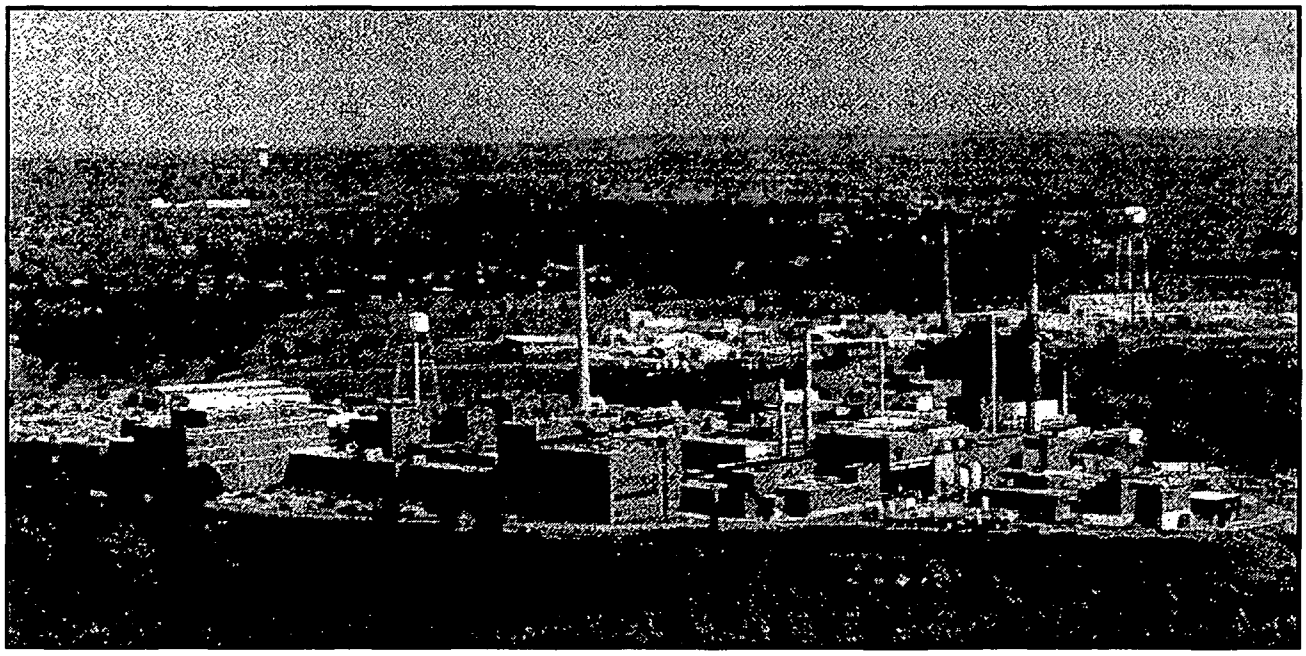
Miamisburg Closure Project

Potential Release Site Package

PRS 64

Addendum 1

Public Review Draft
February 2003



PRS HISTORY:

Potential Release Site (PRS) 64 is located on the western portion of the site (Figure 1) and was binned Further Assessment (FA) by the Core Team on 2 October 1996. PRS 64 is the location of an underground storage tank that was reportedly removed but soil sampling results could not be found.

FURTHER ASSESSMENT ACTIVITY:

PRS 64 sampling was grouped with PRSs 41 and 417 due to their proximity to each other. This addendum applies to PRS 64 only. The potential contaminants of concern (COCs) for PRS 64 were BTEX (benzene, toluene, ethylbenzene, and xylene) and TPH (total petroleum hydrocarbon).

A metal detector was used to confirm that the tank was removed. Further Assessment sampling was completed in November 2002 per the Sampling and Analysis Plan (**SAP**)[1] approved by the Core Team.

Ten soil samples and one duplicate sample were analyzed for the COCs. The FA sample locations are presented in Figure 2. The FA **Data Report**[2] presents a full account of soil sampling activities and sample results.

There were no **BTEX** results above the screening levels in any sample. All results were below the detection limit except one detection of xylene. All detection limits were significantly below the more restrictive of the 10^{-6} Risk-Based Guideline Value (RBGV) or the Hazard Index of one value. One xylene result was reported at the detection limit of 6 mg/kg. The detection was not a concern when compared to the screening level for xylene in soil (430,000 mg/kg). The potential leachability of the xylene was also assessed and confirmed that it would not leach to the groundwater at unacceptable levels.

The maximum **TPH** result of 470 mg/kg did not exceed the former action level of 642 mg/kg (category 2 soil) prescribed in the 1992 Bureau of Underground Storage Tank Regulations (BUSTR)[3]. The calculations in BUSTR include site specific characteristics such as soil type (category). Other factors used in the calculations include distance to sensitive receptors, depth to groundwater, etc. TPH results are analyte non-specific with respect to the hazardous components of gasoline and as such, are no longer a chemical of concern in the revised (1999) BUSTR.[4]

Table 1: Maximum Detections (mg/kg)

Analyte	Result	Screening Level for Soil	Soil Screening Level for Groundwater
Xylene	6	430,000	1,368
Total Petroleum Hydrocarbons	470	642	Not Calculated

FIGURES:

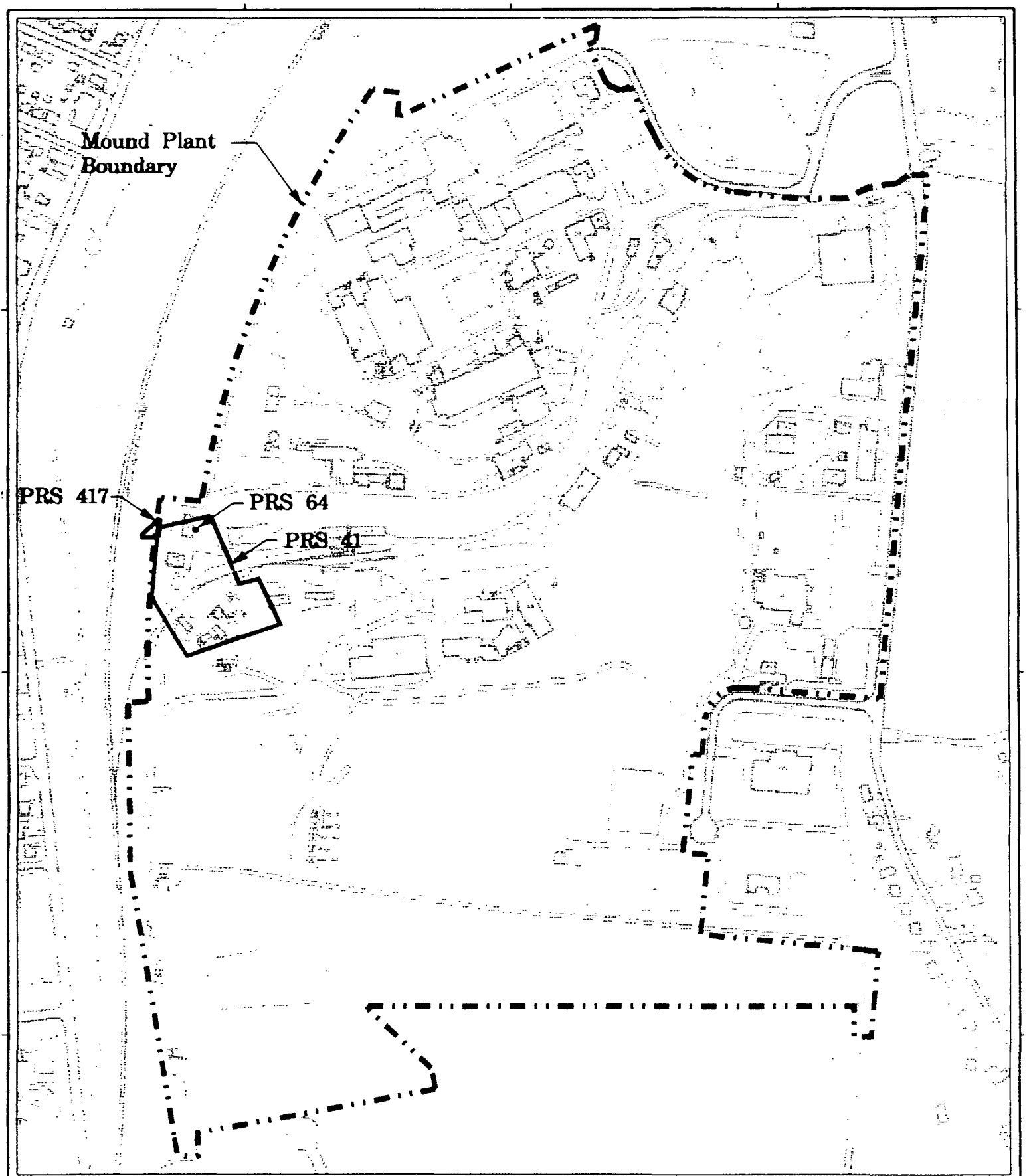
Figure 1: Location of PRS 41/64/417
Figure 2: PRS 64 Sample Locations

REFERENCES:

1) PRS 41/64/417 Sampling and Analysis Plan, Final, November 2002
2) PRS 41/64/417 Data Report, Rev. 0, December 2002
3) Ohio Administrative Code (OAC); 1301:7-9-13, effective 1 September 1992, Petroleum UST Corrective Action
4) Ohio Administrative Code (OAC); 1301:7-9-13, effective 31 March 1999, Petroleum UST Corrective Action

PREPARED BY:

Karen M. Arthur, CH2MHill, ER QA
Gary Miller, CH2MHill, ER Technical Staff



Legend

Structures
Paved roadway
Unpaved roadway
Mound Plant boundary
Railroad

0 100 200 400 600 800 1000
Scale in Feet

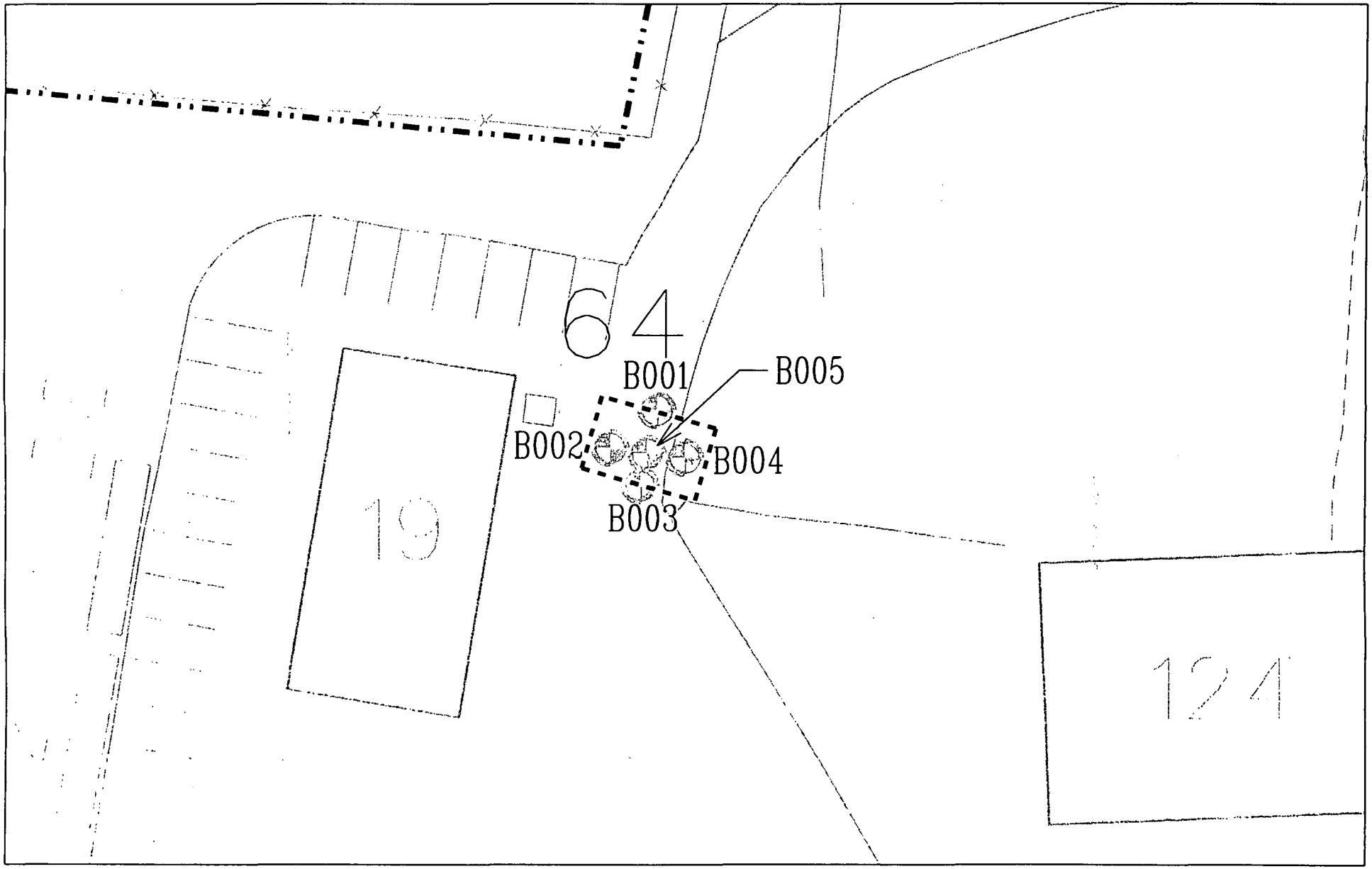
MOUND
Environmental Restoration Geographic Information System

ISS	DATE	REVISION	BY	CHKR	ENG	LPMCE	APVD	#
	06/24/02	*	SSP					

SHEET 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
ISSUE
SHEET 1 2 3 4 5 6
ISSUE
PART CLASSIFICATION

Figure 1:
Location of PRS 41/64/417

DRAWING CLASSIFICATION UNCLASSIFIED
SIZE
DRAWING NUMBER gen_site_plan.dgn
JOB NUMBER
DWG TYPE STE
PRNG ER-GIS
CAGEC
SCALE
SHEET 1 OF
STATUS MD-REL -**/**/**
ORIGIN MSTATION / J



PRS 64 (BTEX, TPH) @ 5x2 intervals

20 10 0 20 40FT
GRAPHIC SCALE

MOUND
Environmental Restoration Geographic Information System

SHEET	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
ISSUE																					

SHEET	1	2	3	4	5	6
ISSUE	*					

PART CLASSIFICATION

Figure 2: PRS 64
Sample Locations

DRAWING CLASSIFICATION: UNCLASSIFIED
SIZE
DRAWING NUMBER: fig2_prs64.dgn
JOB NUMBER: *
DGN TYPE: STE
PRNG: ER-GIS
CADD:
SCALE: *
SHEET 1 OF *
STATUS: MD-REL-01/15/03
ORIGIN: MSTATION / J

ISS	DATE	REVISION	BY	CHKR	ENG	LPMEC	APVD	N
	01/15/03		SSP					

MIAMISBURG CLOSURE PROJECT
PRS 64

RECOMMENDATION:

Potential Release Site (PRS) 64 is located on the western portion of the site (Figure 1) and was binned Further Assessment (FA) by the Core Team on 2 October 1996. PRS 64 is the location of an underground storage tank that was reportedly removed but soil sampling results could not be found. Further Assessment was performed and confirmed that all sample results were below screening levels for BTEX and TPH.

Therefore, the Core Team recommends **No Further Assessment** for PRS 64.

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: _____ 2/19/03
Robert S. Rothman, Remedial Project Manager (date)

USEPA: _____ 2/19/03
David P. Seely, Remedial Project Manager (date)

OEPA: _____ 2/19/03
Brian K. Nickel, Project Manager (date)

ORIGINAL DOCUMENT

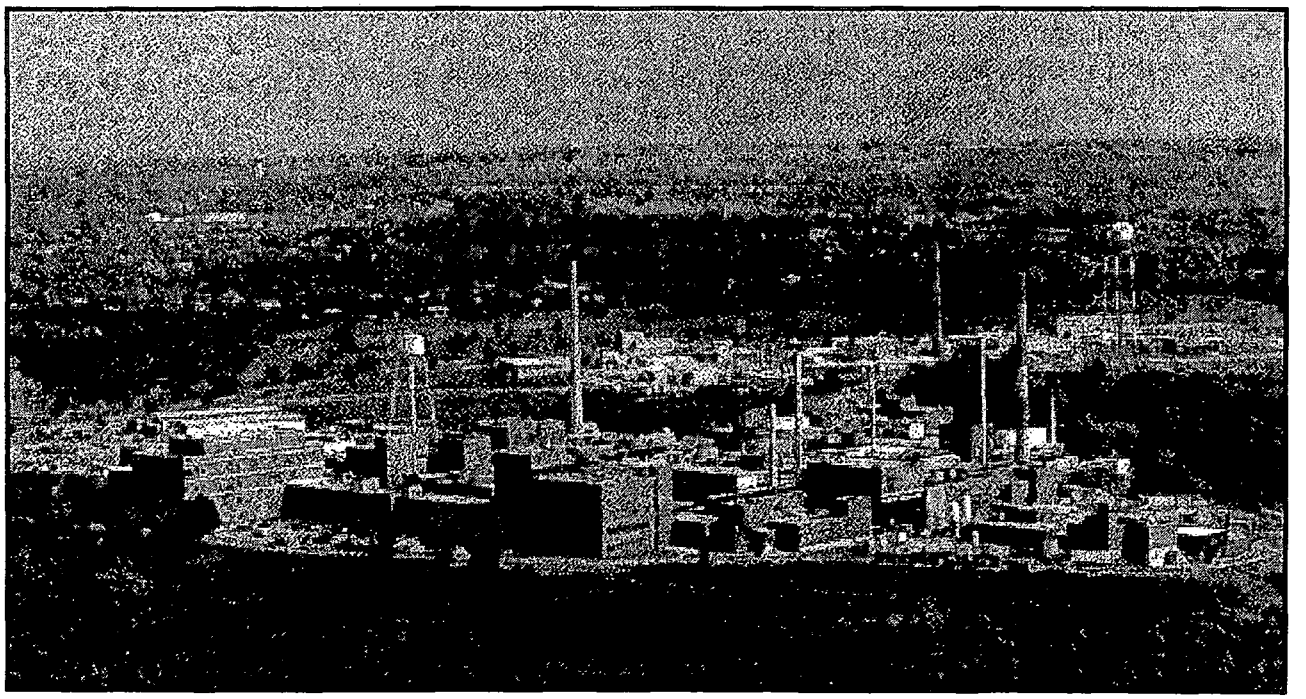
SUPPORTING FA RECOMMENDATION

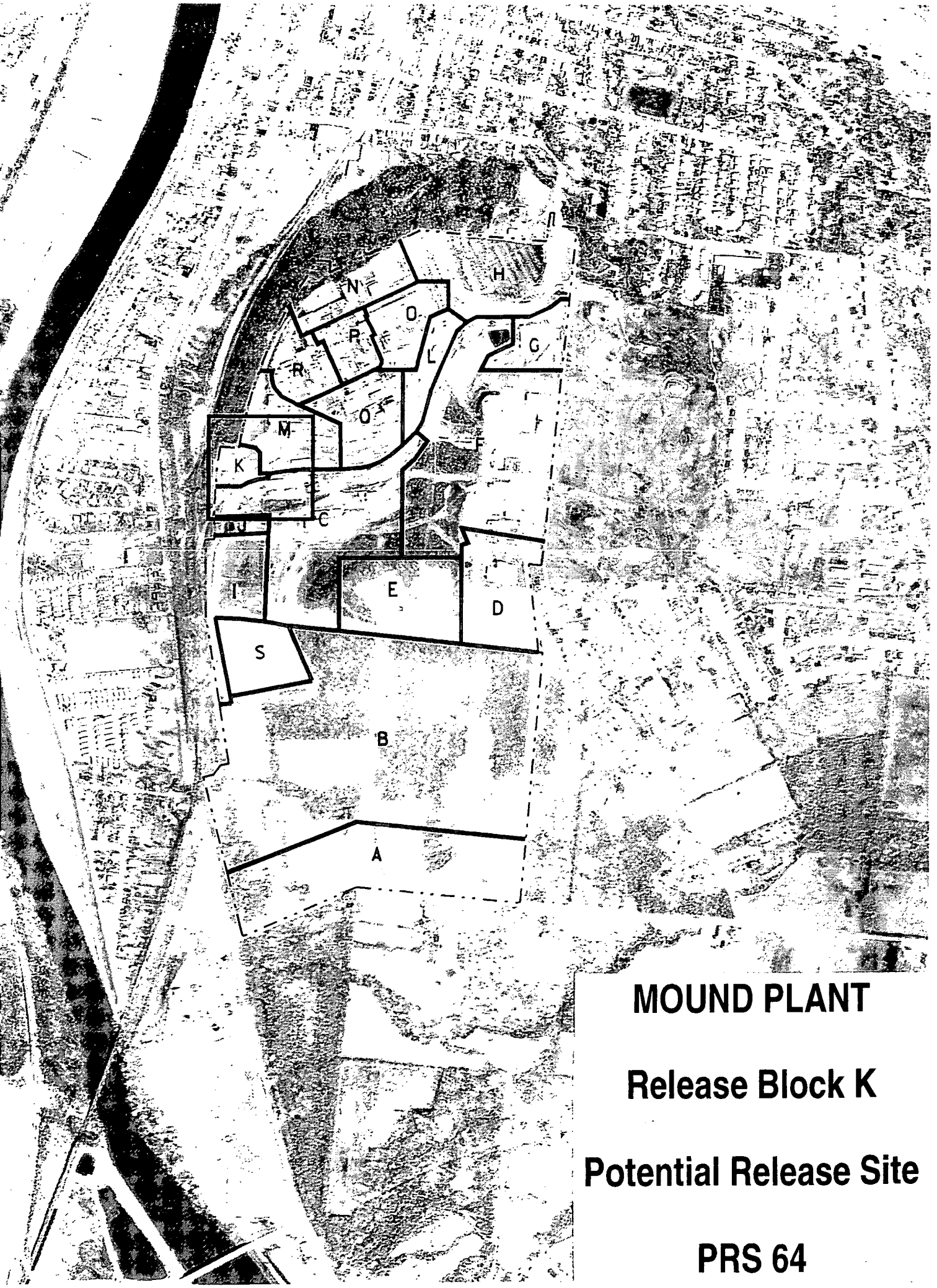
Environmental
Restoration
Program

MOUND PLANT

Potential Release Site Package

PRS # 64





MOUND PLANT

Release Block K

Potential Release Site

PRS 64

H
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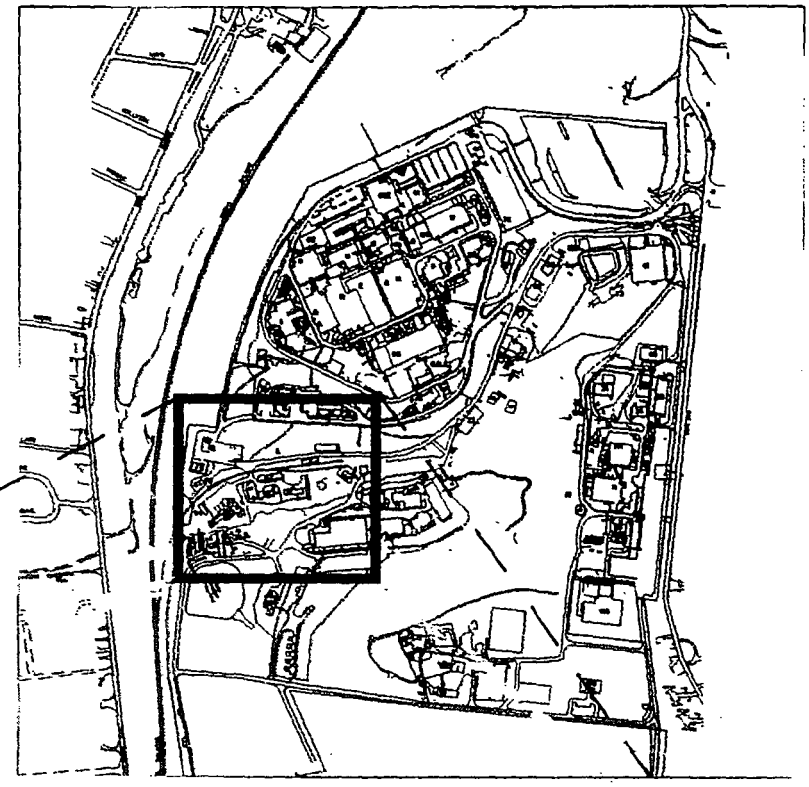
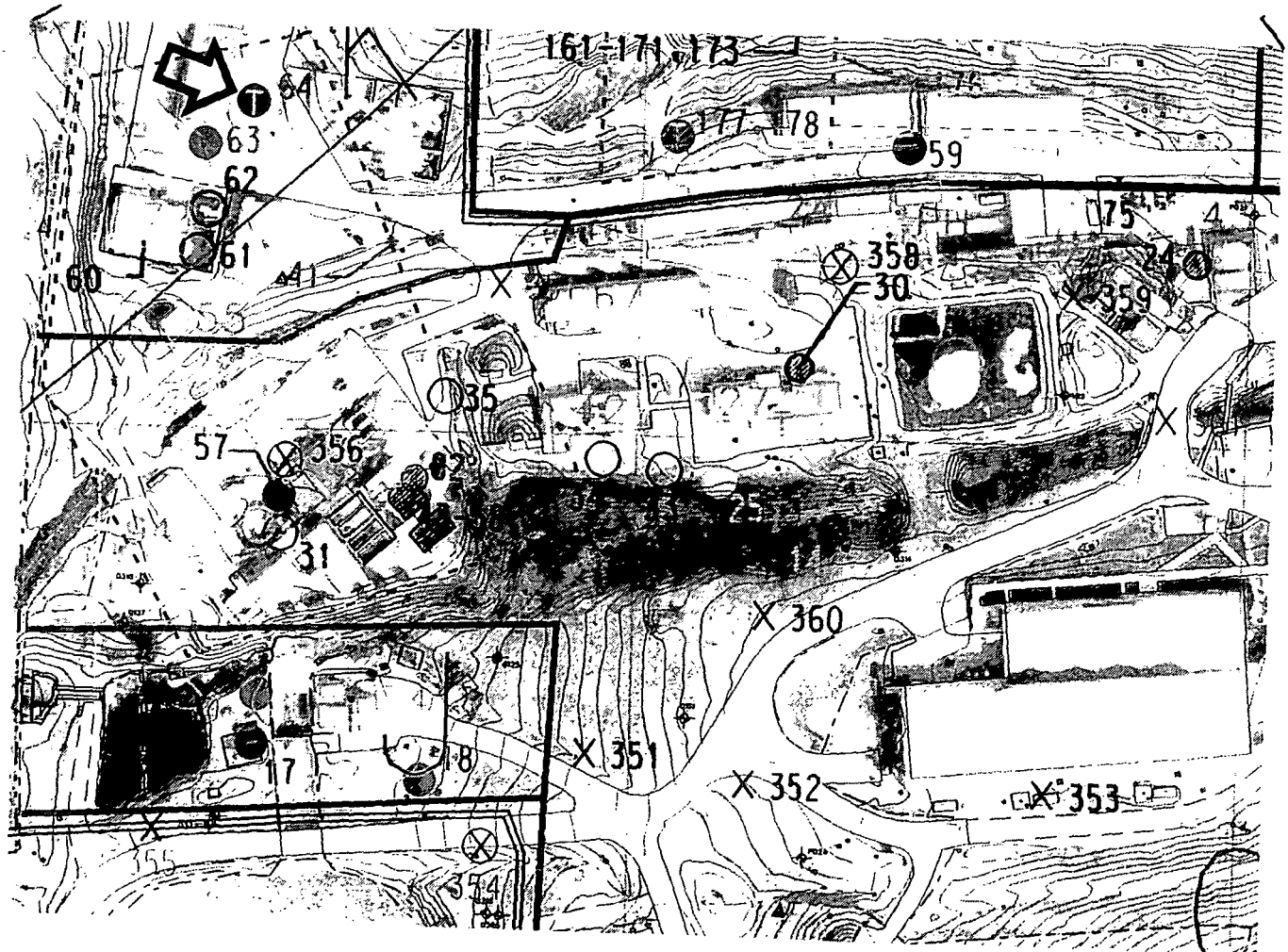
MOUND PLANT

Release Block K

Potential Release Site

PRS 64





PRS 64

PRS HISTORY:

Site is east of Building 19. Two gasoline pumps are visible on a historical drawing and in historic photographs dating back to 1947 and 1948.[5] This site was identified during the Mound Plant Underground Storage Tank Program and Regulatory Status Review as a result of a review of historic construction drawings. The number, volume and construction of the tank(s) has not been determined nor has documentation concerning closure of the tank(s) been found. It is believed that the tank(s) were removed, probably as part of original site construction demobilization.[2]

CONTAMINATION:

1) In 1983 through 1984, the ***Radiological Site Survey***[3] investigated Mound soils for radionuclides. As part of this investigation, one surface sample was taken at PRS 64 and analyzed for plutonium-238 and thorium-232. Results of the analysis are shown in the table below:

Contaminant	Maximum Concentration Detected	Guideline Criteria
Plutonium-238	5.94 pCi/g[ref 3] (in surface soil)	25 pCi/g (Mound ALARA in soil)
Thorium-232	Less than 2 pCi/g[ref 3] (in surface soil)	5 pCi/g[ref 8] (in surface soil)

NOTE: pCi = picocuries, g = grams, ALARA = As Low As Reasonably Achievable

2) In 1994, the ***OU5, Non-AOC Field Report***[4] field screened the soil surface in the vicinity of PRS 64. The field screening found no elevated levels of radioactivity in the soils. Therefore, no samples were collected for laboratory analysis.

   The ***OU5, Non-AOC Field Report***[4] also investigated volatile organic compounds (VOCs) in the vicinity of PRS 64 via a PETREX Soil Gas investigation. The PETREX investigation showed relatively high levels of petroleum, semivolatile and total aromatic hydrocarbons when compared to the surrounding soil areas.

3) In 1996, the ***Soil Gas Confirmation Investigation***[6] sampled the location of PRS 64 (sample #7) for volatiles, semivolatiles, PCBs, pesticides, metals, radionuclides, and explosives. Soil boring refusal was encountered at 18 inches. Results of the investigation showed:

   All concentrations of volatile, semivolatile, PCBs, pesticides, metals, radionuclides, and explosives in the soils were below their respective ALARA, regulatory, or 10^{-6} Risk Based Guideline Criteria.[6, 7, 8]

READING ROOM REFERENCES:

1) Operable Unit 9, Site Scoping Report: Volume 12 - Site Summary Report, December 1994. (pages 5-7)
2) Mound Plant Underground Storage Tank Program Plan and Regulatory Status Review, November 1992. (pages 8-9)
3) OU9, Site Scoping Report: Volume 3 - Radiological Site Survey, Final, June 1993. (pages 10-12)
4) OU5, Operational Area Phase I Investigation, Non-AOC Field Report, Final, June 1995. (pages 13-20)
7) Risk-Based Soil Guidelines, Final, Revision 3, December 1995.

OTHER REFERENCES:

5) Comments on History of Area Around Present Location of Building 19. (pages 21-23)
6) Further Assessment, Soil Gas Confirmation Sampling, May 1996. (pages 24-34)
8) Code of Federal Regulations, 40 CFR 192.12 and 40 CFR 192.43.

PREPARED BY:

Gerald F. Maul, Member of EG&G Technical Staff

MOUND PLANT
PRS 64

RECOMMENDATION:

CONCURRENCE:

DOE/MB: _____

Arthur W. Kleinrath, Remedial Project Manager (date)

USEPA: _____

Timothy J. Fischer, Remedial Project Manager (date)

OEPA: _____

Brian K. Nickel, Project Manager (date)

SUMMARY OF COMMENTS AND RESPONSES:

Comment period from _____ to _____.

☐ No comments were received during the comment period.
☐ Comment responses can be found on page _____ of this package.

REFERENCE MATERIAL
PRS 64

Document Control No. _____

Environmental Restoration Program

OPERABLE UNIT 9 SITE SCOPING REPORT: VOLUME 12 – SITE SUMMARY REPORT

MOUND PLANT
MIAMISBURG, OHIO

December 1994

Final

U.S. Department of Energy
Ohio Field Office

EG&G Mound Applied Technologies

Table A.1. Comprehensive Tabulation of Potential Release Sites

Description of History and Nature of Waste Handling						Hazardous Conditions and Incidents			Environmental Data		
No.	Site Name	Location	Status	Potential Hazardous Substances	Ref	Releases	Media	Ref	Analytes[a]	Results	R
63	Building 19 Soils	G-5	Grounds	Cobalt-60	10	Cobalt-60	S	10	1 14, 16	SGS[b] Table B.5 Location 5221 Table B.9 RSS[c] Locations C0099, C0100, S0530, S0532, S0533, S0534, S0535, S0538 (Appendix E in Ref. 6)	1 (
64	Building 19 Historic Gasoline Tank (Tank 238)	G-5	Historical	Gasoline	3	No information on when tanks were removed			No Data		
65	Building 61 Area, Former Heavy Equipment Area	E-10	Historical	Waste oil	1, 5, 7, 18	Suspected	S	7, 10	3, 4, 5, 6, 8 1 14	Tables B.6, B.7, B.8, and B.9 SGS[b], Table B.3 Locations 2216 and 2217 RSS[c] Locations S0233, S0234, S0235, S0236, S0237, S0240 (Appendix E in Ref. 6)	 1 (
66	Area 7, Thorium and Polonium Wastes	E-8 E-9 F-8 F-9	Historical	Plutonium-238, Thorium-232 and -238, Polonium-210, Actinium-227, Radium-226, Cesium-137	1, 4, 5, 18	Suspected	S	4, 12, 18	14, 15, 16 1	Table B.1 (Table III.5 in Ref. 6) SGS[b] Table B.3	 1

1 - Soil Gas Survey - Freon 11, Freon 113, Trans-1,2-Dichloroethylene, Cis-1,2-Dichloroethylene, 1,1,1-Trichloroethane, Perchloroethylene, Trichloroethylene, Toluene
2 - Gamma Spectroscopy - Thorium-228, -230, Cobalt-60, Cesium-137, Radium-224, -226, -228, Americium-241, Actinium-227, Bismuth-207, Bismuth-210m, Potassium-40
3 - Target Analyte List
4 - Target Compound List (VOC)
5 - Target Compound List (SVOC)
6 - Target Compound List (Pesticides/Polychlorinated Biphenyl)
7 - Dioxins/Furans
8 - Extractable Petroleum Hydrocarbons (EPH)/Total Petroleum Hydrocarbons (TPH)
9 - Lithium
10 - Nitrate/Nitrite
11 - Chloride
12 - Explosives
13 - Plutonium-238
14 - Plutonium-238, Thorium-232
15 - Cobalt-60, Cesium-137, Radium-226, Americium-241
16 - Tritium

Reference List

1. DOE 1986 "Phase I: Installation Assessment Mound [DRAFT]."
2. DOE 1992a "Remedial Investigation/Feasibility Study, Operable Unit 9, Site-Wide Work Plan (Final)."
3. DOE 1992c "Mound Plant Underground Storage Tank Program Plan & Regulatory Status Review (Final)."
4. DOE 1993a "Site Scoping Report: Vol. 7 - Waste Management (FINAL)."
5. EPA 1988a "Preliminary Review/Visual Site Inspection for RCRA Facility Assessment of Mound Plant"
6. DOE 1993d "Operable Unit 9, Site Scping Report: Vol. 3 - Radiological Site Survey (FINAL)."
7. DOE 1993c "Operable Unit 3, Misc. Sites Limited Field Investigation Report."
8. DOE 1992d "Reconnaissance Sampling Report Decontamination & Decommissioning Areas, OU6, (FINAL)."
9. Fentiman 1990 "Characterization of Mound's Hazardous, Radioactive and Mixed Wastes."
10. DOE 1992f "Operable Unit 9, Site Scpoing Report: Vol. 9 - Spills and Response Actions (FINAL)."
11. Styron and Meyer 1981"Potable Water Standards Project: Final Report."
12. DOE 1993b "Reconnalssance Sampling Report - Soil Gas Survey & Geophysical Investigations, Mound Plant Main Hill and SM/PP Hill (FINAL)."
13. DOE 1993d "Operable Unit 9, Site Scoping Report: Vol. 3 - Radiological Site Survey (FINAL)."
14. DOE 1991b "Main Hill Seeps, Operable Unit 2, On-Scene Coordinator Report for CERCLA Section 104 Remedial Action, West Powerhouse PCB Site."
15. Halford 1990 "Results of South Pond Sampling."
16. DOE 1993e "Operable Unit 4, Special Canal Sampling Report, Miami Erie Canal."
17. DOE 1990 "Preliminary Results of Reconnaissance Magnetic Survey of Mound Plant Areas 2, 6, 7, and C."
18. DOE 1992a "Remedial Investigation/Feasibility Study, Operable Unit 9, Site-Wide Work Plan (FINAL)."
19. Rogers 1975 "Mound Laboratory Environmental Plutonium Study, 1974."
20. DOE 1992h "Ground Water and Seep Water Quality Data Report Through First Quarter, FY92."
21. Dames and Moore 1976a, b "Potable Water Standards Project Mound Laboratory" and "Evaluation of the Buried Valley Aquifer Adjacent to Mound Laboratory."
22. DOE 1992l "Closure Report, Building 34 - Aviation Fuel Storage Tank."
23. DOE 1992j "Closure Report, Building 51 - Waste Storage Tank."
24. DOE 1994 "Operable Unit 1, Remedial Investigation Report."
25. EG&G 1994 "Active Underground Storage Tank Plan."

ENVIRONMENTAL RESTORATION PROGRAM

MOUND PLANT UNDERGROUND STORAGE TANK PROGRAM PLAN AND REGULATORY STATUS REVIEW

MOUND PLANT

MIAMISBURG, OHIO

November 1992

DEPARTMENT OF ENERGY

ALBUQUERQUE OPERATIONS OFFICE

ENVIRONMENTAL RESTORATION PROGRAM

EG&G MOUND APPLIED TECHNOLOGIES

FINAL (REVISION 0)

INCORRECT, SEE REF. (4) IN PRS UNDER "OTHER REFERENCES"

2.3.26. Building 19, Historic Gasoline Tank (Tank 238)

Built during the initial construction of Mound Plant in the 1940s Building 19 is reported to have served as a vehicle service and maintenance facility for the Plant construction contractor (Kabot, 1992c). Two gasoline pumps at the facility are visible in a historical drawing, and are believed to have been supplied by a UST. The number, volume, and construction of the tank(s) have not been determined, nor has documentation concerning closure of the tank(s) been found, although it is believed that the tank(s) has been removed.

Because the historic gasoline tank(s) at Building 19 is thought to have been closed by removal, the existence of the tank(s) and any evidence of a release is subject to investigation by the ER Program (FFA) in Operable Unit 5.

2.3.27 Building 36, Historic Gasoline Tanks (Tanks 239 and 240)

A very old construction drawing (circa 1948) indicates that a fueling facility existed at the location of what is now Building 36. The drawing shows four pumps supplied by two USTs. The volume and construction of these tanks have not been determined, nor has documentation concerning closure of the tanks been found, although it is believed that the tanks have been removed.

Because the historic gasoline tanks at Building 19 are thought to have been closed by removal, the existence of the tanks and any evidence of a release is subject to investigation by the ER Program (FFA) in Operable Unit 5.

2.3.28 SM Building, Historic Septic Tank (Tank 241)

Historically, a sanitary septic tank located southeast of Building 30 served the SM Building. This tank is believed to have been constructed as a concrete vault, about 15 feet by 8 feet, and of unknown volume, that served the SM leach field downslope of the tank. Discharges to the tank took place from 1960 when it was built to 1964 when it was taken out of service and when the sanitary sewer connected to the sewage disposal facility. Overflow of the alpha wastewater system in room SM-1, may have contributed plutonium contamination to the tank and leach field. The D&D of the SM leach field originally included the removal of the tank, but the tank could not be located when excavation started. The tank may have been removed during an earlier construction project in the area (DOE, 1992c).

ENVIRONMENTAL RESTORATION PROGRAM

OPERABLE UNIT 9, SITE SCOPING REPORT: VOLUME 3 - RADIOLOGICAL SITE SURVEY

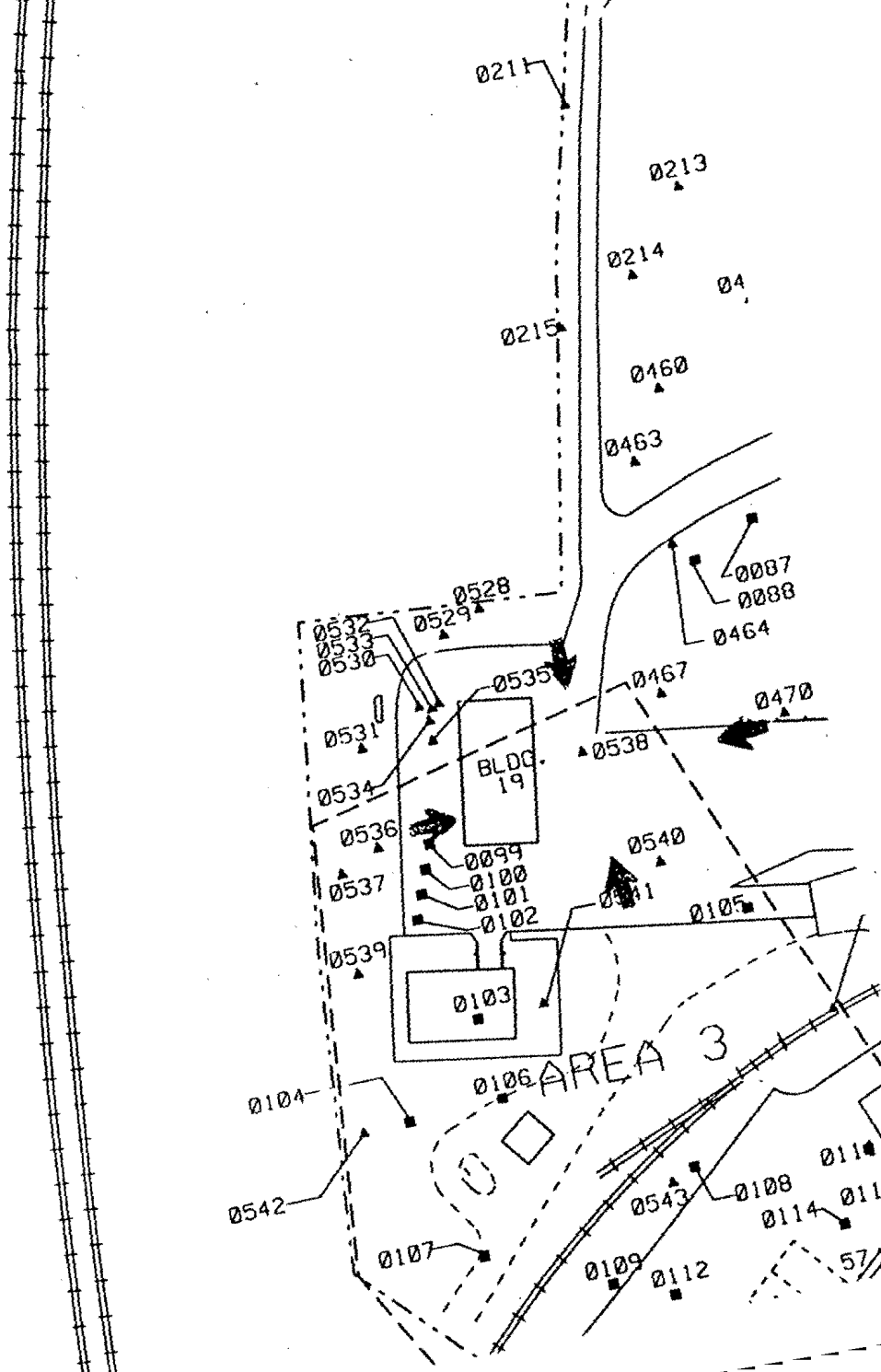
MOUND PLANT
MIAMISBURG, OHIO

June 1993

DEPARTMENT OF ENERGY
ALBUQUERQUE FIELD OFFICE

ENVIRONMENTAL RESTORATION PROGRAM
EG&G MOUND APPLIED TECHNOLOGIES

FINAL


0211
0213
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0464
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0467
0470
0531
0538
BLDG. 19
0534
0536
0540
0099
0100
0101
0102
0537
0105
0539
0103
AREA 3
0104
0106
0542
0543
0108
0114
0107
0109
0112

Map Location[a]	Coordinates South	Coordinates West	MRC ID No.	Mo-Yr	Depth (inch)	Pu-238 (pCi/g)	Thorium[b] (pCi/g)	Tritium (pCi/mL)	Co-60 (pCi/g)	Cs-137 (pCi/g)	Ra-226 (pCi/g)	Am-241 (pCi/g)
S0525	2675	4010	5891	07-84	0	0.59[c]	b					
S0526	2700	3860	2687	09-83	0	4.46	b					
S0527	2700	3935	5890	07-84	0	0.20	b					
S0528	1875	4165	7165	09-84	0	0.27	b					
S0529	1875	4190	7166	09-84	0	0.51	b					
S0530	1900	4225	10497	08-85	0	0.41	b					
S0531	1900	4265	2862	10-83	0	1.27	b					
S0532	1905	4215	10499	08-85	0	0.48	b					
S0533	1905	4220	10496	08-85	0	1.84	b					
S0534	1910	4225	10495	08-85	0	1.13	b					
S0535	1920	4230	10494	08-85	0	0.51	b					
S0536	1950	4290	7167	09-84	0	2.20	b					
S0537	1950	4315	2683	10-83	0	0.17	b					
C0099	1965	4265	10419	08-85	18	31.40	b					
			10420	08-85	36	14.70	b					
S0538	1975	4165	7165	09-84	0	5.94	b					
C0100	1975	4275	10421	08-85	18	32.40	b					
			10422	08-85	36	17.70	b					
			10423	08-85	54	12.40	b					
			10424	08-85	72	10.10	b					

Radiochemical Analysis

Document Control No._____

Environmental Restoration Program

OPERABLE UNIT 5
OPERATIONAL AREA PHASE I INVESTIGATION
NON-AOC FIELD REPORT

MOUND PLANT
MIAMISBURG, OHIO

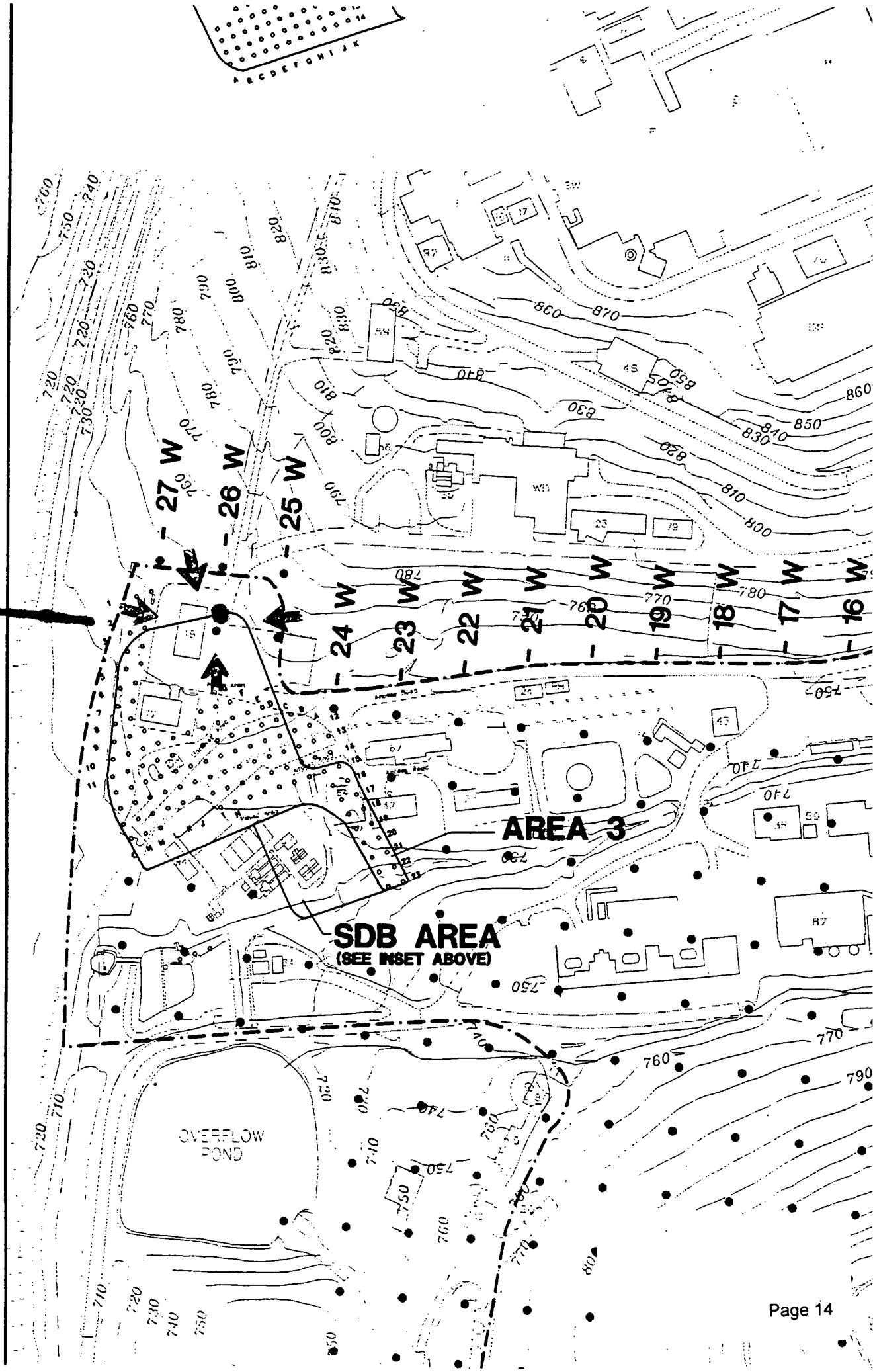
VOLUME II - APPENDICES A-G

June 1995

Final (Revision 0)

U.S. Department of Energy
Ohio Field Office

EG&G Mound Applied Technologies


13N
27 W
26 W
25 W
24 W
23 W
22 W
21 W
20 W
19 W
18 W
17 W
16 W
AREA 3
SDB AREA
(SEE INSET ABOVE)
OVERFLOW POND

FIDLER Data

Mound Soil Screen Data

APPENDIX D
RADIOLOGICAL DATA (FIDLER SURVEY MOUND SOIL SCREENING FACILITY DATA) FOR NON-AOC POINTS

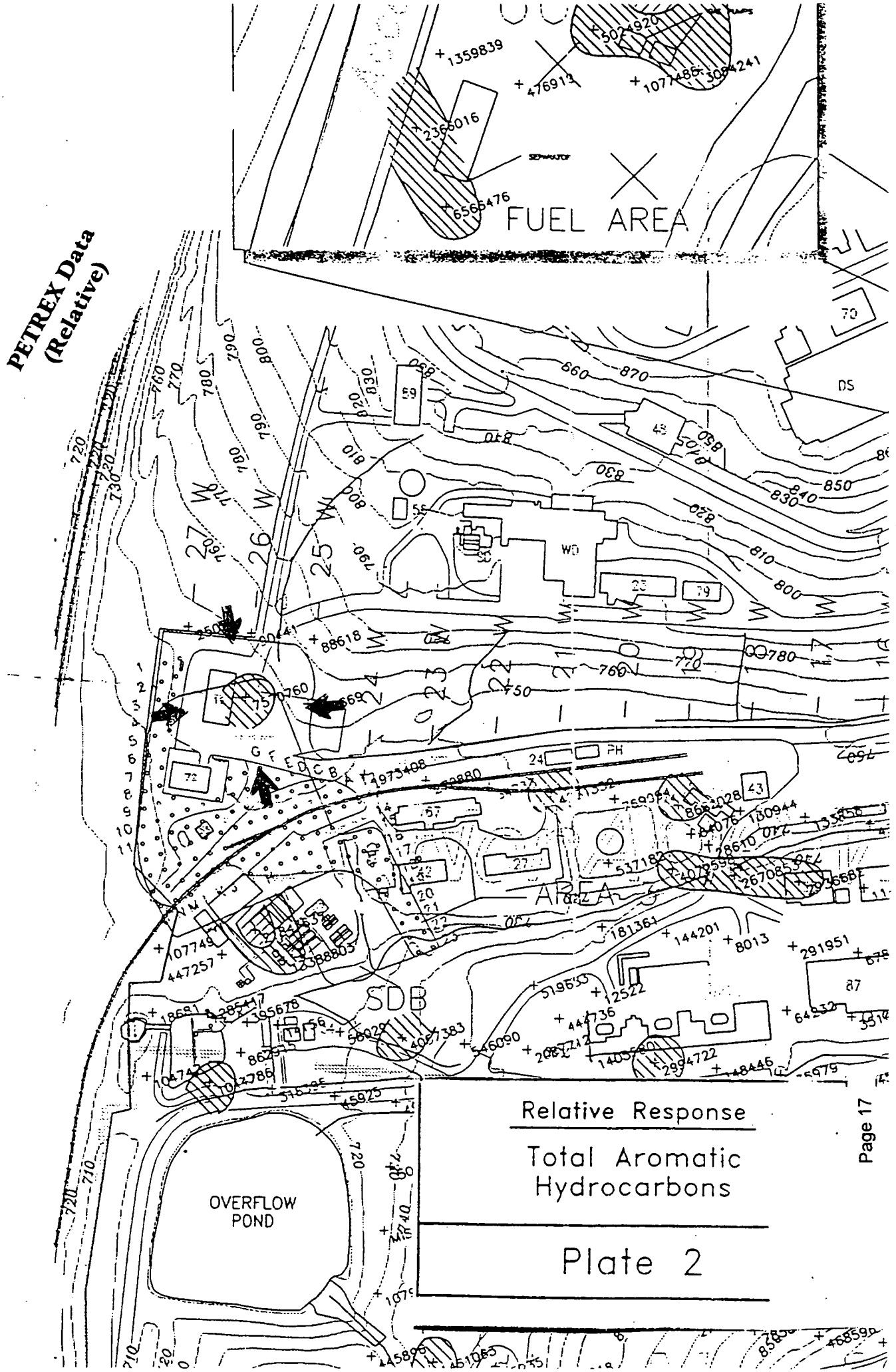
	FIDLER SURVEY DATA					MOUND SOIL SCREENING FACILITY DATA			
SMPID	Contamination Criteria CH1	FIDLER Readings CH1	Contamination Criteria CH2	FIDLER Readings CH2	FIDLER Readings Out Channel	Plutonium - 238		Thorium - 232	
	Units: CPM	Units: CPM	Units: KCPM	Units: KCPM	Units: KCPM	Units: pCi/g		Units: pCi/g	
	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	Note:	RESULTS	Note:
12N15	157.3	65	8.45	4.0	NC	85	b	0.9	a
12N16	157.3	110	8.45	5.5	NC	9	a	0.7	a
12N17	157.3	60	8.45	3.5	NC	WIPE	c	WIPE	c
12N18	157.3	60	8.45	4.5	NC	WIPE	c	WIPE	c
12N19	157.3	55	8.45	4.5	NC	19	a	0.5	a
12N20	157.3	65	8.45	4.5	NC	WIPE	c	WIPE	c
12N21	157.3	50	8.45	3.5	NC	WIPE	c	WIPE	c
12N22	157.3	85	8.45	5.5	NC	16	a	1	a
12N23	157.3	75	8.45	5.0	NC	WIPE	c	WIPE	c
12N24	157.3	40	8.45	3.5	NC	WIPE	c	WIPE	c
13N01	253.5	180	12.48	10.0	NC	15	a	1.1	a
13N02	253.5	95	12.48	4.5	NC	WIPE	c	WIPE	c
13N03	130	110	6.5	4.5	NC	WIPE	c	WIPE	c
13N25	157.3	40	8.45	4.0	NC	WIPE	c	WIPE	c
13N26	157.3	60	8.45	4.0	NC	WIPE	c	WIPE	c
14N01	253.5	100	12.48	7.0	NC	WIPE	c	WIPE	c
14N02	122.2	80	5.59	4.5	NC	WIPE	c	WIPE	c
14N03	130	75	6.5	5.0	NC	WIPE	c	WIPE	c
14N07	170.3	100	9.72	7.0	NC	NR		NR	
14N08	170.3	150	9.72	10.0	NC	NR		NR	
14N09	170.3	145	9.72	10.0	NC	NR		NR	
14N10	170.3	85	9.72	8.0	NC	NR		NR	
14N11	170.3	115	9.72	10.0	NC	NR		NR	
14N12	170.3	130	9.72	8.0	NC	NR		NR	
14N13	157.3	100	8.45	5.5	NC	NR		NR	
14N15	157.3	70	8.45	4.0	NC	WIPE	c	WIPE	c
14N25	157.3	85	8.45	7.0	NC	9	a	0.6	a
14N26	157.3	80	8.45	7.5	NC	8	a	0.7	a
14N27	157.3	150	8.45	9.0	NC	20	a	0.9	a

APPENDIX D

RADIOLOGICAL DATA (FIDLER SURVEY MOUND SOIL SCREENING FACILITY DATA) FOR NON-AOC POINTS

	FIDLER SURVEY DATA					MOUND SOIL SCREENING FACILITY DATA			
SMPID	Contamination Criteria CH1	FIDLER Readings CH1	Contamination Criteria CH2	FIDLER Readings CH2	FIDLER Readings Out Channel	Plutonium - 238		Thorium - 232	
	Units: CPM	Units: CPM	Units: KCPM	Units: KCPM	Units: KCPM	Units: pCi/g		Units: pCi/g	
	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	Note:	RESULTS	Note:

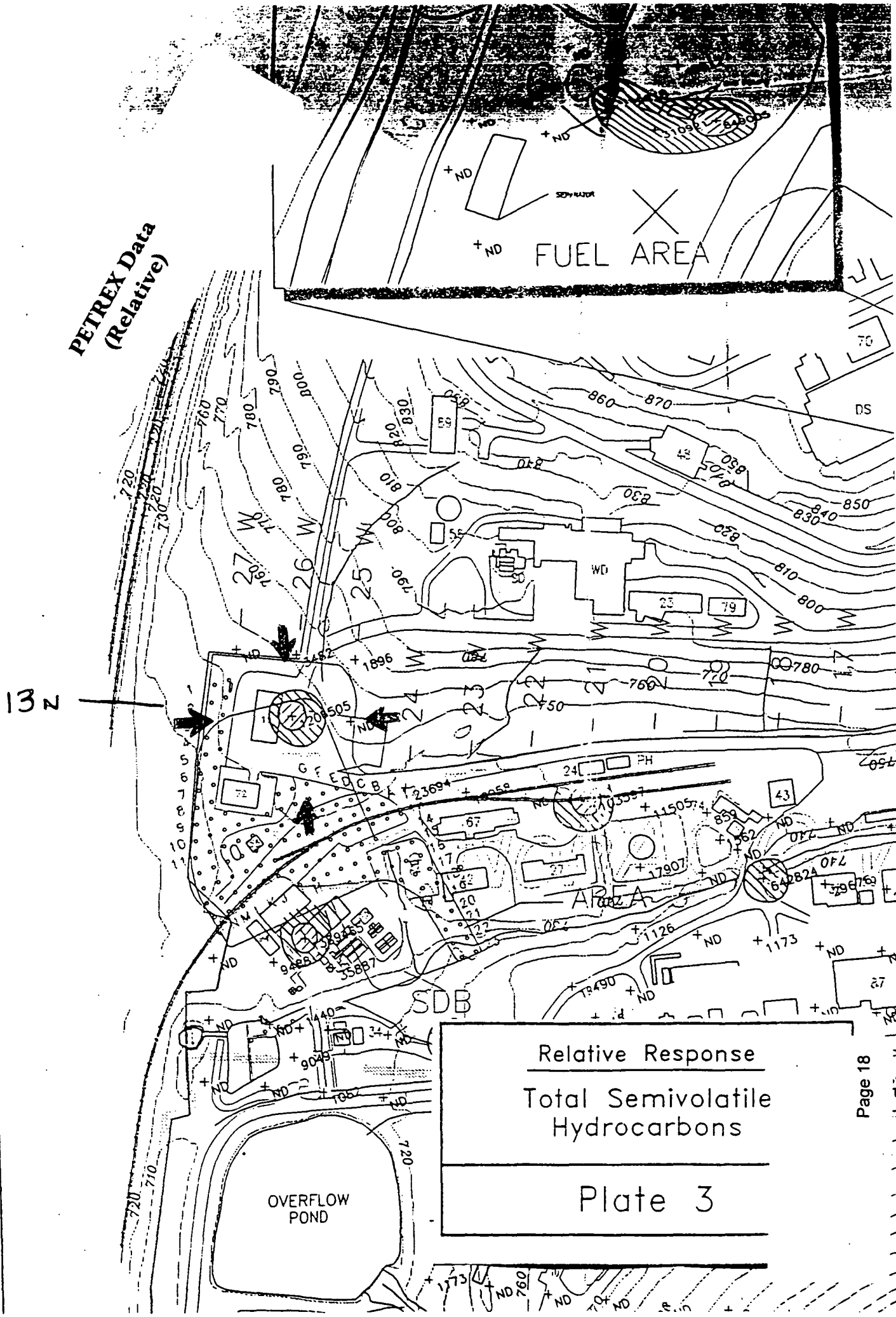
NR - Not recorded
NC - No sample/reading taken
NA - Reading not taken; contamination criteria not exceeded.
a - Mound Soil Screening Facility detection level not exceeded.
b - Concentration at or above the Mound Soil Screening Facility detection level.
c - Results of the wipe sample were less than 20 disintegrations per minute.
CPM - Counts per minute
KCPM - Counts per minute x 1000
pCi/g - Picocuires per gram

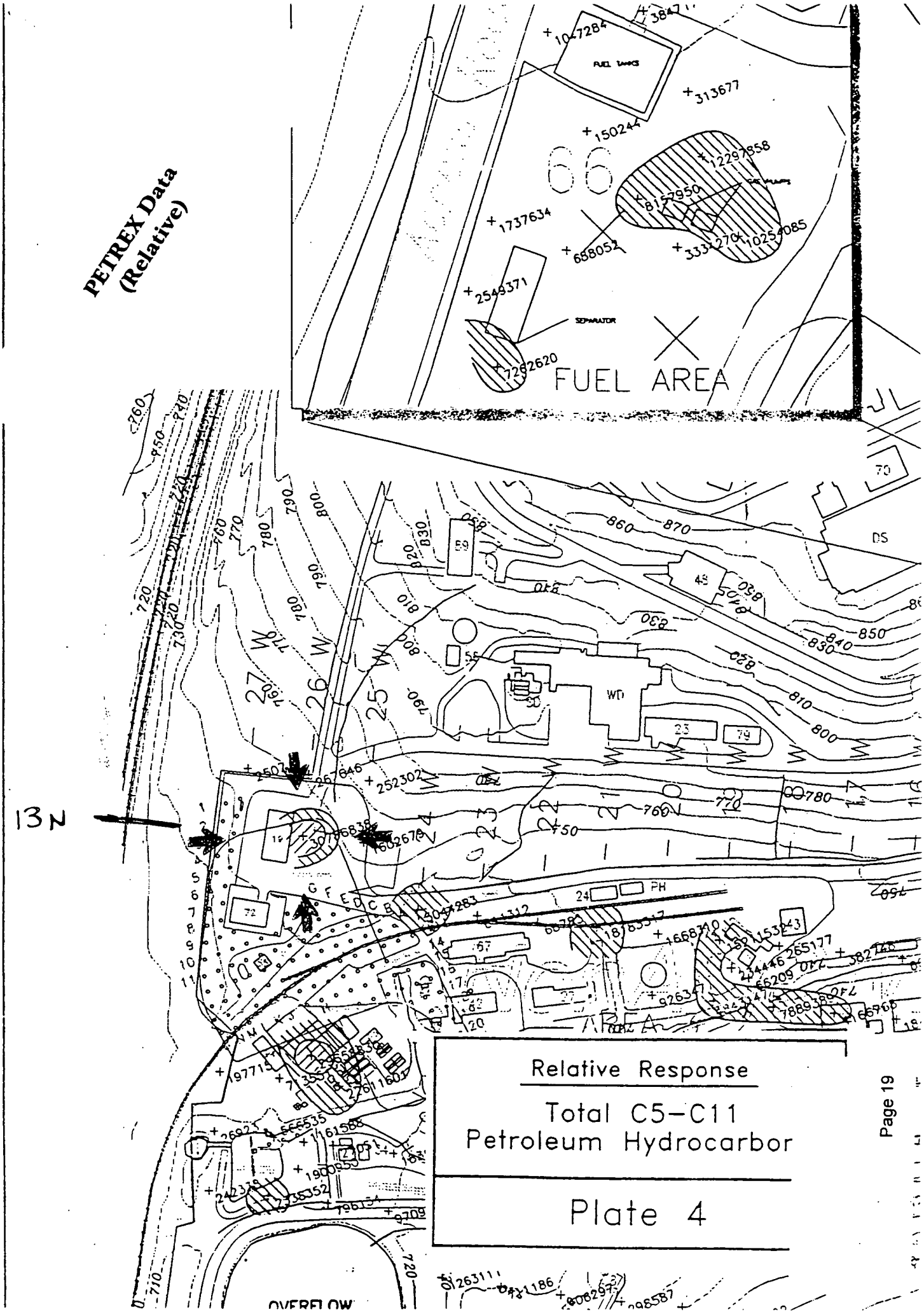


Relative Response

Total Aromatic Hydrocarbons

Plate 2

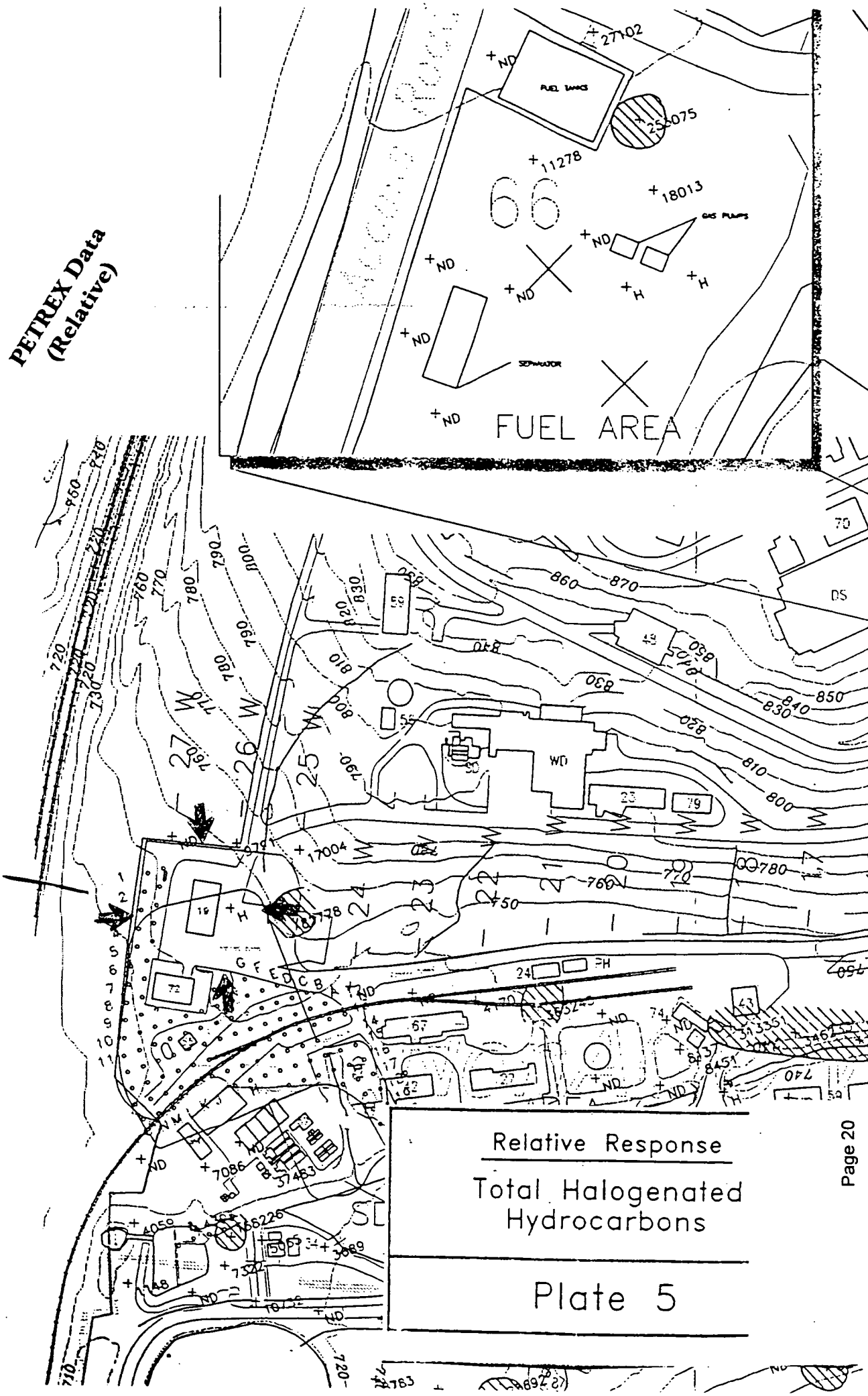

PETREX Data
(Relative)
FUEL AREA
13 N
OVERFLOW
POND
SDB
AREA
Relative Response
Total Semivolatile
Hydrocarbons
Plate 3



Relative Response

Total C5–C11
Petroleum Hydrocarbor

Plate 4


PETREX Data
(Relative)
FUEL AREA
FUEL TANKS
GAS PUMPS
SEPARATOR
13N
Relative Response
Total Halogenated Hydrocarbons
Plate 5

Comments on History of Area Around Present Location of Building 19

Reference the following site drawing[1] of the Mound Plant in its early stages: the present site of Building 19 (shown dashed) overlaps the former maintenance garage. Note the gas pump and underground tank callouts to the southeast of the former maintenance garage.

[1]Drawing "General Plot Plan-Temporary Electric and Telephone", May 1947.

4	#12
5	#12
6	#2
7	#12
8	#6
8A	#12
9	#4
10	#10
11	#10
12	ON BUILDING LIGHTING
13	#12
14	#8
15	#12
16	#4
17	#4
18	#12
19	#2
20	#0
21	#0
22	#4
23	#4
23A	#10
[illegible]	#10
	#0
	#10
	#4
	#10

[illegible]	[illegible]
20	2 #6 1 #2 Neut.
21	2 #4/0 1 #2 Neut.
22	2 #4/0 1 #2 Neut.
25	2 #4/0 1 #2 Neut
[illegible]	#4 [illegible]
[illegible]	[illegible]
13	#10
27	#4
[illegible]	#0
30	3 #4
23	2 #4/0 1 #2
24	#8
29	#8
31	#4/0

UNCLASSIFIED

[signature] 5-23-96

AUTHORIZED DERIVATIVE CLASSIFIER DATE

~~THIS SHEET CONTAINS INFORMATION FOR OFFICIAL USE ONLY AND MUST BE RETURNED TO US REGARDLESS OF CONDITION. MAXON CONSTRUCTION CO., INC. P.O. BOX 72 MIAMISBURG, OHIO~~

RESTRICTED

THIS DWG. SUPERSEDES DWG. No MCC-11 2-3-47

GENERAL PLOT PLAN

TEMPORARY ELECTRIC & TELEPHONE

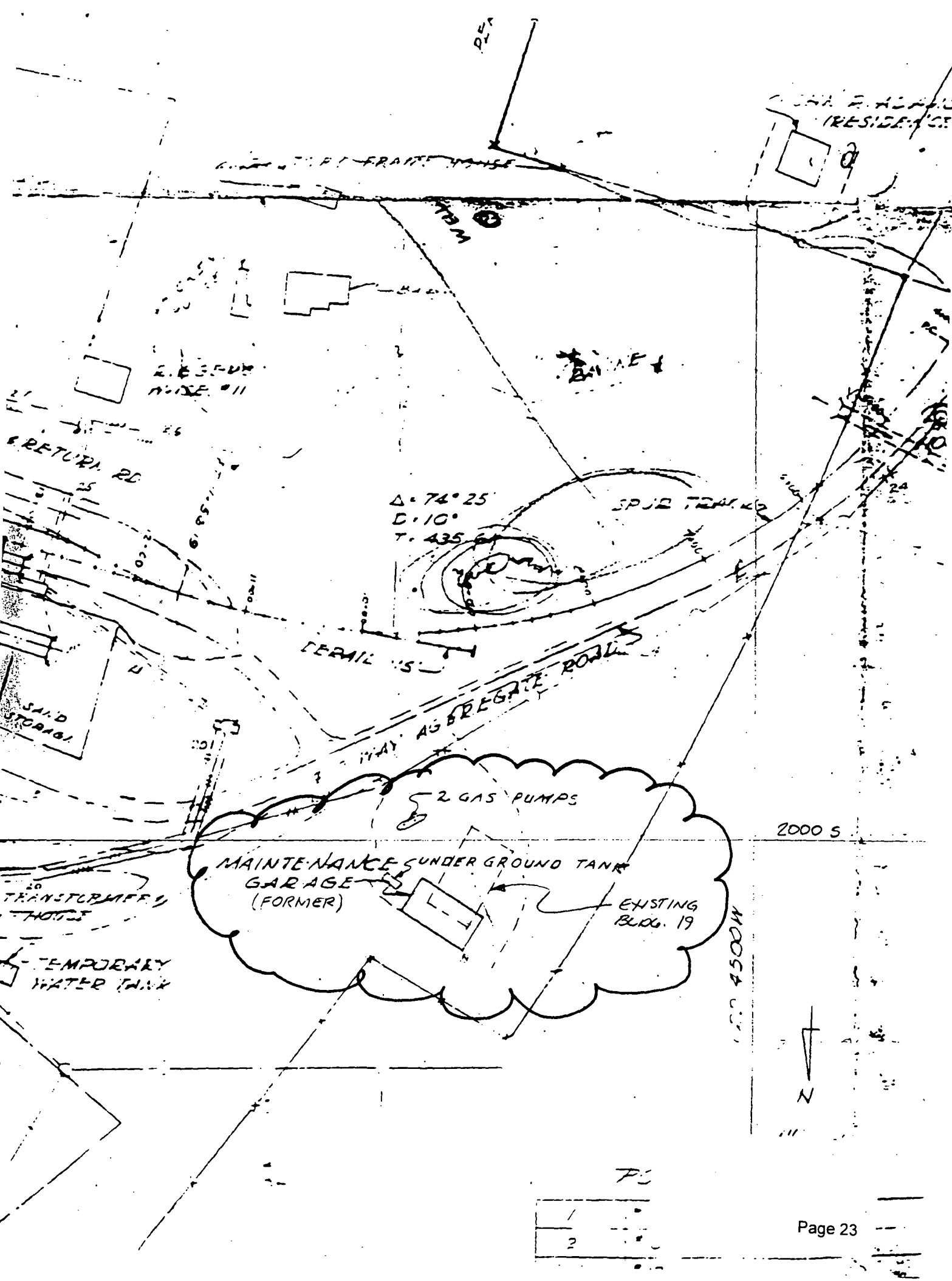
MAXON CONSTRUCTION CO., INC.

UNIT NO. 5 CONTRACT NO. W42-069 eng-101

MIAMISBURG OHIO

SUBMITTED BY | APPROVED BY

DRAWN BY | DRAWING NO.



Δ = 74° 25
D = 10°
T = 435
SPUR TRACK
DERAIL
WAY AGGREGATE ROAD
2 GAS PUMPS
2000 S
MAINTENANCE GARAGE (FORMER)
UNDER GROUND TANK
EXISTING BLDG. 19
4500W
TEMPORARY WATER TANK
N

MOUND

Environmental
Restoration
Program

Further Assessment

Soil Gas Confirmation Sampling

Mound Plant
Miamisburg, Ohio

May 1996

Revision 0

Department of Energy

EG&G Mound Applied Technologies

Table I.1 Soil Analyte List

Volatile Organic Compounds

Acetone	Dibromochloromethane	4-Methyl-2-Pentanone
Benzene	1,1-Dichloroethane	Styrene
Bromodichloromethane	1,2-Dichloroethane	1,1,2,2-Tetrachloroethane
Bromoform	1,1-Dichloroethene	Tetrachloroethene
Bromomethane	1,2-Dichloroethene (total)	1,1,1-Trichloroethane
2-Butanone	1,2-Dichloropropane	1,1,2-Trichloroethane-
Carbon Disulfide	cis-1,3-Dichloropropene	Trichloroethene
Carbon Tetrachloride	trans-1,3-Dichloropropene	Toluene
Chlorobenzene	Ethylbenzene	Vinyl Acetate
Chloroethane	2-Hexanone	Vinyl Chloride
Chloroform	Methylene Chloride	Xylenes (total)
Chloromethane		

Semivolatile Organic Compounds

Acenaphthene	Chrysene	Hexachlorobenzene
Acenaphthylene	Dibenz(a,h)anthracene	Hexachlorobutadiene
Anthracene	Dibenzofuran	Hexachlorocyclopentadiene
Benzo(a)anthracene	1,2-Dichlorobenzene	Hexachloroethane
Benzo(a)pyrene	1,3-Dichlorobenzene	Indeno(1,2,3-cd)pyrene
Benzo(b)fluoranthene	1,4-Dichlorobenzene	Isophorone
Benzo(g,h,i)perylene	3,3-Dichlorobenzidine	2-Methylnaphthalene
Benzo(k)fluoranthene	2,4-Dichlorophenol	2-Methylphenol
bis(2-Chloroethoxy)methane	Diethylphthalate	4-Methylphenol
bis(2-Chloroethyl)ether	2,4-Dimethylphenol	Naphthalene
bis(2-Ethylhexyl)phthalate	Dimethyphthalate	2-Nitroaniline
4-Bromophenyl-phenylether	Di-n-butylphthalate	3-Nitroaniline
Butylbenzylphthalate	Di-n-octylphthalate	4-Nitroaniline
Carbazole	4,6-Dinitro-2-methylphenol	Nitrobenzene
4-Chloroaniline	2,4-Dinitrophenol	2-Nitrophenol
4-Chloro-3-methylphenol	2,4-Dinitrotoluene	4-Nitrophenol
2-Chloronaphthalene	2,6-Dinitrotoluene	N-Nitroso-di-n-propylamine
2-Chlorophenol	Fluoranthene	N-Nitroso-diphenylamine
4-Chlorophenyl-phenylether	Fluorene	2,2-oxybis(1-Chloropropane)
Pentachlorophenol	Pyrene	2,4,5-Trichlorobenzene
Phenanthrene	1,2,4-Trichlorobenzene	2,4,6-Trichlorobenzene
Phenol		

Table I.1 Soil Analyte List (Continued)		
Pesticides/PCB's		
Aroclor-1016	Delta-BHC	Endosulfan II
Aroclor-1221	Gamma-BHC	Endosulfan sulfate
Aroclor-1232	alpha-Chlordane	Endrin
Aroclor-1242	gamma-Chlordane	Endrin aldehyde
Aroclor-1248	4,4'-DDD	Endrin ketone
Aroclor-1254	4,4'-DDE	Heptachlor
Aroclor-1260	4,4'-DDT	Heptachlor epoxide
Aldrin	Dieldrin	Methoxychlor
Alpha-BHC	Endosulfan I	Toxaphene
Beta-BHC		
Inorganics		
Aluminum	Copper	Potassium
Antimony	Cyanide	Selenium
Arsenic	Iron	Silver
Barium	Lead	Sodium
Beryllium	Lithium	Thallium
Bismuth	Magnesium	Tin
Cadmium	Manganese	Vanadium
Calcium	Mercury	Zinc
Chromium	Molybdenum	Nitrate/Nitrite
Cobalt	Nickel	Explosives (USATHAMA,PETN)
Radionuclides		
Americium-241	Plutonium-238	Thorium-230
Bismuth-207	Plutonium-239/240	Thorium-232
Bismuth-210	Potassium-40	Uranium-234
Cesium-137	Radium-226	Uranium-235
Cobalt-60	Thorium-228	Uranium-238

1.2. SAMPLE NUMBERING SCHEME

The sample identification numbers were assigned by Mound to each location in the following format: XXX-AAA-######. For each location, the first three characters were SGC, identifying the sample as part of the soil gas confirmation study. The next three characters represented the area from which each sample was taken:

A03 = Area 3
A07 = Area 7
A13 = Area 13
A21 = Area 21
A22 = Area 22
SDB = Area SDB
AOJ = Area AOJ
NAC = Non-AOC areas (Area of Concern)
SAN = Sanitary area

The final six digits were a sequential number beginning with 000001. The samples related to this study begin with 000001 and end with 000102. Due to an error in surveying, samples 000099 and 000100 were taken from the wrong locations. The sites were resurveyed and the samples were taken again, renamed as 000101 and 000102. No other problems arose with the sample identification.

1.3 SURVEYING

Prior to this sampling event, surveying relocated each of the 100 sites based on coordinates from a previous soil gas sampling event. Surveyors from Barge, Waggoner, Sumner and Cannon, of Miamisburg, Ohio, completed the task, using a benchmark map of approximately 50 locations with state plane coordinates provided by EG&G. Each point was relocated with an accuracy of ±6 inches and identified with either a 3-foot stake with orange flagging tape and the sample identification number or a pin driven into the ground through orange flagging with the sample identification number written on the flagging. The surveyed sampling locations are shown on Figure 1.1.

1.4 UTILITIES CLEARANCE/VARIANCES

After surveying, all sites were checked for the presence of underground utilities by EG&G personnel. The requirement states that sample sites must be located five feet or more from utilities. Situations in which the 5-foot rule was not met were handled in one of three ways: 1) **relocations** - sample sites were placed 5 feet or more from utility markings and normal sampling procedures were followed; 2) **hand-digging** - the VOC sample soil was collected using the core sampler, which was driven only to the depth necessary to collect the VOC sample, and the remaining soil was collected using a hand auger; or 3) **variances to the 5-foot clearance requirement** - some sites were located near visible utilities, so after safe clearance was established, normal sampling procedures were followed. Alternatively, some locations had underground utilities at relitivley deeper depths. At these locations, normal sampling procedures were followed except that digging/coring was limited to two feet instead of the established three feet. No utilities were damaged during the sampling event.

Some locations had no utility interference but still could not be sampled to three feet due to "refusal"--an inability to drive the sampler deeper. This usually indicates that bedrock or large gravel has been reached. In such cases, multiple shallow cores were taken.

A complete list of sites with variances to the original soil gas sampling location or depth can be found in Table I.2.

1.5 SOIL SAMPLING METHODOLOGY

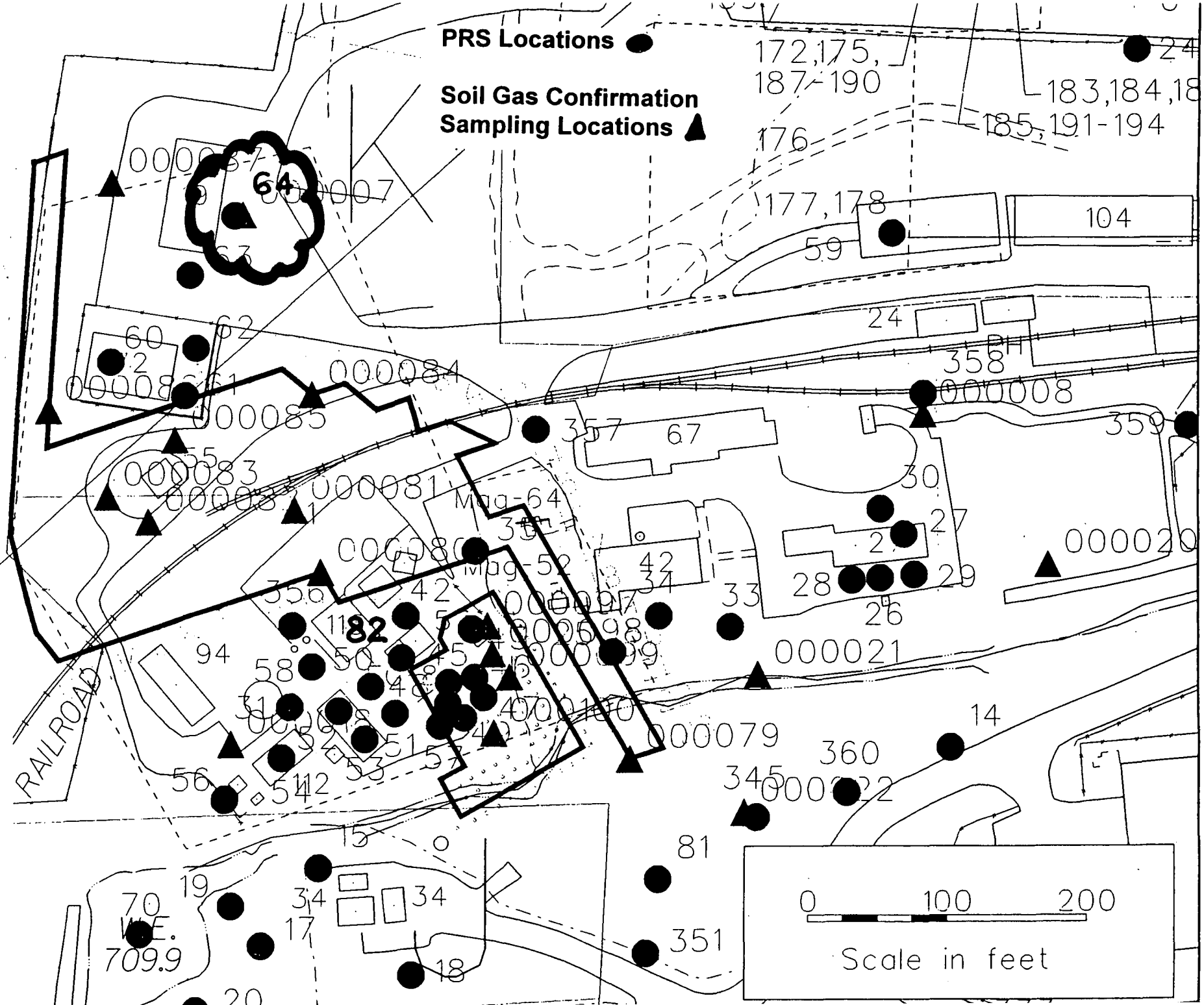
Soil was collected at each location using either a van-mounted Geoprobe® rig equipped with a core sampler, an electric hammer equipped with a core sampler, or a hand auger. The device chosen depended upon the particulars of the location. Acetate liners were used in the Geoprobe® core barrel and the hand-held core sampler. The liners were cut open with utility knives, using a new blade at each site.

The first six inches of the core, designated for radionuclide analysis, were removed using a clean, stainless steel scoop and placed in a clean stainless steel bowl to be homogenized. Soil was cut from between the 6-inch and 1-1/2 foot depth and placed directly into jars appropriate for volatile organic compound (VOC) analysis, leaving as little headspace as possible. The remaining soil was then placed into another clean stainless steel bowl. If necessary to obtain sufficient sample volume, another core was taken, and the above process was repeated. When enough soil was collected to fill all the sample jars, the contents of both bowls were individually homogenized and used to fill their respective containers. The jars were labeled prior to being filled. Each sample was then secured with a custody seal, sealed in a plastic bag and stored in a refrigerator in Building 19. Radiological samples were delivered to the Mound Environmental Laboratory for screening. Several duplicate radiological samples were collected and set aside for later analysis by the Mound wet chemistry laboratory. After screening clearance was obtained from the Mound Environmental Laboratory, the samples were sealed in coolers and shipped to off-site contract laboratories for analysis. The contract laboratory for radionuclide analysis was Quanterra Environmental Services in Richland, Washington. All other analyses were completed by Roy F. Weston, Incorporated Laboratory in Lionville, Pennsylvania.

acc
ple

Table I.2. Variance From 3-Foot Sampling Depth Specification

Location	Description of Variance
SGC-NAC-000001	Core sampler hit refusal at 2 feet.
SGC-NAC-000002	Relocated due to utilities.
SGC-NAC-000003	Core sampler hit refusal at 2 feet.
SGC-NAC-000004	Core sampler hit refusal at 18 inches.
SGC-NAC-000005	Drilled to 1 foot, hand-augered rest due to utilities.
SGC-NAC-000006	Drilled to 1 foot, hand-augered rest due to utilities.
SGC-NAC-000007	Core sampler hit refusal at 18 inches.
SGC-NAC-000008	Drilled to 2 feet due to utilities.
SGC-NAC-000010	Drilled to 1 foot; hand-augered rest due to utilities; flag against building, so sample taken 6 feet from flag.
SGC-NAC-000012	Drilled to 2 feet due to utilities.
SGC-SAN-000018	Core sampler hit refusal at 2 feet; relocated from inside clarifier.
SGC-NAC-000029	Core sampler hit refusal at 18 inches.
SGC-A61-000043	Sampled 1 foot from flag.
SGC-A61-000047	Drilled to 2 feet due to utilities.
SGC-A61-000048	Drilled to 2 feet due to utilities.
SGC-A61-000049	Relocated due to utilities.
SGC-A61-000051	Core sampler hit refusal at 18 inches.
SGC-A61-000052	Relocated due to utilities; core sampler hit refusal at 18 inches.
SGC-A61-000053	Core sampler hit refusal at 2 feet.
SGC-A13-000056	Core sampler hit refusal at 18 inches
SGC-A13-000058	Drilled to 1 foot, hand-augered rest due to utilities.
SGC-A13-000060	Core sampler hit refusal at 1 foot.
SGC-AOJ-000064	Core sampler hit refusal at 2 - 3 inches.
SGC-AOJ-000066	Core sampler hit refusal at 4 inches.
SGC-AOJ-000067	Core sampler hit refusal at 6 inches.
SGC-AOJ-000069	Core sampler hit refusal at 2 feet.
SGC-A03-000080	Core sampler hit refusal at 20 inches
SGC-A03-000081	Drilled to 2 feet due to utilities.
SGC-A03-000082	Drilled to 1 foot, hand-augered rest due to utilities.
SGC-A03-000083	Sampled 25 feet from original location due to storm sewer; core sampler hit refusal at 18 inches.
SGC-A03-000087	Core sampler hit refusal at 2 feet.
SGC-A21-000088	Core sampler hit refusal at 18 inches.
SGC-A21-000090	Core sampler hit refusal at 20 inches.
SGC-SDB-000097	Relocated due to utilities.
SGC-SDB-000098	Relocated from inside a building.
SGC-SDB-000101	Relocation of SGC-SDB-000099; first location surveyed incorrectly.
SGC-SDB-000102	Relocation of SGC-SDB-000100; first location surveyed incorrectly.


PRS Locations
Soil Gas Confirmation
Sampling Locations
172,175,
187-190
183,184,18
185,191-194
176
177,178
104
59
24
358
000008
359
64
000007
60
62
000084
000085
357
67
000083
000081
Mag-64
Mag-52
30
27
000020
42
34
33
28
29
26
356
82
94
58
000021
000079
14
360
345
000022
56
54
112
15
81
19
70
W.E.
709.9
34
17
18
351
20
RAILROAD
0
100
200
Scale in feet

The following tables contain the Soil Gas Confirmation Sampling results. Sampling was performed for the following categories of contaminants:

Volatiles
Semivolatiles
PCBs/pesticides
Metals
Radionuclides
Explosives

If no results are given for the contaminant categories listed above, then no detects were found for that category of contaminants.

Table A.1. Soil Gas Confirmation Detected Volatile Organic Compounds

ANALYTE	SGC NAC 000002	SGC NAC 000003	SGC NAC 000004	SGC NAC 000005	SGC NAC 000006	SGC NAC 000007	Background	10^{-6} Construction Worker Guidelines
VOLATILES (µg/Kg)								
Acetone	36						NA	105000000
1,2-Dichloroethene (total)							NA	21500000
2-Butanone							NA	46500000
Benzene	1						NA	8900
Carbon Disulfide							NA	1400000
Chloroform			67				NA	NA
Chloromethane							NA	NA
Ethylbenzene							NA	480
Methylene Chloride				7	8		NA	NA
Tetrachloroethene							NA	10500000
Toluene	1 J	1 J					NA	1250000
Trichloroethene						7	NA	41000
Xylene (total)							NA	2150000000

Table A.4. Soil Gas Confirmation Detected TAL Inorganics (cont.)

ANALYTE	SGC NAC 000007		SGC NAC 000008		SGC NAC 000009		SGC NAC 000010		SGC NAC 000011		SGC NAC 000012		Background	10^{-6} Construction Worker Guidelines
INORGANICS (mg/kg)														
Aluminum	10200		2820		18700		7300		10[illegible]		13100		19000	NA
Antimony			0.27	B	0.91	B	[illegible]	B	1.2	[illegible]			NA	425
Arsenic	1.9	B	3.2	[illegible]	11.1		7.2		2.2	B	1.9	BJ	8.6	320
Barium	26.2	B	23.2	[illegible]	163		64.7		13.5	B	78.[illegible]		180	75000
Beryllium	0.28				[illegible].9	B	0.34		[illegible]	B	0.44		1.3	0.7
Bismuth					0.8[illegible]	B			0.99	B			NA	NA
Cadmium	0.33	B	0.22	B	6		0.62	B	5.2		6.0		2.1	1050
Calcium	83900		113000		5940		11500		90800		12[illegible]00	J	310000	NA
Chromium	14.3		5.7		20.3		1[illegible]		11.9		17.3		20	1050000
Cobalt	11	B	3.3	B	13		7.9	B	13.7		12.7	J	19	NA
Copper	16.2		13.9		19.2		17.4		16.6		21.3	J	26	NA
Cyanide													ND	21400
Iron	23000		7660		[illegible]400		17300		25600		27900		35000	NA
Lead	7.2		5.9		22.[illegible]		16.5		5.7		9.3	J	48	NA
Lithium	3.2	B	8.2	B	14.7	[illegible]	9.2	B	27.3		[illegible]5.3		26	NA
Magnesium	21600		47900		4500		16700		12300		199[illegible]	J	40000	NA
Manganese	493		256		728		6[illegible]		908		658		1400	135000
Mercury													NC	320
Molybdenum	0.63	B	1.4	B	1.8	B	2.3	B	0.58	B	1.3	B	27	NA
Nickel	22.6		8.1	[illegible]	24.5		16.5		2[illegible]6		26.4		32	21500
Potassium	1590		463	B	[illegible]20		794	B	2210	B	1630		1900	NA
Selenium									0.31	B			NA	NA
Silver													1700	5500000
Sodium	246	B	341	B	1010	B	[illegible]2	B	288	B	2490	J	240	NA
Thallium													460	NA
Tin			4.5	[illegible]	1.5	B					1.6	B	20	NA
Vanadium	14.2		7.4		[illegible]2.7		19.2		1[illegible]		22.4		25	7500
Zinc	53.8		36.6		71.[illegible]		299		59.9		68.5		140	320000

Table A.5. Soil Gas Confirmation Detected Nitrate-Nitrite

ANALYTE	SGC NAC 000001	SGC NAC 000002	SGC NAC 000003	SGC NAC 000004	SGC NAC 000005	SGC NAC 000006	Background	10^{-6} Construction Worker Guidelines
GENERAL ANALYTES								
% Solids (%)	83.9	83.8	88.5	83.3	78.4	75.0	NA	NA
Nitrate/Nitrite (MG-N/KG)	2.0	1.8	1.2	2.1	7.2	4.8	26	NA

ANALYTE	SGC NAC 000007	SGC NAC 000008	SGC NAC 000009	SGC NAC 000010	SGC NAC 000011	SGC NAC 000012	Background	10^{-6} Construction Worker Guidelines
GENERAL ANALYTES								
% Solids (%)	83.9	95.0	78.9	83.9	90.1	84.7	NA	NA
Nitrate/Nitrite (MG-N/KG)	1.6	26.5	2.2	5.[illegible]	5.3	1.8	26	NA

ANALYTE	SGC NAC 000013	SGC NAC 000014	SGC NAC 000015	SGC NAC 000016	SGC NAC 000017	SGC NAC 000018	Background	10^{-6} Construction Worker Guidelines
GENERAL ANALYTES								
% Solids (%)	81.7	80.5	74.0	85.5	72.8	84.2	NA	NA
Nitrate/Nitrite (MG-N/KG)	2.[illegible]	4.9	3.0	2.4	6.4	13.[illegible]	26	NA

ANALYTE	SGC NAC 000019	SGC NAC 000020	SGC NAC 000021	SGC NAC 000022	SGC NAC 000023	SGC NAC 000024	Background	10^{-6} Construction Worker Guidelines
GENERAL ANALYTES								
% Solids (%)	85.3	87.6	77.4	78.3	77.5	89.5	NA	NA
Nitrate/Nitrite (MG-N/KG)	6.5	2.1	6.1	2.2	1.6	2.2	26	NA

Table A.6. Soil Gas Confirmation Detected Radionuclides

ANALYTE	SGC NAC 000001	SGC NAC 000002	SGC NAC 000003	SGC NAC 000004	SGC NAC 000005	SGC NAC 000006	SGC NAC 000007	Background	10^{-6} Construction Worker Guidelines
RADIONUCLIDES (pCi/g)									
Americium-241								ND	4.95
Bismuth-207								ND	0.175
Bismuth-210								ND	NA
Cesium-137						0.86		0.42	0.46
Cobalt-60								NC	0.1
Plutonium-238	1.42	0.0690	0.833	0.08	0.543	4.32	0.537	0.13	5.5
Plutonium-239/240			0.025					0.18	5.5
Potassium-40	21.7	8.95	6.53	27.4	15.1	14	10.8	37	NA
Radium-226	1.03	0.47	0.508	1.16	22	0.870	0.537	2	0.14
Thorium-228	1.52	0.277	0.370	1.4	1.05	1.06	0.431	1.5	0.85
Thorium-230	0.14	0.374	0.621	0.980	1.19	1.18	0.582	1.9	44
Thorium-232	1.30	0.184	0.45	1.17	0.950	1.18	0.328	1.4	50
Uranium-234	2.19	0.401	0.419	0.934	0.874	0.61	0.551	1.1	37.5
Uranium-235	0.0974		0.0400	0.0349	0.0328			0.11	3.35
Uranium-238	2.35	0.392	0.512	0.918	0.913	0.815	0.574	1.2	11