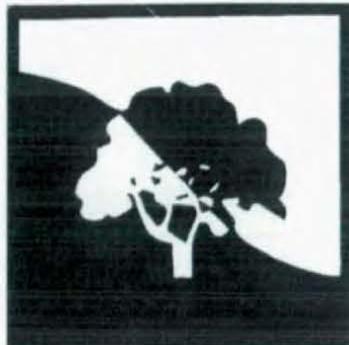


MOUND



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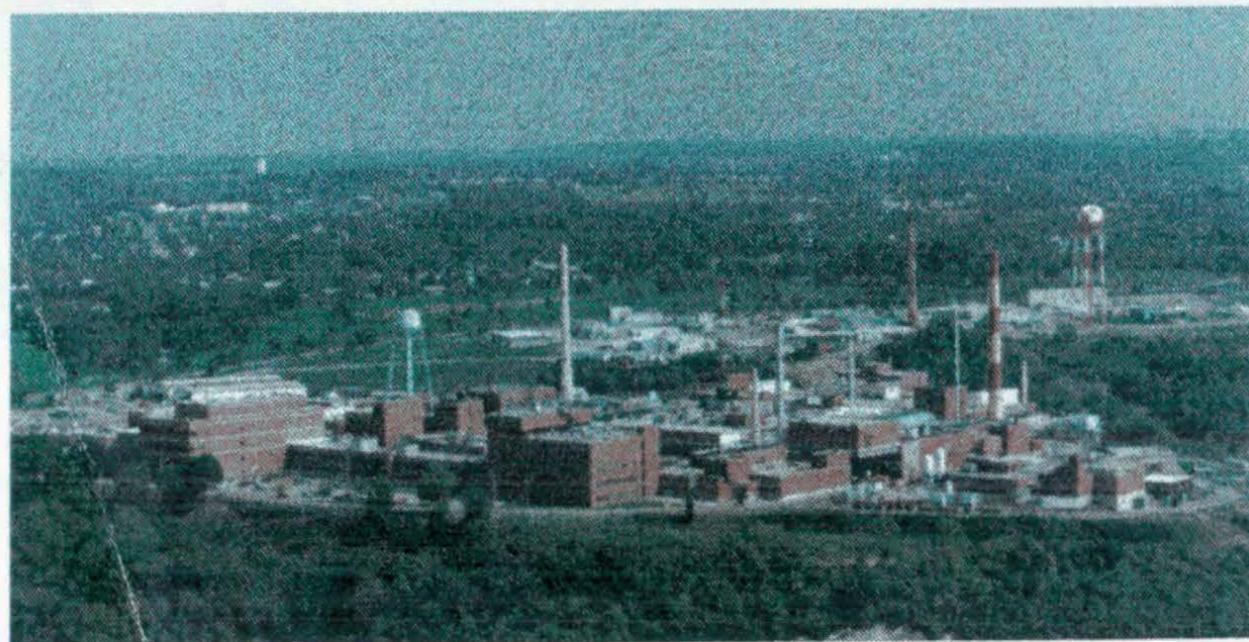


OhioEPA

MOUND PLANT

Potential Release Site Package

PRS # 389/392



MOUND



Environmental
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Program

MOUND PLANT POTENTIAL RELEASE SITE PACKAGE

Notice of Public Review Period

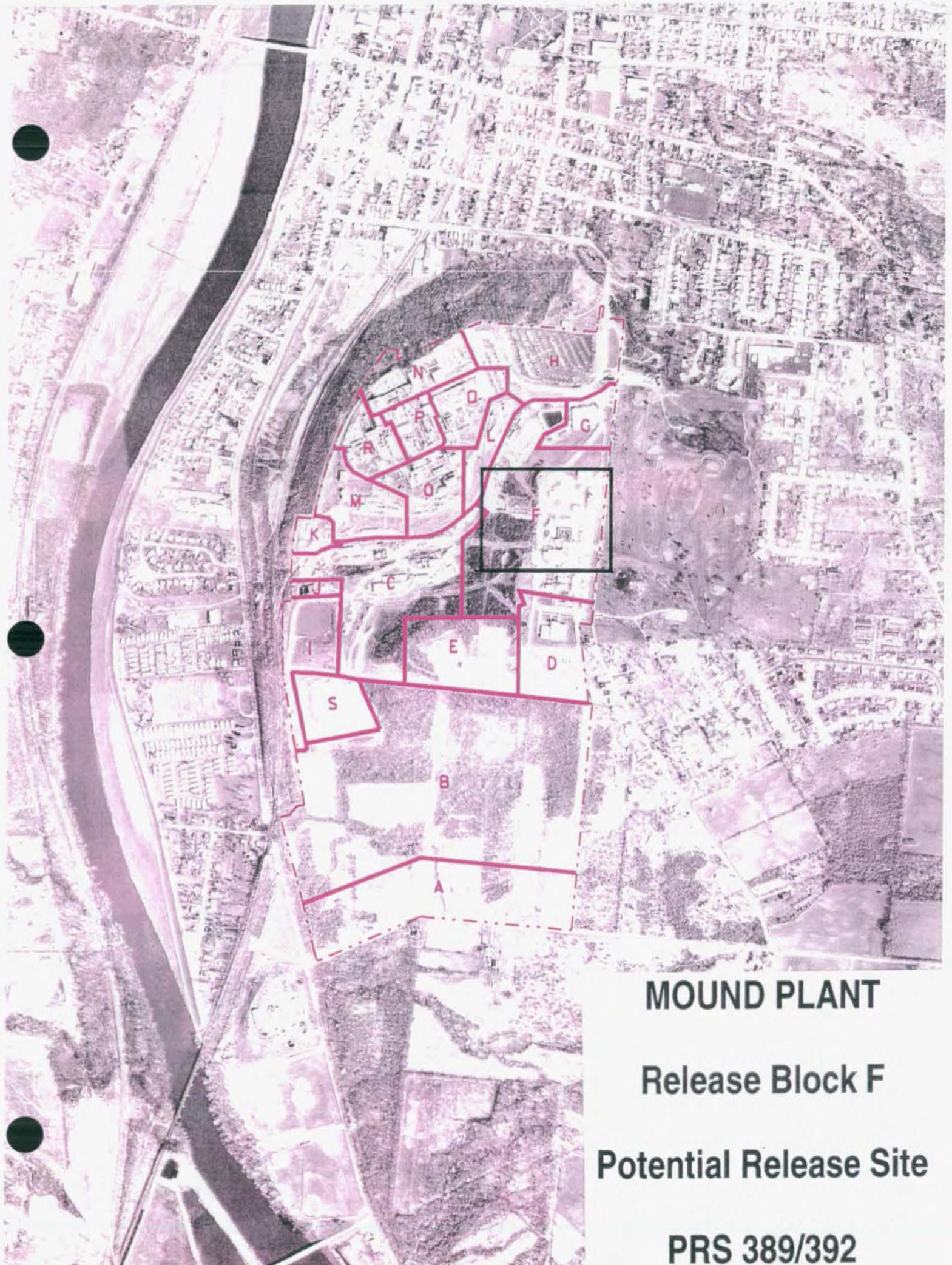


The following potential release site (PRS) packages will be available for public review in the CERCLA Public Reading Room, 305 E. Central Ave., Miamisburg, Ohio beginning December 19, 1996. Public comment will be accepted on these packages from December 19, 1996, through January 23, 1997.

**PRS 346/347/348/355/370,
351/352/353/357/359/360/361/362/385/386/387,
364, 369, 384, 388, 389/392**

Questions can be referred to Mound's Community Relations at (937) 865-4140.

REV	DESCRIPTION	DATE
0 PUBLIC RELEASE	Available for comment.	Dec. 19, 1996
1 FINAL	Comment period expired. No comments. Recommendation page annotated.	Jan. 28, 1997

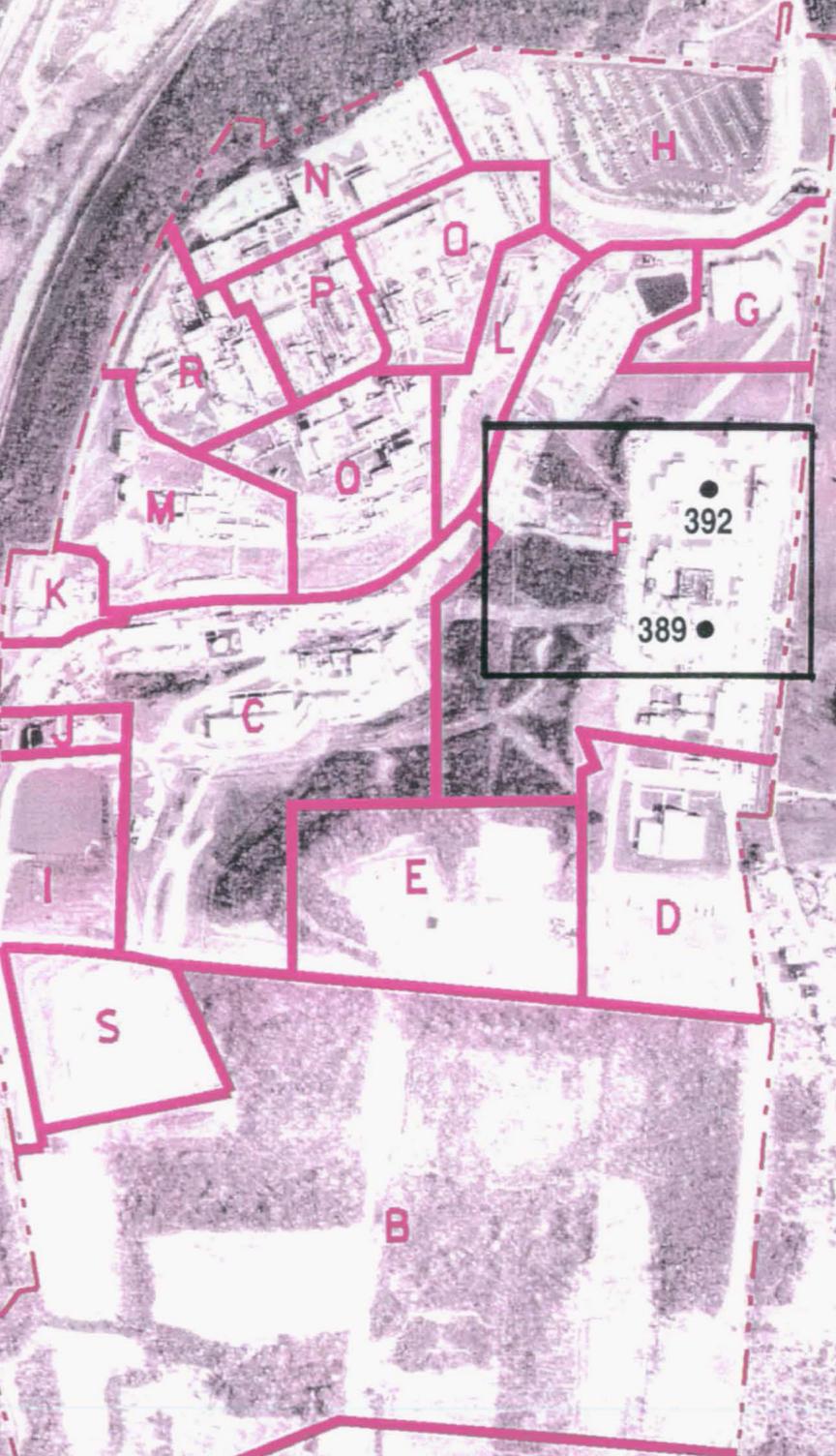
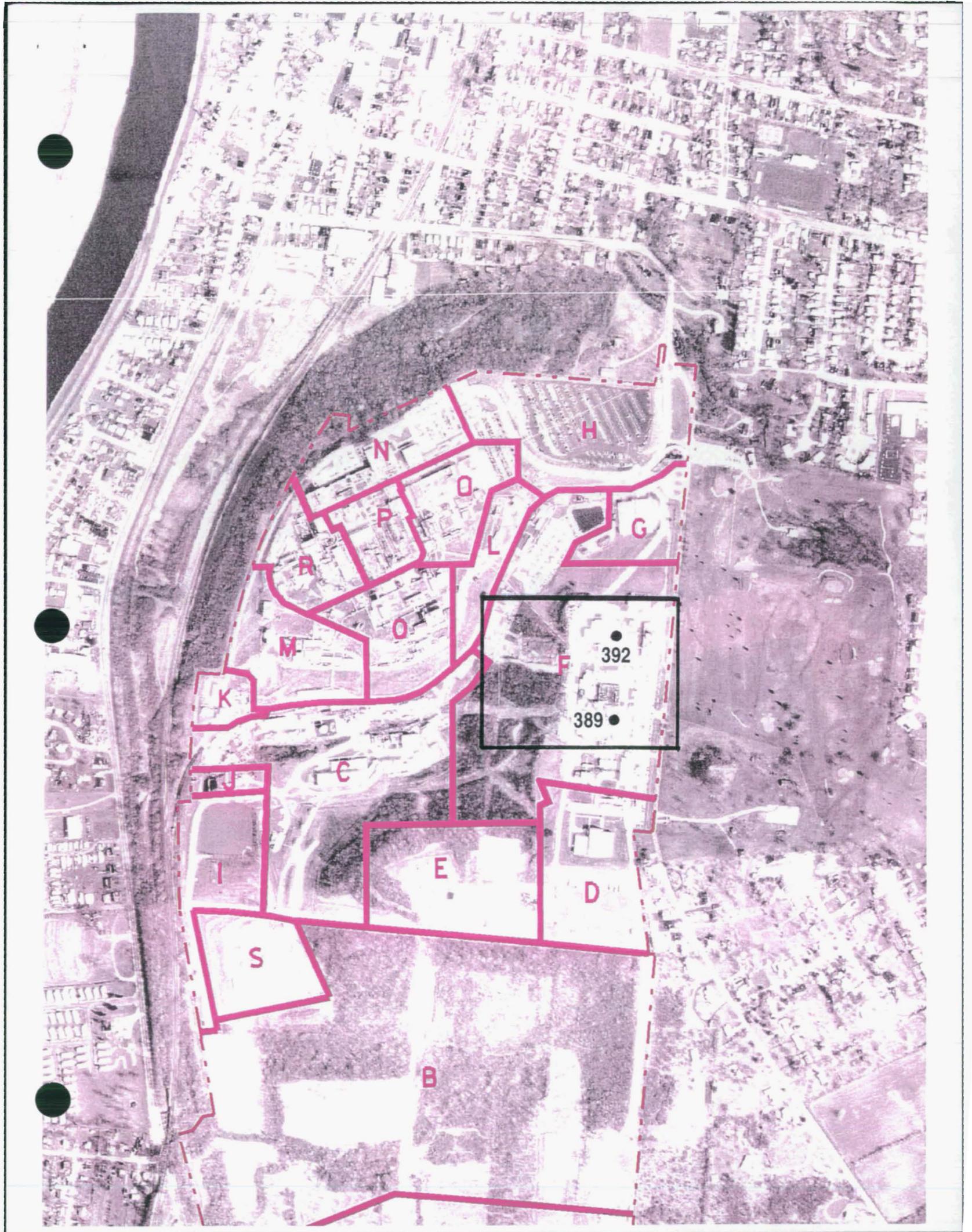


MOUND PLANT

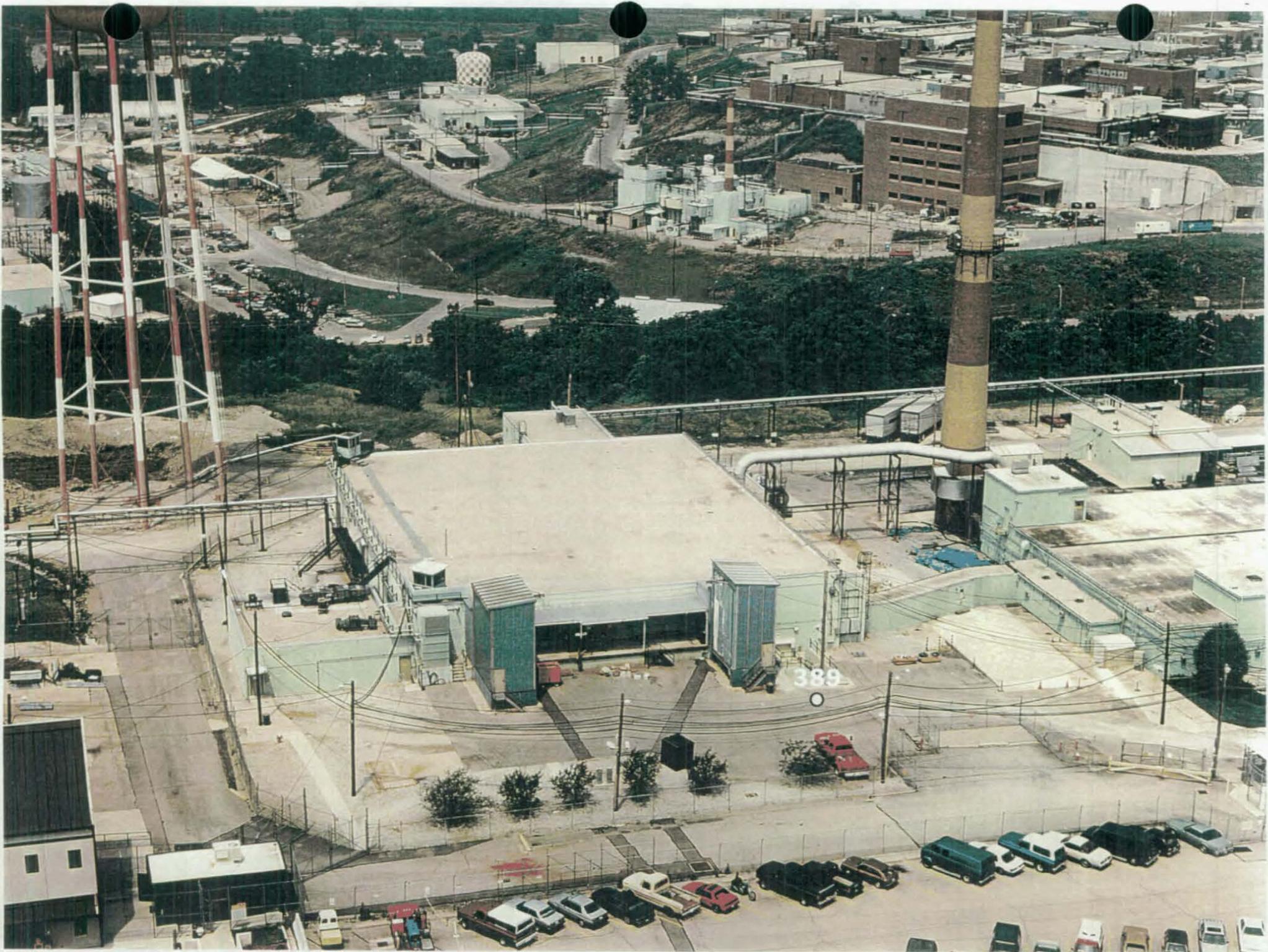
Release Block F

Potential Release Site

PRS 389/392



Aerial photograph of a residential area with red-outlined lots labeled A through S. Lot F is highlighted with a black box and contains two buildings labeled 392 and 389.





392

PRS 389/392

PRS HISTORY:

PRS 389 and 392 are soils potential release sites (PRSs) located in the eastern sector of the original Mound plant (see map on page 22). These soils locations were identified as PRSs due to qualitative hydrocarbon detections found during the PETREX soil gas portion of the *OU5, Non Area of Concern* investigation.

PRS 392 is located approximately 100 feet east of Building 31. The Building 31 area is currently used as a storage and shipment facility for metal boxes filled with low level radioactive waste. PRS 389 is located just south of the Special Metallurgical Building (SM). The SM Building was a plutonium-238 processing facility from 1960 through 1972. The SM Building was decontaminated and decommissioned in 1995.

CONTAMINATION:

- In 1983, the *Radiological Site Survey*² investigated radionuclides in the soils at the Mound site via Mound Soil Screening, radiochemistry, and gamma spectroscopy. Seven samples at two locations were taken within 150 feet of PRS 389. No samples were taken in the vicinity of PRS 392 (see map on page 7). Results from the PRS 389 samples showed:

PRS	Sample Type and Location	Results (Maximum)	Guideline Criteria
389	One surface soil sample S0589 taken approx. 150 feet east of PRS. Six core samples taken at C0125 approx. 50 feet north of PRS.	Plutonium-238 at 33.6 pCi/g at C0125 (54" depth)	25 pCi/g (Mound ALARA)
		Thorium-232 at 3.25 pCi/g, at C0125 (72" depth)	5 pCi/g ^{ref 4}

- In 1994, the *OU5, Operational Area Phase I Investigation*¹ analyzed the Mound site for volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) via a qualitative PETREX soil gas survey. The OU5 investigation also analyzed surface soil for radiological contamination via Mound FIDLER (field instrument for detecting low energy radiation) and Mound soil screening. Results showed:

PRS	Results - OU 5 Operational Area Phase I Investigation
389	<p>Qualitative Soil Gas: Relatively high aromatic, semivolatile and petroleum hydrocarbons</p> <p>Radioactive Soil Screen: less than 20 dpm (disintegrations per minute)</p>
392	<p>Qualitative Soil Gas: Relatively high halogenated hydrocarbons</p> <p>Radioactive Soil Screen: 6 pCi/g plutonium-238 (ALARA guideline = 25 pCi/g) 0.8 pCi/g thorium-232 (guideline = 5 pCi/g^{ref 4})</p>

3. In 1996, the *Soil Gas Confirmation Sampling*⁵ investigation performed a quantitative sampling of the *PETREX* soil gas locations with the highest ion counts in the eastern sector of the Mound plant. These locations were identified as *Soil Gas Confirmation Sampling* locations 5, 6 and 9 (the corresponding *PETREX* sample locations are 919, 941 and 946 respectively).

PRs 389 and 392 (*PETREX* sample locations 925 and 915 respectively) are also located in Mound's eastern sector and had lower ion counts than the sampled *Soil Gas Confirmation* locations 5, 6 and 9. Hence, the quantitative *Soil Gas Confirmation* results from locations with the highest ion counts provide evidence about the risk of contamination at other locations with similar or lower ion counts such as PRs 389 and 392. The map on page 19 shows the locations of PRs 389 and 392 relative to the *Soil Gas Confirmation Sampling* locations 5, 6 and 9).

The following table lists the qualitative (*PETREX*) and quantitative (*Soil Gas Confirmation Sampling*) results for the locations with the highest ion counts. The table also compares these results to the relative ion counts for PRs 389 and 392:

PETREX Soil Gas Contaminant Family	Maximum Ion Count^{ref 1}	Confirm Sample #	Confirmation Sample Results that Exceed Guideline Criteria (GC)^{ref 3,5}	Ion Counts at PRs 389 and 392^{ref 1}	
Total Aromatic Hydrocarbons	6,078,070	(#5)	None	1,727,811 38,590	PRs 389 PRs 392
Total Semivolatile Hydrocarbons	744,700	(#9)	None	158,310 No Detect	PRs 389 PRs 392
Total C5-C11 Petroleum Hydrocarbons	11,565,340	(#5)	None	4,845,396 103,682	PRs 389 PRs 392
Total Halogenated Hydrocarbons	89,852	(#6)	450 ug/kg Benzo(a)pyrene (GC = 410 ug/kg ^{ref 4})	H 40,930	PRs 389 PRs 392

H = Denotes interference by petroleum hydrocarbons

The above table and discussion make no conclusions about individual contaminant concentrations at PRs 389 and 392 only that the overall health risk from PRs 389 and 392 is expected to be similar to or less that of the *PETREX* locations with the highest measured ion counts.

READING ROOM REFERENCES:

- 1) OU5, Operational Area Phase I Investigation, Non-AOC Field Report, Volume I and II, Final (Revision 0), June 1995. (pages 8-15)
- 2) OU9, Site Scoping Report: Volume 3 - Radiological Site Survey, Final, June 1993. (pages 6-7.1)
- 3) Risk Based Guideline Values, Final, (Revision 0), December 1995.

OTHER REFERENCES:

- 4) Code of Federal Regulations, 40 CFR 192.41 and 40 CFR 192.12.
- 5) Soil Gas Confirmation Sampling, (Revision 0), May 1996. (pages 16-25)

PREPARED BY:

George Liebson, Member of EG&G Technical Staff

**MOUND PLANT
PRS 389/392
SOIL CONTAMINATION**

RECOMMENDATION:

PRSs 389 and 392 are located in the eastern sector of the original Mound plant. These soil locations were identified as PRSs due to qualitative hydrocarbon detections found during the PETREX soil gas portion of the *OU5, Non Area of Concern* investigation.

In 1996, the Soil Gas Confirmation sampling effort sampled the locations with the highest ion counts (confirmation sample locations 5, 6 and 9) in the eastern sector and discovered no contamination above the 2×10^{-6} risk range. PRSs 389 and 392 were not sampled as part of the *Soil Gas Confirmation Sampling* but the PRSs had lower ion counts than confirmation sample locations 5, 6, and 9. This implies that these PRSs will have similar or lower health risk.

All radiological samples collected near these PRSs indicate that radionuclides are below their applicable 10^{-5} Risk Based Guideline Criteria or regulatory levels. Therefore, NO FURTHER ASSESSMENT is recommended.

CONCURRENCE:

DOE/MB:

Arthur W. Kleinrath 11/20/96
Arthur W. Kleinrath, Remedial Project Manager (date)

USEPA:

Timothy J. Fischer 11/20/96
Timothy J. Fischer, Remedial Project Manager (date)

OEPA:

Brian K. Nickel 11/29/96
Brian K. Nickel, Project Manager (date)

SUMMARY OF COMMENTS AND RESPONSES:

Comment period from 12/19/96 to 1/23/97



No comments were received during the comment period.



Comment responses can be found on page _____ of this package.

REFERENCE MATERIAL
PRS 389/392

Environmental Restoration Program

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

**MOUND PLANT
MIAMISBURG, OHIO**

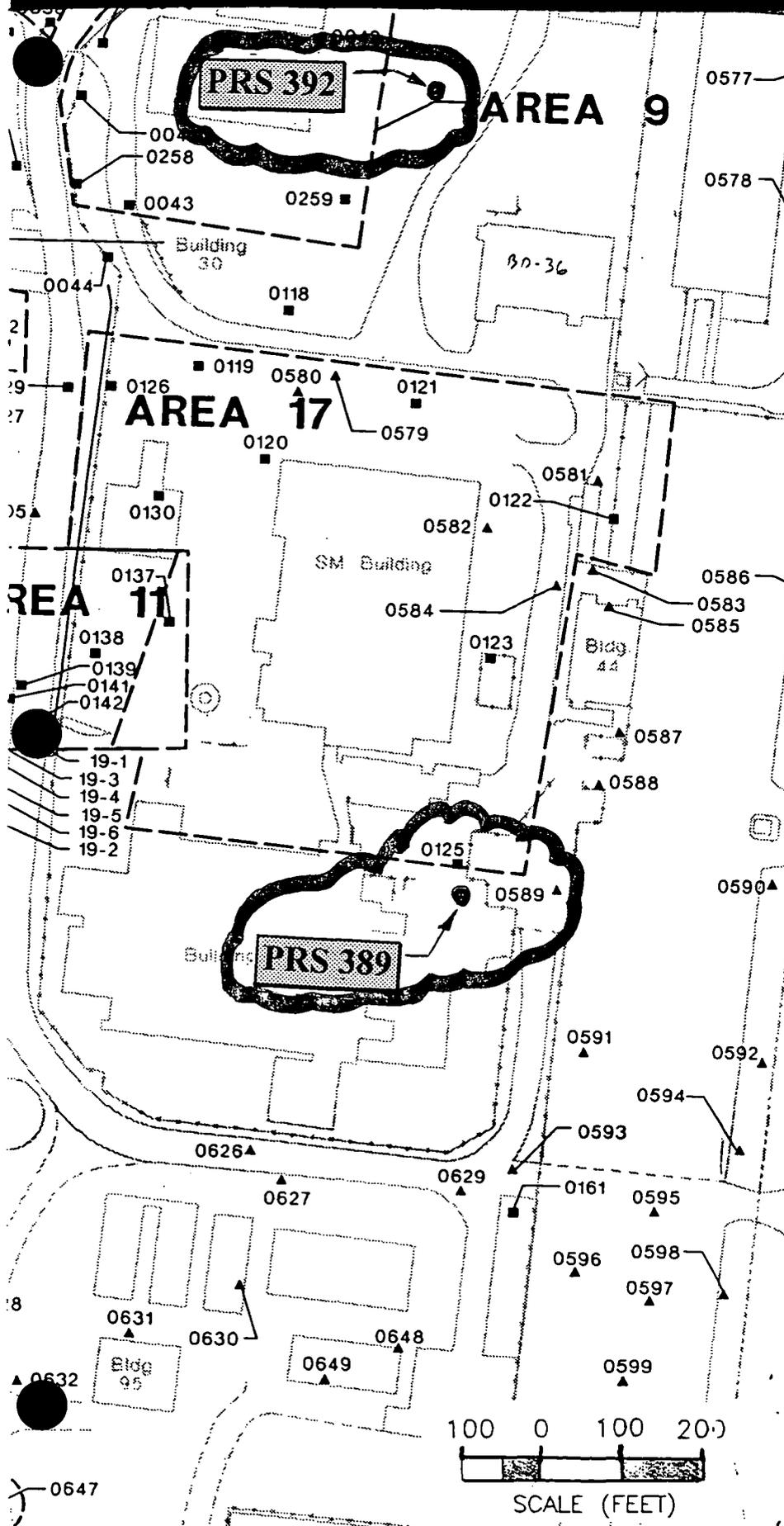
June 1993

FINAL

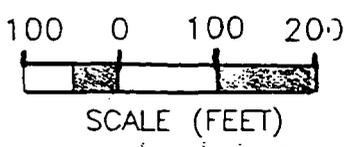
Department of Energy
Albuquerque Field Office

Environmental Restoration Program
Ectac Mound Applied Technologies





ER PROGRAM
MOUND PLANT
 Miamisburg, Ohio
 PLATE 1
 (1 of 2)
 Site Survey Project Sampling Loc:
 Prepared for
 Site Scoping Report: Volume
 Radiological Site



Map Location ^a	Coordinates		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)
---------------------------	-------------	--	------------	-------	--------------	----------------	------------------------------	------------------	---------------	----------------	----------------	----------------

C0125	3085	2185	1358	12-82	18	0.43	b					
			1359	12-82	36	0.25	3.11					
			1360	12-82	54	33.60	b					
			1361	12-82	72	0.13 ^c	3.25 ^c					
			1362	12-82	90	1.97	b					
			1363	12-82	108	0.19	b					
S0589	3125	2135	4007	10-83	0	9.00 ^c	b					
S0590	3175	2010	4010	10-83	0	1.05	b					
S0591	3225	2160	4008	10-83	0	6.12	b			0.15		
S0592	3275	2060	4009	10-83	0	7.71	b			0.33 ^d		
S0593	3275	2230	4012	10-83	0	1.07	b					
S0594	3320	2075	2928	10-83	0	6.55	b			0.70		
S0595	3335	2160	2932	10-83	0	0.14	b					
S0596	3350	2220	2933	10-83	0	0.02	b			0.63		
S0597	3375	2185	5813	07-84	0	3.67	b					
S0598	3400	2140	2929	10-83	0	5.30	b			0.30		
S0599	3425	2220	5814	07-84	0	1.45	b					
S0600	3460	2210	2931	10-83	0	4.06	b			2.27	0.69	
S0601	3555	2220	2931	10-83	0	0.42 ^c	2.46 ^e			0.51		
C0126	2725	2265	1319	12-82	18	5.57	b					

^aC denotes core location and S denotes surface sample location on Plate 1.

^bThorium results of ≤ 2 pCi/g are listed as "b".

^cVerification sample analyzed for QA/QC.

^dNo MRC ID assigned because *in situ* gamma spectrometry was performed for thorium-232.

^eGamma results could not be confirmed using the gamma spectroscopy printout given in this appendix.

^fThe depth for this sample was given as "SS". For mapping purposes (Plates 1 and 5), this is assumed to be a surface sample.

^gSample results were given isotopically for this sample and included 0.99 pCi/g thorium-228; 321 pCi/g thorium-230; and 1.5 pCi/g thorium-232, for a total of 323.5 pCi/g.

Environmental Restoration Program

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

**MOUND PLANT
MIAMISBURG, OHIO**

VOLUME II - APPENDICES A-G

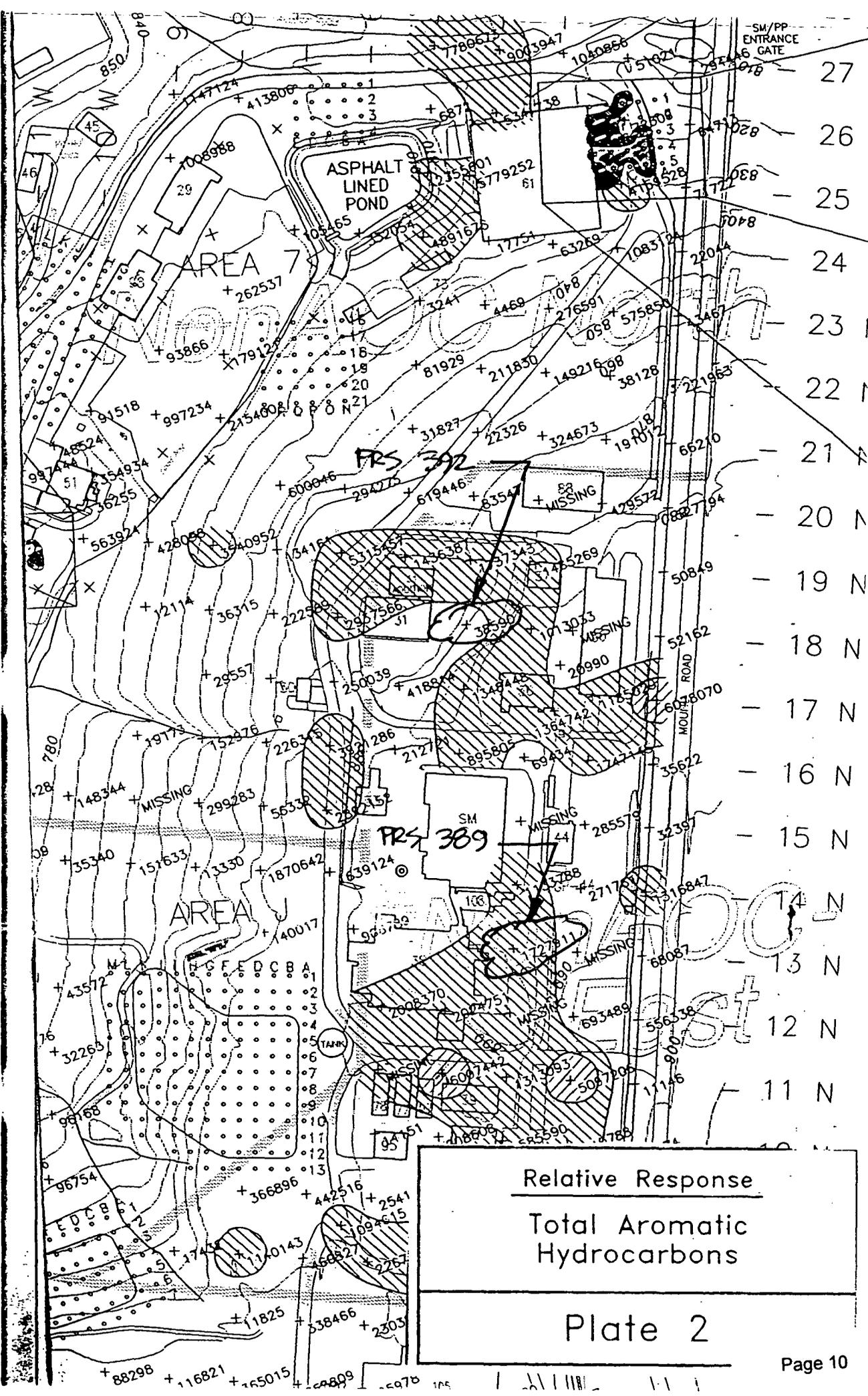
June 1995

Final (Revision 0)

U.S. Department of Energy
Ohio Field Office



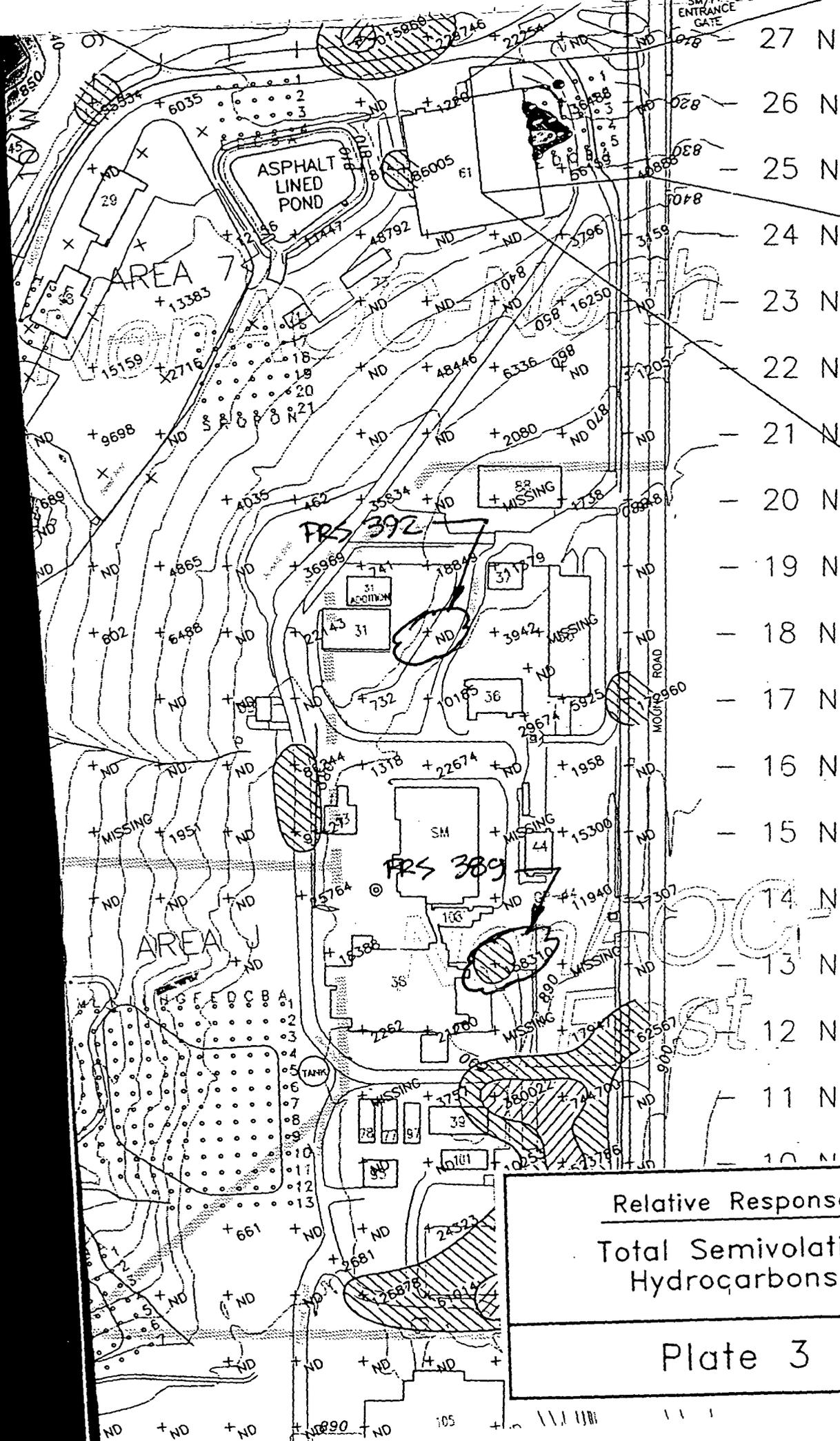
EC&E Mound Applied Technologies

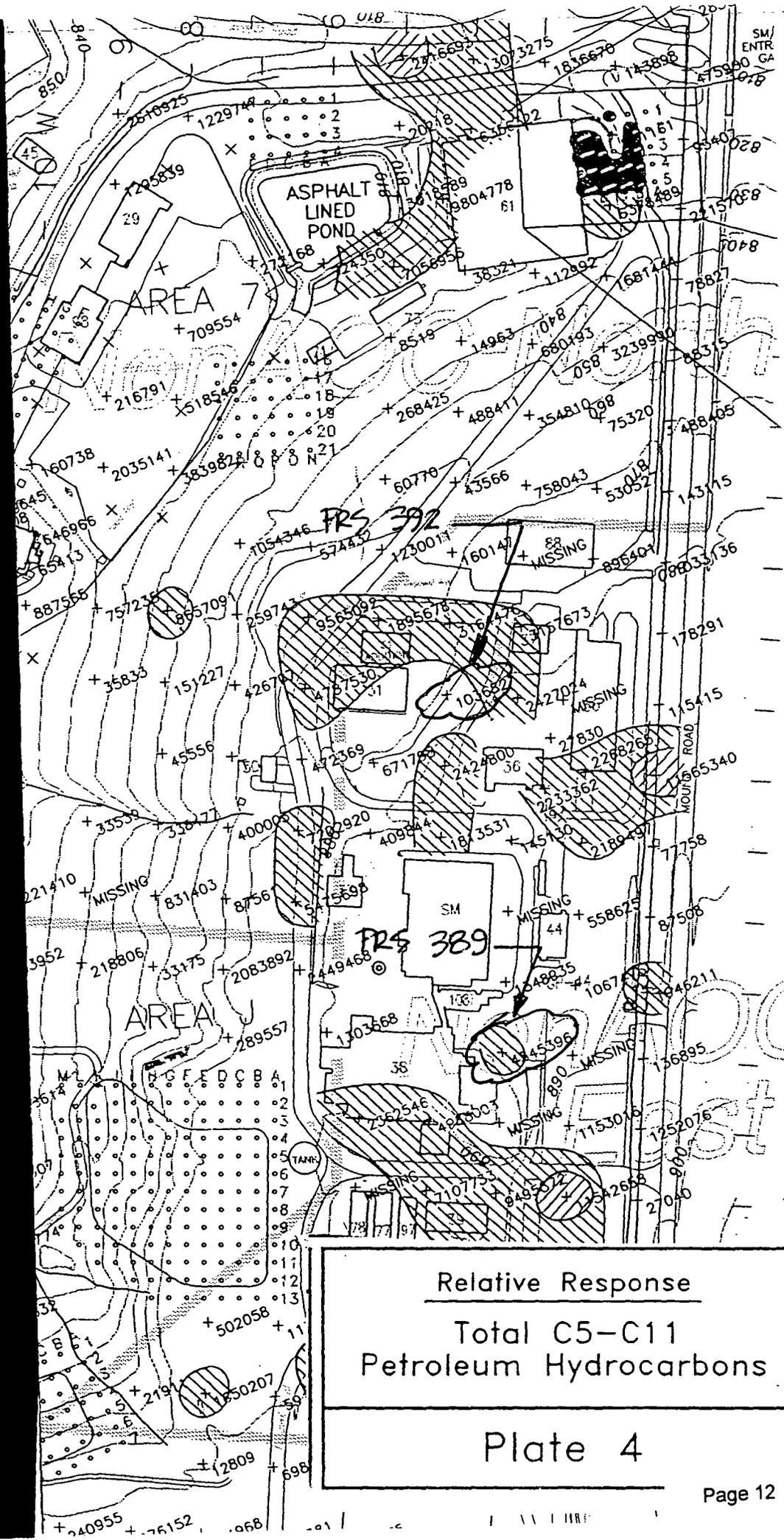


Relative Response

Total Aromatic Hydrocarbons

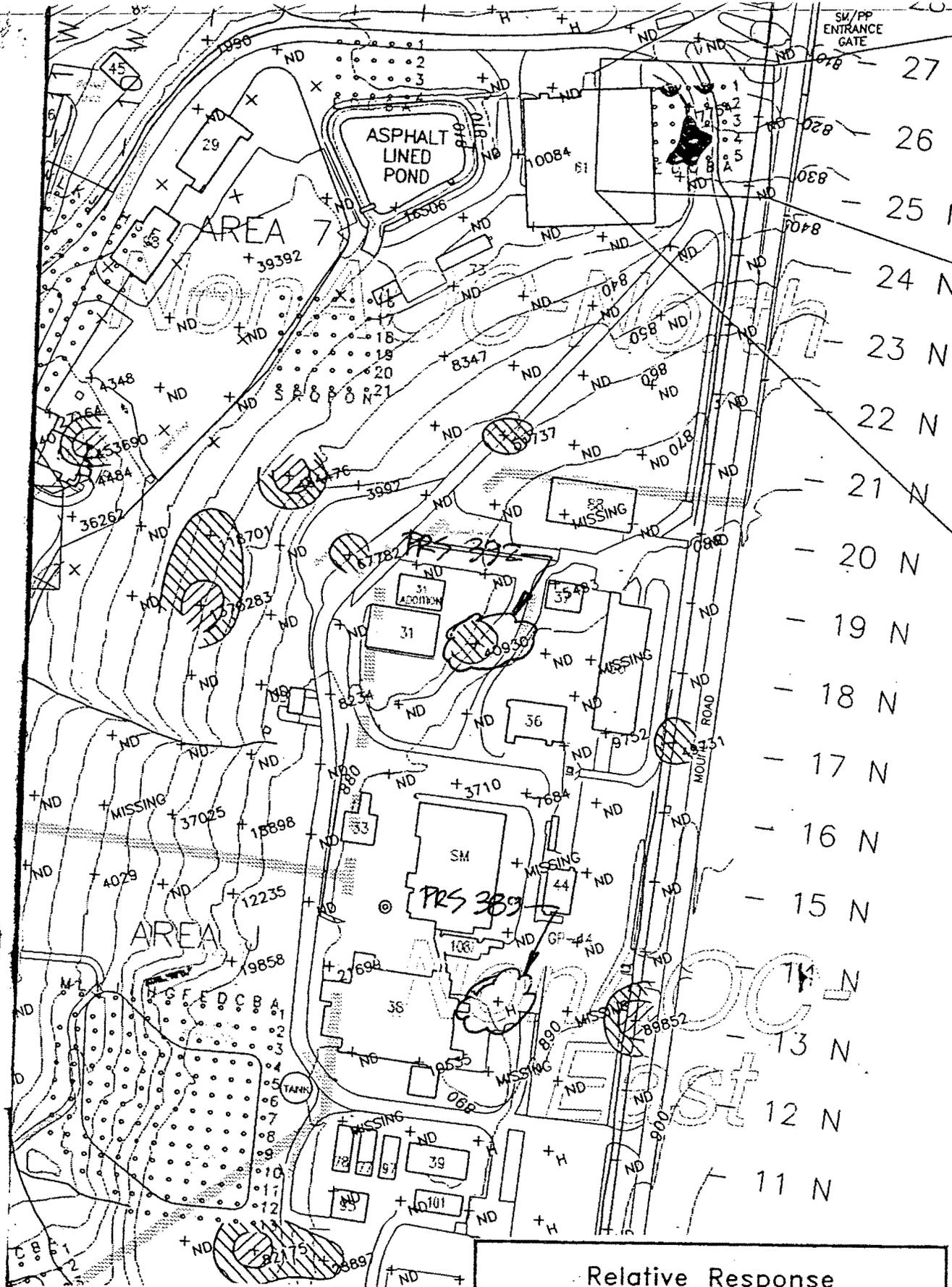
Plate 2





Relative Response
 Total C5-C11
 Petroleum Hydrocarbons

 Plate 4



Features:

- + PETREX Sample Location
- ND Not Detected
- H Denotes interference by petroleum hydrocarbons; see text.

Relative Response
 Total Halogenated
 Hydrocarbons

Plate 5

200
100
50
0
↓

APPENDIX D

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

SMPID	FIDLER SURVEY DATA					MOUND SOIL SCREENING FACILITY DATA			
	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				
14N10	170.3	85	9.72	8.0	NC				
14N11	170.3	115	9.72	10.0	NC				
14N12	170.3	130	9.72	8.0	NC				
14N13	157.3	100	8.45	5.5	NC				
14N15	157.3	70	8.45	4.0	NC				
14N25	157.3	85	8.45	7.0	NC				
14N26	157.3	80	8.45	7.5	NC				
		150	8.45	9.0	NC				

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 - Picocuries per gram

APPENDIX D

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

SMPID	FIDLER SURVEY DATA					MOUND SOIL SCREENING FACILITY DATA			
	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:
17N06	130	100	6.5	5.0	NC	0	a	0.9	a
17N07	170.3	130	9.72	6.5	NC	21	a	1.2	a
17N08	170.3	130	9.72	8.0	NC	19	a	1.2	a
17N09	170.3	80	9.72	5.5	NC	NC		NC	
17N10	170.3	100	9.72	6.0	NC	NC		NC	
17N11	170.3	90	9.72	7.0	NC	NC		NC	
17N12	152.1	40	8.45	4.5	NC	6	a	0.6	a
18N01	253.5	185	12.48	9.0	NC	16	a	1.1	a
18N02	130	80	6.5	4.0	NC	WIPE	c	WIPE	c
18N03	130	75	6.5	5.0	NC	WIPE	c	WIPE	c
18N04	130	60	6.5	4.5	NC	6	a	0.8	a
18N06	130	90	6.5	6.5	NC	WIPE	c	WIPE	c
18N07	170.3	100	9.72	7.0	NC	13	a	0.7	a
18N08	170.3	170	9.72	11.0	NC	22	a	1.1	a
18N09	170.3	150	9.72	10.5	NC	NR		NR	
18N12	152.1	100	8.45	6.5	NC	0	a	0.3	a
19N01	253.5	155	12.48	9.5	NC	3	a	0.6	a
19N02	130	85	6.5	4.0	NC	NC		NC	
19N03	130	70	6.5	5.0	NC	4	a	0.8	a
19N04	130	60	6.5	4.0	NC	WIPE	c	WIPE	c
19N05	130	65	6.5	4.0	NC	WIPE	c	WIPE	c
19N06	130	60	6.5	5.0	NC	NR		NR	
19N07	176.8	325	8.97	20.0	45				
19N08	176.8	125	8.97	7	NC				
19N09	176.8	170	8.97	9.5	NC				
19N10	176.8	70	8.97	3.5	NC				
20N01	253.5	95	12.48	5.0	NC				
20N02	130	105	6.5	6.5	NC				

FRS
392
→

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 - Picocuries per gram

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	Dimethylphthalate	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

Table A.1

Detected Volatile Organic Compounds (µg/kg)

ANALYTE	Background Value	Industrial Scenario Guideline Criteria	SGC-NAC-000002 NORTH	SGC-NAC-000003 NORTH	SGC-NAC-000004 NORTH	SGC-NAC-000005 EAST	SGC-NAC-000006 EAST
PETREX SAMPLE AREA							
Acetone	NA	21000000	36				
1,2-Dichloroethene (total)	NA	43000000					
2-Butanone	NA	93000000					
Benzene	NA	8.90E+03	1 J				
Carbon Disulfide	NA	280000					
Chloroform	NA	3100					
Chloromethane	NA	NA					
Ethylbenzene	NA	480					
Methylene Chloride	NA	3.95E+05	6			7	8
Tetrachloroethene	NA	21000000					
Toluene	NA	250000	1	1 J			
Trichloroethene	NA	41000					
Xylene (total)	NA	430000000					

No entry - not detected

J - Numerical value is an estimated quantity

C - Identification confirmed by GC/MS

mg/kg - micrograms per kilogram

Red = above Guideline Criteria (GC)

Green = above GC and below Background

Magenta = above Background and Below GC

Blue = above Background (no GC)

Table A.2.

Detected Semivolatile Organic Compounds (µg/kg)

ANALYTE	Background Value	Industrial Scenario Guideline Criteria	SGC-NAC-000001	SGC-NAC-000002	SGC-NAC-000003	SGC-NAC-000004	SGC-NAC-000005	SGC-NAC-000006	SGC-NAC-000007
PETREX Sample Area			NORTH	NORTH	NORTH	NORTH	EAST	EAST	WEST
Acenaphthene	NA	NA		190 J					
Acenaphthylene	NA	NA		730				42 J	
Anthracene	NA	64,000,000		1300	68 J		25 J	55 J	
Benzo(a)anthracene	NA	4,100		1500	180 J		160 J	350 J	57 J
Benzo(a)pyrene	NA	410		1300	180 J		200 J	450	65 J
Benzo(b)fluoranthene	NA	4,100		1000	180 J		190 J	480	57 J
Benzo(g,h,i)perylene	NA	NA		550	110 J		100 J	260 J	260
Benzo(k)fluoranthene	NA	41,000		1000	180 J		190 J	440	580
Bis(2-ethylhexyl)phthalate	NA	215,000							
Butylbenzylphthalate	NA	43,000,000							
Carbazole	NA	NA		600	62 J			34 J	
Chrysene	NA	410,000		1500	220		240 J	490	68 J
Di-n-butyl phthalate	NA	21,000,000	120 J			80 J			
Di-n-octyl phthalate	NA	4,300,000							
Dibenz(a,h)anthracene	NA	410		180	40 J		37 J	87 J	
Dibenzofuran	NA	NA		1100	23 J				
Diethyl phthalate	NA	NA							
Fluoranthene	NA	8,500,000		3400 D			400 J	800	10 J
Fluorene	NA	NA		1500	42				
Indeno(1,2,3-cd)pyrene	NA	4,100		690	120 J		130 J	320 J	36 J
2-Methylnaphthalene	NA	NA							
Naphthalene	NA	NA		500 D	24 J				
Phenanthrene	NA	NA		470 D	380		150 J	280 J	530
Phenol	NA	130,000,000							
Pyrene	NA	6,400,000	24 J	2700 D	440		340 J	730	120 J

No entry - not detected
 J - Value is an est. quantity
 D - Sample was diluted
 NA - Value not available
 H - Analyzed outside holding time
 µg/kg - micrograms per kilogram
 Red = above Guideline Criteria (GC)
 Green = above GC and below Background
 Magenta = above Background and Below GC
 Blue = above Background (no GC)

Table A.2.

Detected Semivolatile Organic Compounds (µg/kg)

ANALYTE	Background Value	Industrial Scenario Guideline Criteria	SGC-NAC-000009	SGC-NAC-000010	SGC-NAC-000011	SGC-NAC-000012	SGC-NAC-000013	SGC-NAC-000016	SGC-NAC-000017
PETREX Sample Area			EAST	EAST	WEST	EAST	SOUTH	SOUTH	SOUTH
Acenaphthene	NA	NA							
Acenaphthylene	NA	NA							
Anthracene	NA	64,000,000							
Benzo(a)anthracene	NA	4,100				18 J		47 J	
Benzo(a)pyrene	NA	410				21 J		3 J	
Benzo(b)fluoranthene	NA	4,100				7 J		39 J	
Benzo(g,h,i)perylene	NA	NA						33 J	
Benzo(k)fluoranthene	NA	41,000				17 J		46 J	
Bis(2-ethylhexyl)phthalate	NA	215,000	71 J		36 J	35 J		100 J	
Butylbenzylphthalate	NA	43,000,000							
Carbazole	NA	NA							
Chrysene	NA	410,000		20 J		22 J		51 J	
Di-n-butyl phthalate	NA	21,000,000							
Di-n-octyl phthalate	NA	4,300,000							
Dibenz(a,h)anthracene	NA	410							
Dibenzofuran	NA	NA							
Diethyl phthalate	NA	NA							
Fluoranthene	NA	8,500,000		31 J		38 J		100 J	28 J
Fluorene	NA	NA							
Indeno(1,2,3-cd)pyrene	NA	4,100						27 J	
2-Methylnaphthalene	NA	NA							
Naphthalene	NA	NA					61 J		
Phenanthrene	NA	NA						63 J	
Phenol	NA	130,000,000							
Pyrene	NA	6,400,000		31 J	20 J	37 J		87 J	26 J

No entry - not detected
 J - Value is an est. quantity
 D - Sample was diluted
 NA - Value not available
 H - Analyzed outside holding time
 µg/kg - micrograms per kilogram
 Red = above Guideline Criteria (GC)
 Green = above GC and below Background
 Magenta = above Background and Below GC
 Blue = above Background (no GC)

Table A.4.

Detected Inorganics

ANALYTE	Background Value	Industrial Scenario Guideline Criteria	SGC-NAC-000001	SGC-NAC-000002	SGC-NAC-000003	SGC-NAC-000004	SGC-NAC-000005	SGC-NAC-000006	SGC-NAC-000007	SGC-NAC-000008	SGC-NAC-000009
PETREX Sample Area			NORTH	NORTH	NORTH	NORTH	EAST	EAST	WEST	WEST	EAST
TAL INORGANICS (mg/kg)											
Aluminum	19000	NA	1000	4190	1910	1140	7970	7780	2200	2800	18700
Antimony	NA	85		0.23 B		0.24	0.41 B				0.91 B
Arsenic	8.6	64	1.5 B	2.1	2.9 B	1.4 B	7	7.2	1.9 B	2.2	11.1
Barium	180	15,000	16	20.3	23.7 B	47.1 B	73.6	86.4	26.2 B	23.2 B	163
Beryllium	1.3	1	0.5		0.2 B	0.65	0.38	0.28	0.28		0.9 B
Bismuth	NA	NA									0.85 B
Cadmium	2.1	210		0.25 B	0.19 B		0.36 B	0.5 B	0.3 B	0.22 B	6
Calcium	310000	NA	162000	29000	95500	15700	13600	86200	83900	113000	5940
Chromium	20	110,000	13.2	17	3.8	15.2	13	11.6	14	5.7	20.3
Cobalt	19	NA	9.8 B	4.3	2.3 B	10.1 B	7.6 B	7.6 B	1.1 B	3.3 B	13
Copper	26	NA	16.2	11.9	9.9		14.5	15.2	13.2	13.9	19.2
Cyanide	ND	4,300									
Iron	35000	NA	2130	10600	5680	21800	17200	17700	23000	7000	29400
Lead	48	NA		5.2	2.7	8.6	30.9	25.1	7.2	5.9	22.2
Lithium	26	NA	1 B	12.5 B	6	23 B	7.7 B	10.3 B	3.2 B	8.2 B	14.7 B
Magnesium	40000	NA	18	57800	2700	5670	5210	35600	21600	47900	4500
Manganese	1400	27,000	695	384	270	612	383	589	493	256	728
Mercury	ND	64			0.13						
Molybdenum	27	NA	0.43 B	1.2 B	0.77 B		1.7 B	1.5 B	0.6 B	1.4 B	1.8 B
Nickel	32	4,300	18.4	9.9	6.4 B	6	11.1	16.1	11.1	8.1 B	24.5
Potassium	1900	NA	1780		346 B	2080	574 B	744 B	1590	463 B	1420
Selenium	NA	NA									
Silver	1.7	1,100			0.24 B						
Sodium	240	NA	228 B	888 B	150 B	137 B	411 B	348 B	246 B	111 B	1010 B
Thallium	0.46	NA									
Tin	20	NA				1.4 B	1 B			4.5 B	1.5 B
Vanadium	25	1,500	14.9	8.3	4.7	16.3	23.1	18.9	14.2	7.4	42.7
Zinc	140	64,000	53.3	29.5		67	59	69.2	14.2	36.6	71.8
OTHER INORGANICS											
% Solids (%)	NA	NA	9.9	8.8	88.5	13.3	78.4	75	83.9	25	78.9
Nitrate/Nitrite (mg-N/kg)	NA	NA		1.8	1.2	2.1	7.2	4.8	1.6	26.5	2.2

No entry - not detected

mg/kg - milligrams/kilogram

NA - Value not available

NC - Background not comp

ND - No detections in background samples

mg-N/kg - milligrams per kilogram, reported as nitrogen

J - Numerical value is an estimated quantity

B - Analyte detected in blanks associated with this sample

Red = above Guideline Criteria (GC)

Green = above GC and below Background

Magenta = above Background and Below GC

Blue = above Background (no GC)

Table A.5.

Detected Radionuclides (pCi/g)

ANALYTE	Background	Industrial Scenario Guideline Criteria	SGC-NAC- 00001 NORTH	SGC-NAC- 00002 NORTH	SGC-NAC- 00003 NORTH	SGC-NAC- 00004 NORTH	SGC-NAC- 00005 EAST
PETREX Sample Area							
Americium-241	ND	4.95					
Bismuth-207	ND	0.18					
Bismuth-210	ND	NA					
Cesium-137	0.42	0.46					
Cobalt-60	NC	0.10					
Plutonium-238	0.13	5.5	1.42	0.669	0.833	0.087	0.543
Plutonium-239/240	0.18	5.5			0.0252		
Potassium-40	37	NA	21.7	2.95	6.53	27.4	15.1
Radium-226+D	2	0.14	1.03	0.478	0.508	1.16	1.22
Thorium-228+D	1.5	0.85	1.52	0.277	0.37	1.24	1.05
Thorium-230	1.9	44	0.814	0.374	0.66	0.78	1.19
Thorium-232	1.4	50	1.3	0.184	0.375	0.17	0.95
Uranium-234	1.1	38	2.9	0.401	0.19	0.934	0.874
Uranium-235+D	0.11	3.4	0.0974		0.04	0.049	0.0328
Uranium-238+D	1.2	11.0	2.35	0.392	0.512	0.48	0.913

No entry - not detected
 ND -No detections in background samples
 NA - Data not available
 NC - Background value not computed
 pCi/g - picocuries per gram
 Red = above Guideline Criteria (GC)
 Green = above GC and below Background
 Magenta = above Background and Below GC
 Blue = above Background (no GC)

Table A.5.

Detected Radionuclides (pCi/g)

ANALYTE	Background	Industrial Scenario Guideline Criteria	SGC-NAC- 000006	SGC-NAC- 000007	SGC-NAC- 000008	SGC-NAC- 000009	SGC-NAC- 000010
PETREX Sample Area			EAST	WEST	WEST	EAST	EAST
Americium-241	ND	4.95					
Bismuth-207	ND	0.18					
Bismuth-210	ND	NA					
Cesium-137	0.42	0.46	0.861				
Cobalt-60	NC	0.10					
Plutonium-238	0.13	5.5	4.32	0.537	0.0826	0.0233	0.107
Plutonium-239/240	0.18	5.5					
Potassium-40	37	NA	14.3	0.8	0.72	12.9	5
Radium-226+D	2	0.14	0.87	0.27	0.571	0.764	0.917
Thorium-228+D	1.5	0.85	1.06	0.431	0.678	0.779	0.954
Thorium-230	1.9	44	1.18	0.582	0.541	1.09	0.27
Thorium-232	1.4	50	1.18	0.328	0.554	0.838	0.708
Uranium-234	1.1	38	0.761	0.551	0.361	0.712	0.97
Uranium-235+D	0.11	3.4					0.045
Uranium-238+D	1.2	11.0	0.815	0.57	0.414	0.774	1.0

No entry - not detected

ND -No detections in background samples

NA - Data not available

NC - Background value not computed

pCi/g - picocuries per gram

Red = above Guideline Criteria (GC)

Green = above GC and below Background

Magenta = above Background and Below GC

Blue = above Background (no GC)