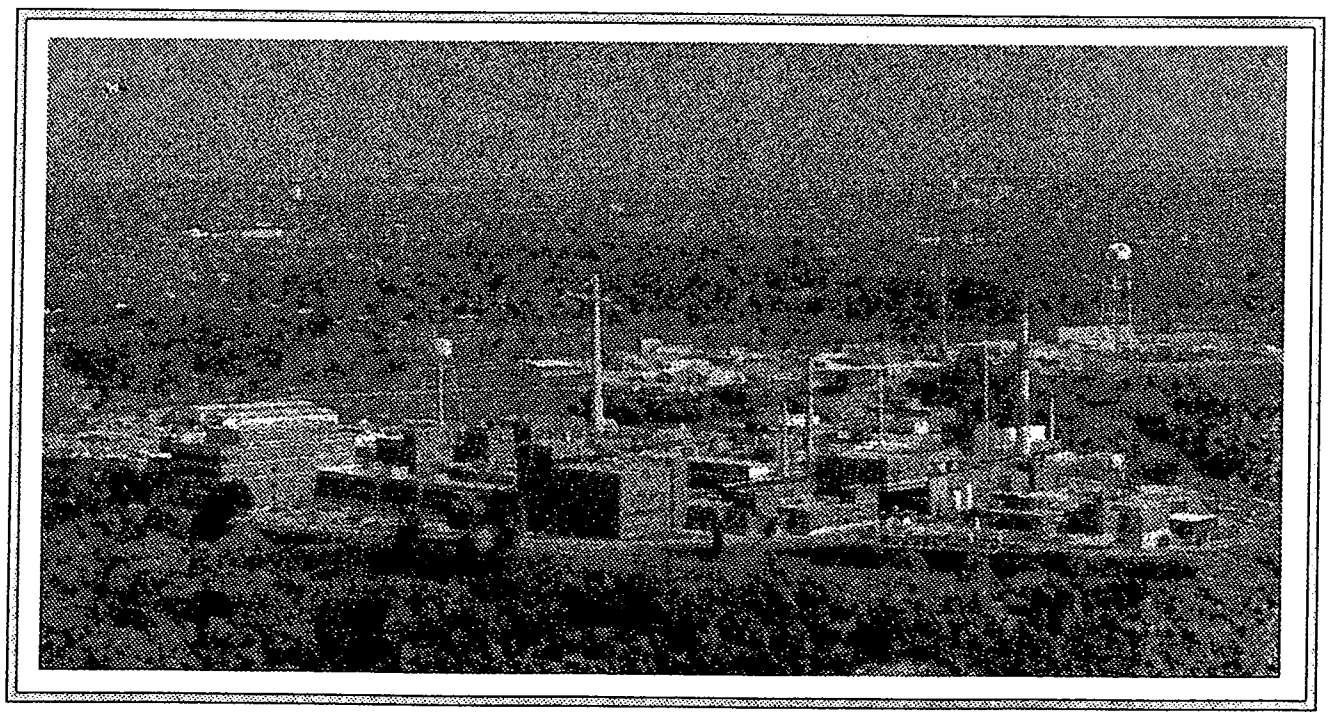
EG&G MOUND-30-03-03-03--9612230052

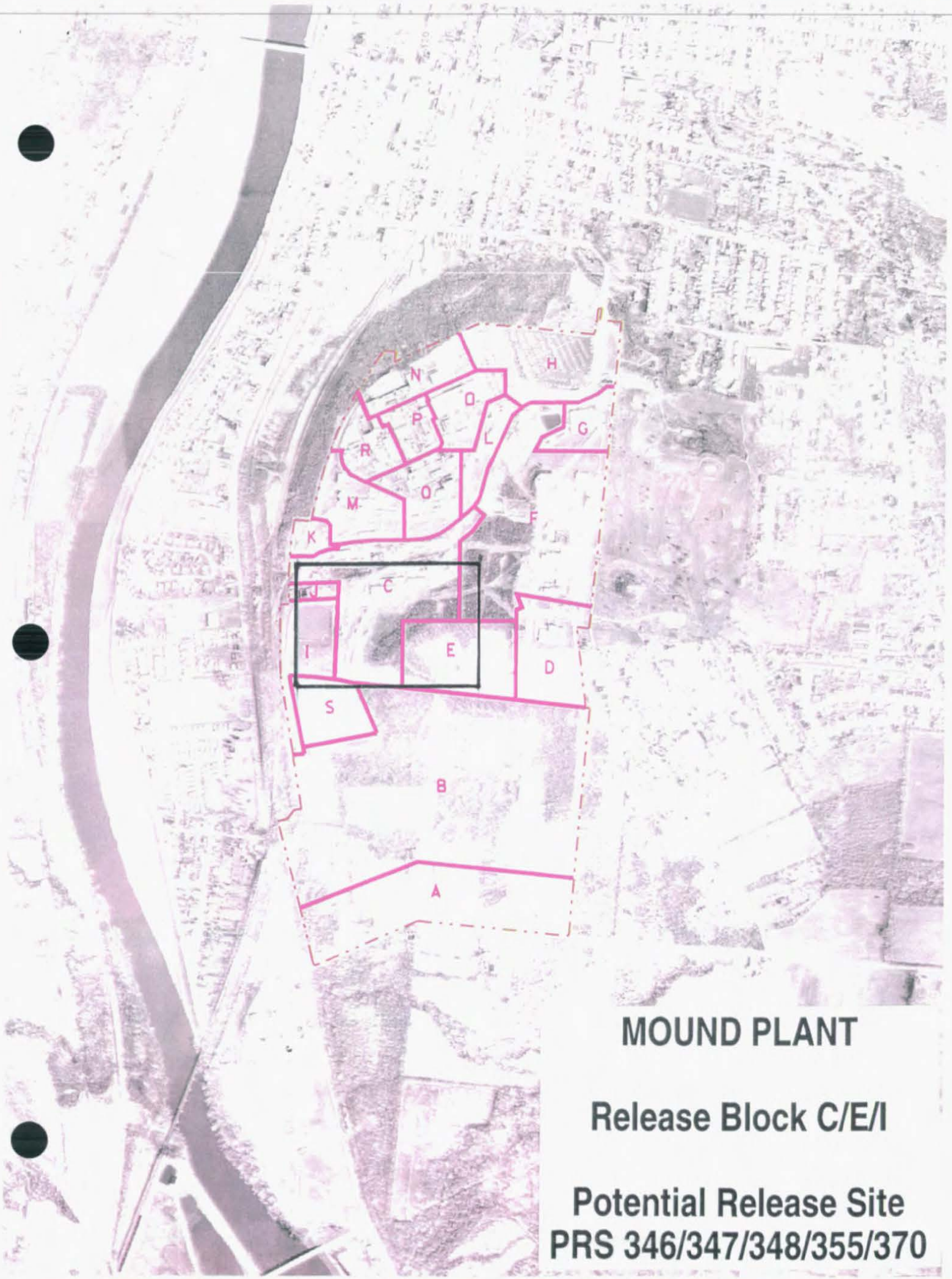
MOUND

Environmental Restoration Program

# MOUND PLANT
## Potential Release Site Package
## PRS # 346/347/348/355/370



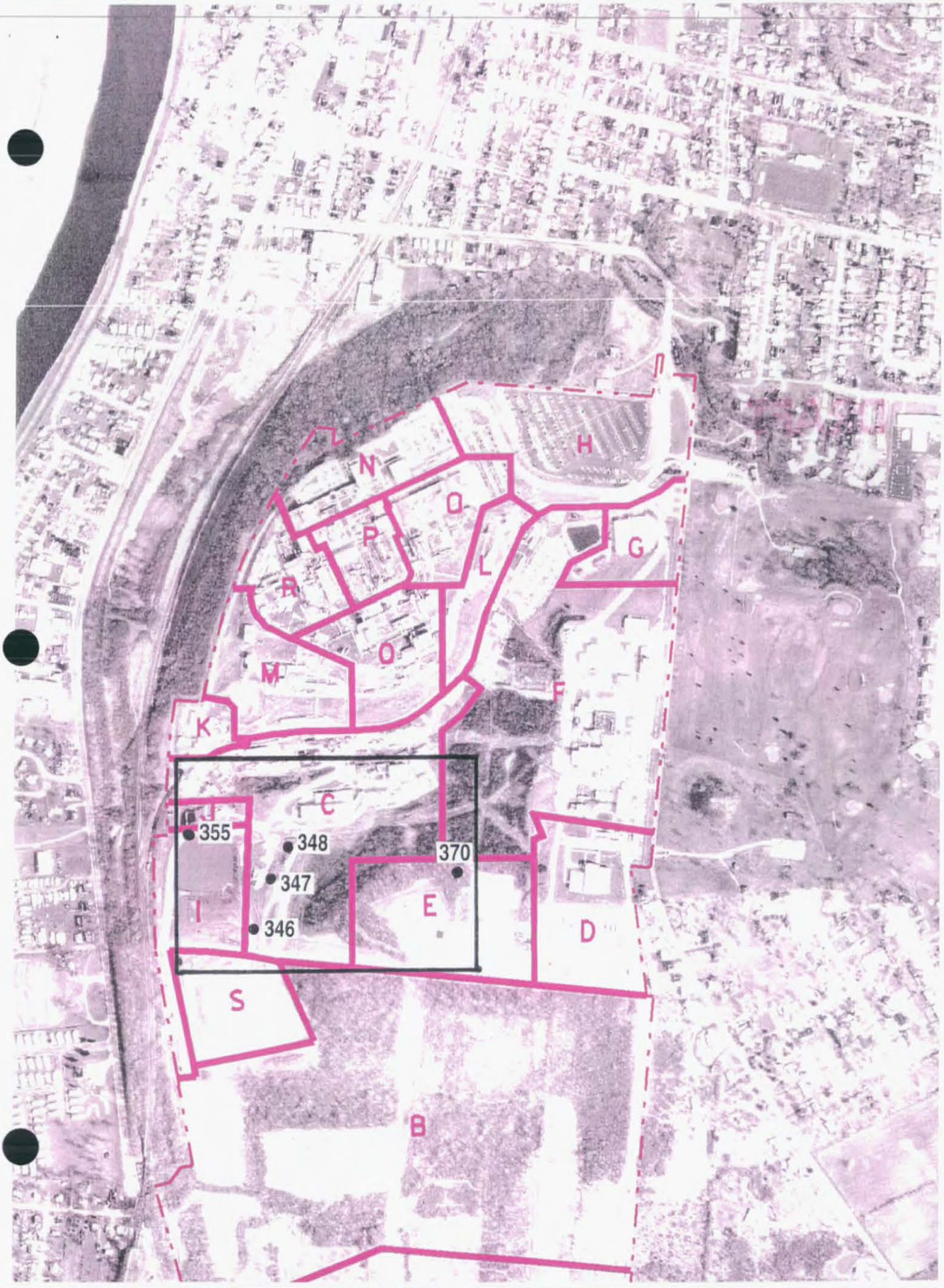
| REV | DESCRIPTION | DATE |
|---|---|---|
| **PUBLIC RELEASE** 0 | Available for comment. | **Dec. 19, 1996** |
| **FINAL** 1 | | |




# MOUND PLANT

## Release Block C/E/I

## Potential Release Site
## PRS 346/347/348/355/370



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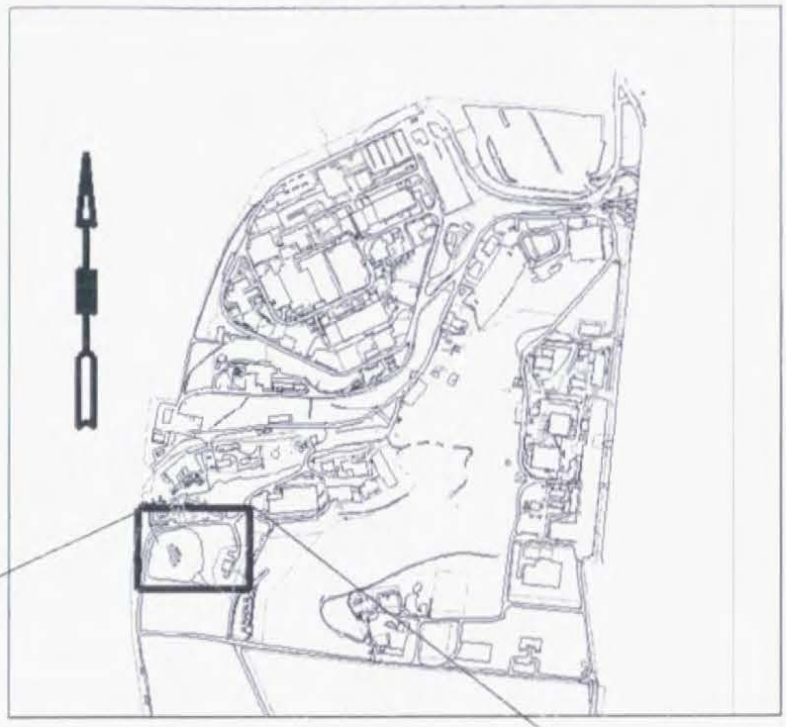
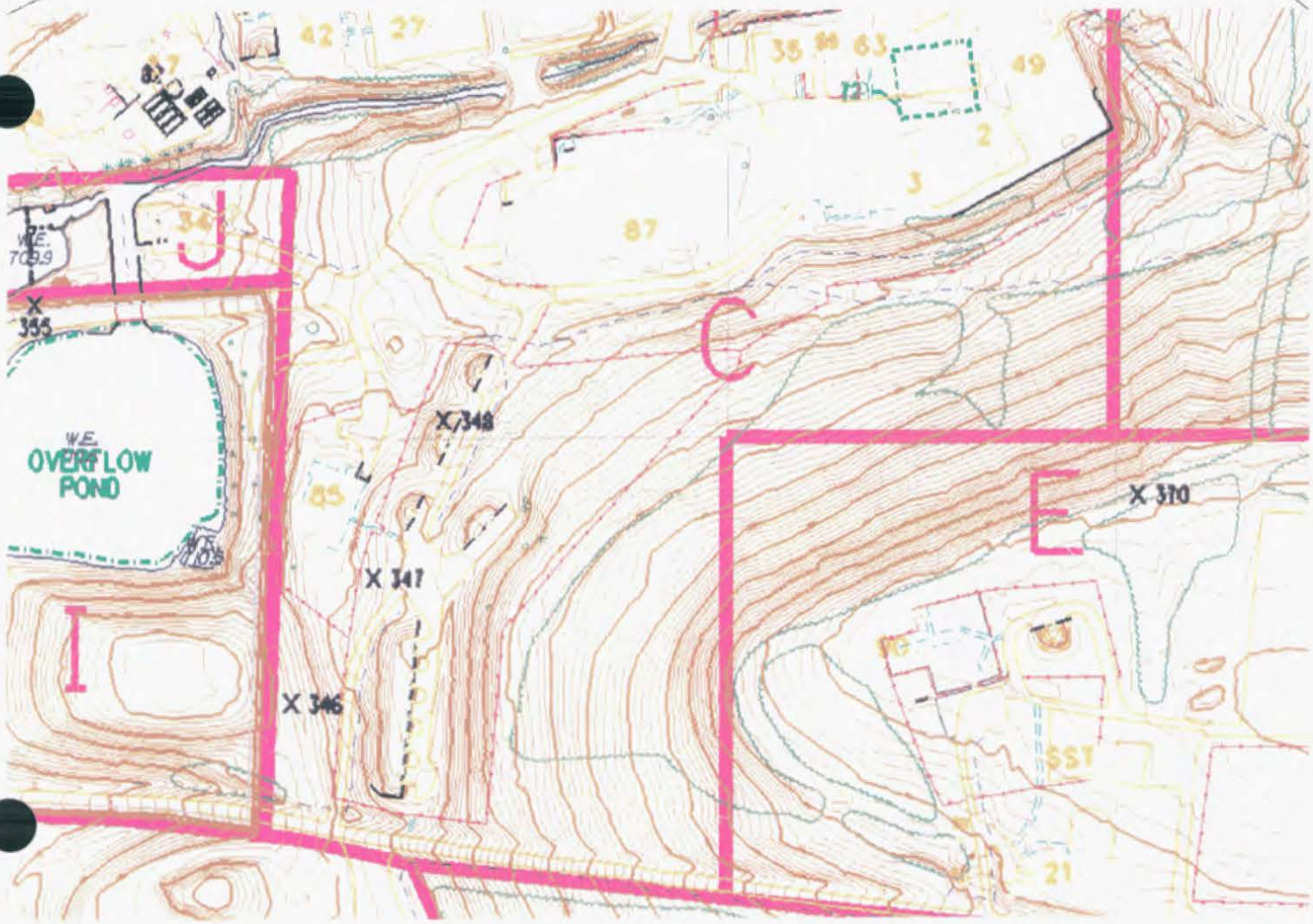
# Mound Plant

## Release Block C/E/I

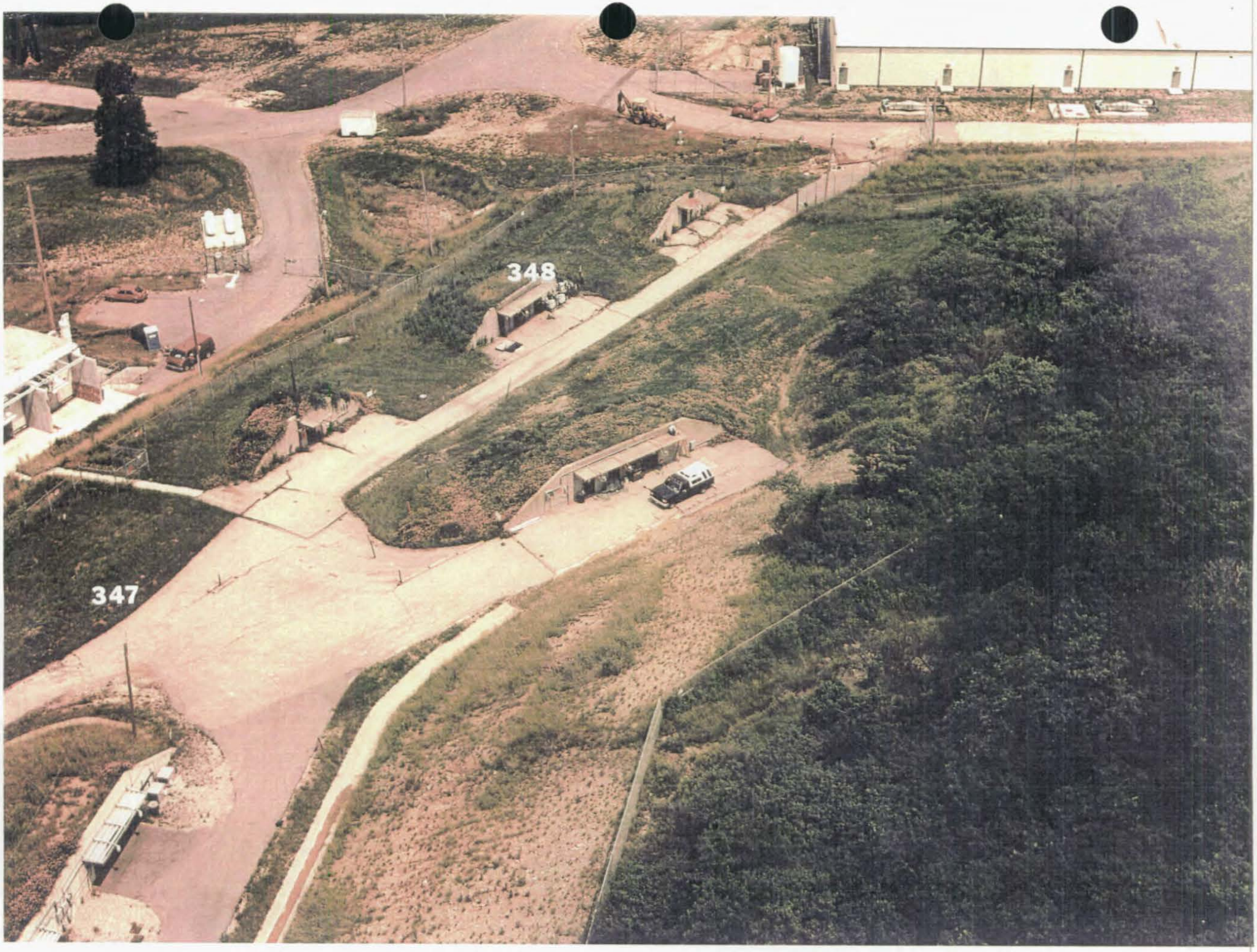
## Potential Release Site

## PRS 346/347/348/355/370





346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# PRS 346/347/348/355/370

## PRS HISTORY:

PRS 346, 347, 348, 355, and 370 are soils potential release sites (PRSs) located in the southern sector of the original Mound plant (see map on page11 or 25). 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. No radioactive nor hazardous waste generating processes or activities are known to have occurred at PRSs 346, 347, 348, 355, or 370.

## CONTAMINATION:

1. In 1983, the ***Radiological Site Survey***[3] investigated radionuclides in the soils at the Mound site via Mound Soil Screening, radiochemistry, and gamma spectroscopy. The map on page 11 shows the location of PRSs 346, 347, 348, 355, and 370 in relation to the Radiological Site Survey samples. Results showed:

| PRS | Sample Type and Location | Results | Guideline Criteria |
|---|---|---|---|
| 346 | One surface soil sample S0839 taken approx. 50 ft. west of PRS 346 | Plutonium-238 at 0.12 pCi/g<br>Thorium at less than 2 pCi/g | 25 pCi/g (Mound ALARA)<br>5 pCi/g[ref 5] |
| 347 | One surface soil sample S0836 taken approx. 20 ft. east of PRS 347 | Plutonium-238 at 0.09 pCi/g<br>Thorium at less than 2 pCi/g | 25 pCi/g (Mound ALARA)<br>5 pCi/g[ref 5] |
| 348 | One surface soil sample S0796 taken approx. 40 ft. west of PRS 348 | Plutonium-238 at 0.34 pCi/g<br>Thorium at less than 2 pCi/g | 25 pCi/g (Mound ALARA)<br>5 pCi/g[ref 5] |
| 355 | No samples in vicinity | N/A | N/A |
| 370 | One surface soil sample S0748 taken approx. 20 ft. northwest of PRS 370 | Plutonium-238 at 12.1 pCi/g<br>Thorium at less than 2 pCi/g | 25 pCi/g (Mound ALARA)<br>5 pCi/g[ref 5] |

2. In 1994, the ***OU5, Operational Area Phase I Investigation***[1,2] 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 are shown in the table below:

| PRS | PETREX Qualitative Results |
|---|---|
| 346 | **Organics:**<br>Relatively high aromatic and petroleum hydrocarbons<br>**Radiological Soil Screen:**<br>21 pCi/g plutonium-238 (ALARA guideline = 25 pCi/g)<br>0.8 pCi/g thorium-232 (guideline = 5 pCi/g [ref 5]) |
| 347 | **Organics:**<br>Relatively high aromatic and petroleum hydrocarbons<br>**Radiological Soil Screen:**<br>1 pCi/g plutonium-238 (ALARA guideline = 25 pCi/g)<br>1.1 pCi/g thorium-232 (guideline = 5 pCi/g [ref 5]) |
| 348 | **Organics:**<br>Relatively high halogenated hydrocarbons<br>**Radiological Soil Screen**<br>1 pCi/g plutonium-238 (ALARA guideline = 25 pCi/g)<br>0.7 pCi/g thorium-232 (guideline = 5 pCi/g [ref 5]) |
| 355 | **Organics:**<br>Relatively high aromatic and petroleum hydrocarbons<br>**Radiological Soil Screening:**<br>4 pCi/g plutonium-238 (ALARA guideline = 25 pCi/g)<br>0.5 pCi/g thorium-232 (guideline = 5 pCi/g [ref 5]) |
| 370 | **Organics:**<br>Relatively high semivolatile hydrocarbons<br>**Radiological Soil Screening:**<br>20 pCi/g plutonium-238 (ALARA guideline = 25 pCi/g)<br>0.8 pCi/g thorium-232 (guideline = 5 pCi/g [ref 5]) |

3. In 1996, the ***Soil Gas Confirmation Sampling*** [6] investigation sampled the PETREX soil gas locations with the highest PETREX ion counts in the southern quadrant of the Mound plant These locations were *Soil Gas Confirmation* samples numbers 15, 16, and 17 which correspond to PETREX sample locations 239, 219 and 25.

PRSs 346, 347, 348, 355, and 370 were not sampled as part of the *Soil Gas Confirmation Sampling* but had lower southern quadrant ion counts than the locations that were sampled. Hence, the *Soil Gas Confirmation* results for the PETREX locations with the highest ion counts in Mound's southern quadrant provide correlating evidence about the risk of contamination at other southern quadrant locations with similar or lower ion counts (i.e. PRSs 346, 347, 348, 355 and 370). The map on reference page 23 shows the location of PRSs 346, 347, 348, 355 and 370 in relation to *Soil Gas Confirmation Sampling* locations 15, 16, and 17.

The following table lists both the maximum qualitative PETREX ion counts in Mound's southern quadrant and the corresponding quantitative *Soil Gas Confirmation* sampling results. The table also compares these results to the qualitative PETREX ion counts for PRSs 346, 347, 348, 355, and 370.

| PETREX Soil Gas Contaminate Family | Maximum Ion Counts[2] | Confirm Sample # | Confirmation Sample Results that Exceed Guideline Criteria (GC) | Ion Counts at PRSs 346, 347, 348, 355, and 370 | |
|---|---|---|---|---|---|
| Total Aromatic Hydrocarbons | 4,568,544 | (#15) | None | 905,196<br>1,461,063<br>76,356<br>1,044,786<br>150,334 | PRS 346<br>PRS 347<br>PRS 348<br>PRS 355<br>PRS 370 |
| Total Semivolitile Hydrocarbons | 71,014 | (#16) | None | No Detect<br>No Detect<br>No Detect<br>No Detect<br>18,763 | PRS 346<br>PRS 347<br>PRS 348<br>PRS 355<br>PRS 370 |
| Total C5-C11 Petroleum Hydrocarbons | 8,946,541 | (#15) | None | 1,576,045<br>1,706,548<br>406,297<br>2,338,352<br>257,644 | PRS 346<br>PRS 347<br>PRS 348<br>PRS 355<br>PRS 370 |
| Total Halogenated Hydrocarbons | 2,481,563 | (#17) | None | No Detect<br>No Detect<br>83,692<br>No Detect<br>29,937 | PRS 346<br>PRS 347<br>PRS 348<br>PRS 355<br>PRS 370 |

The correlations made above make no conclusions about individual contaminant concentrations at PRSs 346, 347, 348, 355, and 370 only that the overall health risk from PRSs 346, 347, 348, 355, and 370 is expected to be similar to or less than 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, Final (Revision 0), June 1995.
2) OU5, Operational Area Phase I Investigation, Non-AOC Field Report, Volume II, Final (Revision 0), June 1995. (pages 12-19)
3) OU9, Site Scoping Report: Volume 3 - Radiological Site Survey, Final, June 1993. (pages 7-11)
4) Risk Based Guideline Values, Final, (Revision 0), December 1995.


**OTHER REFERENCES:**


5) Code of Federal Regulations, 40 CFR 192.41 and 40 CFR 192.12.
6) Soil Gas Confirmation Sampling, (Revision 0), May 1996. (pages 20-29)


**PREPARED BY:**


Irwin D. Dumtschin, Member of EG&G Technical Staff
George Liebson, Member of EG&G Technical Staff

# MOUND PLANT
# PRS 346/347/348/355/370
# SOIL CONTAMINATION

**RECOMMENDATION:**

PRS 346, 347, 348, 355, and 370 are soil potential release sites (PRSs) located in the southern 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. No radioactive or hazardous waste generating processes or activities are known to have occurred at PRSs 346, 347, 348, 355, or 370.

In 1996, the Soil Gas Confirmation sampling effort sampled the locations with the highest ion counts (confirmation sample locations 15, 16, and 17) in the southern sector and discovered no contamination above the 10-6 risk range. PRSs 346, 347, 348, 355, and 370 were not sampled as part of the *Soil Gas Confirmation Sampling* but the PRSs had lower ion counts than confirmation sample locations 15, 16, and 17. This implies that PRSs 346, 347, 348, 355, and 370 will have similar or lower health risk.

All radiological samples collected near these PRSs indicate that radionuclides are below their applicable $10^{-6}$ Risk Based Guideline Criteria, ALARA, regulatory, or background 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 11/20/96
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 346/347/348/355/370

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

| 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S0832 | 3225 | 3935 | 4141 | 11-83 | 0 | 2.48[c] | b | | | | | |
| S0833 | 3225 | 4135 | 4139 | 11-83 | 0 | 0.24 | b | | | | | |
| S0834 | 3250 | 4110 | 4140 | 11-83 | 0 | 0.36 | b | 0.28 | | | | |
| S0835 | 3275 | 3810 | 4142 | 11-83 | 0 | 0.91 | b | 0.26 | | | | |
| C0182 | 3000 | 4140 | 7748 | 09-84 | 90 | 0.04 | b | | | | | |
| | | | 7749 | 09-84 | 150 | 0.21 | b | | | | | |
| S0836 | 3025 | 4265 | 5905 | 07-84 | 0 | 0.09 | b | | | | | |
| S0837 | 3050 | 4340 | 5906 | 07-84 | 0 | 0.08 | b | | LDL | LDL | 1.1 | LDL |
| S0838 | 3100 | 4265 | 5904 | 07-84 | 0 | 0.18 | b | | | | | |
| S0839 | 3100 | 4440 | 5907 | 07-84 | 0 | 0.12 | b | | | | | |
| S0840 | 3125 | 4315 | 5899 | 07-84 | 0 | 0.14 | b | | | | | |
| S0841 | 3175 | 4215 | 2936 | 10-83 | 0 | 0.04[c] | b | | | | | |
| S0842 | 3200 | 4340 | 5900 | 07-84 | 0 | 0.12 | b | | | | | |
| S0843 | 3225 | 4190 | 5903 | 07-84 | 0 | 0.08 | b | | | | | |
| S0844 | 3250 | 4240 | 5902 | 07-84 | 0 | 0.13 | b | | | | | |
| S0845 | 3250 | 4315 | 5901 | 07-84 | 0 | 0.30 | b | | | | | |
| C0183 | 3300 | 4140 | 7808 | 10-84 | 90 | 0.02 | b | | | | | |

20' E OF PRS 347

50' W OF PRS 346

[a]Map locations are given using a "C" to designate core locations and an "S" to designate surface locations.

[b]A "b" indicates that the total thorium concentration was less than the background level of 2.0 pCi/g, using FIDLER screening. Therefore, radiochemical analysis was not performed.

FIDLER - field instrument for the detection of low-energy radiation

LDL - The measured concentration was below the lower detection limit, estimated to be 0.5 pCi/g for cobalt-60, cesium-137, and americium-241; and 1 pCi/g for radium-226.

MRC ID - Monsanto Research Corporation Identification

pCi/g - picocuries per gram

pCi/mL - picocuries per milliliter

40' W OF PRS 348

| 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S0796 | 2850 | 4110 | 7176 | 09-84 | 0 | 0.34 | b | | | | | |
| S0797 | 2875 | 3810 | 7170 | 09-84 | 0 | 0.18 | b | | | | | |
| S0798 | 2875 | 4135 | 7177 | 09-84 | 0 | 0.16 | b | | | | | |
| S0799 | 2900 | 3960 | 7172 | 09-84 | 0 | 0.15 | b | | | | | |
| S0800 | 2900 | 3810 | 7171 | 09-84 | 0 | 0.17 | b | | LDL | 1.30 | 1.1 | LDL |
| S0801 | 2900 | 4135 | 4042 | 10-83 | 0 | 2.74[c] | b | | | | | |
| S0802 | 2925 | 3985 | 7173 | 09-84 | 0 | 0.24 | 2.88 | | | | | |
| S0803 | 2925 | 4080 | 7174 | 09-84 | 0 | 0.23 | 2.59 | | | | | |
| S0804 | 2950 | 3810 | 4044 | 10-83 | 0 | 0.39 | b | | | | | |
| S0805 | 2950 | 4085 | 4043 | 10-83 | 0 | 0.96 | b | | | | | |
| S0806 | 2950 | 4135 | 7171 | 09-84 | 0 | 0.18 | b | | | | | |
| C0181 | 2700 | 4140 | 7746 | 09-84 | 90 | 0.01 | b | | | | | |
| | | | 7747 | 09-84 | 180 | 0.02 | b | | | | | |
| S0807 | 2705 | 4190 | 2588 | 09-83 | 0 | 0.27 | b | | | | | |
| S0808 | 2705 | 4290 | 2587 | 09-83 | 0 | 0.10[c] | b | | | | | |
| S0809 | 2800 | 4165 | 2586 | 09-83 | 0 | 0.05 | b | | | | | |
| S0810 | 2825 | 4190 | 6474 | 08-84 | 0 | 0.38[c] | b | | | | | |

[a]Map locations are given using a "C" to designate core locations and an "S" to designate surface locations.

[b]A "b" indicates that the total thorium concentration was less than the background level of 2.0 pCi/g, using FIDLER screening. Therefore, radiochemical analysis was not performed.

FIDLER - field instrument for the detection of low-energy radiation

LDL - The measured concentration was below the lower detection limit, estimated to be 0.5 pCi/g for cobalt-60, cesium-137, and americium-241; and 1 pCi/g for radium-226.

MRC ID - Monsanto Research Corporation identification

pCi/g - picocuries per gram

pCi/mL - picocuries per milliliter

| 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S0736 | 3175 | 3250 | 7332 | 09-84 | 0 | 0.79 | b | | | | | |
| S0737 | 3200 | 3075 | 7331 | 09-84 | 0 | 1.04 | b | | | | | |
| S0738 | 3200 | 3275 | 7333 | 09-84 | 0 | 0.15 | b | | | | | |
| C0173 | 3250 | 3000 | 10436 | 08-85 | 18 | NR | NR | | LDL | 6.7 | 0.8 | LDL |
| | | | 10437 | 08-85 | 36 | NR | NR | | LDL | 5.6 | 0.8 | LDL |
| | | | 10438 | 08-85 | 54 | NR | NR | | LDL | 1.9 | 0.9 | LDL |
| | | | 10439 | 08-85 | 60 | NR | NR | | LDL | 9.7 | 0.9 | LDL |
| S0739 | 3250 | 3025 | 7335 | 09-84 | 0 | 0.75 | b | | | | | |
| S0740 | 3250 | 3100 | 2997 | 10-83 | 0 | 0.54 | b | 0.77 | LDL | 29 | 1.2 | LDL |
| S0741 | 3250 | 3225 | 7338 | 09-84 | 0 | 0.64 | b | | | | | |
| S0742 | 3275 | 3050 | 2998 | 10-83 | 0 | 0.18 | b | 0.67 | | | | |
| | | | 7337 | 09-84 | 0 | 0.37 | b | | | | | |
| S0743 | 3275 | 3075 | 7334 | 09-84 | 0 | 0.33 | b | | | | | |
| S0744 | 3275 | 3225 | 7336 | 09-84 | 0 | 0.36 | b | | | | | |
| S0745 | 3285 | 3010 | 2999 | 10-83 | 0 | 1.12[c] | b | 0.64 | | | | |
| S0746 | 3295 | 3005 | 9790 | 06-85 | 0 | NR | NR | | | 0.5[e] | | |
| S0747 | 3295 | 3010 | 9794 | 06-85 | 0 | NR | NR | | | 5.0[e] | | |
| S0748 | 3295 | 3300 | 4127 | 10-84 | 0 | 12.10 | b | | | | | |
| C0174 | 3000 | 3380 | 8274 | 10-84 | 72 | 0.03 | b | | | | | |
| | | | 8275 | 10-84 | 138 | 0.01 | b | | LDL | LDL | 0.8 | LDL |
| [illegible] | [illegible] | 3640 | 8518 | 12-84 | 90 | 0.03 | b | | | | | |

20' NW OF PRS 370

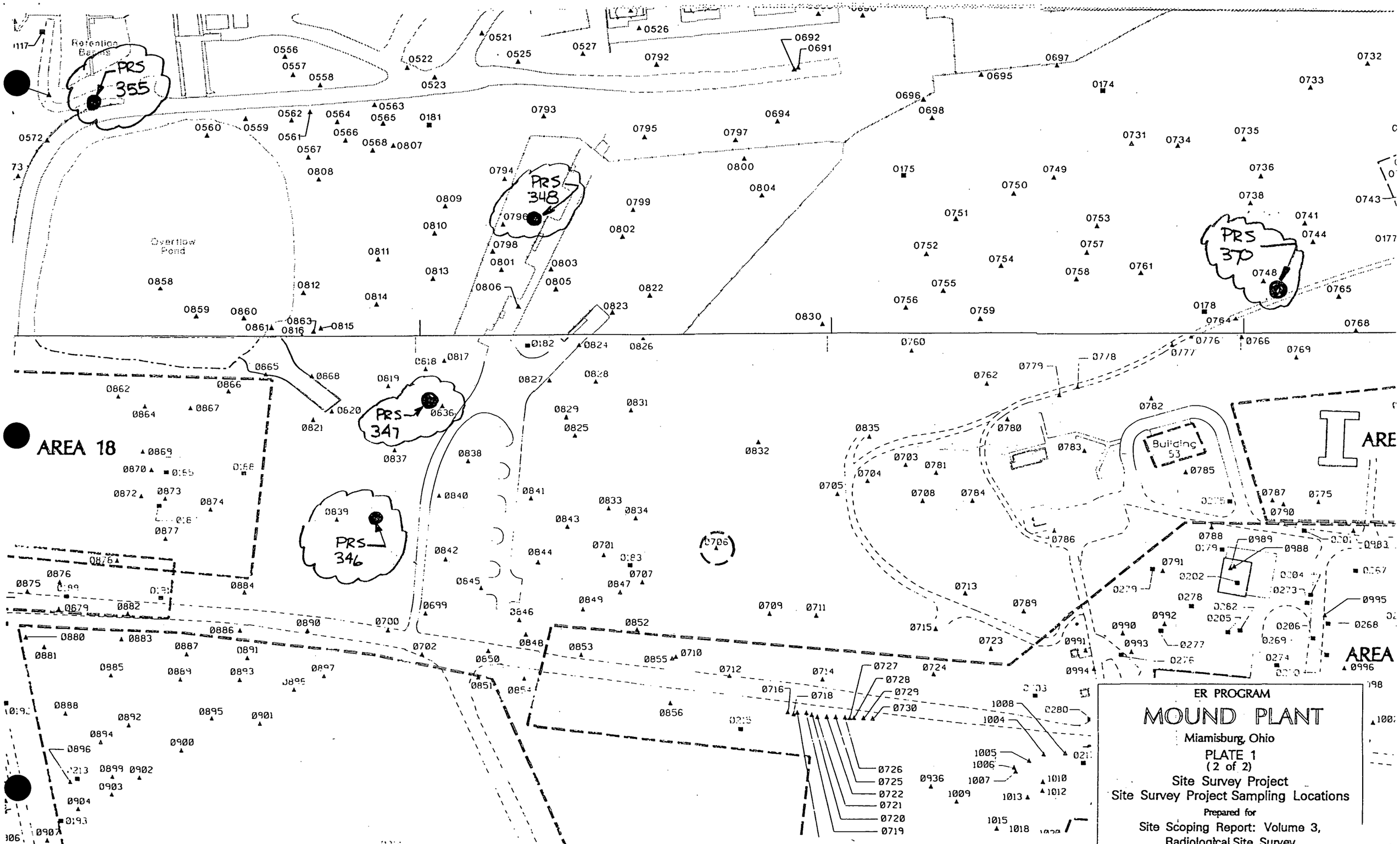
[a]Map locations are given using a "C" to designate core locations and an "S" to designate surface locations.

[b]A "b" indicates that the total thorium concentration was less than the background level of 2.0 pCi/g, using FIDLER screening. Therefore, radiochemical analysis was not performed.

FIDLER - field instrument for the detection of low-energy radiation

LDL - The measured concentration was below the lower detection limit, estimated to be 0.5 pCi/g for cobalt-60, cesium-137, and americium-241; and 1 pCi/g for radium-226.

MRC ID - Monsanto Research Corporation Identification




ER PROGRAM

# MOUND PLANT

Miamisburg, Ohio

PLATE 1
(2 of 2)

Site Survey Project
Site Survey Project Sampling Locations

Prepared for
Site Scoping Report: Volume 3,
Radiological Site Survey

Document Control No.

EG&G MOUND-25-02-10-02--9508150110

Environmental Restoration Program

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

**MOUND PLANT**
**MIAMISBURG, OHIO**

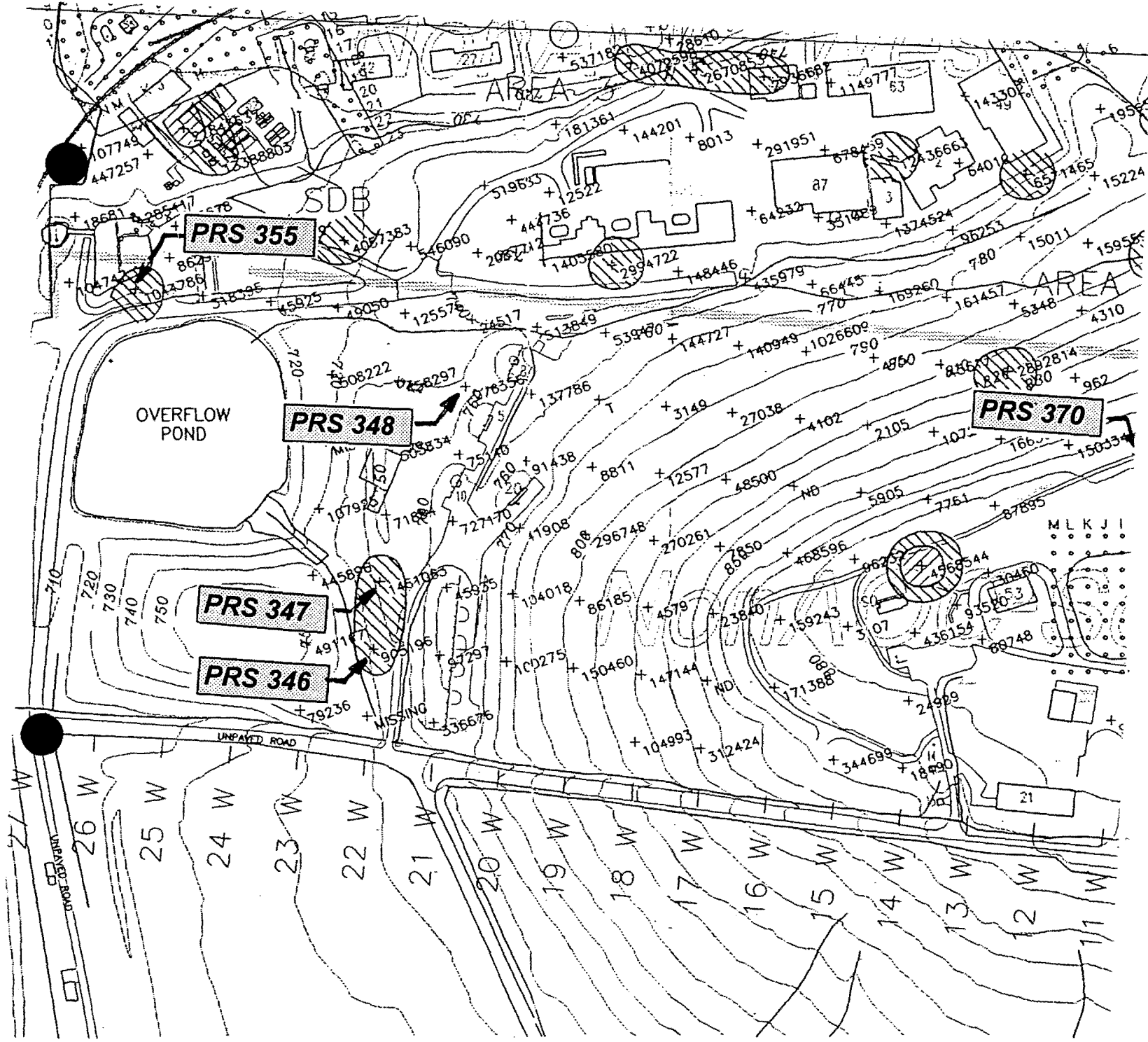
**VOLUME II - APPENDICES A-G**

**June 1995**

**Final (Revision 0)**

**U.S. Department of Energy**
**Ohio Field Office**

EG&G Mound Applied Technologies

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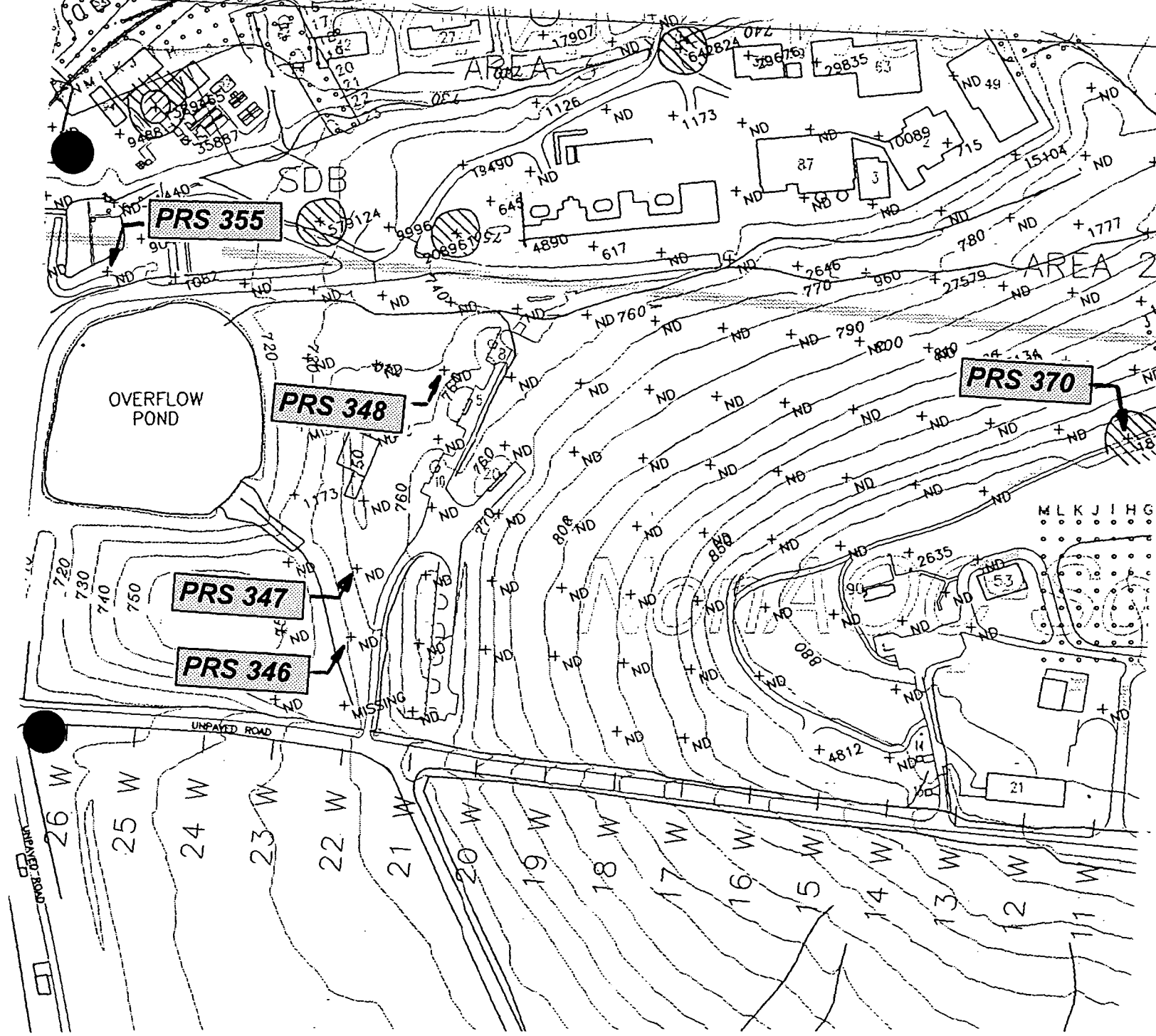
| | Checked By: | Date: November 2, 1994 | Total Aromatic Hydrocarbons |
| | Project Manager: PCB | File Name: 2114-2.dwg | Plate 2 |

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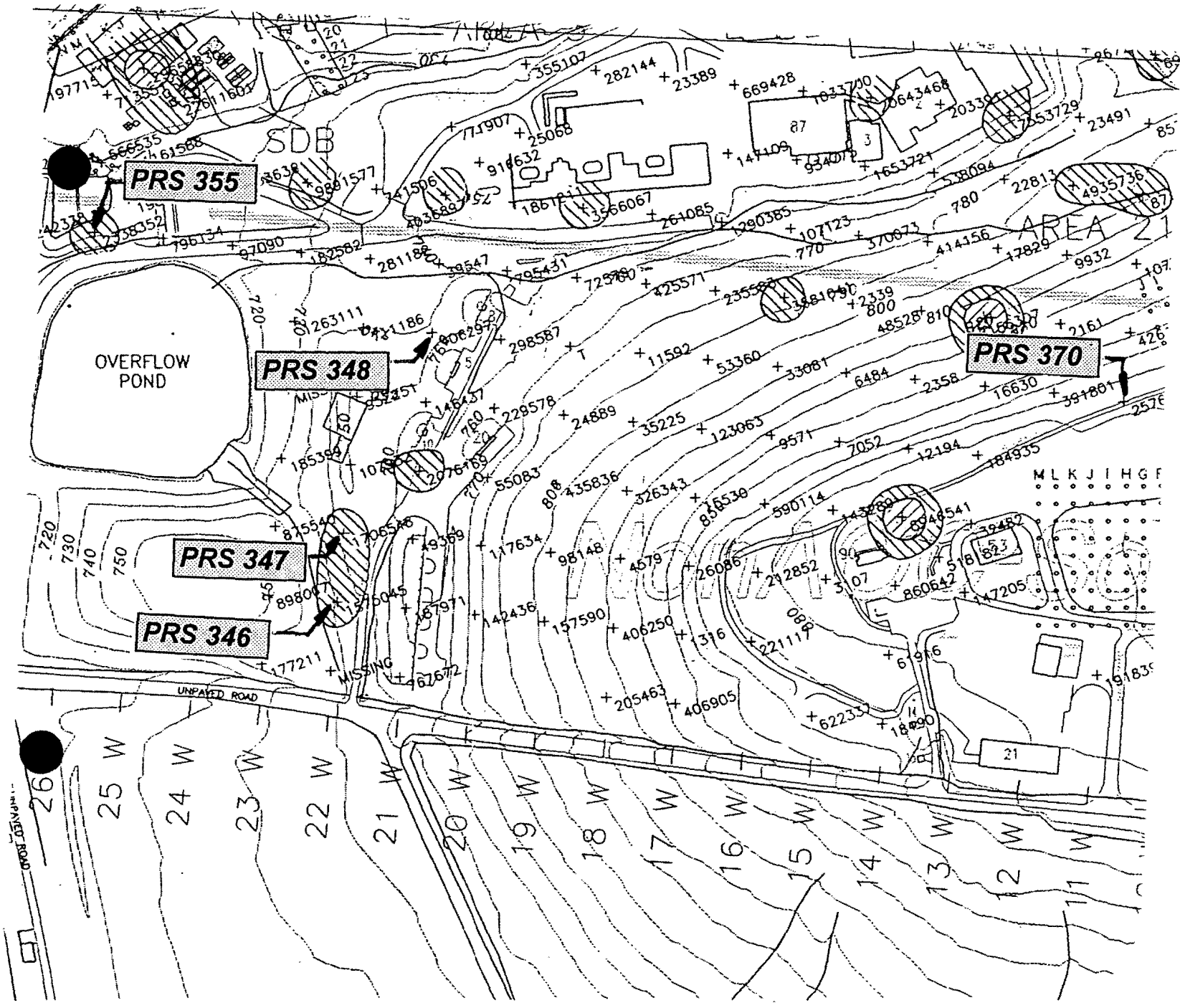
| by: ...titute LLC ...do 80215 ...-0090 | Drawn By: JCS | Project #: 2114E | NonAOC/Operable Unit-5 |
| | Checked By: | Date: November 2, 1994 | US |
| | Project Manager: PCB | File Name: 2114-3.dwg | |

Relative Response

Total Semivolatile Hydrocarbons

Plate 3




| | | | |
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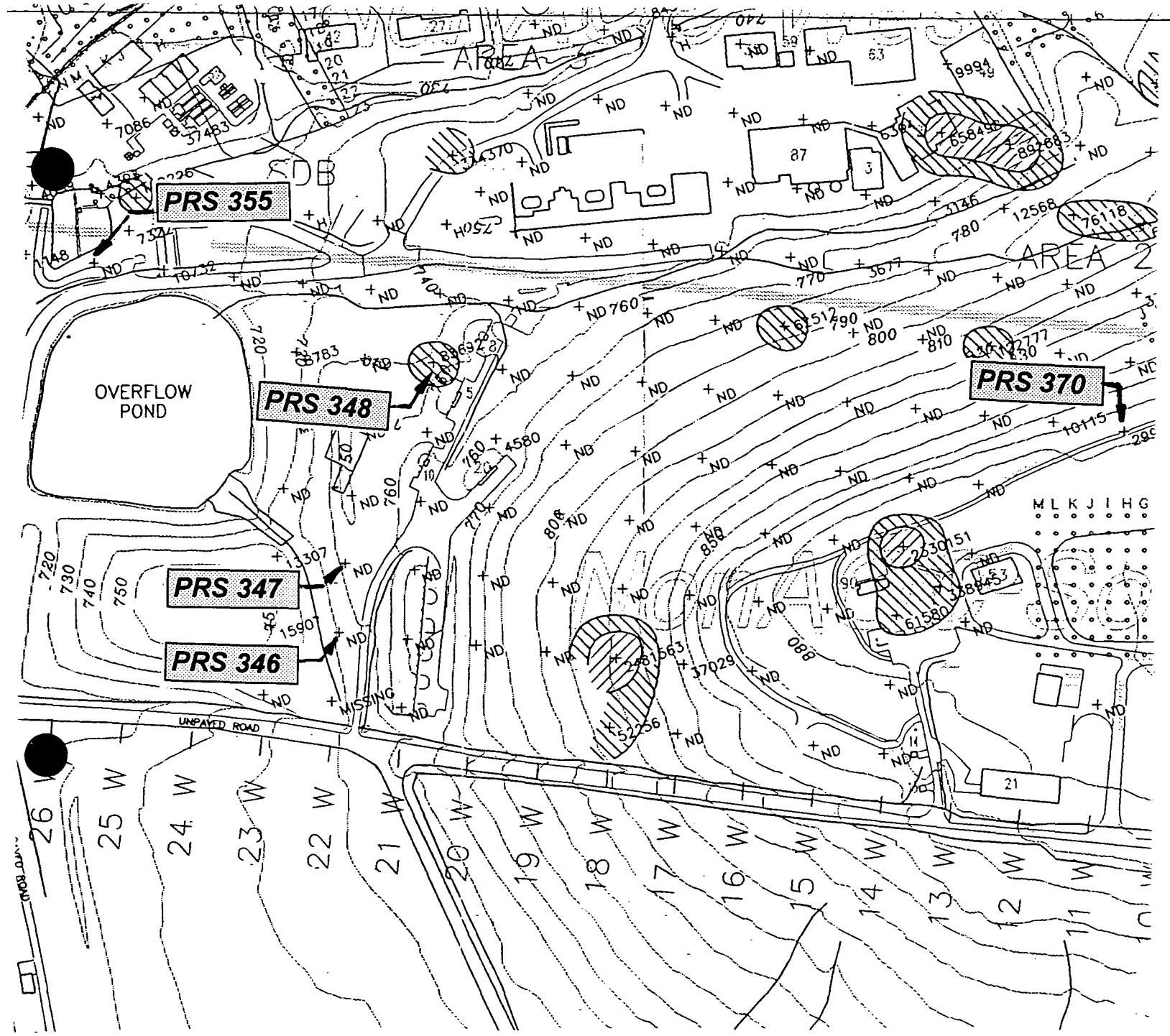
| by: Institute LLC Street 10 ado 80215 -0 | Drawn By: JCS | Project #: 2114E | NonAOC/Operable Unit-5 |
| | Checked By: | Date: November 2, 1994 | USDOE Mound Facility |
| | Project Manager: PCB | File Name: 2114-4.dwg | Relative Response<br>Total C5-C11 Petroleum Hydrocarbons |
| | | | Plate 4 |

No




| | | | |
|---|---|---|---|
| stitute LLC | Drawn By: JCS | Project #: 2114E | NonAOC/Operable Unit-5 |
| | Checked By: | Date: November 2, 1994 | USDO M |
| | Project Manager: PCB | File Name: 2114-5.dwg | PETF |

Relative Response

Total Halogenated Hydrocarbons

Plate 5

NC - No sample collected because location not an ori[illegible]grid point
NA - Reading not taken; contamination criteria not exceeded.
NS - Sample collected but not analyzed.
a - Mound Soil Screening Facility detection level not exceeded.
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

# 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: |
| 02N18 | 179.4 | 170 | 10.92 | 9.5 | NC | 40 | b | 1 | a |
| 02N19 | 179.4 | 150 | 10.92 | 10.0 | NC | 20 | a | 1 | a |
| 02N20 | 130 | 85 | 6.5 | 6.5 | NC | 18 | a | 1.3 | a |
| 02N21 | 130 | 90 | 6.5 | 6.5 | NC | NR | | NR | |
| 02N22 | 179.4 | 115 | 10.92 | 7.0 | NC | 21 | a | 0.8 | a |
| 02N23 | 179.4 | 80 | 10.92 | 6.5 | NC | 15 | a | 1 | a |
| 03N01 | 113 | 105 | 8.06 | 6.5 | NC | 38 | b | 0.7 | a |
| 03N02 | 152 | 145 | 8.45 | 8.5 | NC | 49 | b | 0.9 | a |
| 03N03 | 152 | 150 | 8.45 | 8.5 | NC | 25 | b | 1 | a |
| 03N04 | 152 | 150 | 8.45 | 9.0 | NC | 31 | b | 0.8 | a |
| 03N05 | 137.8 | 100 | 6.5 | 7.0 | NC | 9 | a | 0.9 | a |
| 03N06 | 137.8 | 100 | 6.5 | 6.0 | NC | 21 | a | 0.7 | a |
| 03N07 | 137.8 | 100 | 6.5 | 5.0 | NC | 13 | a | 0.8 | a |
| 03N13 | 170.3 | 90 | 9.72 | 6.0 | NC | 6 | a | 0.6 | a |
| 03N14 | 170.3 | 75 | 9.72 | 5.5 | NC | 9 | a | 0.5 | a |
| 03N15 | 210.6 | 150 | 12.22 | 9.5 | NC | 28 | b | 1.4 | a |
| 03N16 | 210.6 | 155 | 12.22 | 10.0 | NC | 36 | b | 0.8 | a |
| 03N17 | 210.6 | 150 | 12.22 | 10.5 | NC | 35 | b | 0.8 | a |
| 03N18 | 210.6 | 150 | 12.22 | 10.0 | NC | 46 | b | 0.7 | a |
| 03N19 | 179.4 | 160 | 10.92 | 9.0 | NC | 19 | a | 1.1 | a |
| 03N20 | 130 | 80 | 6.5 | 9.0 | NC | 24 | a | 1.6 | a |
| 03N21 | 130 | 100 | 6.5 | 8.0 | NC | 22 | a | 0.9 | a |
| 03N22 | 139 | 150 | 9.23 | 8.5 | NC | 1 | a | 1.1 | a |
| 03N23 | 139 | 100 | 9.23 | 6.5 | NC | 17 | a | 0.6 | a |
| 04N01 | 157.2 | 65 | 8.45 | 6.1 | NC | 0 | a | 0.8 | a |
| 04N02 | 98.8 | 70 | 6.72 | 4.5 | NC | 7 | a | 0.4 | a |
| 04N03 | 98.8 | 90 | 6.72 | 5.0 | NC | 25 | b | 0.8 | a |

PRS 346

PRS 347

NC - No sample collected because location not an original grid point
NA - Reading not taken; contamination criteria not exceeded.
NS - Sample collected but not analyzed.
a - Mound Soil Screening Facility detection level not exceeded.
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

# 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: |
| 07N05 | 253.5 | 125 | 12.48 | 8.5 | NC | 11 | a | 0.8 | a |
| 07N06 | 122.2 | 85 | 5.59 | 4.5 | NC | 3 | a | 0.3 | a |
| 07N07 | 122.2 | 120 | 5.59 | 5.5 | NC | 12 | a | 0.9 | a |
| 07N11 | 179.4 | 170 | 10.92 | 9.5 | NC | 0 | a | 0.7 | a |
| 07N12 | 179.4 | 175 | 10.92 | 10.5 | NC | 24 | a | 0.9 | a |
| 07N13 | 179.4 | 120 | 10.92 | 6.5 | NC | 7 | a | 0.6 | a |
| 07N14 | 179.4 | 100 | 10.92 | 8.5 | NC | 27 | b | 0.8 | a |
| 07N15 | 179.4 | 140 | 10.92 | 9.5 | NC | 6 | a | 1.2 | a |
| 07N16 | 179.4 | 170 | 10.92 | 10.0 | NC | 13 | a | 0.9 | a |
| 07N17 | 179.4 | 150 | 10.92 | 8.5 | NC | 0 | a | 0.8 | a |
| 07N18 | 130 | 150 | 6.5 | 10.0 | NC | 26 | b | 1.3 | a |
| 07N19 | 130 | 85 | 6.5 | 5.5 | NC | 20 | a | 1.1 | a |
| 07N20 | 157.3 | 120 | 8.45 | 6.0 | NC | 12 | a | 0.6 | a |
| 07N21 | 157.3 | 90 | 8.45 | 7.5 | NC | 7 | a | 0.7 | a |
| 07N22 | 143 | 95 | 6.63 | 5.0 | NC | 5 | a | 0.4 | a |
| | | | | | | 12 | a | 0.8 | a |
| 07N23 | 143 | 115 | 6.63 | 8.0 | NC | 11 | a | 0.8 | a |
| | | | | | | 25 | b | 1.0 | a |
| 07N24 | 143 | 100 | 6.63 | 5 | NC | 12 | a | 0.5 | a |
| | | | | | | 19 | a | 0.6 | a |
| 07N25 | 143 | 70 | 6.63 | 5 | NC | 10 | a | 0.5 | a |
| 07N26 | 143 | 90 | 6.63 | 4.5 | NC | 4 | a | 0.3 | a |
| | | | | | | 0 | a | 0.5 | a |
| 07N27 | 143 | 110 | 6.63 | 8.5 | NC | 10 | a | 0.9 | a |
| | | | | | | 3 | a | 0.7 | a |
| 08N01 | 253.5 | 175 | 12.48 | 9.5 | NC | 4 | a | 0.9 | a |
| 08N02 | 122.2 | 75 | 5.59 | 4.5 | NC | WIPE | c | WIPE | c |
| 08N03 | 122.2 | 85 | 5.59 | 4.0 | NC | WIPE | c | WIPE | c |

PRS 355

NC - No sample collected because location not an original grid point
NA - Reading not taken; contamination criteria not exceeded.
NS - Sample collected but not analyzed.
a - Mound Soil Screening Facility detection level not exceeded.
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

# 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: |
| 05N20 | 130 | 105 | 6.5 | 6.5 | NC | 18 | a | 0.9 | a |
| 05N21 | 130 | 95 | 6.5 | 6.0 | NC | 3 | a | 0.6 | a |
| 05N22 | 157.3 | 65 | 8.45 | 4.0 | NC | 20 | a | 0.9 | a |
| 05N23 | 139 | 105 | 9.23 | 6.5 | NC | 23 | a | 0.8 | a |
| 06N02 | 157.3 | 75 | 8.45 | 6.5 | NC | 19 | a | 1.3 | a |
| 06N03 | 157.3 | 120 | 8.45 | 9.0 | NC | 1 | a | 1.1 | a |
| 06N05 | 253.5 | 90 | 12.48 | 5.0 | NC | 14 | a | 1 | a |
| 06N06 | 122.2 | 90 | 5.59 | 4.5 | NC | 11 | a | 0.8 | a |
| 06N07 | 122.2 | 140 | 5.59 | 9.0 | NC | 0 | a | 1.7 | a |
| 06N08 | 184.6 | 115 | 11.7 | 9.5 | NC | 24 | a | 1.4 | a |
| 06N09 | 184.6 | 150 | 11.7 | 9.5 | NC | 33 | b | 1 | a |
| PRS 370 06N11 | 179.4 | 150 | 10.92 | 9.5 | NC | 20 | a | 0.8 | a |
| 06N12 | 179.4 | 175 | 10.92 | 10.0 | NC | 10 | a | 0.8 | a |
| | | | | | | 13 | a | 0.8 | a |
| 06N13 | 179.4 | 190 | 10.92 | 9.5 | NC | 13 | a | 0.8 | a |
| 06N14 | 179.4 | 160 | 10.92 | 11.0 | NC | 30 | b | 1.3 | a |
| 06N15 | 179.4 | 165 | 10.92 | 10.0 | NC | 6 | a | 1 | a |
| 06N16 | 179.4 | 140 | 10.92 | 10.0 | NC | 29 | b | 0.8 | a |
| 06N17 | 179.4 | 150 | 10.92 | 10.0 | NC | 25 | b | 1.3 | a |
| 06N18 | 130 | 125 | 6.5 | 9.0 | NC | 7 | a | 0.9 | a |
| 06N19 | 130 | 155 | 6.5 | 7.5 | NC | 39 | b | 1.2 | a |
| 06N20 | 130 | 130 | 6.5 | 6.5 | NC | 18 | a | 1.1 | a |
| PRS 348 06N21 | 130 | 80 | 6.5 | 6.5 | NC | 1 | a | 0.7 | a |
| 06N22 | 139 | 125 | 9.23 | 5.5 | NC | NR | | NR | |
| 06N23 | 139 | 85 | 9.23 | 4.0 | NC | 18 | a | 0.5 | a |
| 07N01 | 253.5 | 140 | 12.48 | 8.5 | NC | 22 | a | 1.3 | a |
| 07N02 | 115.7 | 65 | 6.11 | 4.5 | NC | 24 | a | 0.7 | a |
| | | | 12.48 | 9.5 | NC | 21 | a | 1.5 | a |

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

Semivolatile Organic Compounds

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

| 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 |

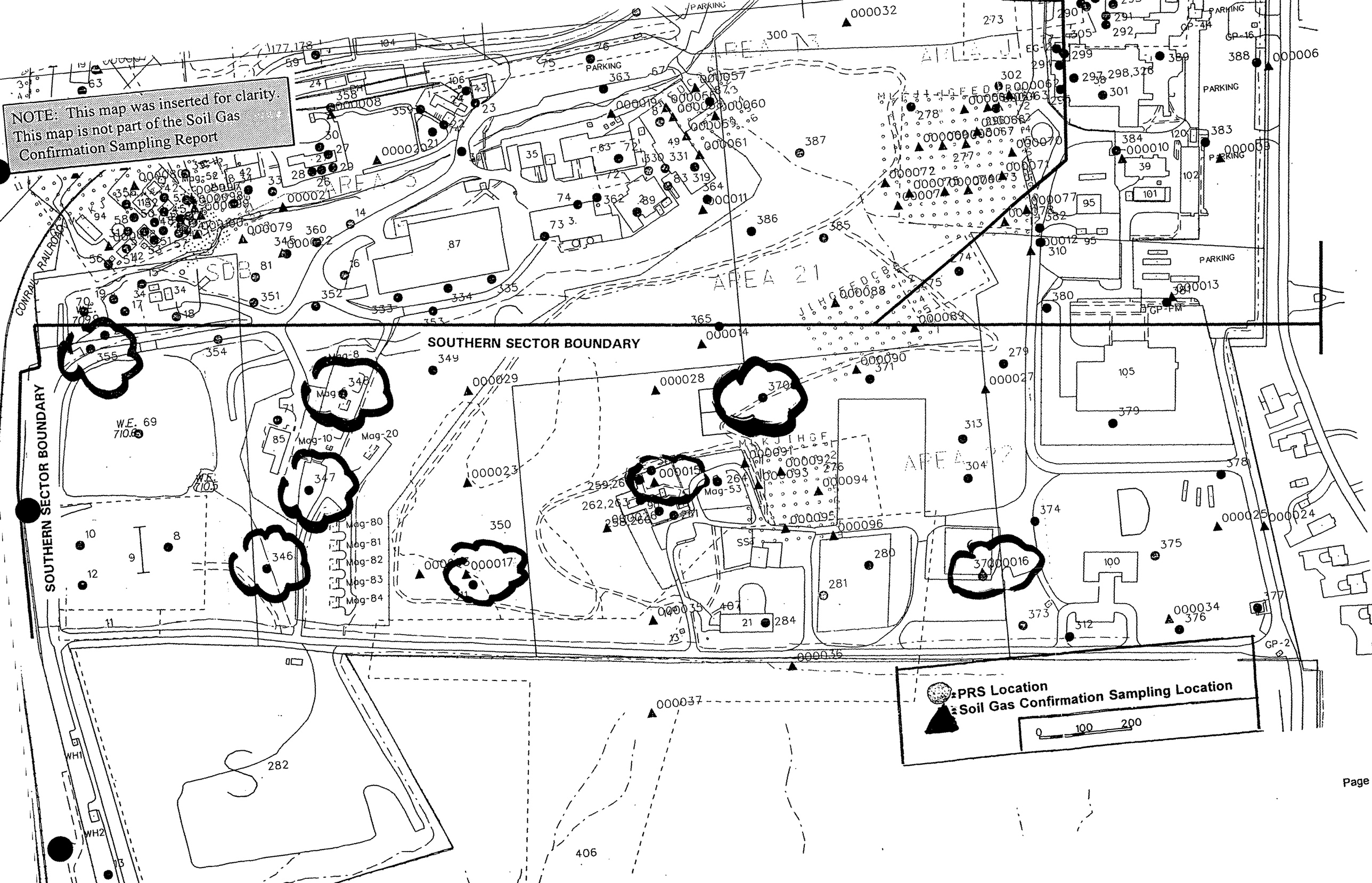

NOTE: This map was inserted for clarity.
This map is not part of the Soil Gas
Confirmation Sampling Report
SOUTHERN SECTOR BOUNDARY
SOUTHERN SECTOR BOUNDARY
AREA 21
AREA 22
AREA 3
CONRAIL RAILROAD
PARKING
PRS Location
Soil Gas Confirmation Sampling Location
0 100 200

**Table A.1. Soil Gas Confirmation Detected Volatile Organic Compounds (cont.)**

| ANALYTE | SGC NAC 00001 | SGC NAC 000011 | SGC NAC 00001 | SGC NAC 000013 | SGC NAC 00001 | SGC NAC 000015 | Background | $10^{-6}$ Construction Worker Guidelines |
|---|---|---|---|---|---|---|---|---|
| VOLATILES (μg/Kg) | | | | | | | | |
| Acetone | | | | | | | NA | 105000000 |
| 1,2-Dichloroethene (total) | | | | | | 96 | NA | 21500000 |
| 2-Butanone | | | 8 J | 10 | | | NA | 46500000 |
| Benzene | | | | | | 2 J | NA | 8900 |
| Carbon Disulfide | | | | J | | | NA | 1400000 |
| Chloroform | | | | | | | NA | NA |
| Chloromethane | 4 | | | | | | NA | NA |
| Ethylbenzene | | | | | | 1 J | NA | 480 |
| Methylene Chloride | 8 | | | | | | NA | NA |
| Tetrachloroethene | | | | | | | NA | 10500000 |
| Toluene | | 2 J | | | | 28 | NA | 1250000 |
| Trichloroethene | | | | 7 | | 3 J | NA | 41000 |
| Xylene (total) | | | | | 1 J | 4 J | NA | 2150000000 |

## Table A.1. Soil Gas Confirmation Detected Volatile Organic Compounds (cont.)

| ANALYTE | SGC NAC 000016 | SGC NAC 000017 | SGC SAN 0000[illegible] | SGC NAC 00[illegible]019 | SGC NAC 000020 | SGC NAC 00[illegible]22 | Background | $10^{-6}$ Construction Worker Guidelines |
|---|---|---|---|---|---|---|---|---|
| VOLATILES (µg/Kg) | | | | | | | | |
| Acetone | | | | | 36 | | NA | 105000000 |
| 1,2-Dichloroethene (total) | | | | | | | NA | 21500000 |
| 2-Butanone | | | | | 6 | | NA | 46500000 |
| Benzene | | | | | | | NA | 8900 |
| Carbon Disulfide | | | | | | | NA | 1400000 |
| Chloroform | | | | | | | NA | NA |
| Chloromethane | | | | | | | NA | NA |
| Ethylbenzene | | | | | | | NA | 480 |
| Methylene Chloride | 8 | | 10 | | | | NA | NA |
| Tetrachloroethene | | | | | | | NA | 10500000 |
| Toluene | | 2 J | | 1 J | 2 | | NA | 1250000 |
| Trichloroethene | | | | 7 | | | NA | 41000 |
| Xylene (total) | | | | | | | NA | 2150000000 |

## Table A.2. Soil Gas Confirmation Detected Semivolatile Organic Compounds (cont.)

| ANALYTE | SGC NAC 000008 | SGC NAC 000009 | SGC NAC 000010 | SGC NAC 000011 | SGC NAC 000012 | SGC NAC 000015 | Background | $10^{-6}$ Construction Worker Guidelines |
|---|---|---|---|---|---|---|---|---|
| SEMIVOLATILES (μg/Kg) | | | | | | | | |
| Acenaphthene | | | | | | | NA | NA |
| Acenaphthylene | | | | | | | NA | NA |
| Anthracene | | | | | | | NA | 320000000 |
| Benzo(a)anthracene | 57 J | | | | 18 J | | NA | 4100 |
| Benzo(a)pyrene | 65 | | | | 21 J | | NA | 410 |
| Benzo(b)fluoranthene | 67 J | | | | 22 J | | NA | 4100 |
| Benzo(g,h,i)perylene | [illegible] J | | | | | | NA | NA |
| Benzo(k)fluoranthene | 58 J | | | | 17 J | | NA | 41000 |
| Bis(2-ethylhexyl)phthalate | | 71 J | | 36 J | 35 J | | NA | 215000 |
| Butylbenzylphthalate | | | | | | | NA | 215000000 |
| Carbazole | | | | | | | NA | NA |
| Chrysene | 68 J | | 20 J | | 22 J | | NA | 410000 |
| Di-n-butyl phthalate | | | | | | | NA | 105000000 |
| Di-n-octyl phthalate | | | | | | | NA | 21500000 |
| Dibenz(a,h)anthracene | | | | | | | NA | 410 |
| Dibenzofuran | | | | | | | NA | NA |
| Diethyl phthalate | | | | | | | NA | NA |
| Fluoranthene | 110 J | | 31 | | 38 J | | NA | 42500000 |
| Fluorene | | | | | | | NA | NA |
| Indeno(1,2,3-cd)pyrene | 36 J | | | | | | NA | 4100 |
| 2-Methylnaphthalene | | | | | | | NA | NA |
| Naphthalene | | | | | | 61 J | NA | NA |
| Phenanthrene | 53 J | | | | | | NA | NA |
| Phenol | | | | | | | NA | 650000000 |
| Pyrene | 120 J | | 31 J | 20 J | 37 J | | NA | 32000000 |

## Table A.2. Soil Gas Confirmation Detected Semivolatile Organic Compounds (cont.)

| ANALYTE | SGC NAC 000016 | | SGC NAC 000017 | | SGC SAN 000018 | | SGC NAC 000020 | | SGC NAC 000021 | | SGC NAC 000024 | | Background | $10^{-6}$ Construction Worker Guidelines |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEMIVOLATILES (μg/Kg) | | | | | | | | | | | | | | |
| Acenaphthene | | | | | | | 21 | J | | | | | NA | NA |
| Acenaphthylene | | | | | | | | | 44 | J | | | NA | NA |
| Anthracene | | | | | | | | | 30 | J | | | NA | 320000000 |
| Benzo(a)anthracene | 47 | J | | | 48 | J | 130 | J | 110 | J | | | NA | 4100 |
| Benzo(a)pyrene | 42 | J | | | 68 | J | 150 | J | 130 | J | | | NA | 410 |
| Benzo(b)fluoranthene | 39 | J | | | 59 | J | [illegible] | J | 88 | J | | | NA | 4100 |
| Benzo(g,h,i)perylene | 33 | J | | | 49 | J | 100 | J | 100 | J | | | NA | NA |
| Benzo(k)fluoranthene | 46 | J | | | 62 | | 37 | | | | | | NA | 41000 |
| Bis(2-ethylhexyl)phthalate | 100 | J | | | 100 | | | | | | 2[illegible] | J | NA | 215000 |
| Butylbenzylphthalate | | | | | | | | | | | | | NA | 215000000 |
| Carbazole | | | | | | | | | 21 | | | | NA | NA |
| Chrysene | 51 | J | | | 54 | J | 220 | J | 170 | J | | | NA | 410000 |
| Di-n-butyl phthalate | | | | | | | | | | | | | NA | 105000000 |
| Di-n-octyl phthalate | | | | | | | | | | | 8[illegible] | J | NA | 21500000 |
| Dibenz(a,h)anthracene | | | | | 40 | J | 24 | J | 28 | J | | | NA | 410 |
| Dibenzofuran | | | | | | | | | | | | | NA | NA |
| Diethyl phthalate | | | | | | | | | | | | | NA | NA |
| Fluoranthene | 100 | J | 28 | J | 84 | J | 180 | J | 320 | J | | | NA | 42500000 |
| Fluorene | | | | | | | | | 26 | J | | | NA | NA |
| Indeno(1,2,3-cd)pyrene | 27 | J | | | 53 | J | 46 | J | [illegible] | J | | | NA | 4100 |
| 2-Methylnaphthalene | | | | | | | | | | | | | NA | NA |
| Naphthalene | | | | | | | | | | | | | NA | NA |
| Phenanthrene | 63 | J | | | 27 | J | | | 220 | J | | | NA | NA |
| Phenol | | | | | | | | | | | | | NA | 650000000 |
| Pyrene | 87 | J | 26 | J | 91 | J | 1400 | | 310 | J | | | NA | 32000000 |

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

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INORGANICS (mg/kg) | | | | | | | | | | | | | | |
| Aluminum | 8460 | | 17700 | | 7370 | | 14100 | | 20000 | | 130 | | 19000 | NA |
| Antimony | | | | | | | | | | | | | NA | 425 |
| Arsenic | 1.2 | BJ | 7 | | 3.6 | J | 3.4 | | 2.4 | B | 4.1 | | 8.6 | 320 |
| Barium | 53.[illegible] | | 110 | | 51.3 | B | 68.7 | | 119 | | 21.4 | B | 180 | 75000 |
| Beryllium | [illegible] | B | 0.68 | | 0.24 | B | 0.46 | | 0.98 | | 0.2[illegible] | | 1.3 | 0.7 |
| Bismuth | | | | | | | 0.82 | B | 1.2 | B | | | NA | NA |
| Cadmium | 4.6 | | 7.7 | | 3.7 | | 5.7 | | 8.6 | | | | 2.1 | 1050 |
| Calcium | 22[illegible]000 | J | 9420[illegible] | | 342000 | | 133690 | | 23800 | | 157000 | | 310000 | NA |
| Chromium | 10.[illegible] | | 2[illegible] | | 9.1 | | 17.7 | | 24.5 | | [illegible].3 | | 20 | 1050000 |
| Cobalt | 7.5 | | [illegible]3.9 | | 5.8 | B | 11.6 | B | 18.5 | | 5.[illegible] | | 19 | NA |
| Copper | 13.5 | J | 22.4 | | 12.2 | | 19.3 | | 26.9 | | 11.6 | | 26 | NA |
| Cyanide | | | | | | | 1.0 | | | | | | ND | 21400 |
| Iron | 21100 | | 36300 | | 16600 | | 26600 | | 40000 | | 13600 | | 35000 | NA |
| Lead | 29 | J | 12.9 | | 14.3 | | 14.1 | | 27.5 | | 8.2 | | 48 | NA |
| Lithium | [illegible].8 | B | 30.7 | | 15.0 | B | 25.1 | | 34.1 | | 18.1 | B | 26 | NA |
| Magnesium | 7250 | J | 8190 | | 4760 | | 14600 | | 6250 | | 47700 | | 40000 | NA |
| Manganese | 543 | | 939 | | 689 | | 641 | | 1360 | | 3[illegible] | | 1400 | 135000 |
| Mercury | | | | | | | | | 0.07 | B | | | NC | 320 |
| Molybdenum | 0.81 | | 1.3 | B | 0.51 | B | 1.3 | B | 0.76 | B | 0.82 | B | 27 | NA |
| Nickel | 17.6 | | 31.4 | | 13.8 | | 23.9 | | 34.4 | | 13.5 | | 32 | 21500 |
| Potassium | 1100 | B | 2[illegible] | B | 1010 | B | 2090 | B | 3680 | | 1040 | B | 1900 | NA |
| Selenium | | | | | | | | | | | | | NA | NA |
| Silver | | | | | | | | | | | 0.4[illegible] | B | 1700 | 5500000 |
| Sodium | 328 | BJ | 142 | B | 248 | B | 398 | B | 209 | B | [illegible] | B | 240 | NA |
| Thallium | | | | | | | | | | | | | 460 | NA |
| Tin | 1.1 | B | 0.[illegible] | B | | | 1.7 | B | 3.3 | B | | | 20 | NA |
| Vanadium | 12.9 | | 29.4 | | 10.7 | | 23.8 | | 30.2 | | 10.3 | | 25 | 7500 |
| Zinc | 44.9 | | [illegible].5 | | 67.7 | | 70.5 | | 103 | | 41.2 | | 140 | 320000 |

Table A.6. Soil Gas Confirmation Detected Radionuclides (cont.)

| ANALYTE | SGC NAC 000015 | SGC NAC 000016 | SGC NAC 000017 | SGC SAN 000018 | SGC NAC 000019 | SGC NAC 000020 | SGC NAC 000021 | Background | $10^{-6}$ Construction Worker Guidelines |
|---|---|---|---|---|---|---|---|---|---|
| RADIONUCLIDES (pCi/g) | | | | | | | | | |
| Americium-241 | | 0.162 | | | | | | ND | 4.95 |
| Bismuth-207 | | 0.0183 | | | | | | ND | 0.175 |
| Bismuth-210 | | -0.00477 | | | | | | ND | NA |
| Cesium-137 | | 0.0763 | 0.582 | | | | 0.193 | 0.42 | 0.46 |
| Cobalt-60 | | 0.0142 | | | | | | NC | 0.1 |
| Plutonium-238 | 0.0118 | 0.253 | 0.200 | 0.684 | 0.121 | 0.721 | 0.072 | 0.13 | 5.5 |
| Plutonium-239/240 | | 0.00413 | 0.0166 | 0.00487 | | | 0.0051 | 0.18 | 5.5 |
| Potassium-40 | 19.2 | 15.2 | 29.1 | 10.1 | 7.90 | 24.7 | 41.8 | 37 | NA |
| Radium-226 | 1.40 | 0.934 | 0.960 | 0.677 | 0.[illegible]8 | 0.841 | 1.03 | 2 | 0.14 |
| Thorium-228 | 1.37 | 1.04 | 1.10 | 0.465 | 0.378 | 0.[illegible] | 1.1 | 1.5 | 0.85 |
| Thorium-230 | 1.48 | 1.36 | 1.01 | 0.5[illegible]2 | 0.749 | 1.08 | 0.701 | 1.9 | 44 |
| Thorium-232 | 1.43 | 0.894 | 1.26 | 0.506 | 0.375 | 0.843 | 0.970 | 1.4 | 50 |
| Uranium-234 | 1.01 | 0.765 | 0.698 | 0.523 | 0.440 | 0.751 | 0.[illegible]1 | 1.1 | 37.5 |
| Uranium-235 | 0.0927 | 0.0394 | 0.0403 | | | 0.0[illegible] | 0.037 | 0.11 | 3.35 |
| Uranium-238 | 0.955 | 0.993 | 0.852 | 0.496 | 0.691 | 0.825 | 0.822 | 1.2 | 11 |