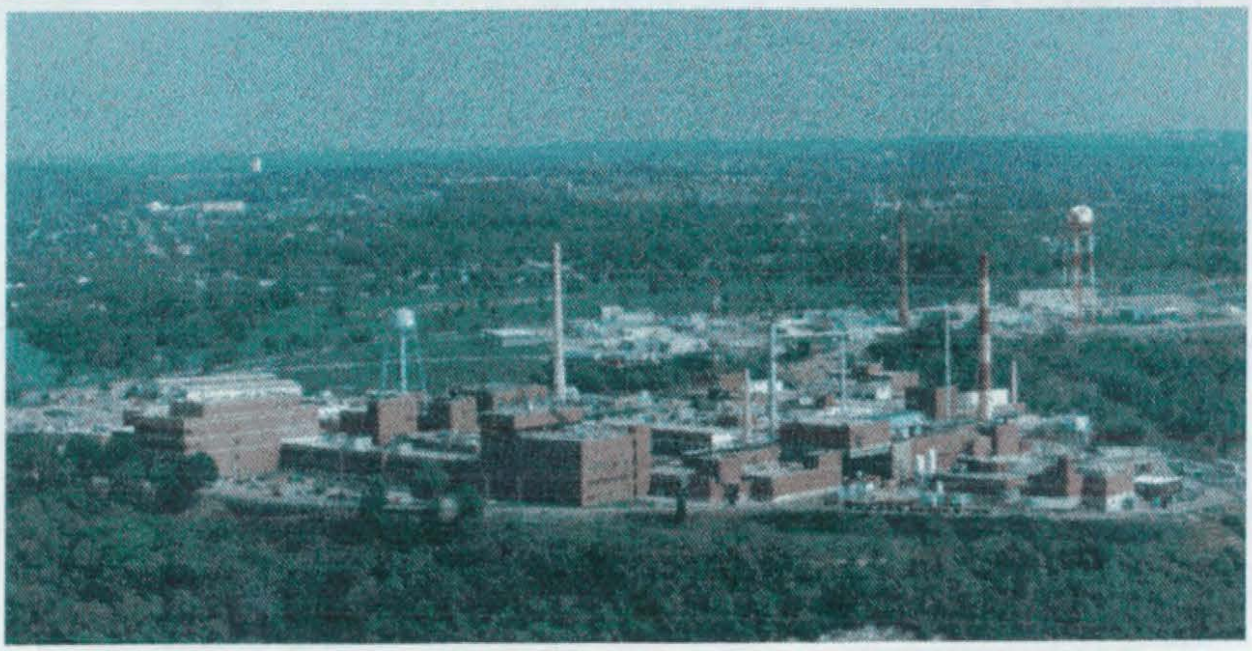
EG&G MOUND-30-03-03-03--9706180008

MOUND

Environmental
Restoration
Program

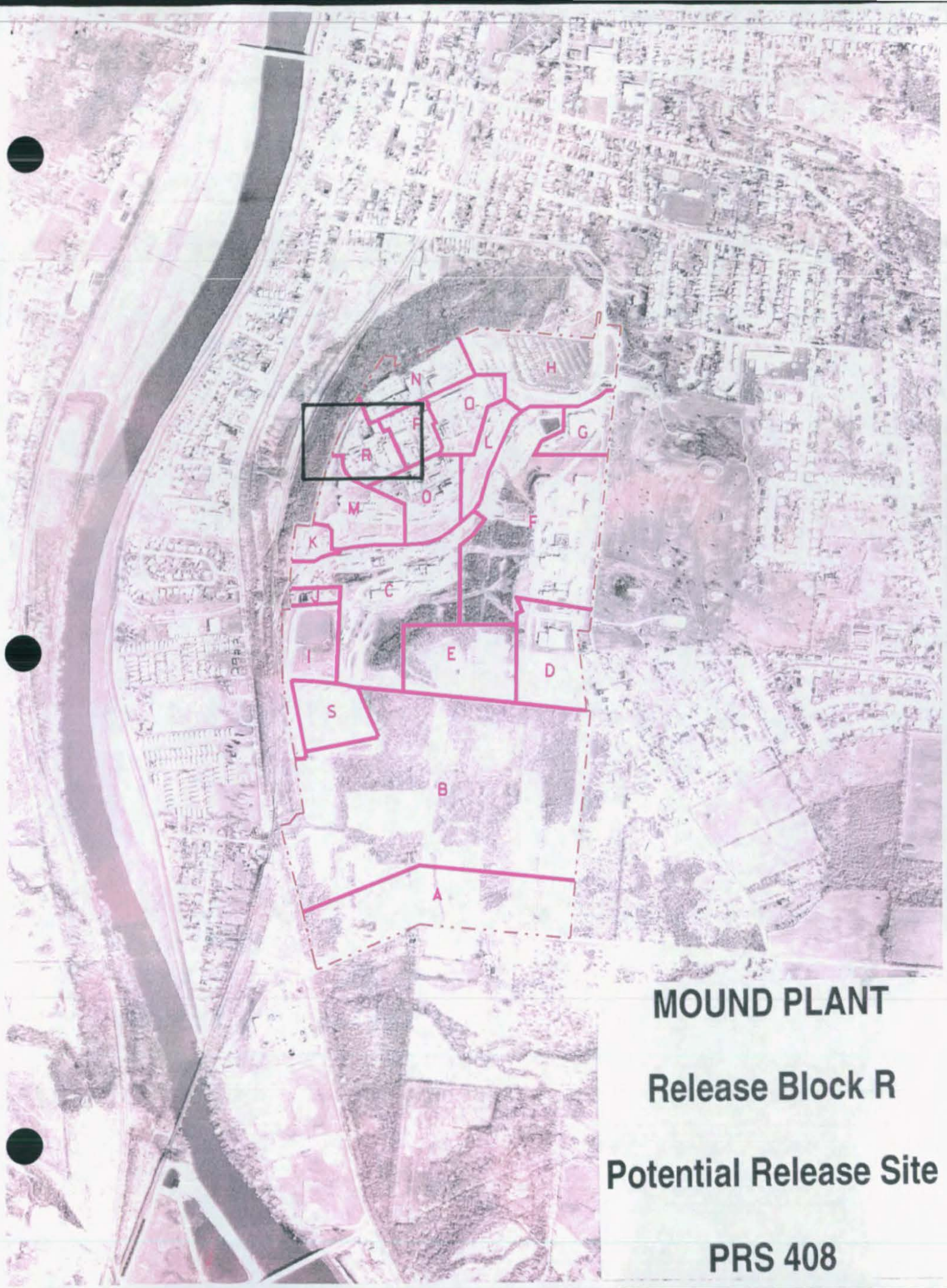
MOUND PLANT

Potential Release Site Package
PRS # 408



PRS 408

REV	DESCRIPTION	DATE
PUBLIC RELEASE 0	Available for comments.	May 21, 1997
FINAL 1		



MOUND PLANT

Release Block R

Potential Release Site

PRS 408

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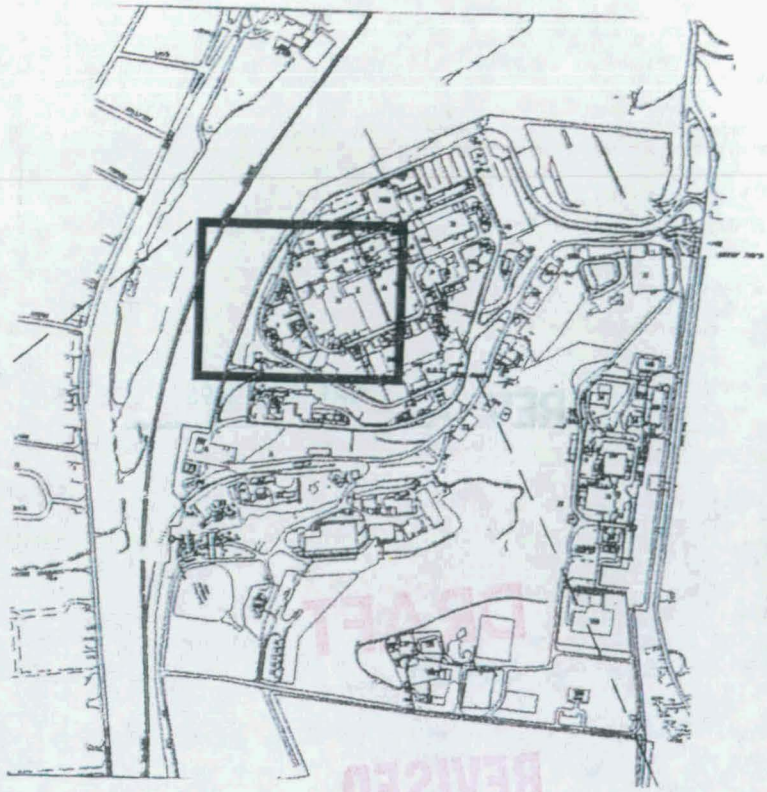
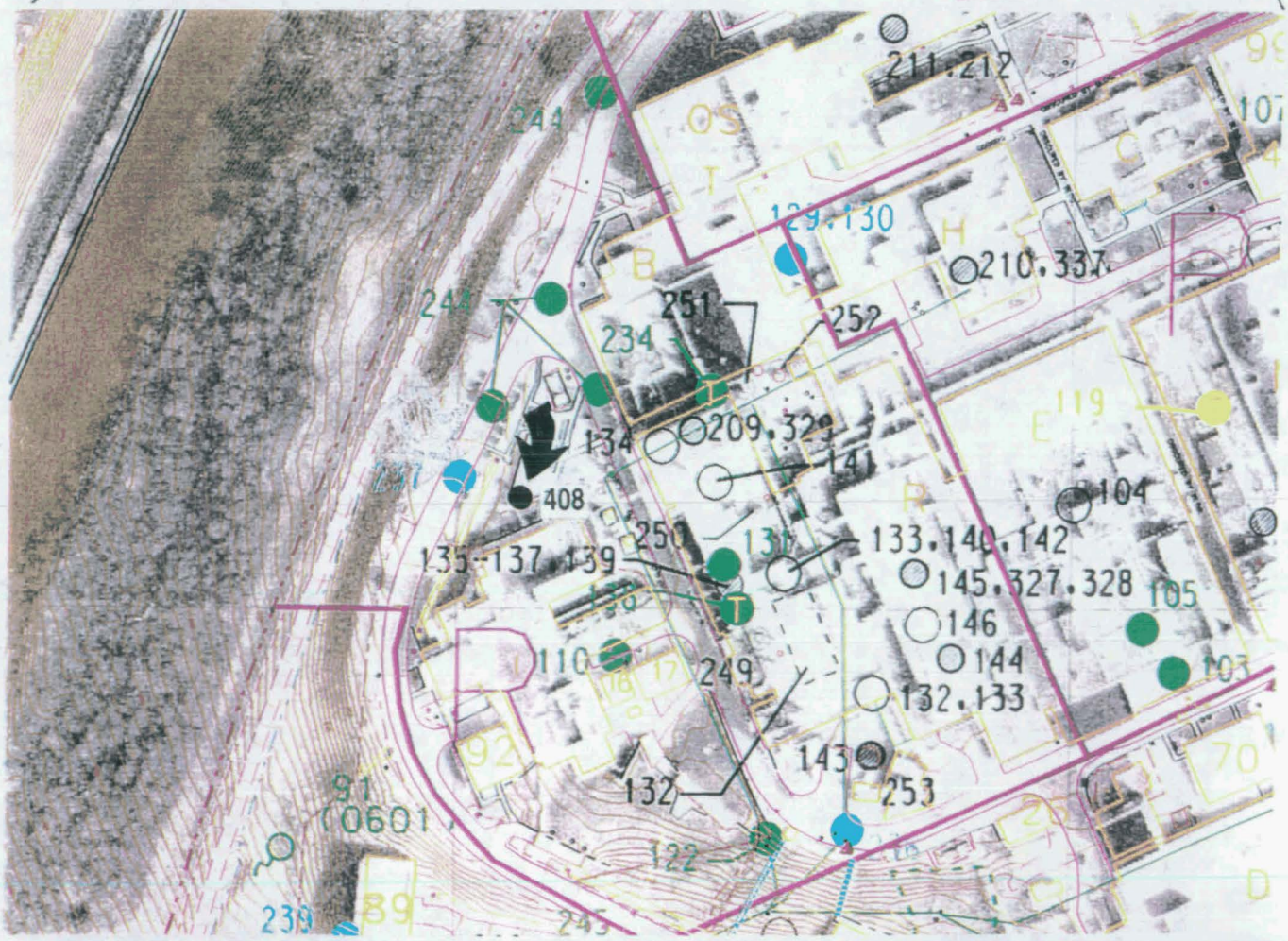
MOUND PLANT

Release Block R

Potential Release Site

PRS 408





408

PRS 408

PRS HISTORY:

PRS 408 is a chemical (Shell Rotella 10W lubricating oil) contamination soils area located in Release Block R, north of I Building. It is the blowdown area for the nitrogen tanks of the "Prism" nitrogen production membrane system which supplied house nitrogen to R and SW buildings. The system operated for about two years from 1989 to 1991. Pump/compressor oil was observed to have been released onto the ground during the blowdown process of the nitrogen tanks to relieve pressure in the tanks. It is believed that the condensate formed during the blowdown process contained oil from the compressor. No other processes took place in this location. It was unused by Mound from the time the plant started operations until the late sixties when several office trailers were located in the area. The site has not been used since the Prism system was removed with the exception of its use as a lay down area for fencing materials. The engineer who was responsible for dismantling the Prism system identified this area as a PRS in June of 1996.[7]

CONTAMINATION:

The 1983 OU3, Radiological Site Survey analyzed surface soil samples in and around PRS 408. The maximum level for plutonium was 1.17 pCi/g and < 2 pCi/g for thorium. All plutonium sampling results were below the guideline criteria of 25 pCi/g. All thorium levels were below the 5 /15 pCi/g regulatory standard.[1]

The 1992 Soil Gas Survey and Geophysical Investigation analyzed locations surrounding PRS#408.[2] All Volatile Organic Compound (VOC) soil gas concentrations were below acceptable guideline criteria. [3]

Mound personnel sampled and characterized the area for petroleum contamination. Core samples were collected using a manual Geoprobe sampler. The samples were then analyzed using a field test analyzer for Total Petroleum Hydrocarbons (TPH). Results indicated that an area of approximately 12 ft. by 15 ft. was contaminated. Portions of the area were contaminated to a depth of 7 feet with a maximum concentration of 9540 ppm (TPH).[5] A clean-up criteria of 1156 ppm (TPH) was established using the scoring system guidance established by the Ohio Bureau of Underground Storage Tank Regulations.[4]

Excavation of contaminated soils was completed on December 18, 1996. Approximately 23 cu. yd. of soil was excavated and staged at the Mound ER Bioremediation facility. Verification sampling of the site performed on December 18, 1996 confirmed that contamination levels were below the clean-up criteria. Metals normally found in lubricating oil including chromium, copper and nickel were below background levels.[6]

Results:[5,6]

Analyte	Maximum Concentration	Guideline Criteria
TPH (Lubricating Oil)	497 ppm	1156 ppm (BUSTR)
BTEX *	Not Detected	*

* : Benzene(0.006 ppm), Toluene(4.0 ppm), Ethylbenzene(6.0 ppm), and Xylene(28.0 ppm)

READING ROOM REFERENCES:

1) Operable Unit 9 Site Scoping Report: Volume 3 - Radiological Site Survey, June 1993. (Pages 6-9)
2) Reconnaissance Sampling Report Soil Survey and Geophysical Investigation, Mound Plant Main Hill and SM/PP Hill: Appendices A, B, and D, February 1993. (Pages 10-12)

OTHER REFERENCES:

3) Comparison of Actual Soil Gas Values with Calculated Acceptable Soil Gas Values, March 5, 1996 (Pages 13-15)
4) Ohio Bureau of Underground Storage Tank Regulations Site Scoring System, January 22, 1993 (Pages 16-20)
5) PRS 408 Validated TPH Sampling Data. (Pages 21-46)
6) PRS 408 Validated BTEX and Inorganic Sampling Data. (Pages 47-59)
7) Interview with Mark Schmidt, Project Engineer, June 12, 1996

PREPARED BY:

Dennis J. Gault, Member of EG&G Technical Staff

MOUND PLANT
PRS 408

RECOMMENDATION:

PRS 408 is a chemical (Shell Rotella 10W lubricating oil) contamination soils area located in Release Block R, north of I Building. It was the blowdown area for the nitrogen tanks of the "Prism" nitrogen production membrane system, which supplied house nitrogen to R and SW buildings. The system operated for about two years from 1989 to 1991. Pump/compressor oil was released onto the ground during the blowdown process of the nitrogen tanks which relieved pressure in the tanks.

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Excavation of chemically contaminated soils was completed on December 18, 1996. Approximately 23 cu. yd. of soil was excavated and staged at the Mound ER Bioremediation facility. Verification sampling of the site performed on December 18, 1996 confirmed that contamination levels were below the clean-up criteria. Metals normally found in lubricating oil including chromium, copper and nickel were below background levels.

Therefore, NO FURTHER ASSESSMENT is recommended for PRS 408.

CONCURRENCE:

DOE/MB: Arthur W. Kleinrath, Remedial Project Manager — 5/13/97 (date)

USEPA: Timothy J. Fischer, Remedial Project Manager — 5/13/97 (date)

OEPA: Brian K. Nickel, Project Manager — 5/14/97 (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 408

Document Control No. _____

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

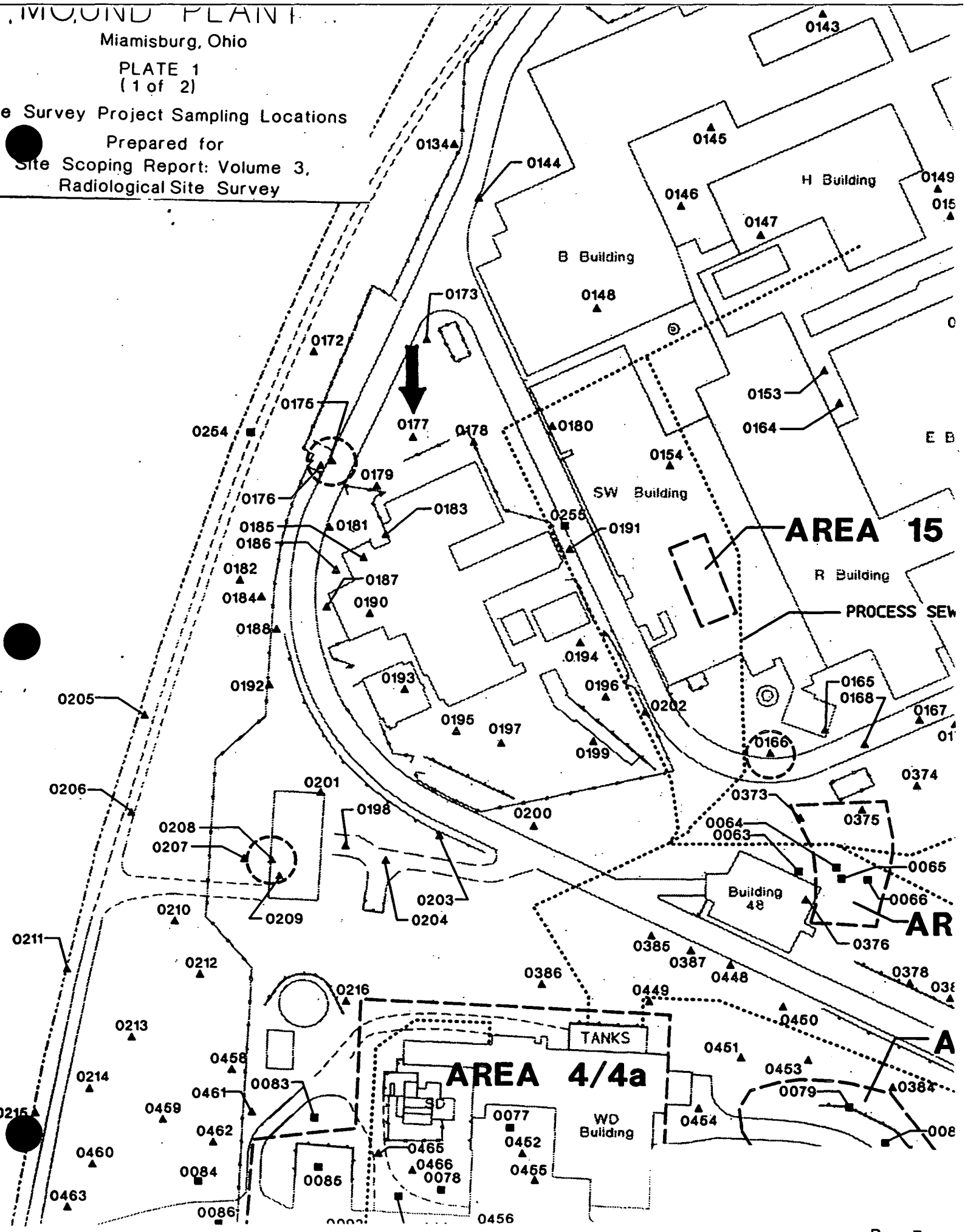
Environmental Restoration Program
EG&G Mound Applied Technologies

MOUND PLANT
Miamisburg, Ohio

PLATE 1
(1 of 2)

te Survey Project Sampling Locations

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



MOUND SOIL SCREEN DATA

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)
S0161	1775	2795	3093	10-83	0	1.19	b					
S0162	1775	2845	6206	08-84	0	0.62	b					
S0163	1775	2870	6207	08-84	0	0.34	b					
S0164	1505	3175	3096	10-83	0	0.25	b					
S0165	1750	3300	6211	08-84	0	0.22[c]	b					
S0166	1750	3350	4000	10-83	0	34.50	b					
S0167	1775	3225	6212	08-84	0	0.81	b					
S0168	1775	3275	3099	10-83	0	1.76	b	12.73				
S0169	1790	3010	8424	11-84	0	0.05	b					
S0170	1790	3025	3097	10-83	0	0.41	b					
S0171	1790	3200	3098	10-83	0	1.87	b					
S0172	1285	3555	4081	10-83	0	0.17	b	1.65				
S0173	1315	3465	3050	10-83	0	0.17[c]	b					
C0254	1325	3630	8415	11-84	36	0.22	b					
S0175	1375	3580	9845	06-85	0	NR	NR		82	10	0.8	LDL
S0176	1375	3590	3051	10-83	0	2.82	b					
S0177	1385	3510	3055	10-83	0	1.17	b					
S0178	1410	3465	6187	08-84	0	0.55	b					
S0179	1410	3555	6189	08-84	0	0.48	b					

[a]C denotes core location and S denotes surface sample location on Plate 1.

[b]Thorium results of ≤ 2 pCi/g are listed as "b".

[c]Verification sample analyzed for QA/QC.

[d]No MRC ID assigned because *in situ* gamma spectrometry was performed for thorium-232.

[e]Gamma results could not be confirmed using the gamma spectroscopy printout given in this appendix.

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

[g]Sample 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.

LDL - The sample result was below the Lower Detection Limit, which was estimated to be 0.5 pCi/g for cesium-137, cobalt-60, and americium-241. The LDL for radium-226 or actinium-227 was estimated to be 1 pCi/g.

NR - No result provided. (Note: no samples were taken for plutonium-238 when *in situ* gamma spectrometry was performed.)

Environmental Restoration Program

RECONNAISSANCE SAMPLING REPORT SOIL GAS SURVEY AND GEOPHYSICAL INVESTIGATIONS, MOUND PLANT MAIN HILL AND SM/PP HILL

REPORT
APPENDICES A, B AND D

MOUND PLANT
MIAMISBURG, OHIO

February 1993

Department of Energy
Albuquerque Field Office

Environmental Restoration Program
EG&G Mound Applied Technologies

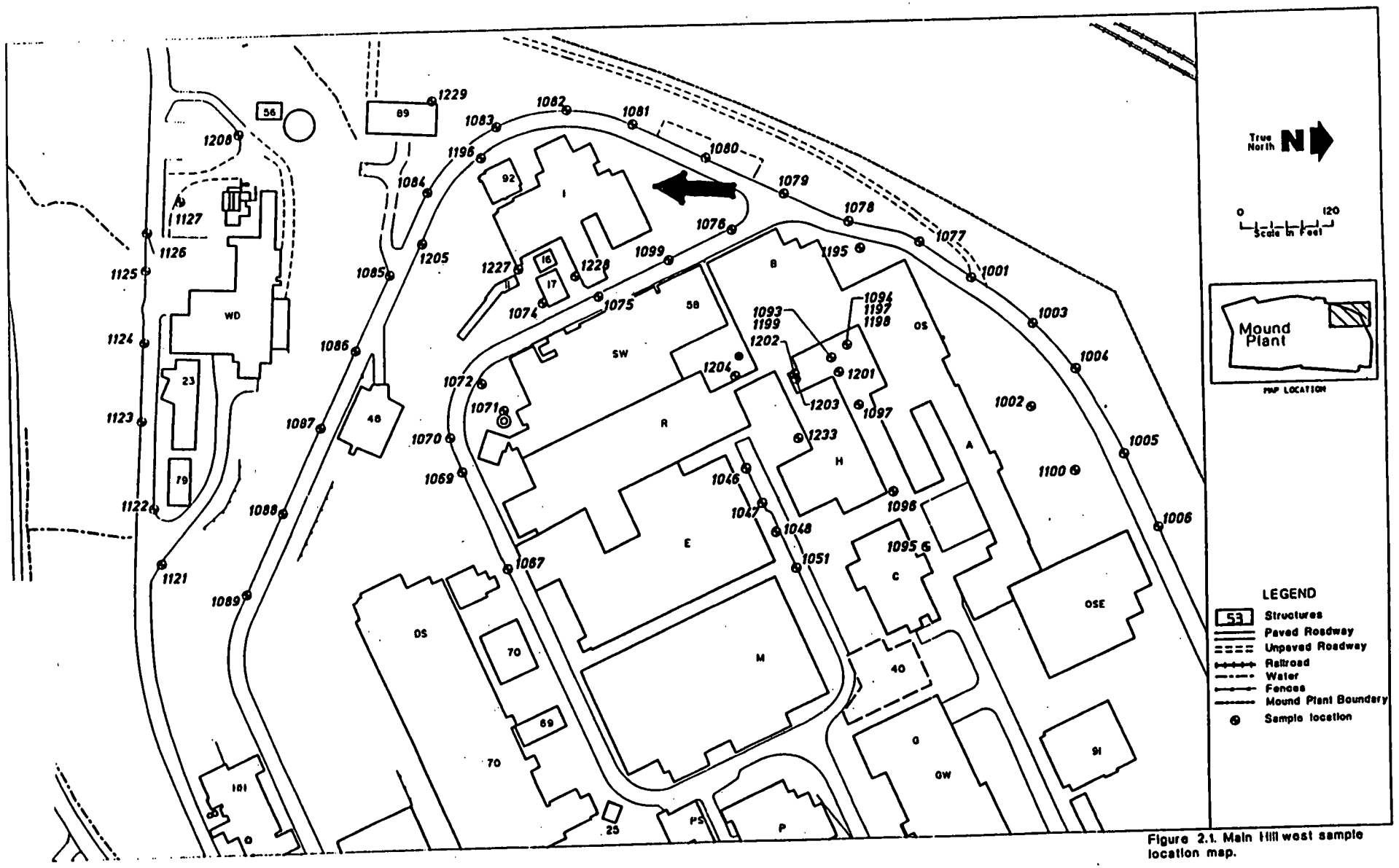


Figure 2.1. Main Hill west sample location map.

SOIL GAS DATA (ABSOLUTE)

TABLE II.4. SUMMARY OF POSITIVE DETECTIONS–MAIN HILL
(ppb)

SAMPLE ID	SAMPLE DATE	FREON 11	FREON 113	TRAN–12DCE	CIS–12DCE	111TCA	PCE	TCE	TOLUENE
MND–01–1002–1003	28 JUL 92	---	---	---	---	---	---	---	40
MND–01–1003–0005	28 JUL 92	---	---	---	---	---	---	---	3*
MND–01–1005–0005	28 JUL 92	---	---	---	---	---	---	---	21*
MND–01–1007–0005	29 JUL 92	---	---	---	---	---	---	2	---
MND–01–1008–0005	29 JUL 92	---	---	---	---	---	---	---	5
MND–01–1008–1005	29 JUL 92	---	---	---	---	---	---	---	3
MND–01–1009–0005	29 JUL 92	---	---	---	---	---	---	4	19
MND–01–1010–0005	29 JUL 92	---	---	---	---	---	---	---	13
MND–01–1014–0005	29 JUL 92	---	---	---	---	---	---	---	8
MND–01–1016–0003	30 JUL 92	---	---	---	---	---	---	2	8
MND–01–1046–0005	4 AUG 92	---	---	---	---	2	---	188	3*
MND–01–1047–0005	4 AUG 92	---	---	---	---	7	---	4	---
MND–01–1048–0005	4 AUG 92	---	---	---	---	6	---	4	---
MND–01–1050–0003	4 AUG 92	---	---	---	---	---	---	8	---
MND–01–1050–1003	4 AUG 92	---	---	---	---	---	---	17	27*
MND–01–1051–0003	4 AUG 92	---	---	---	---	---	---	8	5*
MND–01–1052–0003	4 AUG 92	---	---	---	---	---	---	---	13*
MND–01–1053–0002	5 AUG 92	2	---	---	---	---	---	---	447
MND–01–1054–0005	5 AUG 92	4	---	---	---	7	---	226*	11
MND–01–1055–1005	5 AUG 92	---	---	---	---	---	---	4*	5
MND–01–1057–0005	5 AUG 92	---	---	---	---	---	---	---	24
MND–01–1062–0003	5 AUG 92	---	---	---	---	13	---	6	---
MND–01–1064–0005	11 AUG 92	---	---	---	---	---	---	---	19
MND–01–1066–0005	11 AUG 92	---	---	---	---	6	---	---	226
MND–01–1067–0005	11 AUG 92	---	---	---	---	---	---	11	133
MND–01–1069–1005	12 AUG 92	---	---	---	---	---	---	---	37
MND–01–1070–0005	12 AUG 92	---	---	---	---	---	---	---	5
MND–01–1070–1005	12 AUG 92	---	---	---	---	---	---	---	5
MND–01–1072–0005	12 AUG 92	---	---	---	---	---	---	---	106
MND–01–1074–0005	12 AUG 92	---	799	---	---	---	1191	---	5
MND–01–1074–1005	12 AUG 92	---	812	---	---	---	1117	---	5
MND–01–1075–0005	12 AUG 92	---	---	---	---	---	---	---	80
MND–01–1076–0005	12 AUG 92	---	2934	---	---	148	---	---	---
MND–01–1077–0005	12 AUG 92	---	---	---	---	---	---	---	27
MND–01–1079–0005	13 AUG 92	---	13	---	---	---	---	---	---
MND–01–1080–0005	13 AUG 92	---	13	---	---	---	---	---	---
MND–01–1085–0005	13 AUG 92	---	102	---	---	22	---	41	---
MND–01–1086–0005	13 AUG 92	---	47	---	---	---	---	---	---
MND–01–1093–0005	15 AUG 92	---	**131000	247	40800	---	---	**34780	53*
MND–01–1094–0005	14 AUG 92	---	83	13	485	---	---	978	---
MND–01–1097–0002	14 AUG 92	---	---	---	---	---	---	6	8
MND–01–1099–0005	15 AUG 92	---	---	---	---	---	---	4	8*
MND–01–1101–0005	16 AUG 92	---	865	---	---	---	---	---	8
MND–01–1102–0005	16 AUG 92	---	419	---	---	---	---	---	13
MND–01–1106–0003	16 AUG 92	---	329	---	---	---	---	6	---
MND–01–1108–0005	16 AUG 92	---	---	---	---	---	---	6	---
MND–01–1109–0005	16 AUG 92	---	---	---	---	---	---	8	13
MND–01–1110–0005	16 AUG 92	---	---	---	---	---	---	---	255

COMPARISON OF ACTUAL SOIL GAS VALUES WITH CALCULATED ACCEPTABLE SOIL GAS VALUES

SCREENING POTENTIAL RELEASE SITES BASED ON SOIL GAS READINGS

Soil gas readings can be utilized in the PRS screening process to identify potential release sites that may present a potential soil contamination problem for volatile organics. The soil gas survey that was conducted at Mound as part of the "Reconnaissance Sampling Report--Soil Gas Survey and Geophysical Investigations, Mound Plant Main Hill and SM/PP Hill" investigated 8 volatile compounds. The concentrations of these compounds in the in the vapor phase within the pore spaces of the soil can be correlated to the actual soil contaminant concentrations by utilizing a method developed by ICF Kaiser Engineers. This technique has been used with US EPA Region IX approval at a large Superfund site contaminated with many of the same chemicals found at relatively low levels in soils at the Mound Plant.

The soil concentration can be estimated from the soil gas values by the following equation:

$$Ct = (Cg/Pb)*[[Pb * Kd / H] + [pw / H] + [pt - pw]]$$

where

Cg	concentration of volatile chemical concentrations as soil vapor in ng/ml
Pb	Bulk density of the soil in g/ml
Kd	soil/water partition coefficient in ml/g
H	Dimensionless Henry's Law Constant
pw	water filled porosity
pt	total porosity
Ct	target soil concentration in ng/g or ug/kg (ppb)

The technique that Mound Plant will use for screening a PRS, is to compare the soil gas values obtained at a PRS with soil gas concentrations that are known to be below any regulatory or health based level of concern. The risk based guideline values for the Mound Plant (DOE, December 1995) soils are based upon 10^{-6} risk levels or a hazard index of 1. These values correspond to direct soil exposure to persons who's activities place them at the highest risk, in particular inhalation and ingestion by a Mound Plant construction worker.

Another potential exposure path must be considered, however. The potential for some of the organic contaminants to leach into ground water must be considered in developing protective soil screening levels. A "Mound Plant Soil Screening Level" paper explains the calculation of soil screening levels. For all of the chemicals that the soil gas survey identified, the calculated soil screening level soil concentrations are below the standard guideline values, therefore they are more conservative and are appropriate to be used as the basis for the soil gas calculations.

By re-arranging the equation, and using either the soil guideline values or the soil screening levels as the target soil concentration, a soil gas concentration can be calculated; this calculated soil gas concentration can be compared to the actual observed soil gas values:

$$Cg = (Pb*Ct)/[[Pb*Kd/H] + [pw/H] + [pt-pw]]$$

The values of the soil specific and chemical parameters for this equation are summarized as follows:

Pb	1.6	Bulk density of the soil in g/ml
pw	0.15	water filled porosity
pt	0.43	total porosity
foc	0.02	fraction organic material in soil (used in developing the SSL values)

Typical chemicals that are detected with soil gas sampling are:					
NAME	H	Kd	Calculated Acceptable	Calculated Acceptable	Calculated Acceptable
			Soil Screening Level Value	Soil Gas Reading	Soil Gas Reading
		ml/g	mg/Kg (ppm)	ng/ml	ppb
Toluene	2.52E-01	3.42	22.06	1.56E+03	414600
Trichloroethene (TCE)	4.35E-01	2.24	0.07	1.26E+01	2400
1,1,1 Trichloroethane (TCA)	7.63E-01	2.2	3.01	9.46E+02	173400
Trans-1,2 Dichloroethene (DCE)	2.29E-01	1	0.70	1.41E+02	35700
cis-1,2 Dichloroethene (DCE)	1.85E-01	2.78	0.31	1.97E+01	5000
Freon 11	NA	NA			
Freon 113	NA	NA			
Tetrachloroethene (PCE)	7.09E-01	2.78	0.09	2.13E+01	3100

na not available

IF THE SOIL GAS READING IS BELOW THE VALUES IN THE CALCULATED SOIL GAS READING COLUMN (SHADED), THEN THERE IS NO THREAT TO GROUNDWATER FROM THIS PRS.

The soil screening level values are calculated using the Soil Screening Methodology. The Potential Release Site is assumed to be more than 100 meters from a potential drinking water source with an aquifer thickness of 15 meters and a source size of 10 meters. The hydraulic gradient is assumed to be 0.01 which is conservative for most of the Mound Plant PRSs. In special instances where the PRS lies less than 100 meters from a potential drinking water source, or the hydraulic gradient is much less than 0.01, new SSL values and new acceptable soil gas values will be calculated for that particular PRS.

Ohio Department of Commerce
Division of State Fire Marshal
Bureau of Underground Storage Tank Regulations

BUSTR

PRS 408 Removal Goal Determination

(4) List of parameters and analytical methods.

TABLE 1

Analytical Group	Constituent	Analytical Method For Soil Samples	Analytical Method For Water Samples
1.GASOLINE (Motor Gasoline, Aviation Gasoline, and Gasohol)	Benzene	EPA Method 8020	EPA Method 602
	Toluene	EPA Method 8020	EPA Method 602
	Ethylbenzene	EPA Method 8020	EPA Method 602
	Total Xylenes	EPA Method 8020	EPA Method 602
	Total Petroleum Hydrocarbons	EPA Method 8015	Not Applicable (MODIFIED)
2.MIDDLE DISTILLATES (Kerosene, Diesel Fuel, Jet Fuel, and Light Oils)	Benzene	EPA Method 8020	EPA Method 602
	Toluene	EPA Method 8020	EPA Method 602
	Ethylbenzene	EPA Method 8020	EPA Method 602
	Total Xylenes	EPA Method 8020	EPA Method 602
	Polynuclear Aromatic Hydrocarbons	EPA Method 8100 (MODIFIED)	EPA Method 610
	Total Petroleum Hydrocarbons	EPA Method 418.1	Not Applicable
3.Used Oil and Unknowns	Volatile Organic Aromatics	EPA Method 8240	EPA Method 624
	Total Petroleum Hydrocarbons	EPA Method 418.1	Not Applicable
4.Heavy Fuel Oils and Lubricating Oils	Total Petroleum Hydrocarbons	EPA Method 418.1	Not Applicable
5.Other Compounds	Not Applicable	Consult With The Fire Marshal	Consult With The Fire Marshal

(E) ACTION LEVELS

(1) Upon completion of a site check pursuant to paragraph (D)(3) of this rule or a closure assessment pursuant to paragraph (K) of rule 1301:7-9-12 of the Administrative Code, owners and operators shall determine the appropriate action levels for the UST site using the scoring system and action level table set forth in paragraph (E)(3)(i) of this rule. If contaminant levels at any location on the UST site, as determined by the site check or closure assessment, exceed the action levels determined for the UST site, owners and operators shall proceed to conduct a site assessment pursuant to paragraph (I) of this rule.

(2) If owners and operators have obtained laboratory analytical results from a study or survey of the UST site other than from a site check conducted pursuant to paragraph (D)(3) of this rule, a closure assessment conducted pursuant to paragraph (K) of rule 1301:7-9-12 of the Administrative Code, or a site assessment conducted pursuant to paragraph (I) of this rule, owners and operators shall conduct a site check pursuant to this rule if any such results exceed the appropriate action levels determined for the UST site using the scoring system and action level table set forth in paragraph (E)(3)(i).

(3) Scoring system.

(i) UST sites shall be scored using the site feature scoring system set forth in this paragraph.

SITE FEATURE SCORING SYSTEM

SITE FEATURES	COLUMN A		COLUMN B		COLUMN C		COLUMN D	
	SCORE 20 IF TRUE	SCORE	SCORE 15 IF TRUE	SCORE	SCORE 10 IF TRUE	SCORE	SCORE 5 IF TRUE	SCORE
1. Distance of UST system from closest drinking water supply well or intake currently in use.	>1000 feet	20	301-1000 feet		<301 feet		Inside of designated sensitive area	
2.Average depth to ground water.	>50 feet		31-50 feet	15	15-30 feet or unknown		<15 feet	
3.Predominant soil type of substratum.	Clay or Shale	20	Silt or Clayey Sands or Fine Sandstone		Silty Sand or Fine Sand or Sandstone or Unknown		Clean Sand or Gravel or Conglomerate	
4.Natural and/or manmade conduits or receptors.	< 8		8-10	15	11-13		> 13	
Subtotal:								

Total Score = _____

(ii) Site feature 1 shall be measured from the edge of the portion of the UST system closest to the drinking water supply well or intake. A drinking water supply well or intake includes an area upstream from a public surface water supply intake, a public drinking water well, a private drinking water well, or a reservoir or lake greater then five acres in surface area.

(iii) Site feature 2 shall calculate the average depth of ground water utilizing readily accessible public documents and or site-specific investigations, such as local drilling logs within one-quarter mile of the site, Ohio department of natural resources records, Ohio department of transportation records, soil boring logs, site checks, and site assessments. The depth should be

calculated from the ground surface and not from the bottom of the tank excavation. If the depth to ground water can not be determined then you must utilize the score from column C of the site feature scoring system.

(iv) Site feature 3 shall select a substratum type which best represents the soil and/or bedrock under the UST site or is most typical of the area utilizing readily accessible public documents and/or site-specific investigations, such as local drilling logs within one-quarter mile of the site, geologic maps, Ohio department of natural resources records, Ohio department of transportation records, soil boring logs, site checks, and site assessments.

(v) Site feature number 4 shall be scored using the following site Feature Number 4 Worksheet and in accordance with procedures established by the fire marshal:

SITE FEATURE NUMBER 4 WORKSHEET

Basements or subsurface foundations within one hundred feet of UST system	4 points	✓
Storm sewer within fifty feet of UST system	4 points	✓
Sanitary sewer within fifty feet of UST system	4 points	___
Septic system leach field within fifty feet of UST system	2 points	___
Water line main within fifty feet of UST system	1 point	___
Natural gas line main within fifty feet of UST system	1 point	___
Bedrock area prone to dissolution along joints of fractures (i.e., caves & sinkholes) within one hundred feet of UST system	1 point	___
Faults or known fractures within one hundred feet of UST system	1 point	✓
Buried telephone/television cable main within fifty feet of UST system	1 point	___
Buried electrical cable main within fifty feet of UST system	1 point	___
	TOTAL POINTS	9

(4) Action level table.

(i) Action levels shall be determined for the UST site by applying the total score calculated for the UST site pursuant to paragraphs (E)(3)(i) to (E)(3)(v) of this rule to the following table:

	CATEGORY 4	CATEGORY 3	CATEGORY 2	CATEGORY 1
TOTAL SCORE	>71	70-51	50-31	<31
Constituents level in soil:				
Benzene	.500 PPM	.335 PPM	.170 PPM	.006 PPM
Toluene	12 PPM	9 PPM	7 PPM	4 PPM
Ethylbenzene	18 PPM	14 PPM	10 PPM	6 PPM
Total Xylenes	85 PPM	67 PPM	47 PPM	28 PPM
Constituents level in ground water:				
Benzene	.005 PPM	.005 PPM	.005 PPM	.005 PPM
Toluene	1 PPM	1 PPM	1 PPM	1 PPM
Ethylbenzene	.700 PPM	.700 PPM	.700 PPM	.700 PPM
Total Xylenes	10 PPM	10 PPM	10 PPM	10 PPM
TPH level in soil:				
Analytical Group No. 1	600 PPM	450 PPM	300 PPM	105 PPM
Analytical Group Nos. 2, 3, and 4	1156 PPM	904 PPM	642 PPM	380 PPM

PRS 408
Validated TPH Sampling Data

PRS 408 Preliminary Sampling

June 13,1996

Total Petroleum Hydrocarbons

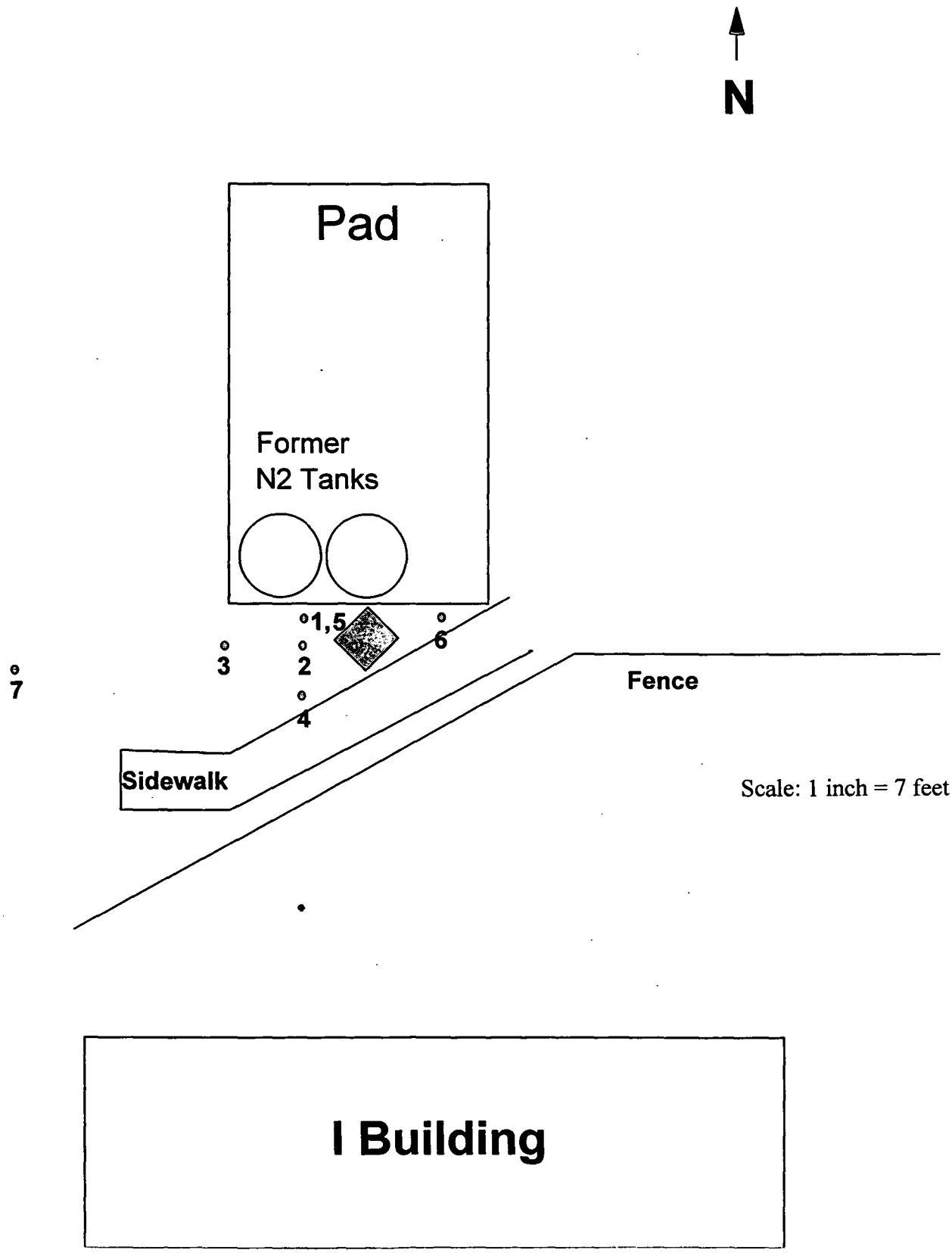
PetroFlag TPH Field Test Kit

Location	TPH (ppm)
1	13,400
2	19,720
3	>20,000
4	7,140
5	12,010
6	199
7	1,632

Note: Surface samples included a dark colored surface crust that had a petroleum odor

General Chemistry

PRS 408
Initial Site Charactorization Sample Locations
June 13, 1996



PetroFLAG™

Hydrocarbon Test Kit - Field Data Sheet

Date: 6-13-96
Operator: DENNIS GAULT
Location: NITROGEN TANK PAD NORTH OF I BUILDING

Calibration Time/Date: 10:30 AM / 6-13-96
Calibration Temperature: 23.2°C

No.	Sample ID	Weight	Time/Date	Reading (ppm)	DF[1]	RF[2]	Actual (ppm)	Comments
1	#1	10gm	1105/6-13	>2000	1	7	>2000	OVER RANGE
2	#2	10gm	1105/6-13	>2000	1	7	>2000	"
3	#3	10gm	1106/6-13	>2000	1	7	>2000	"
4	#4	10gm	1106/6-13	>2000	1	7	>2000	"
5	#5	10gm	1107/6-13	>2000	1	7	>2000	"
6	BLANK	10gm	1103/6-13	0	1	7	0	
7	CAL.	10gm	1104/6-13	1000	1	7	1000	
8								
9	#1	1gm	1339 / 1335/6-13	1427/1340	10	7	14270/13400	24.5°C
10	#2	1gm	1339 / 1335/6-13	>2000/1972	10	7	OVER RANGE/19720	
11	#3	1gm	1340 / 1336/6-13	>2000/>2000	10	7	OVER RANGE	OVER RANGE
12	#4	1gm	1340 / 1336/6-13	771/714	10	7	7710/7140	
13	#5	1gm	1341 / 1337/6-13	1295/1201	10	7	12950/12010	
14	#6	10gm	1341 / 1338/6-13	266/199	1	7	266/199	
15	#7	10gm	1342 / 1338/6-13	1750/1632	1	7	1750/1632	
16								
17								
18								
19								
20								

General Chemistry

[1]DF = Dilution Factor, e.g., for 5 gram soil sample DF=10g/5g=2, and actual concentration equals reading times DF (reading (ppm) x DF = actual concentration).

[2]RF = Response Factor, selected for the hydrocarbon contamination at the site.

PRS 408 Site Characterization

August 8,1996

Total Petroleum Hydrocarbons

PetroFlag TPH Field Test Kit

Location	Depth	TPH (ppm)
1	0-6"	936
1	6-12"	459
1	12-18"	216
2	0-6"	358
2	6-12"	68
2	12-18"	0
2	18-22"	0
2	22-28"	0
2	28-34"	0
2	34-40"	0
2	40-46"	0
2	46-52"	0
2	52-58"	0
2	58-64"	0
3	0-6"	9540
3	6-12"	467
3	12-18"	356
3	18-24"	953
3	24-30"	345
3	30-36"	481
3	36-42"	0
4	0-6"	77
4	6-12"	0
4	12-20"	0
4	20-26"	6

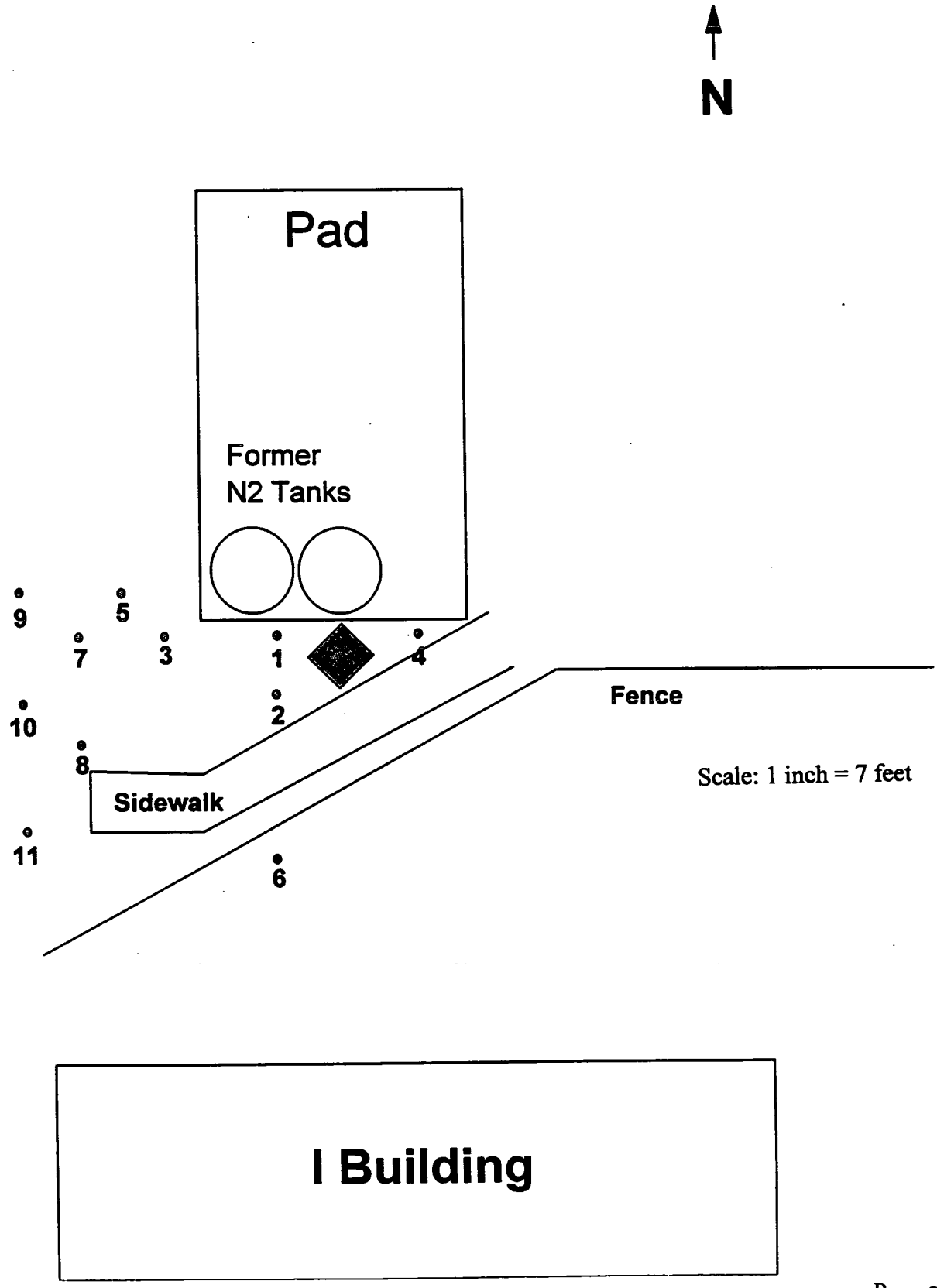
Location	Depth	TPH (ppm)
4	26-32"	29
4	32-38"	0
4	38-44"	0
4	44-50"	0
4	50-56"	22
4	56-62"	124
4	62-68"	7
4	68-74"	43
4	74-80"	10
4	80-85"	0
5	0-12"	70
6	0-12"	37
6	12-21"	0
7	0-12"	87
7	12-21"	0
7	21-30'	0
8	0-12"	16
8	12-24"	0
9	0-12"	23
9	12-21"	0
10	0-12"	38
10	12-17"	17
11	0-12"	51
11	12-22"	0

General Chemistry

PRS 408

Site Charactorization Sample Locations

August 8, 1996



PetroFLAG™

Hydrocarbon Test Kit - Field Data Sheet

Date: 8-8-96
Operator: D. Gault
Location: Prizm System

Calibration Time/Date: 1415 / 8-8-96
Calibration Temperature: 23.1°C

No.	Sample ID	Weight	Time/Date	Reading (ppm)	DF[1]	RF[2]	Actual (ppm)	Comments
1	Blank	10gm	1415/8-8	Ø	1	8		
2	Cal.	"	1415/8-8	1000	"	"		
3	#1 0-6"	"	1450/8-8	936	"	"	936	
4	#1 6-12"	"	1450/8-8	459	"	"	459	
5	#1 12-18"	"	1451/8-8	216	"	"	216	
6	#2 0-6"	"	1451/8-8	358	"	"	358	
7	#2 6-12"	"	1451/8-8	68	"	"	68	
8	#2 12-18"	"	1452/8-8	Ø	"	"	Ø	
9	#2 18-22"	"	1452/8-8	Ø	"	"	Ø	
10	#2 22-28"	"	1453/8-8	6	"	"	6	
11	#2 28-34"	"	1453/8-8	Ø	"	"	Ø	
12	#2 34-40"	"	1454/8-8	Ø	"	"	Ø	
13	#2 40-46"	"	1454/8-8	Ø	"	"	Ø	
14	#2 46-52"	"	1455/8-8	Ø	"	"	Ø	
15	#2 52-58"	"	1455/8-8	Ø	"	"	Ø	
16	#2 58-64"	"	1456/8-8	Ø	"	"	Ø	
17								
18	Re-Read							
19	Blank	"	1456/8-8	Ø				
20	Cal.	"	1457/8-8	968				

General Chemistry

[1]DF = Dilution Factor, e.g., for 5 gram soil sample DF=10g/5g=2, and actual concentration equals reading times DF (reading (ppm) x DF = actual concentration).

[2]RF = Response Factor, selected for the hydrocarbon contamination at the site.

PetroFLAG™

Hydrocarbon Test Kit - Field Data Sheet

Date: 8-12-96
Operator: D. Gault / M. Spivey
Location: Prizm System

Calibration Time/Date: 0845 / 8-12
Calibration Temperature: 23.8°C

No.	Sample ID	Weight	Time/Date	Reading (ppm)	DF[1]	RF[2]	Actual (ppm)	Comments
1	Blank	10g soil	0845/8-12	0	1	8	0	
2	Cal.	"	0845/8-12	1000	"	"	1000	
3	#3 0-6"	"	0845/8-12	>2000			>2000	over range.
4	#3 6-12"	"	0846/8-12	467	"	"	467	
5	#3 12-18"	"	0846/8-12	356	"	"	356	
6	#3 18-24"	"	0847/8-12	953	"	"	953	
7	#3 24-30"	"	0847/8-12	345	"	"	345	
8	#3 30-36"	"	0849/8-12	481	"	"	481	
9	#3 36-42"	"	0849/8-12	Ø	"	"	Ø	
10	#4 0-6"	"	0850/8-12	77	"	"	77	
11	#4 6-12"	"	0850/8-12	Ø	"	"	Ø	
12	#4 12-20"	"	0851/8-12	Ø	"	"	Ø	
13	#4 20-26"	"	0851/8-12	6	"	"	6	
14	#4 26-32"	"	0852/8-12	29	"	"	29	
15	#4 32-38"	"	0852/8-12	Ø	"	"	Ø	
16	#4 38-44"	"	0853/8-12	Ø	"	"	Ø	
17	#4 44-50"	"	0853/8-12	Ø	"	"	Ø	
18	#4 50-56"	"	0854/8-12	22	"	"	22	General Chemistry
19	#4 56-62"	"	0854/8-12	124	"	"	124	
20	#4 62-68"	"	0855/8-12	7	"	"	7	

[1]DF = Dilution Factor, e.g., for 5 gram soil sample DF=10g/5g=2, and actual concentration equals reading times DF (reading (ppm) x DF = actual concentration).

[2]RF = Response Factor, selected for the hydrocarbon contamination at the site.

PetroFLAG™

Hydrocarbon Test Kit - Field Data Sheet

Date: 8-12-96
Operator: D. Gauit / M. Spivey
Location: Pr. Fin System

Calibration Time/Date: _____
Calibration Temperature: _____

	No.	Sample ID	Weight	Time/Date	Reading (ppm)	DF[1]	RF[2]	Actual (ppm)	Comments
2	1	#4 68-74"	10gm	0855/8-12	43	1	8	43	
2	2	#4 74-80"	"	0856/8-12	10	"	"	10	
2	3	#4 80-85"	"	856/8-12	Ø	"	"	Ø	
	4								
	5								
	6	Blank	"	0857/8-12	Ø	1	8	Ø	Re Check
	7	Cal	"	0857/8-12	1035	"	"	1135	"
	8								
	9								
	10								
	11	Blank	1gm	0920/8-12	Ø	10	8	Ø	
	12	Cal	1gm	0920/8-12	1000	10	8	1000	
	13								
	14	#3 0-6"	1gm	0920/8-12	9540	10	8	9540	
	15								
	16	Blank	1	0923/8-12	Ø		8	Ø	
	17	Cal.	1	0923/8-12	1068		8	1168	
	18								
	19								
	20								

General Chemistry

[1]DF = Dilution Factor, e.g., for 5 gram soil sample DF=10g/5g=2, and actual concentration equals reading times DF (reading (ppm) x DF = actual concentration).

[2]RF = Response Factor, selected for the hydrocarbon contamination at the site.

PetroFLAG™

Hydrocarbon Test Kit - Field Data Sheet

Date: 8-13-96 Calibration Time/Date: 1515 / 8-13-96
Operator: D. GAULT Calibration Temperature: 22.9°C
Location: BLDG 23 / PRIZER SYSTEM

No.	Sample ID	Weight	Time/Date	Reading (ppm)	DF[1]	RF[2]	Actual (ppm)	Comments
1	BLANK	10g	1515	Ø	1	8	Ø	
2	CAL.	"	1515	1000	"	"	1000	
3	BLDG 23 M. SCHIBS	"	1516	757	"	"	757	?
4	PRIZER #5 0-12"	"	1520	70	"	"	70	
5	#6 0-12"	"	1520	37	"	"	37	
6	#6 12-24"	"	1522	Ø	"	"	Ø	
7	#7 0-12"	"	1522	87	"	"	87	
8	#7 12-21"	"	1522	Ø	"	"	Ø	
9	#7 21-30"	"	1523	Ø	"	"	Ø	
10	#8 0-12"	"	1524	16	"	"	16	
11	#8 12-24"	"	1545	Ø	"	"	Ø	
12	#9 0-12"	"	1545	23	"	"	23	
13	#9 12-21"	"	1546	Ø	"	"	Ø	
14	#10 1-12"	"	1546	38	"	"	38	
15	#10 12-17"	"	1547	17	"	"	17	
16	#11 0-12"	"	1547	51	"	"	51	
17	#11 12-22"	"	1548	Ø	"	"	Ø	
18	BLANK	"	1525	Ø	"	"	Ø	
19	CAL	"	1525	1168	"	"	1168	
20	BLDG. 23	1g	1548	>2000	10	"	>20,000	

General Chemistry

[1]DF = Dilution Factor, e.g., for 5 gram soil sample DF=10g/5g=2, and actual concentration equals reading times DF (reading (ppm) x DF = actual concentration).

[2]RF = Response Factor, selected for the hydrocarbon contamination at the site.

PRS 408 Verification Sampling
(After 1st Removal Action)
September 10,1996

Total Petroleum Hydrocarbons

Weston Environmental Measurements Laboratory

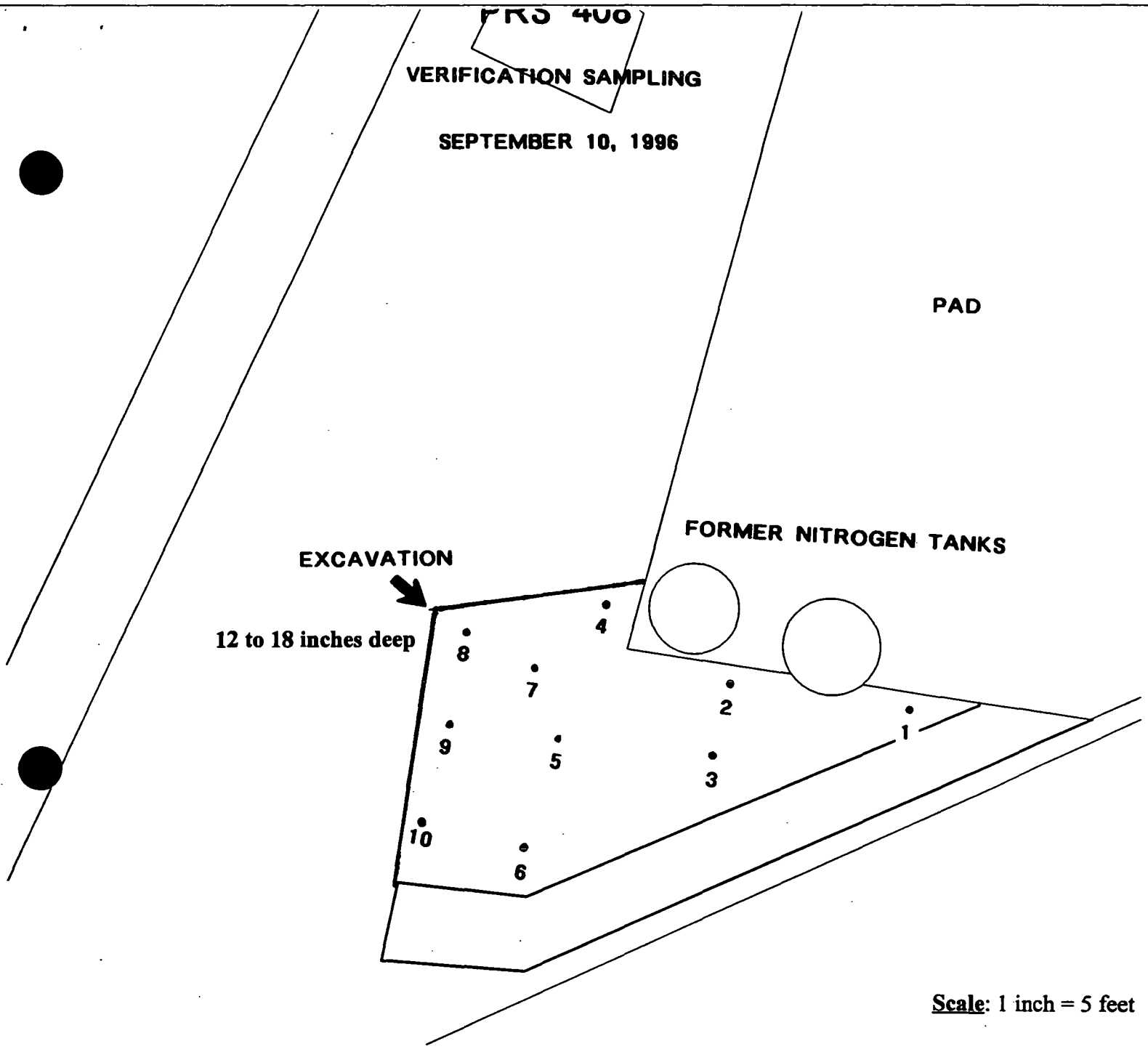
Location	TPH (ppm)
1	37.2
2	**1650**
3	96.9
4	550
5	**1190**
6	386
7	**4780**
8	749
9	92.2
10	55.7
11	88.3
12	1110
13	1140
14	876
15	*
16	1340

*: No Data

Note: Highlighted Data exceeds the cleanup level

Note: Locations 1-10 was PRS408 site after removal, 11-16 was the removed soil

General
Chemistry



LEGEND

• :SAMPLE LOCATION

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 09/23/96

CLIENT: EG&G MOUND

WESTON BATCH #: 9609L137

WORK ORDER: 05376-069-001-0700-02

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	000001	% Solids	84.0	%	0.10	1.0
		Petroleum Hydrocarbons	27.2	MG/KG	4.0	1.0
-002	000002	% Solids	85.4	%	0.10	1.0
		Petroleum Hydrocarbons	1650	MG/KG	39.0	10.0
-003	000003	% Solids	95.7	%	0.10	1.0
		Petroleum Hydrocarbons	96.9	MG/KG	3.5	1.0
-004	000004	% Solids	91.8	%	0.10	1.0
		Petroleum Hydrocarbons	550	MG/KG	36.3	10.0
-005	000005	% Solids	96.0	%	0.10	1.0
		Petroleum Hydrocarbons	1190	MG/KG	34.7	10.0
-006	000006	% Solids	91.5	%	0.10	1.0
		Petroleum Hydrocarbons	386	MG/KG	36.4	10.0
-007	000007	% Solids	96.1	%	0.10	1.0
		Petroleum Hydrocarbons	4780	MG/KG	86.7	25.0
-008	000008	% Solids	99.1	%	0.10	1.0
		Petroleum Hydrocarbons	749	MG/KG	33.6	10.0
-009	000009	% Solids	94.2	%	0.10	1.0
		Petroleum Hydrocarbons	92.2	MG/KG	3.5	1.0
-010	000010	% Solids	94.0	%	0.10	1.0
		Petroleum Hydrocarbons	55.7	MG/KG	3.5	1.0

General Chemistry

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 09/23/96

CLIENT: BOMG MOUND

WORK ORDER: 05376-069-001-0700-02

WESTON BATCH #: 9609L137

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-011	000012	% Solids	96.6	%	0.10	1.0
		Petroleum Hydrocarbons	88.3	MG/KG	3.5	1.0
-012	000013	% Solids	92.0	%	0.10	1.0
		Petroleum Hydrocarbons	1110	MG/KG	36.2	10.0
-013	000014	% Solids	88.9	%	0.10	1.0
		Petroleum Hydrocarbons	1140	MG/KG	37.5	10.0
-014	000015	% Solids	92.3	%	0.10	1.0
		Petroleum Hydrocarbons	876	MG/KG	36.1	10.0
-016	000011	% Solids	93.6	%	0.10	1.0
		Petroleum Hydrocarbons	1340	MG/KG	36.6	10.0
-017	000017	Petroleum Hydrocarbons	2.6 u	MG/L	2.6	1.0

General Chemistry

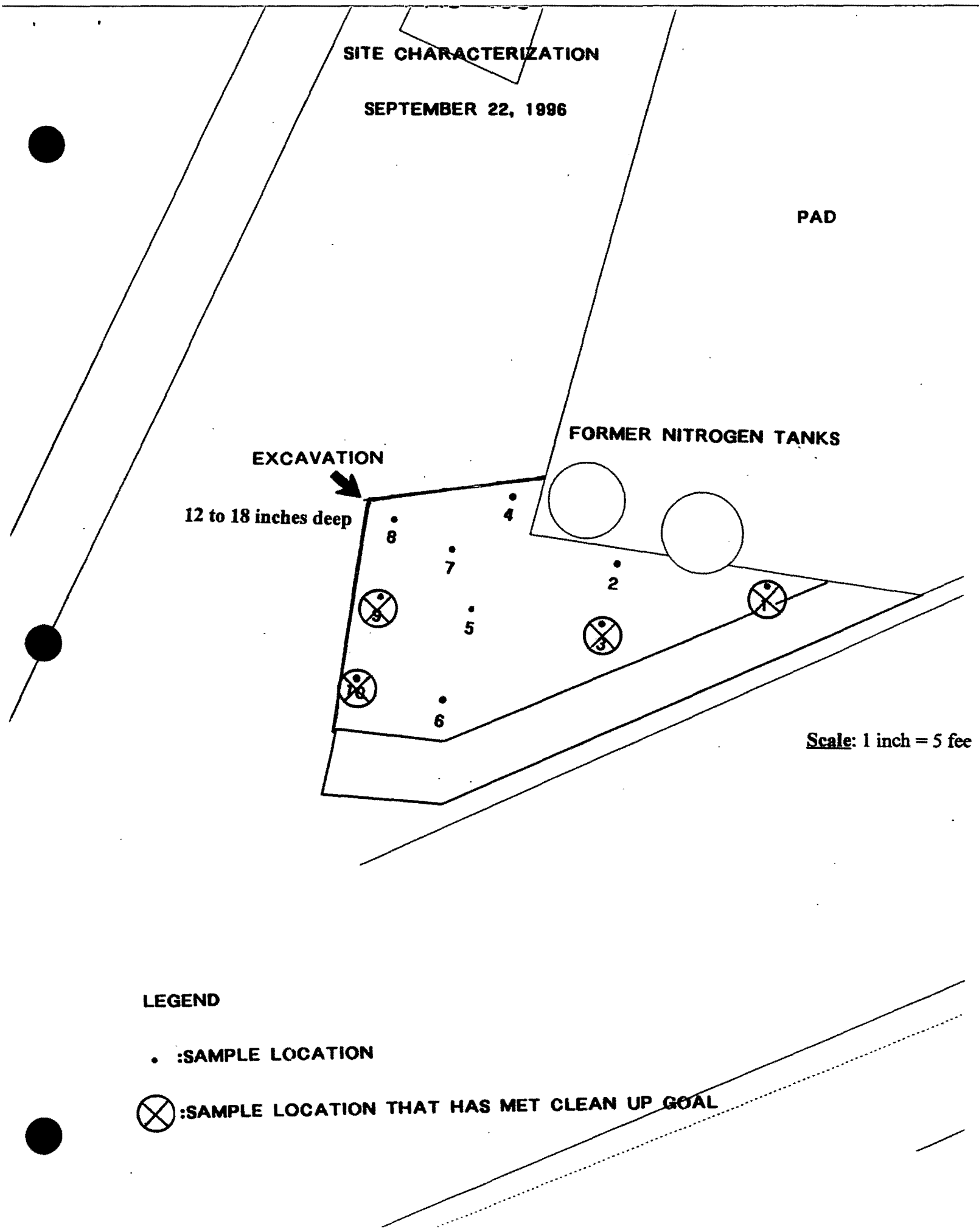
PRS 408 Site Characterization
(After 1st Removal Action)
September 22,1996

Total Petroleum Hydrocarbons
(To Determine the Extent of Further Removal)

PetroFlag TPH Field Test kit

Location	Depth	TPH (ppm)
2	2"	409
2	10"	593
2	15"	1942
2	20"	233
2	29"	0
2	39"	0
4	12"	0
4	24"	33
5	4"	113
5	15"	0
5	28"	0
5	40"	0
5	50"	0
5	60"	0
6	12"	0
6	24"	0
7	6"	0
7	14'	0
7	26'	0
7	36'	7
7	48"	0
7	55"	0
8	6'	0
8	12'	0
8	26"	0
8	36'	0

General
Chemistry


SITE CHARACTERIZATION
SEPTEMBER 22, 1996
PAD
FORMER NITROGEN TANKS
EXCAVATION
12 to 18 inches deep
8
4
7
2
9
5
3
1
10
6
Scale: 1 inch = 5 fee
LEGEND
• :SAMPLE LOCATION
:SAMPLE LOCATION THAT HAS MET CLEAN UP GOAL

PetroFLAG™

Hydrocarbon Test Kit - Field Data Sheet

Date: 10/28/96
Operator: D. GAULT
Location: PRS 408

Calibration Time/Date: 0720 / 10-28-96
Calibration Temperature: 17.9°C

No.	Sample ID	Weight	Time/Date	Reading (ppm)	DF[1]	RF[2]	Actual (ppm)	Comments
1	Blank	10 gm	0721	Ø	1	7	Ø	
2	CAL.	"	0721	1000	1	7	1000	
3	#2 2"	"	0722	409	1	7	409	SAND + CLAY
4	#2 10"	"	0722	593	1	7	593	SAND
5	#2 15"	"	0723	1942	1	7	1942	SAND + CLAY
6	#2 20"	"	0723	233	1	7	233	"
7	#2 29"	"	0724	Ø	1	7	Ø	CLAY
8	#2 39"	"	0725	Ø	1	7	Ø	CLAY & ROCK
9	#5 4"	"	0725	113	1	7	113	SAND
10	#5 15"	"	0726	Ø	1	7	Ø	SAND & CLAY
11	#5 28"	"	0727	Ø	1	7	Ø	CLAY
12	#5 40"	"	0727	Ø	1	7	Ø	CLAY
13	#5 50"	"	0728	Ø	1	7	Ø	CLAY
14	#5 60"	"	0728	Ø	1	7	Ø	BLACK CLAY
15								
16	Blank		0729	Ø	1	7	Ø	
17	CAL		0729	1280	1	7	1280	
18								
19								
20								

General Chemistry

[1]DF = Dilution Factor, e.g., for 5 gram soil sample DF=10g/5g=2, and actual concentration equals reading times DF (reading (ppm) x DF = actual concentration).

[2]RF = Response Factor, selected for the hydrocarbon contamination at the site.

PetroFLAG™

Hydrocarbon Test Kit - Field Data Sheet

Date: 10-24-96
Operator: D. Gault
Location: PRS-40R

Calibration Time/Date: _____
Calibration Temperature: 17.3°C

No.	Sample ID	Weight	Time/Date	Reading (ppm)	DF[1]	RF[2]	Actual (ppm)	Comments
1	Blank	10gm	/10-24	Ø	1	7	Ø	
2	Cal.	10gm	/10-24	1000	1	7	1000	
3	#7 6"	1gm	/10-24	Ø	10	7	Ø	Sand
4	#7 14"	1gm	/10-24	Ø	10	7	Ø	Light Clay
5	#7 26"	10gm	/10-24	Ø	1	7	Ø	Light Clay & water
6	#7 36"	10gm	/10-24	7	1	7	7	Dark Clay
7	#7 48"	10gm	/10-24	Ø	1	7	Ø	Dark Clay Rock
8	#7 55	10gm	/10-24	Ø	1	7	Ø	Rock Wet Clay
9								
10	Blank			Ø	1	7	Ø	
11	Cal.			1342	1	7	1342	
12								
13								
14								
15								
16								
17								
18								
19								
20								

General Chemistry

[1]DF = Dilution Factor, e.g., for 5 gram soil sample DF=10g/5g=2, and actual concentration equals reading times DF (reading (ppm) x DF = actual concentration).

[2]RF = Response Factor, selected for the hydrocarbon contamination at the site.

PetroFLAG™

Hydrocarbon Test Kit - Field Data Sheet

Date: 10/28/96
Operator: D. Gault
Location: PRS 408

Calibration Time/Date: 0822 / 10-28-96
Calibration Temperature: 18.1°C

No.	Sample ID	Weight	Time/Date	Reading (ppm)	DF[1]	RF[2]	Actual (ppm)	Comments
1	Blank	10 gm	0822	Ø	1	7	Ø	
2	Cal.	"	0822	1000	1	7	1000	
3	#8 6"	"	0824	Ø	1	7	Ø	Sand & Clay
4	#8 12"	"	0824	Ø	1	7	Ø	"
5	#8 26"	"	0825	Ø	1	7	Ø	"
6	#8 36"	"	0825	Ø	1	7	Ø	Clay
7	#6 12"	"	0826	Ø	1	7	Ø	
8	#6 24"	"	0826	Ø	1	7	Ø	
9	#4 12"	"	0826	Ø	1	7	Ø	
10	#4 24"	"	0827	33	1	7	33	
11								
12	Blank	"	0827	Ø			Ø	
13	Cal	"	0828	1326			1326	
14	#4 24"		0828	31			31	
15								
16								
17								
18								
19								
20								

General Chemistry

[1]DF = Dilution Factor, e.g., for 5 gram soil sample DF=10g/5g=2, and actual concentration equals reading times DF (reading (ppm) x DF = actual concentration).

[2]RF = Response Factor, selected for the hydrocarbon contamination at the site.

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PRS 408 Verification Sampling
(After 2nd Removal Action)
November 20,1996

Total Petroleum Hydrocarbons

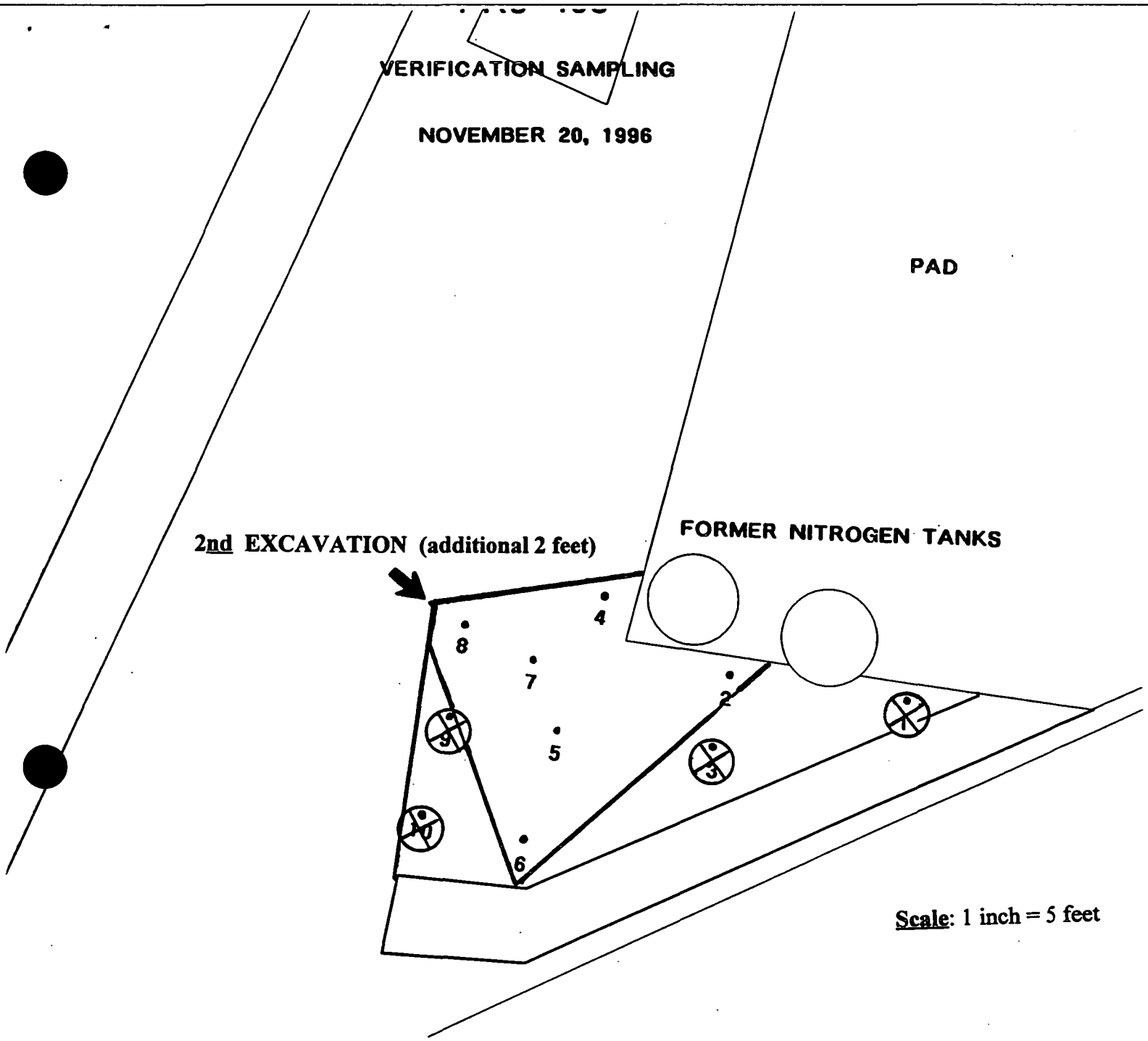
Weston Environmental Measurements Laboratory

Location	TPH (ppm)
2	1190
4	41.6
5	1580
6	187
7	38.4
8	43.2

General
Chemistry

VERIFICATION SAMPLING

NOVEMBER 20, 1996



LEGEND

• :SAMPLE LOCATION

⊗ :SAMPLE LOCATION THAT HAS MET CLEAN UP GOAL

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 12/02/96

CLIENT: FG&G MOUND

WESTON BATCH #: 9611L373

WORK ORDER: 05376-069-001-0700-02

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	000021 (2)	% Solids	89.3	%	0.10	1.0
		Petroleum Hydrocarbons	1190	MG/KG	18.7	5.0
-002	000022 (4)	% Solids	93.8	%	0.10	1.0
		Petroleum Hydrocarbons	41.6	MG/KG	3.6	1.0
003	000023 (7)	% Solids	81.8	%	0.10	1.0
		Petroleum Hydrocarbons	38.4	MG/KG	4.1	1.0
-004	000024 (5)	% Solids	89.4	%	0.10	1.0
		Petroleum Hydrocarbons	1580	MG/KG	37.3	10.0
-005	000025 (6)	% Solids	85.7	%	0.10	1.0
		Petroleum Hydrocarbons	137	MG/KG	3.9	1.0
-006	000026 (8)	% Solids	85.9	%	0.10	1.0
		Petroleum Hydrocarbons	43.2	MG/KG	3.9	1.0
-007	000027	Petroleum Hydrocarbons	1.0 u	MG/L	1.0	1.0
-008	000028 (2)	% Solids	88.2	%	0.10	1.0
		Petroleum Hydrocarbons	1240	MG/KG	18.9	5.0

General Chemistry

PRELIMINARY

PRS 408 Verification Sampling
(After Final Removal Action)
December 18,1996

Total Petroleum Hydrocarbons

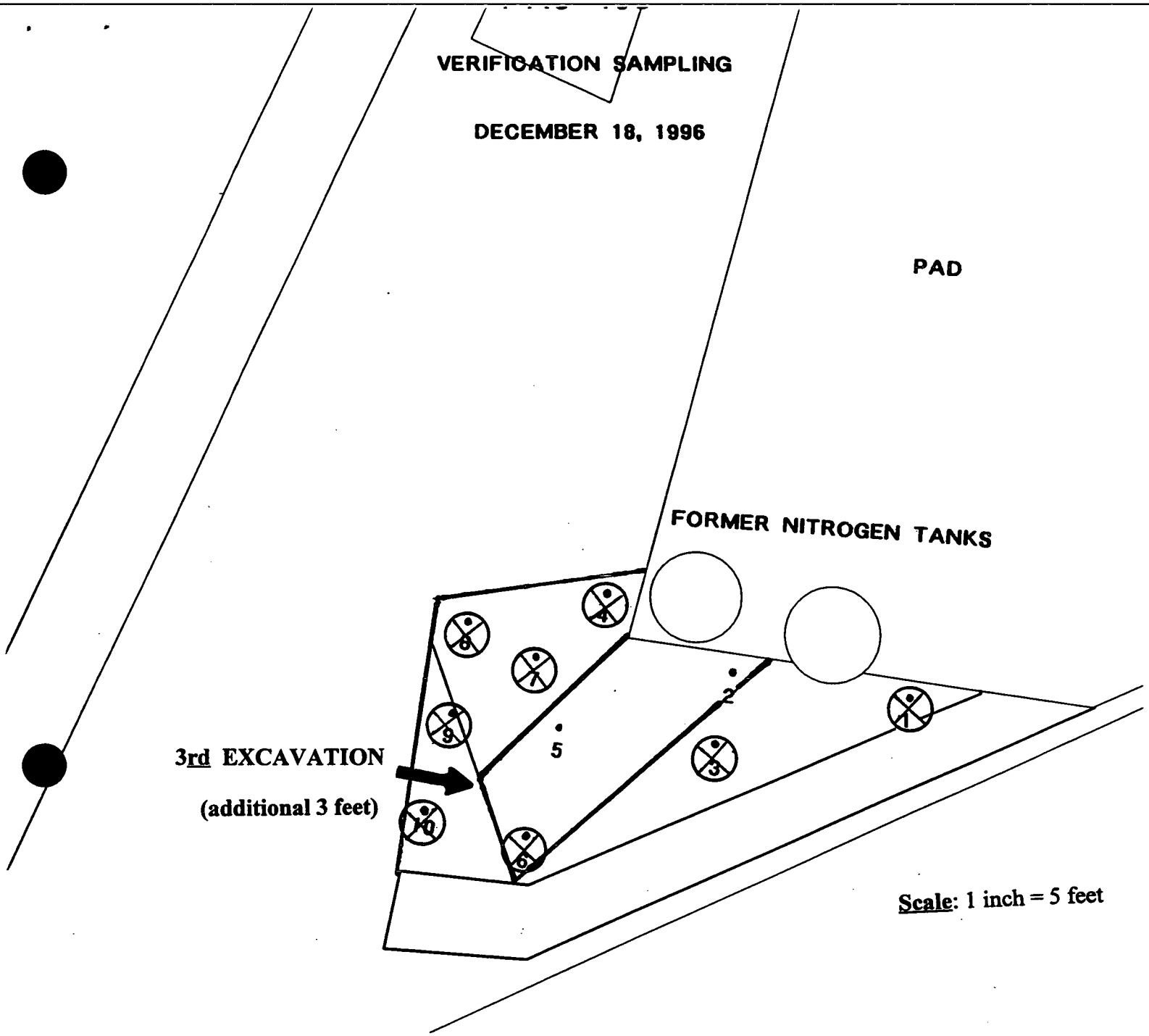
Weston Environmental Measurements Laboratory

Location	TPH (ppm)
2	497
5	27.8

General
Chemistry

VERIFICATION SAMPLING

DECEMBER 18, 1996



LEGEND

• :SAMPLE LOCATION

⊗ :SAMPLE LOCATION THAT HAS MET CLEAN UP GOAL

ROY F. WESTON INC.

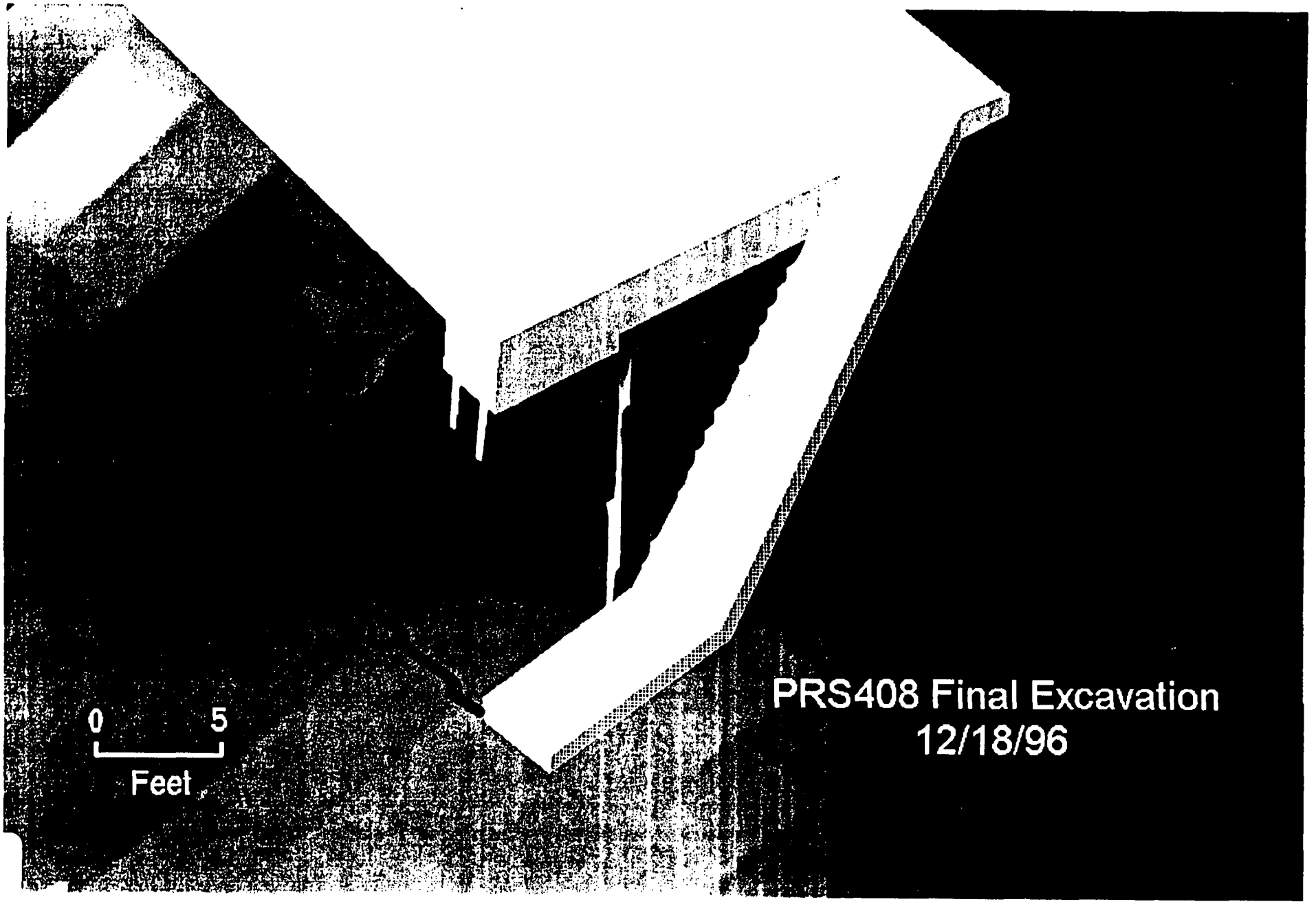
INORGANICS DATA SUMMARY REPORT 12/26/96

CLIENT: EG&G MOUND
WORK ORDER: 05376-069-001-0700-02

WESTON BATCH #: 9612L748

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	000029	% Solids	80.8	%	0.10	1.0
		Petroleum Hydrocarbons	497	MG/KG	41.2	10.0
-002	000030	% Solids	86.2	%	0.10	1.0
		Petroleum Hydrocarbons	27.8	MG/KG	3.9	1.0
-003	000031	% Solids	79.2	%	0.10	1.0
		Petroleum Hydrocarbons	212	MG/KG	4.2	1.0
-004	000032	Petroleum Hydrocarbons	0.96 u	MG/L	0.96	1.0

General Chemistry


PRS408 Final Excavation
12/18/96
0
5
Feet

PRS 408
Validated BTEX and Inorganic Sampling Data

General Chemistry

Roy F. Weston, Inc. - Lionville Laboratory
Purgeable Aromatics by GC, Method 8020

Report Date: 09/18/96 12:57

RFW Batch Number: 9609L137 Client: EG&G MOUND Work Order: 05376069001 Page: 1

	Cust ID:	000001	000002	000003	000004	000005	000006
Sample Information	RFW#:	001	002	003	004	005	006
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
	Fluorobenzene	57 %	60 %	58 %	51 %	62 %	69 %
Benzene		1.2 U	1.2 U	1.0 U	1.1 U	1.0 U	1.1 U
Ethylbenzene		1.2 U	1.2 U	1.0 U	1.1 U	1.0 U	1.1 U
Toluene		1.2 U	1.2 U	1.0 U	1.1 U	1.0 U	1.1 U
Xylene (total)		1.2 U	1.2 U	1.0 U	1.1 U	1.0 U	1.1 U

	Cust ID:	000006	000006	001007	000008	000009	000010
Sample Information	RFW#:	006 MS	006 MSD	007	008	009	010
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
	Fluorobenzene	76 %	72 %	55 %	62 %	62 %	65 %
Benzene		76 %	74 %	1.0 U	1.0 U	1.1 U	1.1 U
Ethylbenzene		72 %	67 %	1.0 U	1.0 U	1.1 U	1.1 U
Toluene		77 %	74 %	1.0 U	1.0 U	1.1 U	1.1 U
Xylene (total)		70 %	65 %	1.0 U	1.0 U	1.1 U	1.1 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Roy F. Weston, Inc. - Lionville Laboratory
Purgeable Aromatics by GC, Method 8020

RFW Batch Number: 9609L137 Client: EG&G MOUND Work Order: 05376069801 Page: 2 Report Date: 09/18/96 12:57

	Cust ID:	000017	TBLKZV	TBLKZW BS	TBLKZX	TBLKZZ BS	TBLKZY
Sample Information	RFW#:	017	96LVD053-MB1	96LVD053-MB2	96LVD054-MB1	96LVD054-MB2	96LVD054-MB1
	Matrix:	WATER	SOIL	SOIL	SOIL	SOIL	WATER
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/L	UG/KG	UG/KG	UG/KG	UG/KG	UG/L
Fluorobenzene		84 %	84 %	86 %	84 %	88 %	84 %
Benzene		1.0 U	1.0 U	91 %	1.0 U	89 %	1.0 U
Ethylbenzene		1.0 U	1.0 U	92 %	1.0 U	89 %	1.0 U
Toluene		1.0 U	1.0 U	93 %	1.0 U	91 %	1.0 U
Xylene (total)		1.0 U	1.0 U	89 %	1.0 U	87 %	1.0 U

	Cust ID:	TBLKAA BS
Sample Information	RFW#:	96LVD054-MB2
	Matrix:	WATER
	D.F.:	1.00
	Units:	UG/L
Fluorobenzene		88 %
Benzene		89 %
Ethylbenzene		89 %
Toluene		91 %
Xylene (total)		87 %

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

General Chemistry

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 09/19/96

CLIENT: EG&G MOUND
WORK ORDER: 05376-069-001-0700-02

WESTON BATCH #: 96091137

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	000001	Silver, Total	0.21 u	MG/KG	0.21	1.0
		Aluminum, Total	11900	MG/KG	2.9	1.0
		Arsenic, Total	8.8	MG/KG	0.98	1.0
		Barium, Total	78.5	MG/KG	0.05	1.0
		Beryllium, Total	0.63	MG/KG	0.05	1.0
		Bismuth, Total	1.4 u	MG/KG	1.4	1.0
		Calcium, Total	21100	MG/KG	3.1	1.0
		Cadmium, Total	0.17 u	MG/KG	0.17	1.0
		Cobalt, Total	10.9	MG/KG	0.29	1.0
		Chromium, Total	15.3	MG/KG	0.36	1.0
		Copper, Total	17.5	MG/KG	0.19	1.0
		Iron, Total	20400	MG/KG	20.5	1.0
		Mercury, Total	0.06 u	MG/KG	0.06	1.0
		Potassium, Total	1380	MG/KG	6.5	1.0
		Magnesium, Total	5070	MG/KG	2.1	1.0
		Manganese, Total	750	MG/KG	0.24	1.0
		Sodium, Total	71.8	MG/KG	31.7	1.0
		Nickel, Total	15.7	MG/KG	0.52	1.0
		Lead, Total	16.3	MG/KG	0.43	1.0
		Antimony, Total	0.71 u	MG/KG	0.71	1.0
		Selenium, Total	1.0 u	MG/KG	1.0	1.0
		Thallium, Total	2.3	MG/KG	0.95	1.0
		Vanadium, Total	25.7	MG/KG	0.21	1.0
		Zinc, Total	54.4	MG/KG	0.12	1.0

General
Chemistry

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 09/19/96

CLIENT: EG&G MOUND
WORK ORDER: 05376-069-001-0700-02

WESTON BATCH #: 9609L137

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	000002	Silver, Total	0.21 u	MG/KG	0.21	1.0
		Aluminum, Total	9420	MG/KG	2.0	1.0
		Arsenic, Total	8.4	MG/KG	0.96	1.0
		Barium, Total	80.7	MG/KG	0.05	1.0
		Beryllium, Total	0.46	MG/KG	0.05	1.0
		Bismuth, Total	1.4 u	MG/KG	1.4	1.0
		Calcium, Total	48900	MG/KG	2.1	1.0
		Cadmium, Total	0.27	MG/KG	0.16	1.0
		Cobalt, Total	7.9	MG/KG	0.28	1.0
		Chromium, Total	13.4	MG/KG	0.35	1.0
		Copper, Total	21.4	MG/KG	0.19	1.0
		Iron, Total	16000	MG/KG	20.2	1.0
		Mercury, Total	0.07	MG/KG	0.05	1.0
		Potassium, Total	1410	MG/KG	6.4	1.0
		Magnesium, Total	16800	MG/KG	2.1	1.0
		Manganese, Total	502	MG/KG	0.23	1.0
		Sodium, Total	101	MG/KG	31.1	1.0
		Nickel, Total	13.4	MG/KG	0.61	1.0
		Lead, Total	17.7	MG/KG	0.42	1.0
		Antimony, Total	0.70 u	MG/KG	0.70	1.0
		Selenium, Total	0.98 u	MG/KG	0.98	1.0
		Thallium, Total	2.0	MG/KG	0.94	1.0
		Vanadium, Total	21.9	MG/KG	0.21	1.0
		Zinc, Total	73.1	MG/KG	0.12	1.0

General Chemistry

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 09/19/96

CLIENT: BG&G MOUND WESTON BATCH #: 9609L137

WORK ORDER: 05376-069-001-0700-02

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	000003	Silver, Total	0.19 u	MG/KG	0.19	1.0
		Aluminum, Total	8770	MG/KG	2.5	1.0
		Arsenic, Total	8.1	MG/KG	0.86	1.0
		Barium, Total	55.0	MG/KG	0.04	1.0
		Beryllium, Total	0.38	MG/KG	0.04	1.0
		Bismuth, Total	1.2 u	MG/KG	1.2	1.0
		Calcium, Total	90500	MG/KG	1.8	1.0
		Cadmium, Total	0.16	MG/KG	0.15	1.0
		Cobalt, Total	6.9	MG/KG	0.25	1.0
		Chromium, Total	12.4	MG/KG	0.31	1.0
		Copper, Total	19.9	MG/KG	0.17	1.0
		Iron, Total	16600	MG/KG	18.0	1.0
		Mercury, Total	0.05 u	MG/KG	0.05	1.0
		Potassium, Total	1470	MG/KG	5.7	1.0
		Magnesium, Total	16700	MG/KG	1.9	1.0
		Manganese, Total	534	MG/KG	0.21	1.0
		Sodium, Total	164	MG/KG	27.8	1.0
		Nickel, Total	13.6	MG/KG	0.54	1.0
		Lead, Total	12.2	MG/KG	0.28	1.0
		Antimony, Total	0.63 u	MG/KG	0.63	1.0
		Selenium, Total	0.88 u	MG/KG	0.88	1.0
		Thallium, Total	1.4	MG/KG	0.84	1.0
		Vanadium, Total	18.2	MG/KG	0.19	1.0
		Zinc, Total	76.2	MG/KG	0.10	1.0

General Chemistry

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 09/19/96

CLIENT: EG&G MOUND
WORK ORDER: 05376-059-001-0700-02

WESTON BATCH #: 9609L137

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-004	000004	Silver, Total	0.20 u	MG/KG	0.20	1.0
		Aluminum, Total	7830	MG/KG	2.6	1.0
		Arsenic, Total	7.1	MG/KG	0.89	1.0
		Barium, Total	63.5	MG/KG	0.04	1.0
		Beryllium, Total	0.35	MG/KG	0.04	1.0
		Bismuth, Total	1.3 u	MG/KG	1.3	1.0
		Calcium, Total	85100	MG/KG	1.9	1.0
		Cadmium, Total	0.23	MG/KG	0.15	1.0
		Cobalt, Total	6.5	MG/KG	0.26	1.0
		Chromium, Total	11.6	MG/KG	0.33	1.0
		Copper, Total	16.4	MG/KG	0.17	1.0
		Iron, Total	14000	MG/KG	18.8	1.0
		Mercury, Total	0.05 u	MG/KG	0.05	1.0
		Potassium, Total	1400	MG/KG	5.9	1.0
		Magnesium, Total	41800	MG/KG	1.9	1.0
		Manganese, Total	500	MG/KG	0.22	1.0
		Sodium, Total	161	MG/KG	29.0	1.0
		Nickel, Total	11.4	MG/KG	0.57	1.0
		Lead, Total	15.2	MG/KG	0.39	1.0
		Antimony, Total	0.74	MG/KG	0.65	1.0
		Selenium, Total	0.82 u	MG/KG	0.92	1.0
		Thallium, Total	0.94	MG/KG	0.87	1.0
		Vanadium, Total	18.3	MG/KG	0.20	1.0
		Zinc, Total	56.7	MG/KG	0.11	1.0

General Chemistry

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 09/19/96

CLIENT: EG&G MOUND
WORK ORDER: 05376-069-001-0700-02

WESTON BATCH #: 96091137

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	000005	Silver, Total	0.19 u	MG/KG	0.19	1.0
		Aluminum, Total	10000	MG/KG	2.5	1.0
		Arsenic, Total	8.0	MG/KG	0.85	1.0
		Barium, Total	67.8	MG/KG	0.04	1.0
		Beryllium, Total	0.47	MG/KG	0.04	1.0
		Bismuth, Total	1.2 u	MG/KG	1.2	1.0
		Calcium, Total	68000	MG/KG	1.8	1.0
		Cadmium, Total	0.15	MG/KG	0.15	1.0
		Cobalt, Total	8.1	MG/KG	0.25	1.0
		Chromium, Total	13.4	MG/KG	0.31	1.0
		Copper, Total	15.9	MG/KG	0.17	1.0
		Iron, Total	17100	MG/KG	17.9	1.0
		Mercury, Total	0.05 u	MG/KG	0.05	1.0
		Potassium, Total	1560	MG/KG	5.7	1.0
		Magnesium, Total	12900	MG/KG	1.9	1.0
		Manganese, Total	610	MG/KG	0.21	1.0
		Sodium, Total	86.1	MG/KG	27.7	1.0
		Nickel, Total	13.8	MG/KG	0.54	1.0
		Lead, Total	16.7	MG/KG	0.37	1.0
		Antimony, Total	0.62 u	MG/KG	0.62	1.0
		Selenium, Total	0.87 u	MG/KG	0.87	1.0
		Thallium, Total	0.96	MG/KG	0.83	1.0
		Vanadium, Total	21.6	MG/KG	0.19	1.0
		Zinc, Total	73.9	MG/KG	0.10	1.0

General Chemistry

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 09/19/96

CLIENT: EG&G MOUND

WESTON BATCH #: 96097137

WORK ORDER: 05376-069-001-0700-02

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-006	000006	Silver, Total	0.20 u	MG/KG	0.20	1.0
		Aluminum, Total	9900	MG/KG	2.6	1.0
		Arsenic, Total	7.9	MG/KG	0.90	1.0
		Barium, Total	53.7	MG/KG	0.04	1.0
		Beryllium, Total	0.44	MG/KG	0.04	1.0
		Bismuth, Total	1.3 u	MG/KG	1.3	1.0
		Calcium, Total	70400	MG/KG	1.9	1.0
		Cadmium, Total	0.15 u	MG/KG	0.15	1.0
		Cobalt, Total	8.8	MG/KG	0.26	1.0
		Chromium, Total	13.1	MG/KG	0.33	1.0
		Copper, Total	16.0	MG/KG	0.17	1.0
		Iron, Total	18300	MG/KG	18.8	1.0
		Mercury, Total	0.05 u	MG/KG	0.05	1.0
		Potassium, Total	1710	MG/KG	6.0	1.0
		Magnesium, Total	20500	MG/KG	1.9	1.0
		Manganese, Total	599	MG/KG	0.22	1.0
		Sodium, Total	109	MG/KG	29.1	1.0
		Nickel, Total	14.9	MG/KG	0.57	1.0
		Lead, Total	13.8	MG/KG	0.39	1.0
		Antimony, Total	0.66 u	MG/KG	0.66	1.0
		Selenium, Total	0.92 u	MG/KG	0.92	1.0
		Thallium, Total	0.92	MG/KG	0.87	1.0
		Vanadium, Total	17.9	MG/KG	0.20	1.0
		Zinc, Total	81.6	MG/KG	0.11	1.0

General Chemistry

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 09/19/96

CLIENT: EG&G MOUND
WORK ORDER: 05376-069-001-0700-02

WESTON BATCH #: 9609L137

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	000007	Silver, Total	0.19 u	MG/KG	0.19	1.0
		Aluminum, Total	9570	MG/KG	2.5	1.0
		Arsenic, Total	6.4	MG/KG	0.85	1.0
		Barium, Total	42.7	MG/KG	0.04	1.0
		Beryllium, Total	0.20	MG/KG	0.04	1.0
		Bismuth, Total	1.2 u	MG/KG	1.2	1.0
		Calcium, Total	86000	MG/KG	1.8	1.0
		Cadmium, Total	0.19	MG/KG	0.15	1.0
		Cobalt, Total	5.0	MG/KG	0.25	1.0
		Chromium, Total	7.5	MG/KG	0.31	1.0
		Copper, Total	11.9	MG/KG	0.17	1.0
		Iron, Total	11000	MG/KG	17.9	1.0
		Mercury, Total	0.05 u	MG/KG	0.05	1.0
		Potassium, Total	1030	MG/KG	5.7	1.0
		Magnesium, Total	30100	MG/KG	1.9	1.0
		Manganese, Total	402	MG/KG	0.21	1.0
		Sodium, Total	120	MG/KG	27.7	1.0
		Nickel, Total	10.1	MG/KG	0.54	1.0
		Lead, Total	9.2	MG/KG	0.37	1.0
		Antimony, Total	0.62 u	MG/KG	0.62	1.0
		Selenium, Total	0.87 u	MG/KG	0.87	1.0
		Thallium, Total	0.95	MG/KG	0.83	1.0
		Vanadium, Total	33.0	MG/KG	0.18	1.0
		Zinc, Total	42.1	MG/KG	0.10	1.0

General Chemistry

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 09/19/96

CLIENT: EG&G MOUND

WESTON BATCH #: 9609L137

WORK ORDER: 05376-069-001-0700-02

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-008	000008	Silver, Total	0.18 u	MG/KG	0.18	1.0
		Aluminum, Total	6630	MG/KG	2.4	1.0
		Arsenic, Total	7.9	MG/KG	0.83	1.0
		Barium, Total	53.3	MG/KG	0.04	1.0
		Beryllium, Total	0.30	MG/KG	0.04	1.0
		Bismuth, Total	1.2 u	MG/KG	1.2	1.0
		Calcium, Total	69100	MG/KG	1.8	1.0
		Cadmium, Total	0.20	MG/KG	0.14	1.0
		Cobalt, Total	6.3	MG/KG	0.24	1.0
		Chromium, Total	10.1	MG/KG	0.30	1.0
		Copper, Total	15.3	MG/KG	0.16	1.0
		Iron, Total	14000	MG/KG	17.4	1.0
		Mercury, Total	0.05 u	MG/KG	0.05	1.0
		Potassium, Total	1320	MG/KG	5.5	1.0
		Magnesium, Total	23900	MG/KG	1.8	1.0
		Manganese, Total	406	MG/KG	0.20	1.0
		Sodium, Total	106	MG/KG	26.8	1.0
		Nickel, Total	12.2	MG/KG	0.52	1.0
		Lead, Total	13.7	MG/KG	0.36	1.0
		Antimony, Total	0.61 u	MG/KG	0.61	1.0
		Selenium, Total	0.86 u	MG/KG	0.85	1.0
		Thallium, Total	0.81	MG/KG	0.81	1.0
		Vanadium, Total	16.3	MG/KG	0.18	1.0
		Zinc, Total	54.3	MG/KG	0.10	1.0

General Chemistry

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 09/19/96

CLIENT: EG&G MOUND

WESTON BATCH #: 96097127

WORK ORDER: 05376-068-001-0700-02

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-009	000009	Silver, Total	0.19 u	MG/KG	0.19	1.0
		Aluminum, Total	11000	MG/KG	2.6	1.0
		Arsenic, Total	7.8	MG/KG	0.87	1.0
		Barium, Total	75.7	MG/KG	0.04	1.0
		Beryllium, Total	0.54	MG/KG	0.04	1.0
		Bismuth, Total	1.3 u	MG/KG	1.3	1.0
		Calcium, Total	60600	MG/KG	1.9	1.0
		Cadmium, Total	0.15 u	MG/KG	0.15	1.0
		Cobalt, Total	9.3	MG/KG	0.25	1.0
		Chromium, Total	14.0	MG/KG	0.32	1.0
		Copper, Total	16.5	MG/KG	0.17	1.0
		Iron, Total	19300	MG/KG	18.3	1.0
		Mercury, Total	0.05 u	MG/KG	0.05	1.0
		Potassium, Total	2040	MG/KG	5.8	1.0
		Magnesium, Total	14600	MG/KG	1.9	1.0
		Manganese, Total	740	MG/KG	0.21	1.0
		Sodium, Total	93.8	MG/KG	28.2	1.0
		Nickel, Total	16.7	MG/KG	0.55	1.0
		Lead, Total	16.8	MG/KG	0.38	1.0
		Antimony, Total	0.64 u	MG/KG	0.64	1.0
		Selenium, Total	0.89 u	MG/KG	0.89	1.0
		Thallium, Total	1.1	MG/KG	0.85	1.0
		Vanadium, Total	22.3	MG/KG	0.19	1.0
		Zinc, Total	57.0	MG/KG	0.11	1.0

General Chemistry

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 09/19/96

CLIENT: EG&G MOUND

WESTON BATCH #: 9609L137

WORK ORDER: 05376-069-001-0700-02

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-010	000010	Silver, Total	0.19 u	MG/KG	0.19	1.0
		Aluminum, Total	9260	MG/KG	2.6	1.0
		Arsenic, Total	7.9	MG/KG	0.87	1.0
		Barium, Total	66.1	MG/KG	0.04	1.0
		Beryllium, Total	0.43	MG/KG	0.04	1.0
		Bismuth, Total	1.3 u	MG/KG	1.3	1.0
		Calcium, Total	79100	MG/KG	1.9	1.0
		Cadmium, Total	0.17	MG/KG	0.15	1.0
		Cobalt, Total	8.4	MG/KG	0.26	1.0
		Chromium, Total	13.7	MG/KG	0.32	1.0
		Copper, Total	16.4	MG/KG	0.17	1.0
		Iron, Total	16700	MG/KG	18.3	1.0
		Mercury, Total	0.05 u	MG/KG	0.05	1.0
		Potassium, Total	1500	MG/KG	5.8	1.0
		Magnesium, Total	26900	MG/KG	1.9	1.0
		Manganese, Total	628	MG/KG	0.21	1.0
		Sodium, Total	121	MG/KG	28.3	1.0
		Nickel, Total	14.1	MG/KG	0.55	1.0
		Lead, Total	16.9	MG/KG	0.38	1.0
		Antimony, Total	0.64 u	MG/KG	0.64	1.0
		Selenium, Total	0.89 u	MG/KG	0.89	1.0
		Thallium, Total	0.85 u	MG/KG	0.85	1.0
		Vanadium, Total	20.1	MG/KG	0.19	1.0
		Zinc, Total	63.5	MG/KG	0.11	1.0

General Chemistry