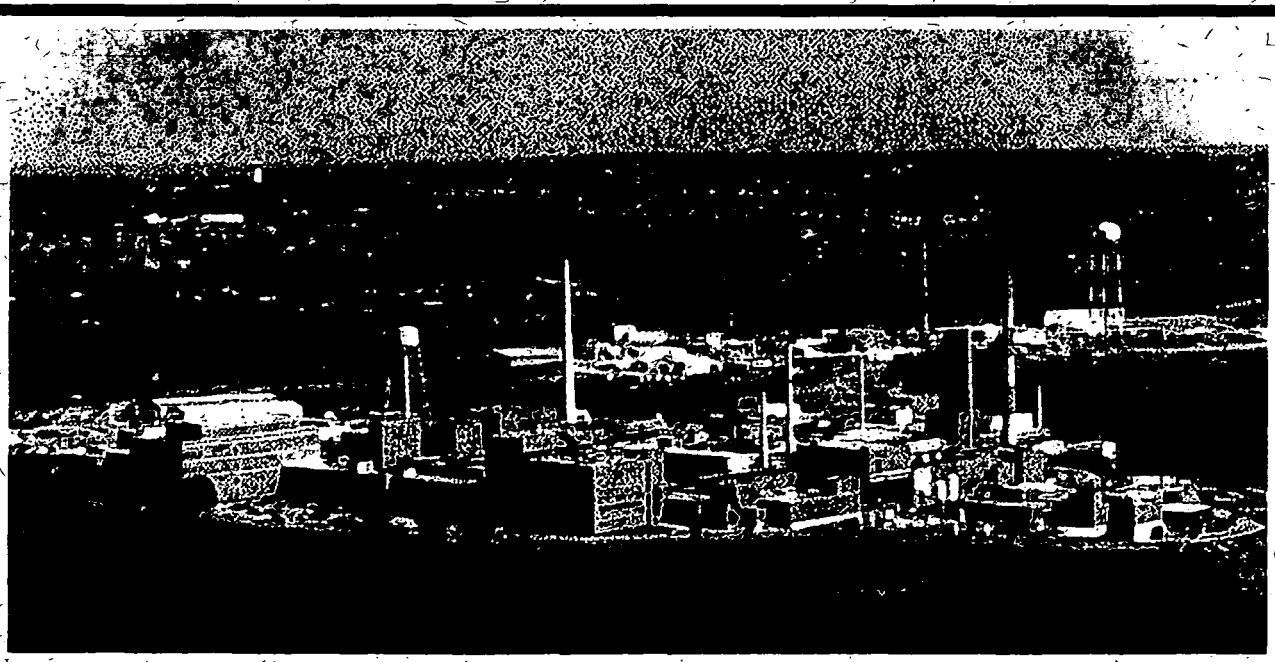
3001-0003200004

MOUND

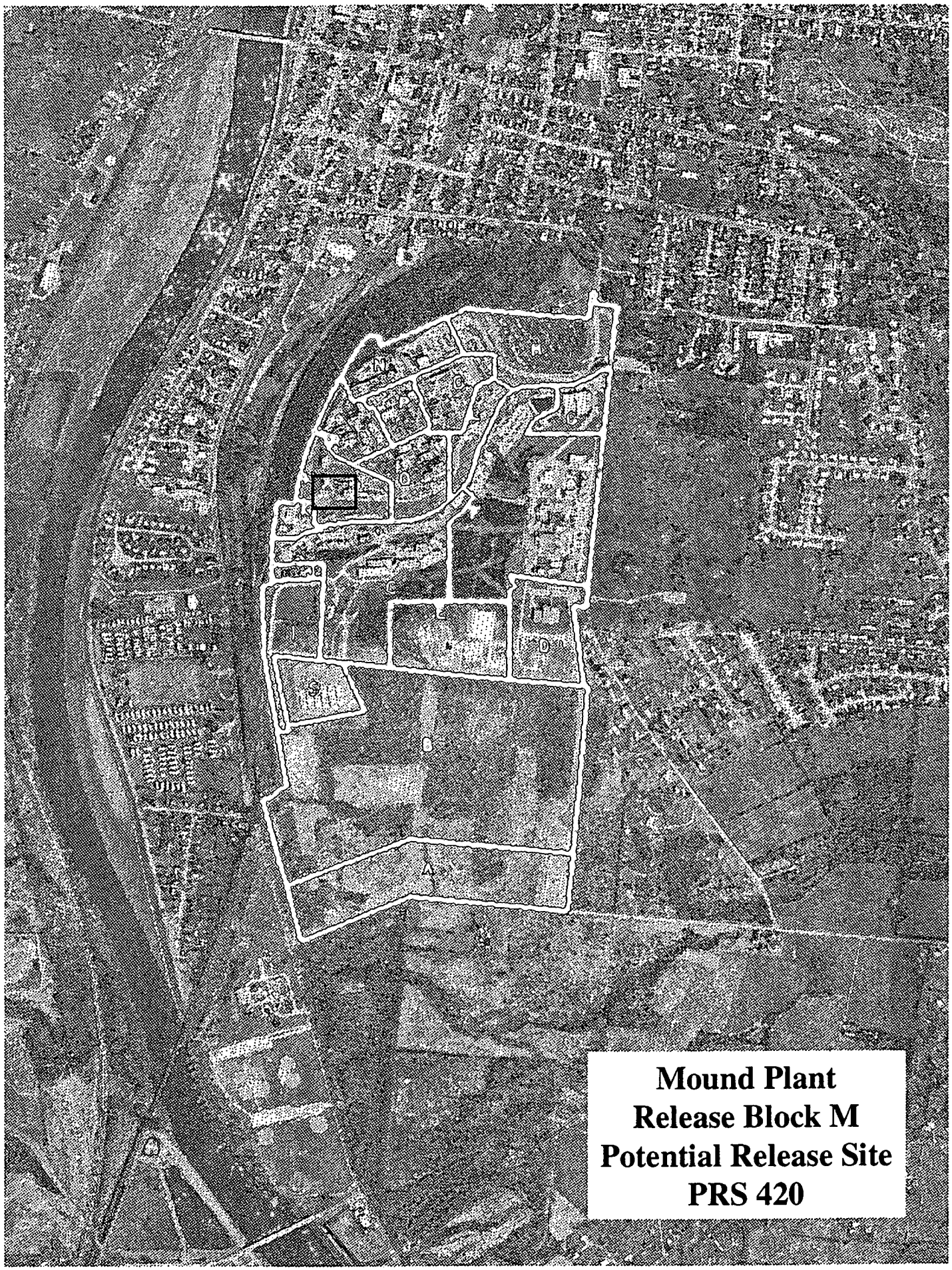
Environmental
Restoration
Program

MOUND PLANT
Potential Release Site Package
PRS #420

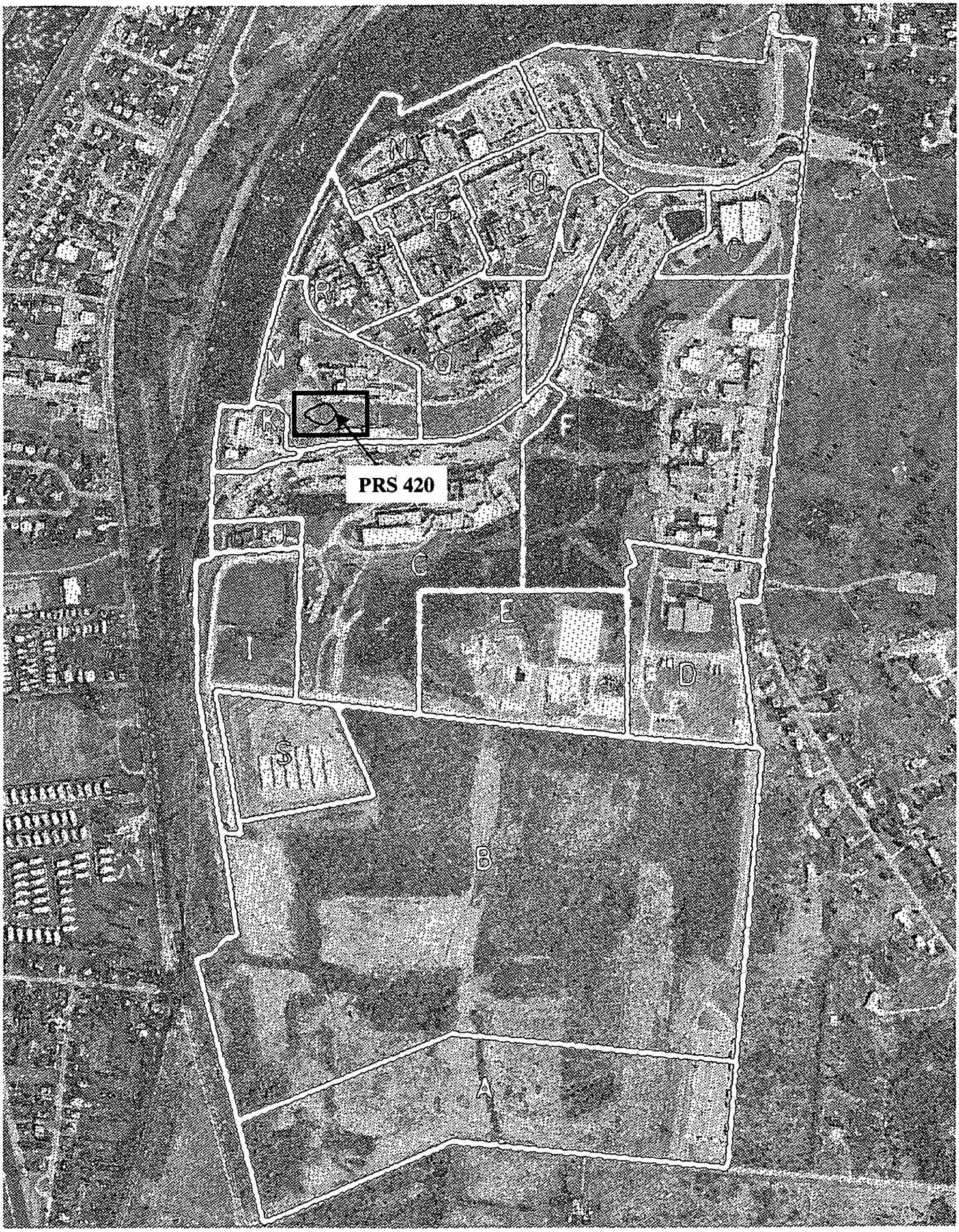


PRS 420

REV	DESCRIPTION	DATE
WORKING DRAFT		**April 7, 1999**
DRAFT	Binned NFA 4/14/99. Additional information to be incorporated. Recommendation signed.	**April 8, 1999**
DRAFT PROPOSED FINAL	Addendum 1 presented at Core Team Meeting 2/17/00. Addendum 1 incorporated.	**April 26, 1999**
PUBLIC REVIEW DRAFT		**March 14, 2000**
FINAL		

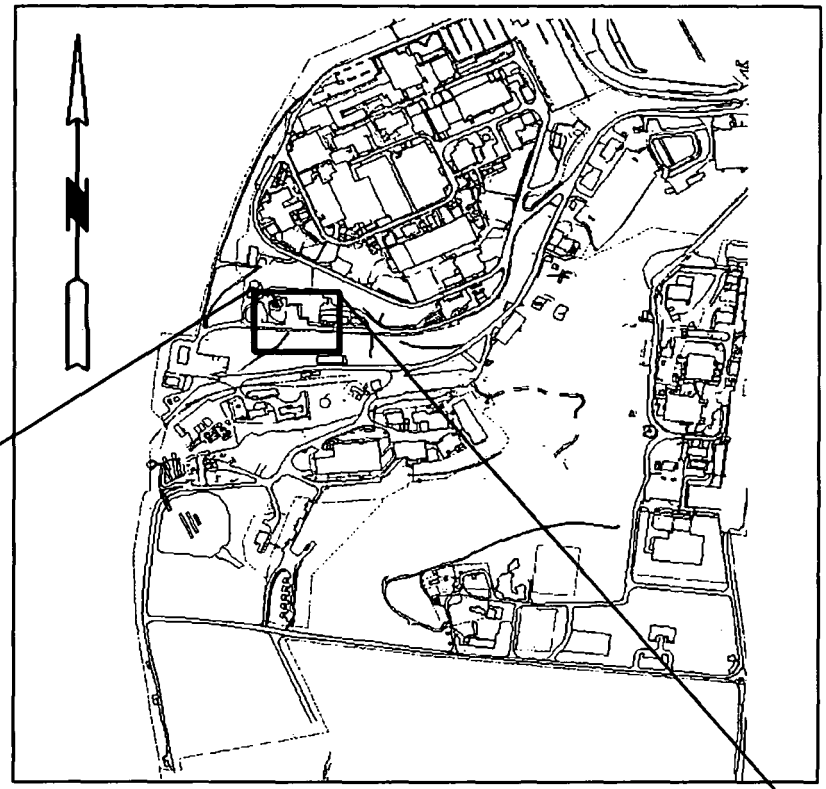


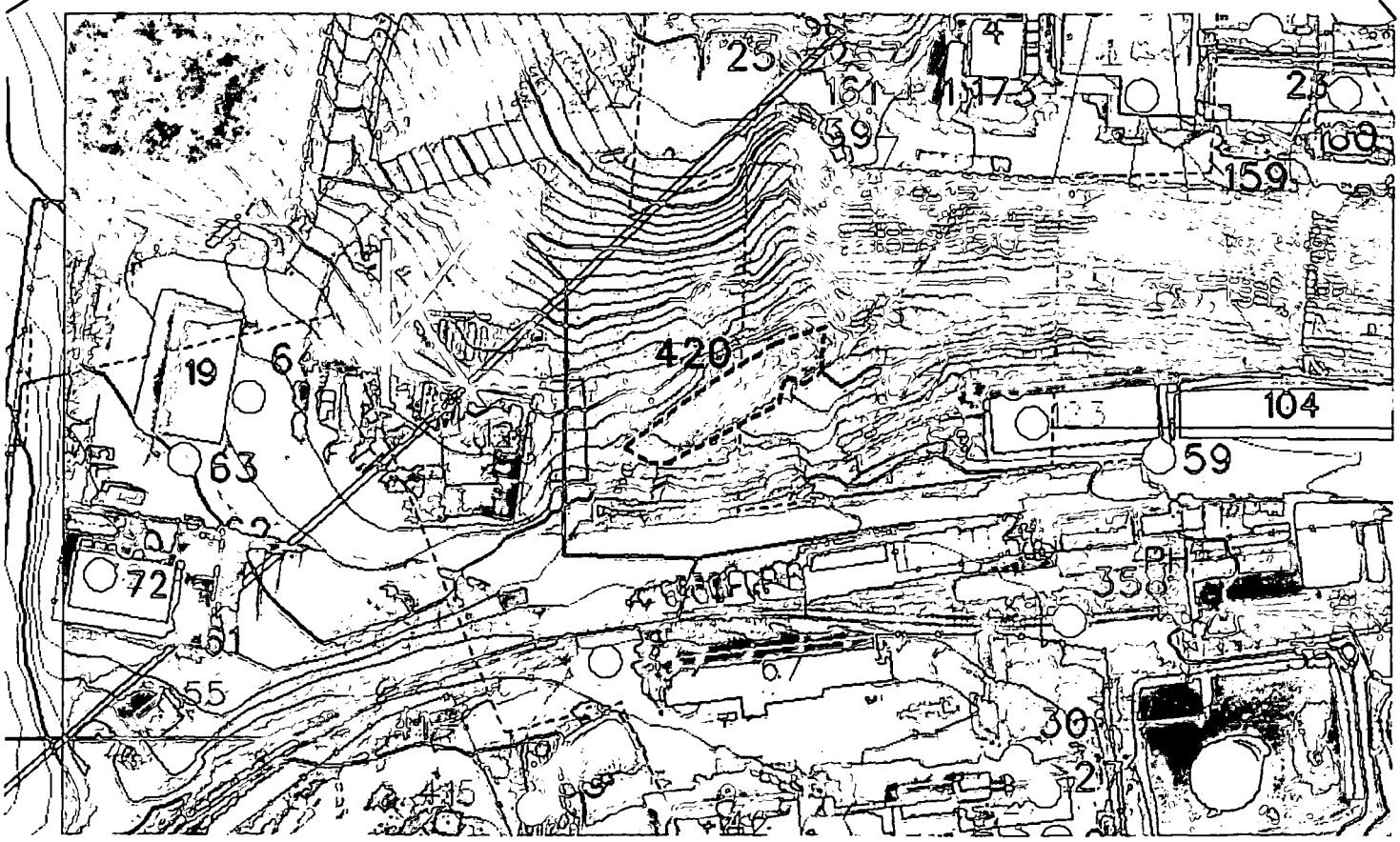
Mound Plant
Release Block M
Potential Release Site
PRS 420


PRS 420
H
N
O
P
R
M
F
C
E
D
I
S
B
A

Mound Plant
PRS 420
Wetlands

On the map below:
- Building number and location shown in tan
- PRS number and location shown in black
- Fencing shown in red
- Elevation contours shown in brown





PRS 420
Man-Made Wetland Area

PRS HISTORY:

Potential Release Site (PRS) 420 is the isolated man-made wetland area located between Buildings 123 and 124. This wetland resides in a depression that ranges from approximately three feet to eight feet lower than the surrounding ground surface. It is oblong in shape and approximately 0.06 acres in size[1]. It was identified as a PRS because of the presence of previously identified contaminants, including plutonium-238 (Pu^{238}), that likely were present as a result of a historical breach in a nearby waste transfer line - PRS 176. Recent sampling data documents the success of remedial efforts.

PROCESS DESCRIPTION:

The depressed area is used to control excess storm water runoff to the Miami-Erie Canal. Specifically, the area retains runoff and settles sediment. Runoff from the adjacent hill and discharge from at least one underground pipe accumulate in the depressed area.

CONTAMINATION:

Numerous remedial and sampling efforts for areas that overlap or include the PRS 420 area have been conducted since 1969. A list of documents referencing remedial and/or sampling efforts that include all or part of the PRS 420 area is presented below. Included in the documents are sample data documenting successful remediations as well as continued elevated levels of Pu^{238} in the PRS 420 and surrounding hillside area.

- Final Report: Waste Transfer Systems Decommissioning Project (ADS ALMD-1176), (90% Draft), January 28, 1993, Revised April 27, 1993
- Reconnaissance Sampling Report, Decontamination and Decommissioning Areas, Operable Unit 6, Mound Plant, Miamisburg, Ohio, May 1992, Final
- Operable Unit 6, Area 19 and Area 14 Verification Report, Mound Plant, Miamisburg, Ohio, October 1994, Final (Rev 0)
- Operable Unit 6, Decontamination and Decommissioning, Proposed Area 14 Fuel Oil Storage System Verification Report, Mound Plant, Miamisburg, Ohio, October 1992
- Operable Unit 9, Site Scoping Report, Volume 3, Radiological Site Survey, Mound Plant, Miamisburg, Ohio, March 1993
- Confirmatory Soil Data for Area Between Building 41 and WD Building

The 10^{-5} risk based guideline value for Pu^{238} is 55 picoCuries/gram (pCi/g).[2] Current sample results for the PRS 420 area are represented below in Table 1[3,4,5] and associated sample locations are presented in Figure 1.

Table 1. Confirmation Results for the PRS 420 Area
Contaminants of Concern

Sample ID	Figure 1 ID	Sample Date	Pu^{238} Level[a] (pCi/g)	Guideline Criterion (pCi/g) soil/sediment, construction[2]
MND11-0080	80	1991	14/19	55
MND11-0081	81	1991	5	55
MND11-0082	82	1991	12	55
MND11-0083	83	1991	38	55
MND11-0084	84	1991	0	55
MND11-0085	85	1991	0	55
MND11-0086	86	1991	25	55
MND11-0087	87	1991	18	55
MND11-0088	88	1991	16	55
MND11-0089	89	1991	18	55
MND11-0090	90	1991	4	55
MND11-0091	91	1991	7	55
MND11-0092	92	1991	14	55
MND11-0093	93	1991	23	55
MND11-0094	94	1991	11	55
MND11-0095	95	1991	15	55
MND11-0096	96	1991	12	55
MND11-0097	97	1991	10	55
MND11-0098	98	1991	4	55
MND11-0099	99	1991	17	55
MND11-0100	100	1991	15	55
MND11-0101	101	1991	15	55
MND11-0102	102	1991	9	55
MND11-0103	103	1991	11	55
19-2C	19-2C	1993	10.67/0.23/1.35	55
19-2D	19-2D	1993	2.67/16.86	55

Table 1. Confirmation Results for the PRS 420 Area
Contaminants of Concern
(continued)

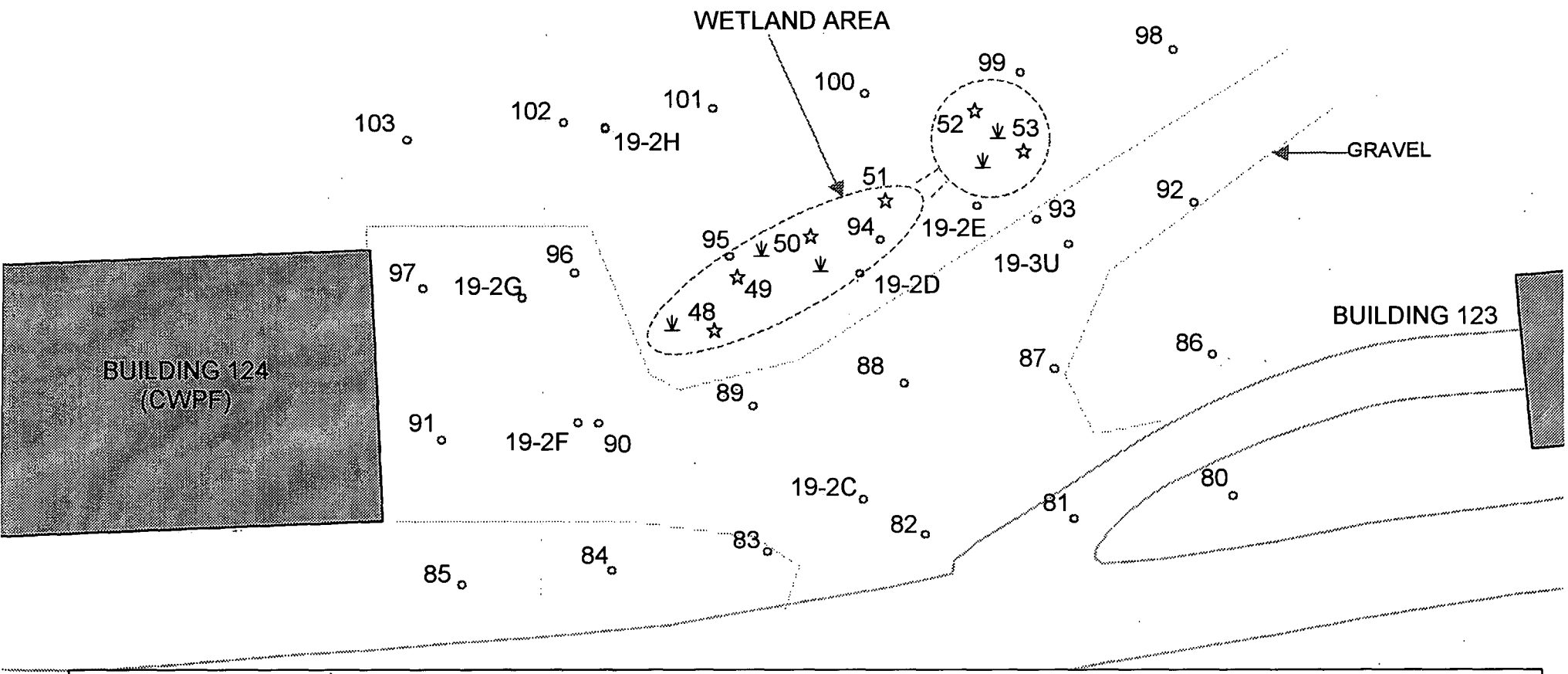
Sample ID	Figure 1 ID	Sample Date	Pu^{238} Level[a] (pCi/g)	Guideline Criterion (pCi/g) soil/sediment, construction[2]
19-2E	19-2E	1993	21	55
19-2F	19-2F	1993	0.23/0.23	55
19-2G	19-2G	1993	1.53/3.83	55
19-2H	19-2H	1993	0.51/0.35/1.22	55
19-3U	19-3U	1993	46.22/4.97	55
NA800306/004448	48	1999	23.3*	55
NA800307/004449	49	1999	15.9*	55
NA800308/004450	50	1999	23.7*	55
NA800309/004451	51	1999	22.2*	55
NA800310/004452	52	1999	16.9*	55
NA800311/004453	53	1999	19.7*	55

Sample ID	Figure 1 ID	Sample Date	Th^{228} Level[a] (pCi/g)	Guideline Criterion (pCi/g) soil/sediment, construction[2]
19-2D	19-2D	1993	1.27	3.0
19-2E	19-2E	1993	2.64	3.0
19-3C	19-3C	1993	1.36	3.0

* Value presented is the Minimum Detectable Activity (MDA)

[a] Multiple results indicate the collection of samples at more than one interval or a duplicate sample was collected.

[b] PRS 304 Action Memorandum of September 1998.



o Sample Location (1991 & 1993)

☆ Sample Location (1999)

Marsh

North

Approx. Scale

0 10m 20m

FIGURE 1. PRS 420 SAMPLE LOCATIONS

REFERENCES:

1) *Wetlands Assessment for the Installation of the Consolidated Waste Processing Facility Accessway*, 18 June 1998.
2) *Risk-Based Guideline Values, Mound Plant, Miamisburg, Ohio*, March 1997, Final (Revision 4), Appendix B, Tables 4A and 4B.
3) *Operable Unit 6, Area 19 and Area 14 Verification Report, Mound Plant, Miamisburg, Ohio*, October 1994, Final (Rev 0).
4) *Operable Unit 6, Decontamination and Decommissioning, Proposed Area 14 Fuel Oil Storage System Verification Report, Mound Plant, Miamisburg, Ohio*, October 1992.
5) Analytical data for PRS 420 sediment samples collected 24 March 1999.

PREPARED BY:

Karen M. Arthur, Member of Babcock & Wilcox of Ohio Technical Staff
Joseph C. Geneczko, Member of Babcock &Wilcox of Ohio Technical Staff

MOUND PLANT
PRS 420
Man-Made Wetland Area

RECOMMENDATION:

Potential Release Site (PRS) 420 is the isolated man-made wetland area located between Buildings 123 and 124. It is oblong in shape and approximately 0.06 acres in size. It was identified as a PRS because of the presence of previously identified contaminants, including plutonium-238 (Pu^{238}), that likely were present as a result of a historical breach in a nearby waste transfer line - PRS 176. Removal Actions for plutonium have been conducted several times in this area. Recent sampling confirms that all levels of plutonium are below the 10^{-5} guideline value of 55 pCi/g and all thorium results are below the Mound cleanup criteria of 3 pCi/g.

Therefore NO FURTHER ASSESSMENT is recommended for PRS 420.

CONCURRENCE:

DOE/MEMP: Arthur W. Kleinrath, Remedial Project Manager (date) 4/14/99

USEPA: Timothy J. Fischer, Remedial Project Manager (date) 4/14/99

OEPA: Brian K. Nickel, Project Manager (date) 4/14/99

SUMMARY OF COMMENTS AND RESPONSES:

Comment period from _____ to _____

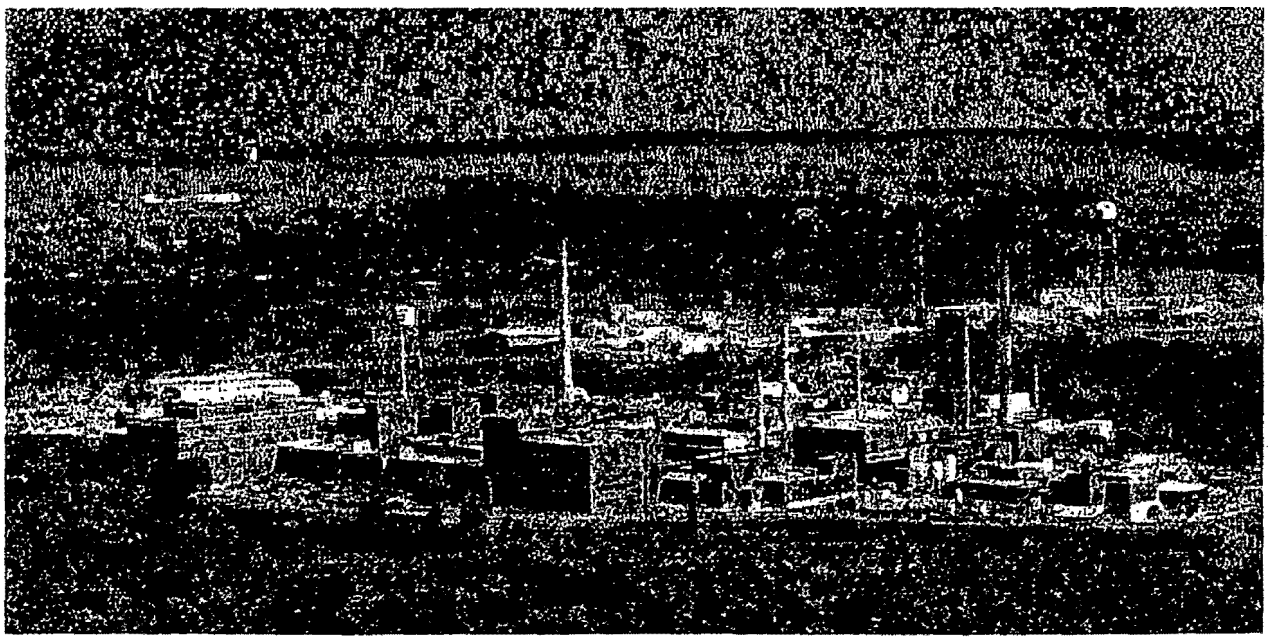
☐ No comments were received during the comment period.

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

MOUND

Environmental
Restoration
Program

MOUND PLANT
Potential Release Site Package
PRS #420 (Addendum 1)



This addendum was prepared to address comments made during the binning cycle for PRS 420.

Specifically, five comments were made as listed below followed by numbered sections that correspond to the comments:

- ❑ 1. add background concentrations to Table 1 of the PRS 420 Package
- ❑ 2. explain the roadway construction and why samples were collected
- ❑ 3. add the data associated with construction of the roadway
- ❑ 4. clarify in Figure 1 that the wetland was man made
- ❑ 5. make a note in Figure 1 explaining that numbers associated with sample locations correspond to data presented in Table 1

1. The table presented below is a modification of PRS 420 Package Table 1 to reflect the addition of the background concentrations.

2. The construction of an access road between the two buildings shown on Figure 1 was planned for 1999. Since the PRS area had received runoff from the WD hillside for six years following the most recent sample collection within the PRS, additional sample collection was deemed prudent to confirm that recontamination had not occurred. Six samples were collected from the undisturbed accumulated sediment within the PRS area and analyzed for Pu^{238}.

3. In order to afford the distinction between sampling that occurred in conjunction with the construction of the roadway versus everything else leading up to that point, Table 1 of the PRS 420 Package is presented herein as "historic", and the 1999 data was relocated into its own table (Table 2 herein). All of the undisturbed sediment sample results reported in Table 2 are below the guideline criteria for Pu^{238}.

The initial phase of access road construction included removing the sediment from the construction area because it does not have the geotechnical qualities required for a road subbase. The sediment was excavated from the PRS area and placed into two spoil locations on the hillside where it could dry out and remain.

Following completion of the removal of the sediment from the construction area, additional surveying and sampling occurred. Fourteen swipes were collected from the excavator bucket and tracks as depicted on sketches attached. All direct and swipe readings from the tracks and bucket were below the applicable release criteria. Radiological survey sheets and sample results are included herein for reference. Four samples were collected from the base of the excavation and one sample was collected from each of the two spoil areas. One sample was collected from the accumulated runoff within the excavation. Results for all of the soil and the runoff samples are below applicable criteria as presented in Table 3 herein.

4. The title to Figure 1was modified to show that samples presented are both within and exterior to the PRS 420 boundary. The label on the figure was also changed to represent that it was man made rather than naturally occurring.

5. A note was added to Figure 1 clarifying the association between numbers on the figure and data in Table 1.

PREPARED BY:

Karen M. Arthur, Member of BWXT of Ohio Technical Staff
Joseph C. Geneczko, Member of BWXT of OhioTechnical Staff

Table 1: Historic PRS 420 Area Sample Results

Sample ID	Figure 1 ID	Sample Date	Pu^{238} Level[a] (pCi/g)	Guideline Criterion (pCi/g) soil/sediment, construction[2]	Background Concentration (pCi/g)
MND11-0080	80	1991	14/19	55	0.13
MND11-0081	81	1991	5	55	0.13
MND11-0082	82	1991	12	55	0.13
MND11-0083	83	1991	38	55	0.13
MND11-0084	84	1991	0	55	0.13
MND11-0085	85	1991	0	55	0.13
MND11-0086	86	1991	25	55	0.13
MND11-0087	87	1991	18	55	0.13
MND11-0088	88	1991	16	55	0.13
MND11-0089	89	1991	18	55	0.13
MND11-0090	90	1991	4	55	0.13
MND11-0091	91	1991	7	55	0.13
MND11-0092	92	1991	14	55	0.13
MND11-0093	93	1991	23	55	0.13
MND11-0094	94	1991	11	55	0.13
MND11-0095	95	1991	15	55	0.13
MND11-0096	96	1991	12	55	0.13
MND11-0097	97	1991	10	55	0.13
MND11-0098	98	1991	4	55	0.13
MND11-0099	99	1991	17	55	0.13
MND11-0100	100	1991	15	55	0.13
MND11-0101	101	1991	15	55	0.13
MND11-0102	102	1991	9	55	0.13
MND11-0103	103	1991	11	55	0.13

Table 1: Historic PRS 420 Area Sample Results

Sample ID	Figure 1 ID	Sample Date	Pu^{238} Level[a] (pCi/g)	Guideline Criterion (pCi/g) soil/sediment, construction[2]	Background Concentration (pCi/g)
19-2C	19-2C	1993	10.67/0.23/1.35	55	0.13
19-2D	19-2D	1993	2.67/16.86	55	0.13
19-2E	19-2E	1993	21	55	0.13
19-2F	19-2F	1993	0.23/0.23	55	0.13
19-2G	19-2G	1993	1.53/3.83	55	0.13
19-2H	19-2H	1993	0.51/0.35/1.22	55	0.13
19-3U	19-3U	1993	46.22/4.97	55	0.13

* Value presented is the Minimum Detectable Activity (MDA)

[a] Multiple results indicate the collection of samples at more than one interval or a duplicate sample was collected.

Table 2: Undisturbed Sediment Results

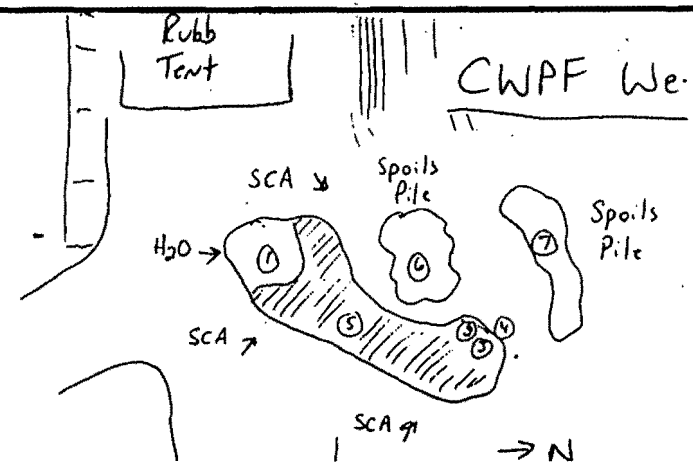
Sample ID	Figure 1 ID	Sample Date	Pu^{238} Level[a] (pCi/g)	Guideline Criterion (pCi/g) soil/sediment, construction[2]	Background Concentration (pCi/g)
NA800306/ 004448	48	1999	23.3*	55	0.13
NA800307/ 004449	49	1999	15.9*	55	0.13
NA800308/ 004450	50	1999	23.7*	55	0.13
NA800309/ 004451	51	1999	22.2*	55	0.13
NA800310/ 004452	52	1999	16.9*	55	0.13
NA800311/ 004453	53	1999	19.7*	55	0.13

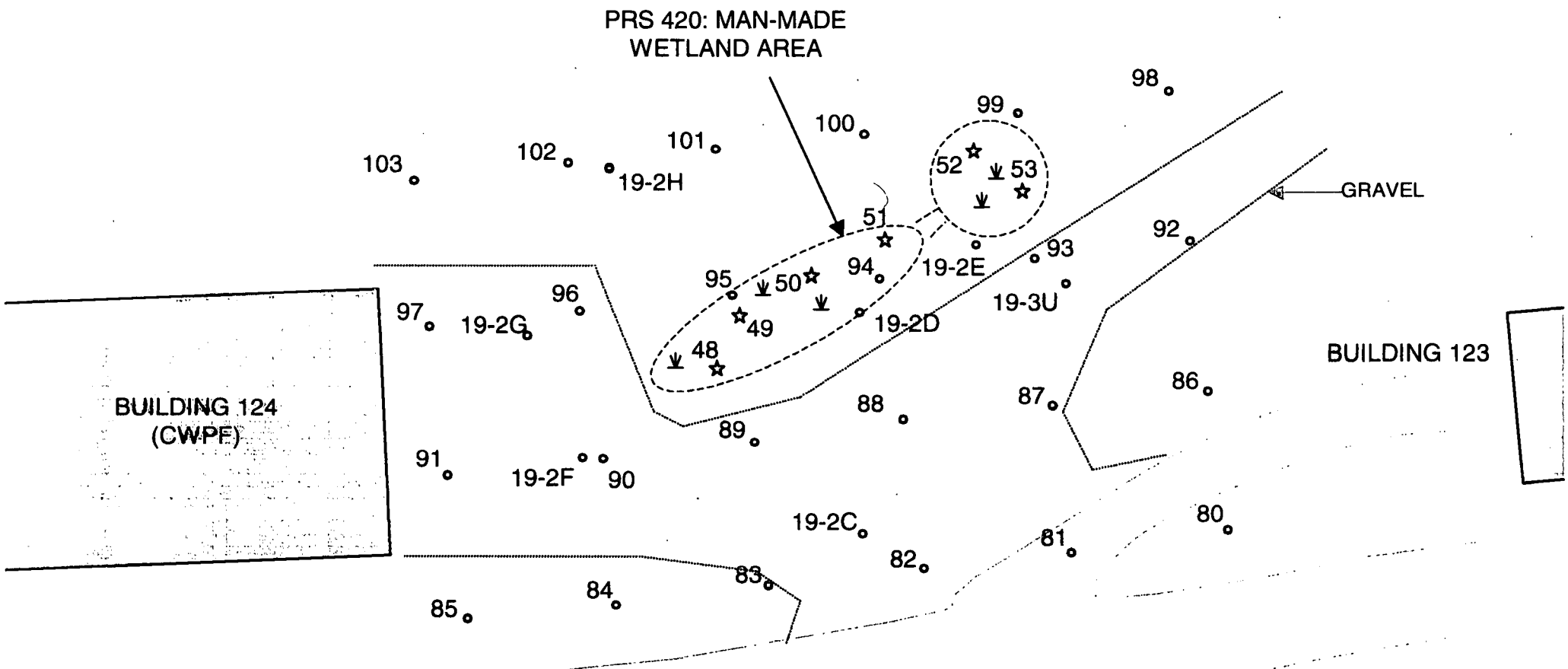
Table 3: Pre-Construction Verification Sample Results*

(following removal of hydric soils)

Sample Number	Radionuclide Activity/MDA (pCi/g)								
	Co^{60} 10^{-6} GV=0.1	Cs^{137} 10^{-6} GV=0.46	Pb^{210} **	Ra^{226} 10^{-6} GV=0.14 bkgd=2.0	Ac^{227}(D) 10^{-6} GV=1.0	Th^{230} 10^{-6} GV=44	Th^{232}(D) ALARA=3.0	Pu^{238} 10^{-5} GV=1.0	Am^{241} 10^{-6} GV=4.95
2	0/0.02	0/0.01	1.91/0.31	1.11/0.16	0.09/0.08	0/2.82	0.94/0.06	0/21.04	0.05/0.03
3	0.03/0.03	0.02/0.02	1.03/0.35	1.04/0.16	0.11/0.09	3.17/3.17	1.22/0.06	0/19.46	0.03/0.03
4	0.01/0.02	0.01/0.01	0.9/0.31	1.11/0.15	0.04/0.08	0/2.93	1.2/0.05	0/21.8	0/0.03
5	0/0.02	0.03/0.01	0/0.41	0.61/0.22	0.09/0.12	0/3.22	0.55/0.04	0/17.58	0.06/0.04
6	0/0.02	0.02/0.01	1/0.26	0.94/0.2	0.04/0.09	2.72/2.52	0.47/0.05	0/15.01	0.01/0.03
7	0/0.02	0.01/0.01	0.42/0.27	0.54/0.13	0/0.07	1.04/2.35	0.5/0.04	0/16.2	0.2/0.03
1	Accumulated runoff in excavation: alpha = <LDL, tritium (H_3)= 3.38 nCi/l								

*samples collected 7 April 1999
**GV not developed for Pb210 but results are below site-specif GVs for other radionuclides with similar HEAST slope factors
MDA – Minimum Detectable Activity
LDL – lower detection limit
(D) – identification by daughter emissions, sample assumed to be in specular equilibrium.





o **Sample Location (1991 & 1993)**

☆ **Sample Location (1999)**

Marsh ⩔

Note: numbers associated with sample locations correspond to data presented on Table 1

North

Approx. Scale

0 10m 20m

FIGURE 1. SAMPLE LOCATIONS IN & AROUND PRS 420

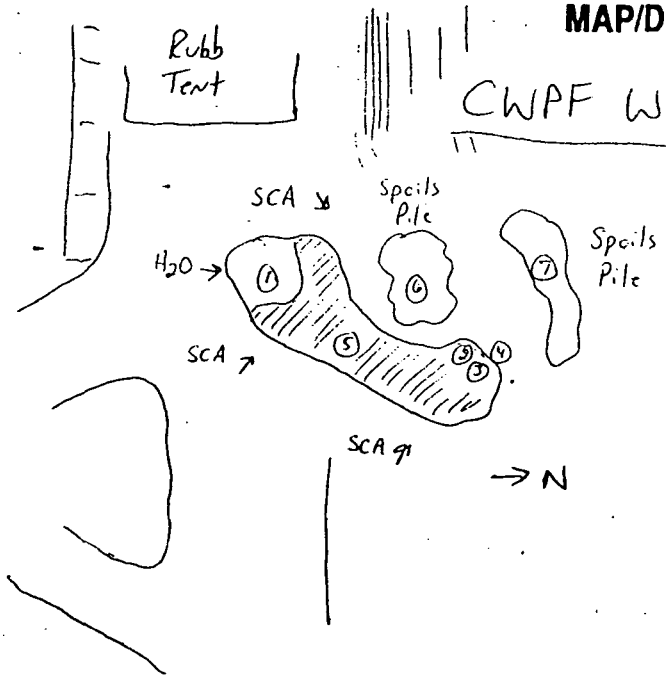
RADIOLOGICAL SURVEY DATA SHEET

TS 4/8/99

LOCATION: (BLDG./AREA/ROOM) CWPF Wetlands	SURVEY NO. 99-LS-067
PURPOSE: CWPF Wetlands Survey	RWP NO. LS-001-99
	DATE: 4/8/99
	TIME: 1400

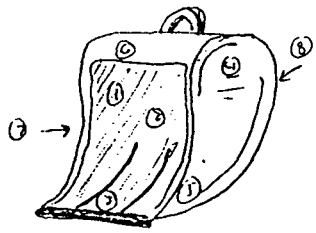
MAP/DRAWING

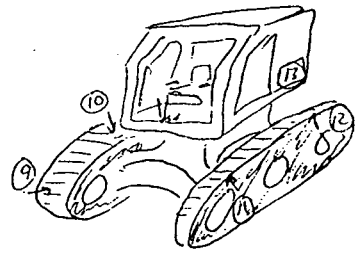
COPY



* Bicron Fid not calibrated only used as indicator.
All readings ≤ Background Ch. 1 + Out.
- See Sample Results

Bucket Used





Excavator.

* Tracks not Affected by soil *

Directs

< 100 dpm/100cm² α

< 5000 dpm/100cm² β/γ

LEGEND: # = mrem/hr (γ) whole body
E = mrem/hr (β+η+γ) extremity on contact
△# = mrem/hr neutron
[#] = air sample number
(#) = swipe number
(#/α) or /β = direct cont. measurement in dpm/100cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
NE Electra	5305/5316	9/17/99
Bicron Fid.	3853/3854	N/A
	A	
	N	

Completed by: (Signature) [redacted]	HP# 8234	Date: 4/7/99
Completed by: (Print Name) [redacted]		
Counted by: (Signature) [redacted]	HP# 8234	Date: 4/7/99
Counted by: (Print Name) [redacted]		
Reviewed/Approved by: (Signature) [redacted]	HP# 5520	Date: 4/14/99
Reviewed/Approved by: (Print Name) [redacted]		

ML-9620 (2-98)

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm²)				[redacted]
Sample #	β/γ	Alpha	Tritium	Comments
1-8	<1000*	<20	N/A	Bucket
9-14	<1000	<20	N/A	Excavator
		N	A	

Removable Contamination				
Swipes (dpm/100cm²)				[redacted]
Sample #	β/γ	Alpha	Tritium	Comments
	N	A		

COPY

COMMENTS: All Directs and Swipes < values in Table 2.2 w/ NE Electra → Bicron FID only used as indicator not calibrated. All values ≤ Background Ch 1 + Out.

NOTES:

1. See MD-80036 10002 for calculations of WB, extremity and skin dose rates.
2. To request RO Count Room analysis for β/γ, alpha or tritium, leave column blank. Mark column N/A if not needed. If count room printout of results are attached, write "see attached" in column.
3. Annotate special sample type (e.g., soil, water), special identifiers or otherwise in Comments. If not needed, mark N/A.

EG&G MOUND APPLIED TECHNOLOGIES

p3 of 15
RIM

AMOLE

ENVIRONMENTAL MONITORING LABORATORY
REQUEST FOR ANALYSIS

DATE: 4-7-99	SAMPLE MATRIX: H_2O	COST CENTER:
NUMBER OF SAMPLES: 1	CHARGE NUMBER:	SAMPLE LOCATION:
RELINQUISHED BY: Keith McMahon		VOLUME: 300
SEND DATA TO: TODD SMITH	EXT.: 3462	MAIL STOP:

ANALYSES REQUESTED (check):

☑ ^3H ☑ Gross α ☐ Pu ☐ U ☐ Th

Other Analysis: _____

LAB I.D. NUMBER	SAMPLE IDENTIFICATION	^3H RESULT	α =
9903074	CWIPF-Wet Land	3.38 nCi/l	<LDL

COMMENTS: _____

ANALYZED BY: Ruth Schindel	DATE: 4-7-99

ML-5222 (2-96)

CF-3 , 5890 , 621.000 , CWPF #2 HPG03422 Rec. 4/7/99

99-LS-067
p4 of 15
RIM

Sample Filename: C3_01590.S0
Sample Identification: NA800339
Title: CWPF #2 HPG03422 Rec. 4/7/99
Begin Collection Time & Date: 2:02:50PM Apr/7/1999
Detector Identification: CF-3
User Identification: 5890
Sample Quantity: 621.000 grams

COPY

Isotope	Energy (keV)	Concentration (pCi/gram)	MDA (pCi/gram)	Flag
Pu-238	15-20	0.000000	21.0434	Use MDA value

Density: 1.30737
Efficiency: 0.00355000
Concentration: 0.000000

99-LS-067
P5 of 15

SOIL ANALYSIS REPORT

FIELD SAMPLE ID:
LAB SAMPLE ID: HPG03422
FILE ID: GEA00664.S0
PRIORITY

COPY

Description\Location:
CWPF #2
EPA Dish

Collector: 8234

Date Received: 4/7/99 **Date Collected:**

Radionuclide		Activity (pCi/g)	MDA	MD-10438 Limit (pCi/g)
Co-60	*	0.00	0.02 ✓	45,000
Cs-137	*	0.00	0.01 ✓	45,000
Pb-210		1.91	0.31 ✓	45,000
Ra-226		1.11	0.16 ✓	800
Ac-227 (D)		0.09	0.08 ✓	40
Th-230	*	0.00	2.82 ✓	800
Th-232 (D)		0.94	0.06 ✓	130
~~Pu-238~~		~~42.48~~	~~32.62~~	~~500~~
Am-241		0.05	0.03 ✓	500

Other Nuclides:

Radionuclide	Activity (pCi/g)	MDA	MD-10438 Limit (pCi/g)

Σ DOT 0.05 nCi/g

Σ Respirator 0.10

Σ Respirator < 1 indicates soil levels below limit.
Values > or = 1 indicate soil levels exceed limit. Limits based on MD-10438 table 4.

Σ DOT 2 nCi/g limit, total activity.

(D) Denotes identification by daughter emissions.
Sample is assumed to be in secular equilibrium.

* Indicates activity < MDA. MDA used in limits calculation.

Instrument Type: High Purity Germanium

Comments:

Date: 7/99 Counted By: 5090 Analyzed By: [illegible] INITIALS [redacted]

NA800340 , 0.000000 , 19.4565 , 2:04:22PM Apr/7/1999 , 99-25-0
CF-4 , 5890 , 584.000 , CWPF #3 HPG03423 Rec. 4/7/99 P6 of 15

RM

Sample Filename: C4_00080.S0
Sample Identification: NA800340
Title: CWPF #3 HPG03423 Rec. 4/7/99
Begin Collection Time & Date: 2:04:22PM Apr/7/1999
Detector Identification: CF-4
User Identification: 5890
Sample Quantity: 584.000 grams

COPY

Isotope	Energy (keV)	Concentration (pCi/gram)	MDA (pCi/gram)	Flag
Pu-238	15-20	0.000000 ✓	19.4565✓	Use MDA value

Density: 1.22947
Efficiency: 0.00370700
Concentration: 0.000000

99-LS-067
p7 of 15
RIC

SOIL ANALYSIS REPORT

FIELD SAMPLE ID:
LAB SAMPLE ID: HPG03423
FILE ID: GEA00668.S0
PRIORITY:

Description\Location:
CWPF #3
EPA Dish

Collector: 8234
Date Received: 4/7/99
Date Collected:

COPY

Radionuclide		Activity (pCi/g)	MDA	MD-10438 Limit (pCi/g)
Co-60	*	0.03	0.03 ✓	45,000
Cs-137	*	0.02	0.02 ✓	45,000
Pb-210		1.03	0.35 ✓	45,000
Ra-226		1.04	0.16 ✓	800
Ac-227 (D)		0.11	0.09 ✓	40
Th-230	*	3.17	3.17 ✓	800
Th-232 (D)		1.22	0.06 ✓	130
~~Pu-238~~	*	~~38.65~~	~~38.65~~	~~500~~
Am-241	*	0.03	0.03 ✓	500

Other Nuclides:

Radionuclide	Activity (pCi/g)	MDA	MD-10438 Limit (pCi/g)

Σ DOT **0.05** nCi/g

Σ Respirator **0.09**

Σ Respirator <1 indicates soil levels below limit.
Values > or = 1 indicate soil levels exceed limit. Limits based on MD-10438 table 4.

Σ DOT 2 nCi/g limit, total activity.

(D) Denotes identification by daughter emissions.
Sample is assumed to be in secular equilibrium.

* Indicates activity < MDA. MDA used in limits calculation.

Instrument type: High Purity Germanium

Comments:

Date: 4-9-99 Counted By: [illegible] Analyzed By: [illegible] INITIALS [redacted]

Sample Filename: C5_01395.S0
Sample Identification: NA800341
Title: CWPF #4 HPG03424 Rec. 4/7/99
Begin Collection Time & Date: 2:05:35PM Apr/7/1999
Detector Identification: CF-5
User Identification: 5890
Sample Quantity: 569.000 grams

COPY

Isotope	Energy (keV)	Concentration (pCi/gram)	MDA (pCi/gram)	Flag
Pu-238	15-20	0.000000	21.7982	Use MDA value

Density: 1.19789
Efficiency: 0.00358000
Concentration: 0.000000

SOIL ANALYSIS REPORT

FIELD SAMPLE ID:
LAB SAMPLE ID: HPG03424
FILE ID: GEA00669.S0
PRIORITY:

Description\Location:
CWPF #4
EPA Dish

Collector: 8234

Date Received: 4/7/99

Date Collected:

COPY

Radionuclide		Activity (pCi/g)	MDA	MD-10438 Limit (pCi/g)
Co-60	*	0.01	0.02 ✓	45,000
Cs-137	*	0.01	0.01 ✓	45,000
Pb-210		0.90	0.31 ✓	45,000
Ra-226		1.11	0.15 ✓	800
Ac-227 (D)	*	0.04	0.08 ✓	40
Th-230	*	0.00	2.93 ✓	800
Th-232 (D)		1.20	0.05 ✓	130
~~Pu-238~~	~~*~~	~~0.00~~	~~36.66~~	~~500~~
Am-241	*	0.00	0.03 ✓	500

Other Nuclides:

Radionuclide	Activity (pCi/g)	MDA	MD-10438 Limit (pCi/g)

Σ DOT 0.04 nCi/g

Σ Respirator 0.09

Σ Respirator <1 indicates soil levels below limit.
Values > or = 1 indicate soil levels exceed limit. Limits based on MD-10438 table 4.

Σ DOT 2 nCi/g limit, total activity.

(D) Denotes identification by daughter emissions
Sample is assumed to be in secular equilibrium.

* Indicates activity < MDA. MDA used in limits calculation.

Instrument type: High Purity Germanium

Comments:

Date: 4/12/99 Counted By: 5896 Analyzed By: 5390 INITIALS [redacted]

Sample Filename: C3_01591.S0
Sample Identification: NA800342
Title: CWPF #5 HPG03426 Rec.4/7/99
Begin Collection Time & Date: 2:39:41PM Apr/7/1999
Detector Identification: CF-3
User Identification: 5890
Sample Quantity: 756.000 grams

COPY

Isotope	Energy (keV)	Concentration (pCi/gram)	MDA (pCi/gram)	Flag
Pu-238	15-20	0.000000	17.5833	Use MDA value

Density: 1.59158
Efficiency: 0.00355000
Concentration: 0.000000

99-LS-067
p11 of 15
RIM

SOIL ANALYSIS REPORT

FIELD SAMPLE ID:
LAB SAMPLE ID: HPG03426
FILE ID: F9900006.S0
PRIORITY:

Description\Location:
CWPF #5
EPA Dish

Collector: 8234

Date Received: 4/7/99

Date Collected:

COPY

Radionuclide		Activity (pCi/g)	MDA	MD-10438 Limit (pCi/g)
Co-60	*	0.00	0.02 ✓	45,000
Cs-137		0.03	0.01 ✓	45,000
Pb-210	*	0.00	0.41 ✓	45,000
Ra-226		0.61	0.22 ✓	800
Ac-227 (D)	*	0.09	0.12 ✓	40
Th-230	*	0.00	3.22 ✓	800
Th-232 (D)		0.55	0.04 ✓	130
~~Pu-238~~	~~*~~	~~0.00~~	~~39.80~~	~~500~~
Am-241		0.06	0.04 ✓	500

Other Nuclides:

Radionuclide	Activity (pCi/g)	MDA	MD-10438 Limit (pCi/g)

Σ DOT **0.04** nCi/g

Σ Respirator **0.09**

Σ Respirator <1 indicates soil levels below limit.
Values > or = 1 indicate soil levels exceed limit. Limits based on MD-10438 table 4.

Σ DOT 2 nCi/g limit, total activity.

(D) Denotes identification by daughter emissions.
Sample is assumed to be in secular equilibrium.

* Indicates activity < MDA. MDA used in limits calculation.

Instrument type: High Purity Germanium

Comments:

Date: 4/14/99 Counted By: 5890 Analyzed By: 5890 INITIALS [redacted]

Rim

Sample Filename: C4_00081.S0
Sample Identification: NA800343
Title: CWPF #6 HPG03427 Rec. 4/7/99
Begin Collection Time & Date: 2:41:23PM Apr/7/1999
Detector Identification: CF-4
User Identification: 5890
Sample Quantity: 621.000 grams

COPY

Isotope	Energy (keV)	Concentration (pCi/gram)	MDA (pCi/gram)	Flag
Pu-238	15-20	0.000000	15.0129	Use MDA value

Density: 1.30737
Efficiency: 0.00370700
Concentration: 0.000000

99-LS-067
p 13 of 15

SOIL ANALYSIS REPORT

FIELD SAMPLE ID: RIM
LAB SAMPLE ID: HPG03427
FILE ID: GED00194.S0
PRIORITY:

Description\Location:
CWPF #6
EPA Dish

Collector: 8234

Date Received: 4/7/99 **Date Collected:**

COPY

Radionuclide		Activity (pCi/g)	MDA	MD-10438 Limit (pCi/g)
Co-60	*	0.00	0.02 ✓	45,000
Cs-137		0.02	0.01 ✓	45,000
Pb-210		1.00	0.26 ✓	45,000
Ra-226		0.94	0.20 ✓	800
Ac-227 (D)	*	0.04	0.09 ✓	40
Th-230		2.72	2.52 ✓	800
Th-232 (D)		0.47	0.05 ✓	130
~~Pu-238~~	~~*~~	~~0.00~~	~~30.91~~ ✓	~~500~~
Am-241	*	0.01	0.03 ✓	500

Other Nuclides:

Radionuclide	Activity (pCi/g)	MDA	MD-10438 Limit (pCi/g)

Σ DOT **0.04** nCi/g

Σ Respirator **0.07**

Σ Respirator: <1 indicates soil levels below limit.
Values > or = 1 indicate soil levels exceed limit. Limits based on MD-10438 table 4.

Σ DOT 2 nCi/g limit, total activity.

(D) Denotes identification by daughter emissions.
Sample is assumed to be in secular equilibrium.

* Indicates activity < MDA. MDA used in limits calculation.

Instrument type: High Purity Germanium

Comments:

Counted By: 5890 Analyzed By: 5390 [redacted]

Sample Filename: C5_01396.S0
Sample Identification: NA800344
Title: CWPF #7 HPG03428 Rec. 4/7/99
Begin Collection Time & Date: 2:44:20PM Apr/7/1999
Detector Identification: CF-5
User Identification: 5890
Sample Quantity: 794.000 grams

COPY

Isotope	Energy (keV)	Concentration (pCi/gram)	MDA (pCi/gram)	Flag
Pu-238	15-20	0.000000	16.1997	✓ Use MDA value

Density: 1.67158
Efficiency: 0.00358000
Concentration: 0.000000

SOIL ANALYSIS REPORT

FIELD SAMPLE ID:
LAB SAMPLE ID: HPG03428
FILE ID: GEA00671.S0
PRIORITY:

Description\Location:
CWPF #7
EPA Dish

Collector: 8234

Date Received: 4/7/99

Date Collected:

COPY

Radionuclide		Activity (pCi/g)	MDA	MD-10438 Limit (pCi/g)
Co-60	*	0.00	0.02	45,000
Cs-137	*	0.01	0.01	45,000
Pb-210		0.42	0.27	45,000
Ra-226		0.54	0.13	800
Ac-227 (D)	*	0.00	0.07	40
Th-230	*	1.04	2.35	800
Th-232 (D)		0.50	0.04	130
~~Pu-238~~	~~*~~	~~12.95~~	~~30.31~~	~~500~~
Am-241		0.20	0.03	500

Other Nuclides:

Radionuclide	Activity (pCi/g)	MDA	MD-10438 Limit (pCi/g)

Σ DOT **0.03** nCi/g

Σ Respirator **0.07**

Σ Respirator <1 indicates soil levels below limit.
Values > or = 1 indicate soil levels exceed limit. Limits based on MD-10438 table 4.

Σ DOT 2 nCi/g limit, total activity.

(D) Denotes identification by daughter emissions.
Sample is assumed to be in secular equilibrium.

* Indicates activity < MDA. MDA used in limits calculation.

Instrument type: High Purity Germanium

Comments:

Date 4/12/99 Counted By: 5890 Analyzed By: 5890 INITIALS [redacted]

Reference Material

Reference 1

WETLANDS ASSESSMENT
FOR THE INSTALLATION OF A
CONSOLIDATED WASTE PROCESSING FACILITY ACCESSWAY
June 18, 1998

1.0 Introduction

The Miamisburg Environmental Management Project (MEMP) is a U. S. Department of Energy owned, contractor-operated facility located in southwestern Ohio. MEMP is located in the community of Miamisburg, Ohio, approximately ten (10) miles southwest of Dayton, Ohio. The subject of this wetlands assessment is the construction of an accessway to the Consolidated Waste Processing Facility (CWPF). The accessway, which is an addition to the existing roadway, would be constructed over an existing, man-made isolated wetland. The area of the wetland that would be impacted is less than one-third (1/3) of an acre (0.06 acre). A previous action in the subject wetland, impacting less than 0.04 acres, was completed in January 1998.

2.0 Purpose and Need for the Proposed Action

The primary objective of the CWPF is to support shipment of radioactive waste from the MEMP to approved waste receiver sites. The accessway will enable transportation vehicles to enter the CWPF safely and efficiently.

3.0 Alternatives Considered

The alternatives considered for the project were no action, relocation of the facility footprint to avoid the wetland, relocation of the accessway only, and relocation of the entire project.

3.1 Alternative 1 -- No action

This alternative would not allow transportation vehicles to safely enter the facility. This alternative would also not allow the increase in waste handling throughput needed to implement the 5.3 year exit plan under which the facility is operating. Therefore, the No Action Alternative was not selected.

3.2 Alternative 2 -- Relocation of the facility footprint to avoid the wetland

To relocate the facility footprint would require the dismantlement and relocation of the existing structure and operating equipment, excavation and leveling of terrain on a steep slope and extensive rerouting of utilities. Therefore, this alternative was not selected.

3.3 Alternative 3 -- Relocation of the Accessway Only

This alternative involves excavation and leveling of terrain on a steep slope and rerouting of utilities. Other accessway relocation options would impact other environmental restoration projects underway at the MEMP. Therefore, this alternative was not selected.

3.4 Alternative 4 -- Relocation of the Entire Project

Relocation of the entire project would present the same obstacles described in Sections 3.1 through 3.3 of this assessment. Therefore, this alternative was not selected.

4.0 Wetland Effects

The wetland area affected by the accessway was delineated using the *OU9 Hydrogeologic Investigation: Wetlands Determination Report*, January 1994. This report was prepared in accordance with the 1987 COE Wetlands Delineation Manual and has the concurrence of the U.S. Army Corps of Engineers (USCOE). This wetlands assessment has been developed pursuant to 10 CFR Part 1022, *Compliance with Floodplan/Wetlands Environmental Review Requirements*.

The proposed action will result in long-term and direct impacts from the filling of an isolated, man-made wetland of 0.06 acres in size. The affected wetland would be backfilled with gravel during the construction of an accessway which is needed to support a consolidated waste processing facility.

Best management practices will be utilized to avoid or minimize potential harm to or within the surrounding environment.

5.0 References

OU9 Hydrogeologic Investigation: Wetlands Determination Report, Environmental Restoration Program, EG&G Mound Applied Technologies, Miamisburg, OH, January 1994.

Reference 2

RISK-BASED GUIDELINE VALUES

MOUND PLANT
MIAMISBURG, OHIO

March 1997

Submitted to the
Miamisburg Environmental Management Project
U.S. DEPARTMENT OF ENERGY

Prepared by
HAZARDOUS WASTE REMEDIAL ACTIONS PROGRAM
Environmental Management and Enrichment Facilities
Managed by
LOCKHEED MARTIN ENERGY SYSTEMS, INC.
for the
U.S. DEPARTMENT OF ENERGY
under contract DE-AC05-84OR21400

Revised by EG&G Mound Applied Technologies, Inc.

FINAL
(REVISION 4)

TABLE 4A

Construction/Mound Employee - Soil/Sediment Guideline Values: Chemicals (Units = mg/kg)

CHEMICAL	Ingestion				Inhalation				Ingestion + Inhalation			
	GV for TR=10^{-4}	GV for TR=10^{-5}	GV for TR=10^{-6}	GV for HI=1	GV for TR=10^{-4}	GV for TR=10^{-5}	GV for TR=10^{-6}	GV for HI=1	GV for TR=10^{-4}	GV for TR=10^{-5}	GV for TR=10^{-6}	GV for HI=1
Tribromomethane	3.75e+04	3.75e+03	3.75e+02	4.30e+03	8.00e+09	8.00e+08	8.00e+07		3.75e+04	3.75e+03	3.75e+02	
Trichloroethylene	2.70e+04	2.70e+03	2.70e+02		2.20e+03	2.20e+03	2.25e+02		2.20e+03	1.25e+03	1.25e+02	
Trichlorofluoromethane				6.40e+04				7.30e+02				7.30e+02
Trichloromethane	4.90e+04	4.90e+03	4.90e+02	2.10e+03	1.55e+03	1.55e+02	1.55e+01		1.55e+03	1.55e+02	1.55e+01	
Xylene				4.30e+05								
bis(2-Ethylhexyl)phthalate	2.15e+04	2.15e+03	2.15e+02	4.30e+03								
PAHs												
Acenaphthylene												
Anthracene				6.40e+04								
Benzo(a)anthracene	4.10e+02	4.10e+01	4.10e+00									
Benzo(a)pyrene	4.10e+01	4.10e+00	4.10e-01									
Benzo(b)fluoranthene	4.10e+02	4.10e+01	4.10e+00									
Benzo(g,h,i)perylene												
Benzo(k)fluoranthene	4.10e+03	4.10e+02	4.10e+01									
Dibenz(a,h)anthracene	4.10e+01	4.10e+00	4.10e-01									

TABLE 4A

Construction/Mound Employee - Soil/Sediment Guideline Values: Chemicals (Units = mg/kg)

CHEMICAL	Ingestion				Inhalation				Ingestion + Inhalation			
	GV for TR=10^{-4}	GV for TR=10^{-5}	GV for TR=10^{-6}	GV for HI=1	GV for TR=10^{-4}	GV for TR=10^{-5}	GV for TR=10^{-6}	GV for HI=1	GV for TR=10^{-4}	GV for TR=10^{-5}	GV for TR=10^{-6}	GV for HI=1
High Explosives												
HMX				1.10e+04								
PETN												
RDX	2.70e+03	2.70e+02	2.70e+01	6.40e+04								
Inorganics												
Aluminum												
Antimony				8.50e+01								
Arsenic				6.40e+01	6.00e+05	6.00e+04	6.00e+03					
Barium				1.50e+04				3.10e+06				1.50e+04
Beryllium	7.00e+01	7.00e+00	7.00e-01	1.10e+03	3.65e+06	3.65e+05	3.65e+04		7.00e+01	7.00e+00	7.00e-01	
Cadmium (Diet)				2.10e+02	5.00e+06	5.00e+05	5.00e+04					
Chromium III				2.10e+05								
Chromium VI				1.10e+03	7.50e+05	7.50e+04	7.50e+03					
Cobalt												
Copper												

TABLE 4B Construction/Mound Employee - Soil/Sediment Guideline Values: Radionuclides (Units = pCi/g)

RADIONUCLIDE	Ingestion			External			Inhalation			Ingestion + External + Inhalation		
	GV for TR=10-4	GV for TR=10-5	GV for TR=10-6	GV for TR=10-4	GV for TR=10-5	GV for TR=10-6	GV for TR=10-4	GV for TR=10-5	GV for TR=10-6	GV for TR=10-4	GV for TR=10-5	GV for TR=10-6
Actinium-227+D	2.65e+02	2.65e+01	2.65e+00	1.65e+02	1.65e+01	1.65e+00	2.20e+05	2.20e+04	2.20e+03	1.00 e+02	1.00 e+01	1.00 e+00
Americium-241	5.00e+02	5.00e+01	5.00e+00	2.10e+04	2.10e+03	2.10e+02	4.45e+05	4.45e+04	4.45e+03	4.45e+02	4.95e+01	4.95 e+00
Bismuth-207	3.30e+04	3.30e+03	3.30e+02	1.75e+01	1.75e+00	1.75e-01	1.80e+09	1.80e+08	1.80e+07	1.75e+01	1.75e+00	1.75 e-01
Cesium-137+D	5.50e+03	5.50e+02	5.50e+01	4.65e+01	4.65e+00	4.65e-01	9.00e+08	9.00e+07	9.00 e+06	4.60e+01	4.60e+00	4.6 e-01
Cobalt-60	9.00e+03	9.00 e+02	9.00 e+01	10.00e+00	1.00e+00	1.00e-01	2.50e+08	2.50e+07	2.50 e+06	1.00 e+01	1.00e+00	1.00 e-01
Plutonium-238	5.50e+02	5.50e+01	5.50 e+00	5.00e+06	5.00 e+05	5.00 e+04	6.50e+05	6.50 e+04	6.50 e+03	5.50e+02	5.50 e+01	5.50 e+00
Plutonium-239	5.50e+02	5.50 e+01	5.50 e+00	7.50e+06	7.50 e+05	7.50 e+04	6.00e+05	6.00 e+04	6.00 e+03	5.50 e+02	5.50 e+01	5.50 e+00
Plutonium-240	5.50e+02	5.50 e+01	5.50 e+00	5.00e+06	5.00 e+05	5.00 e+04	6.00e+05	6.00 e+04	6.00 e+03	5.50 e+02	5.50 e+01	5.50 e+00
Radium-226+D	5.50 e+02	5.50 e+01	5.50 e+00	1.45e+01	1.45e+00	1.45e-01	6.00e+06	6.00e+05	6.00 e+04	1.40e+01	1.40e+00	1.40 e-01
Strontium-90+D	3.00e+03	3.00 e+01	3.00 e+00				2.45e+08	2.45 e+07	2.45 e+06	3.00 e+02	3.00 e+01	3.00 e+00
Thorium-228+D	7.00e+02	7.00 e+01	7.00 e+00	10.00e+01	10.00 e+00	1.00e+00	1.75e+05	1.75e+04	1.75 e+03	8.50e+01	8.50 e+00	8.50 e-01
Thorium-230	4.45e+03	4.45e+02	4.45e+01	2.20e+06	2.20 e+05	2.20 e+04	10.00e+05	10.00 e+04	10.00 e+03	4.40e+03	4.40e+02	4.40 e+01
Thorium-232	5.00e+03	5.00 e+02	5.00 e+01	4.95e+06	4.95 e+05	4.95 e+04	9.00e+05	9.00 e+04	9.00 e+03	5.00e+03	5.00 e+02	5.00 e+01
Tritium	2.35e+06	2.35 e+05	2.35 e+04				1.80e+11	1.80 e+10	1.80 e+09	2.35e+06	2.35 e+05	2.35 e+04

Reference 3

REFERENCE USE ONLY

ENVIRONMENTAL RESTORATION PROGRAM

OPERABLE UNIT 6, AREA 19 AND AREA 14

VERIFICATION REPORT

MOUND PLANT

MIAMISBURG, OHIO

OCTOBER 1994

DEPARTMENT OF ENERGY

ALBUQUERQUE FIELD OFFICE

ENVIRONMENTAL RESTORATION PROGRAM

EG&G MOUND APPLIED TECHNOLOGIES

FINAL

(REVISION 0)

Pu^{230}

Table IV.6 Radiological Analytical Data

Sample Number	Boring Location	Sample Depth	Units	Am-241	Q	Pu-238	Q	Pu 239/240	Q	Th-228	Q	Th-230	Q	Th-232	Q	Tritium	Q	U-234	Q	U-235	Q	U-238	Q
010002	19-3A	1-3'	pCi/g	0.30		5.04		0.20	U	0.84		0.59		0.60		14.00	U	0.54		0.07	UJ	0.48	
011002	19-3A	1-3'	pCi/g	0.26	U	132.05		1.92		0.84		0.88		0.71		14	U	0.68		0.07	U	0.52	
020003	19-3B	3-4'	pCi/g	0.31		100.92		0.54	J	1.10		0.99		0.98		14	U	0.52		0.06	J	0.71	
020006	19-3B	6-7'	pCi/g	0.30	U	16.55		0.30		3.66		0.96		0.15		14	U	0.53		0.10		0.53	
030004	19-3C	4-6'	pCi/g	0.31	U	3.25		0.11	U	3.52		0.61		0.23		14	U	0.39		0.07	U	0.37	
040007	19-3D	7-9'	pCi/g	0.31	U	0.23	U	0.11	U	1.16		1.40		0.72		14	U	0.75		0.07	U	0.74	
040012	19-3D	12-14'	pCi/g	0.33	U	0.23	U	0.11	U	0.98		0.84		0.68		14	U	0.55		0.10		0.61	
050004	19-3E	4-6'	pCi/g	0.27	U	0.45	U	0.21	U	0.47	U	0.44		0.38		14.00	U	0.49		0.07	UJ	0.42	
050010	19-3E	10-11.5'	pCi/g	0.40	U	0.45	U	0.21	U	0.48		0.43		0.24		14.00	U	0.61		0.10	J	0.70	
060000	19-3F	0-2'	pCi/g	0.38	U	7.54		0.11	U	1.78		1.25		0.97		14	U	0.67		0.07	U	0.59	
060005	19-3F	5-7'	pCi/g	0.37	U	1.48		0.11	U	1.23		1.25		0.80		14	U	0.56		0.08		0.55	
070001	19-3G	1-2'	pCi/g	0.40	U	6.10		0.12	J	1.53		0.97		1.10		14	U	0.52		0.07	U	0.72	
070012	19-3G	12-12.5'	pCi/g	0.36	U	0.23	U	0.11	UJ	1.44		1.21		1.31		14	U	0.67		0.07	U	0.87	
071001	19-3G	1-2'	pCi/g	0.34	U	10.95		0.11	UJ	1.18		1.06		0.86		14	U	0.52		0.07	U	0.71	
074000	19-3G	BLANK	pCi/L	90.64	U	0.93	U	0.44	U	2.78		1.50		0.38		700		0.83		0.29	U	0.24	U
080001	19-3H	1-3'	pCi/g	0.37	U	1.10		0.11	U	0.84		1.25		0.51		14	U	0.76	J	0.12	J	0.65	
080009	19-3H	9-11'	pCi/g	0.28	U	0.23	U	0.11	U	1.55		0.97		0.98		14	U	0.77	J	0.09	J	0.82	
090002	19-3I	2-4'	pCi/g	0.33	U	0.22	U	0.11	U	0.44		0.90		0.34		14	U	0.58		0.07	U	0.58	
090017	19-3I	17-19'	pCi/g	0.28	U	0.40	U	0.19	U	0.42	U	1.24		0.53		14.00	U	0.69		0.07	UJ	0.66	
100011	19-3J	11-13'	pCi/g	0.32	U	0.23	U	0.11	U	0.64		0.80		0.38		14	U	0.73		0.03	J	0.71	
100020	19-3J	20-22'	pCi/g	0.23	U	0.23	U	0.11	U	1.08		1.00		0.47		14	U	0.63	J	0.09	J	0.77	
101020	19-3J	20-22'	pCi/g	0.36	U	0.23	U	0.11	U	0.78		0.92		0.35		14	U	0.69		0.06	J	0.66	
104000	19-3J	BLANK	pCi/L	50.30	U	0.93	U	0.44	UJ	0.96	U	0.51		0.24	U	530	U	0.41		0.29	U	0.24	U
110006	19-3K	6-8'	pCi/g	0.36	U	0.45	U	0.21	U	0.89		0.96		1.27		14.00	U	1.16		0.11	JJ	1.21	
110017	19-3K	17-19'	pCi/g	0.31	U	0.45		0.11	U	0.74		0.83		0.50		14	U	0.71		0.08		0.67	
120001	19-3L	1-3'	pCi/g	0.38	U	3.01	J	0.21	U	2.56		1.32		1.80		17.40		0.86		0.10	J	0.65	
120020	19-3L	20-22'	pCi/g	0.29	U	0.22	U	0.11	U	4.17		0.88		0.44		14	U	0.69		0.07	U	0.77	
124000	19-3L	BLANK	pCi/L	81.85	U	0.93	U	0.44	U	0.96	U	0.34		0.24	U	530.00	U	0.38		0.29	UJ	0.26	
130003	19-3M	3-6'	pCi/g	0.37	U	6.62		0.11	U	0.69		0.84		0.56		14	U	0.72		0.07	U	0.74	
130008	19-3M	8-9'	pCi/g	0.39	U	0.33		0.11	U	1.36		1.48		1.46		14	U	0.93		0.12		1.12	
140006	19-3N	7-9'	pCi/g	0.32	U	2.50		0.11	U	0.87		1.00		0.56		14	U	0.66		0.06		0.72	
140001	19-3N	0.5-2.5'	pCi/g	0.36	U	20.18		0.20		4.23		0.82		0.67		14	U	1.12		0.18	J	1.09	
150001	19-3O	1-3'	pCi/g	0.43		31.96		0.23		1.06		1.09		0.70		14	U	0.91		0.19	J	0.73	
150020	19-3O	20-22'	pCi/g	0.33	U	0.23	U	0.11	U	0.73		0.70		0.44		14	U	0.83		0.18	J	0.67	
160018	19-3P	18-20'	pCi/g	0.40	U	0.46	U	0.22	U	0.46	U	0.49		0.37		14.00	U	0.71		0.08	J	0.80	
160010	19-3P	10-12'	pCi/g	0.36	U	0.23	U	0.11	U	1.51		1.31		1.18		14	U	0.71	J	0.07	J	0.90	
170007	19-3Q	7-9'	pCi/g	0.36	U	0.23	U	0.11	UJ	1.07		1.02		1.02		14	U	0.65		0.07	U	0.68	
170020	19-3Q	20-22'	pCi/g	0.34	U	0.23	U	0.11	UJ	1.40		1.26		1.18		14	U	0.70		0.13	J	0.74	
171020	19-3Q	20-22'	pCi/g	0.37	U	0.23	U	0.11	UJ	1.20		0.79		0.96		14	U	0.59		0.07	J	0.74	
180012	19-3R	10-12'	pCi/g	0.22	U	0.37	U	0.18	U	0.39		0.68		0.37		14.00	U	0.49		0.07	UJ	0.82	
180020	19-3R	20-22'	pCi/g	0.30	U	0.23	U	0.11	U	1.05		1.00		0.51		14	U	0.72	J	0.07	U	0.69	
190007	19-3S	7-9'	pCi/g	0.37	U	0.23	U	0.11	UJ	0.86		1.06		0.46		18.70		0.70		0.06	J	0.68	
190020	19-3S	20-22'	pCi/g	0.32	U	0.23	U	0.11	UJ	0.50		0.92		0.40		14	U	0.81		0.07	J	0.70	
191020	19-3S	20-22'	pCi/g	0.24	U	0.23	U	0.11	UJ	0.39		1.17		0.25		17.30		0.82		0.08	J	0.76	
200020	19-3T	20-22'	pCi/g	0.22	U	0.41	U	0.20	U	0.43	U	0.86		0.46		14.00	U	0.78		0.10	J	0.77	
200009	19-3T	9-11.5'	pCi/g	0.29	U	[illegible]	U	0.11	U	0.64		1.01		0.36		14	U	0.89	J	0.12	J	0.77	
210006	19-3U	5-7'	pCi/g	0.34		46.22		0.20		1.11		1.08		0.82		14	U	1.16	J	0.22	J	0.75	
210012	19-3U	12-14'	pCi/g	0.33	U	4.87		0.11	U	1.36		0.68		0.92		14	U	1.19	J	0.08	J	0.88	
220005	19-3V	5-7'	pCi/g	0.31	U	[illegible]	U	0.19	U	1.08		1.15		1.46		14.00	U	0.77		0.07	UJ	0.65	
220010	19-3V	10-11.5'	pCi/g	0.32	U	0.45	U	0.21	U	0.47	U	0.91		0.56		14.00	U	0.61		0.06	UJ	0.64	
230005	19-3W	5-7'	pCi/g	0.39	U	1.11		0.11	U	0.71		0.55		0.54		14	U	0.44		0.07	U	0.53	
230014	19-3W	15.15.5'	pCi/g	0.36	U	0.22	U	0.11	U	0.65		0.79		0.85		14	U	0.78		0.07		0.91	
240004	19-3X	4-6'	pCi/g	0.37	U	0.23	U	0.11	UJ	1.39		1.07		1.22		14	U	1.19		0.07	U	0.74	
240011	19-3X	11-12.5'	pCi/g	0.36	U	17.67		0.12	J	1.20		0.95		0.97		14	U	0.77		0.07	U	0.91	
250009	19-3Y	9-11.5'	pCi/g	0.28	U	0.74		0.11	U	1.24		1.10		1.09		14	U	0.82		0.08		0.85	
250016	19-3Y	16-17.5'	pCi/g	0.28	U	0.23	U	0.11	UJ	1.04		0.78		0.83		14	U	0.65		0.09	J	0.84	
260002	19-4A	1-3'	pCi/g	0.66		68.84		0.91		1.23		1.01		0.47		14	U	0.60	J	0.07	U	0.59	
260010	19-4A	9-11'	pCi/g	0.30	U	0.23	U	0.11	U	0.86		1.23		0.39		14	U	0.69	J	0.07	J	0.70	
260020	19-4A	20-22'	pCi/g	0.34	U	0.23	U	0.11	U	0.81		0.70		0.44		14	U	0.80	J	0.06	J	0.88	
270000	19-2A	0-2'	pCi/g	0.30	U	0.44	U	0.21	U	1.76		2.59		2.39		14.00	U	0.61		0.07	UJ	0.64	
270006	19-2A	6-8'	pCi/g	0.31	U	0.23	U	0.11	UJ	0.80		0.97		0.36		14	U	0.81		0.07	U	0.74	
270013	19-2A	13-15'	pCi/g	0.38	U	0.23	U	0.11	UJ	0.43		1.06		0.36		14	U	0.70		0.07	U	0.78	
270020	19-2A	20-22'	pCi/g	0.29	U	0.23	U	0.11	UJ	0.66		0.83		0.35		14	U	0.73		0.07	U	0.87	
274000	19-2A	BLANK	pCi/L	79.54	U	0.93	U	0.44	UJ	0.96	U	0.30		0.24	U	656.7		0.29	U	0.29	U	0.24	U
280006	19-2B	6-8'	pCi/g	0.27	U	0.44	U	0.21	U	0.51		0.73		0.21		15.30		0.56		0.07	UJ	0.70	
280013	19-2B	13-15'	pCi/g	0.30	U	0.45	U	0.22	U	0.45		0.61		0.39		14.00	U	0.78		0.15	J	0.82	
280020	19-2B	20-22'	pCi/g	0.28	U	1.68		0.22	U	0.52		0.88		0.42		14.00	U	0.87		0.07	UJ	0.81	
290000	19-2B	0-2'	pCi/g	0.19	U	0.88		0.11	U	0.40		0.07		0.07		14	U	0.28		0.07	U	0.11	
291000	19-2B	0-2'	pCi/g	0.22	U	0.23	U	0.11	U	0.24	U	0.56		0.35		14	U	0.23		0.07	U	0.25	
294000	19-2C	BLANK	pCi/L	48.74	U	0.93	U	0.93	U	0.96	U	0.29	U	0.24	U	530	U	0.29	U	0.29	U	0.24	U
290000	19-2C	0-2'	pCi/g	0.32	U	10.87		0.11	UJ	0.76		0.94		0.55		14	U	0.62	J	0.07	UJ	0.70	J
290006	19-2C	6-8'	pCi/g	0.31	U	0.23	U	0.11	U	0.80		1.06		0.46		14	U	0.79	J	0.21	J	0.97	
290013	19-2C	13-15'	pCi/g	0.35	U	1.35		0.11	U	1.10		0.97		0.89		14	U	0.63	J	0.07	U	0.72	
300000	19-2D	0-2'	pCi/g	0.23	U	2.67		0.11	U	0.50		0.68		0.28		14	U	0.44		0.07	U	0.42	
301000	19-2D	0-2'	pCi/g	0.41	U	16.86		0.11	U	1.27		1.12		0.82		21.3		1.35		0.07	U	0.78	
310000	19-2E	0-2'	pCi/g	0.32	U	21.61		0.45		2.64		1.29		0.46		34.0		7.45		0.15		0.62	
320000	19-2F	0-2'	pCi/g	0.22	U	0.23	U	0.11	U	0.72		0.78		0.43		14	U	0.81		0.24	J	0.82	
320006	19-2F	6-8'	pCi/g	0.33	U	0.23	U	0.11	U	1.10		0.88		0.42		14.9		0.80		0.13	J	0.95	
330006	19-2G	6-8'	pCi/g	0.43	U	1.53		0.22	U	0.76		0.65		0.90		22.00		0.69		0.08	J	0.69	
330000	19-2G	0-2'	pCi/g	0.29	U	3.83		0.11	U	1.06		1.37		0.72		16		0.79		0.07	U	0.65	
340000	19-2H	0-2'	pCi/g	0.36	U	1.22		0.11	U	1.32		0.77		1.07		14	U	0.88		0.07	U	0.92	
340006	19-2H	6-8'	pCi/g	0.36	U	0.35		0.11	U	1.49		0.98		1.05		14	U	1.02	J	0.07	U	0.97	
341000	19-2H	0-2'	pCi/g	0.37	U	0.51		0.11	U	2.19		1.10		1.20		14	U	1.22	J	0.09	J	0.92	
350013	19-2I	13-14.5'	pCi/g	0.39	U	0.40	U	0.19	U	0.81		0.74		0.85		14.00	U	0.65		0.07	UJ	0.71	
354000	19-2I	BLANK	pCi/L	47.02	U	0.93	U	0.44	U	0.96		0.29	U	0.24	U	530.00	U	0.29	U	0.29	UJ	0.24	U
350000	19-2I	0-2'	pCi/g	0.33	U	0.23	U	0.11	U	1.39		1.29		0.82		15	U	0.76		0.07		0.88	
350006	19-2I	6-8'	pCi/g	0.34	U	0.23	U	0.11	U	1.31		1.14		0.84		16.4		0.64		0.16		0.64	
350020	19-2I	20-22'	pCi/g	0.31	U	1.77		0.11	U	1.28		1.22		1.01		14	U	0.82	J	0.07	U	0.73	
360000	19-2J	0-2'	pCi/g	0.32	U	11.37		0.33		10.69		1.01		0.66		14	U	0.97		0.12	J	0.93	
360006	19-2J	6-8'	pCi/g	0.39	U	1.99		0.11	U	1.34		1.29		0.82		14	U	1.07		0.22	J	0.96	
360013	19-2J	13-15'	pCi/g	0.34	U	0.51		0.11	U	1.00		0.74		0.50		14	U	0.77		0.09	J	0.67	
360020	19-2J	20-22'	pCi/g	0.25	U	0.25		0.11	U	1.34		0.87		0.69		14	U	0.78		0.11	J	0.82	
370012	19-1A	12-14'	pCi/g	0.44	U	3.22		0.11	U	2.01		0.78		0.85		14	U	0.55		0.07	U	0.60	
370006	19-1A	6-8'	pCi/g	0.43	U	16.11		0.27		1.49		0.92		0.95		14	U	0.68	J	0.12	J	0.80	
380006	19-2B	6-8'	pCi/g	0.31	U	82.57		0.26	J	0.70		0.68		0.39		20.30		1.02		0.07	U	0.84	
380012	19-2B	12-14'	pCi/g	0.34	U	2.58		0.11	U	0.59		1.11		1.02		14	U	1.00		0.08		0.86	
384000	19-2B	BLANK	pCi/L	78.43	U	0.93	U	0.93	U	0.96	U	0.29	U	0.24	U	530	U	0.29	U	0.29	U	0.24	U
390011	19-2C	12-14'	pCi/g	0.45	U	0.84		0.11	U	1.07		1.07		1.03		14	U	0.81		0.07	U	0.89	
391006	19-2C	6-8'	pCi/g	0.36	U	0.23	U	0.11	U	1.29		0.93		1.20		14	U	0.76		0.07		0.89	
390006	19-2C	6-8'	pCi/g	0.44	U	5.38		0.11	UJ	1.12		0.82		1.25		14	U	1.04		0.07	J	0.88	
400000	NONE	SPIKE	pCi/g	0.86		103.93		1.54		13.35		2.77		1.21		14	U	0.94		0.08		0.92	
410010	NONE	SPIKE	pCi/g	0.37	U	17.09		0.37		2.64		1.59		0.88		14	U	0.77		0.07		0.78	
420020	NONE	SPIKE	pCi/g	0.35	U	0.23	U	0.11	U	1.15		1.55		0.68		14	U	0.54		0.08		0.78	

Reference 4

ENVIRONMENTAL RESTORATION PROGRAM

OPERABLE UNIT 6, DECONTAMINATION AND DECOMMISSIONING PROPOSED AREA 14 FUEL OIL STORAGE SYSTEM VERIFICATION REPORT

MOUND PLANT
MIAMISBURG, OHIO

October 1992

DEPARTMENT OF ENERGY
ALBUQUERQUE FIELD OFFICE

ENVIRONMENTAL RESTORATION PROGRAM
TECHNICAL SUPPORT OFFICE
LOS ALAMOS NATIONAL LABORATORY

FINAL
(REVISION 0)

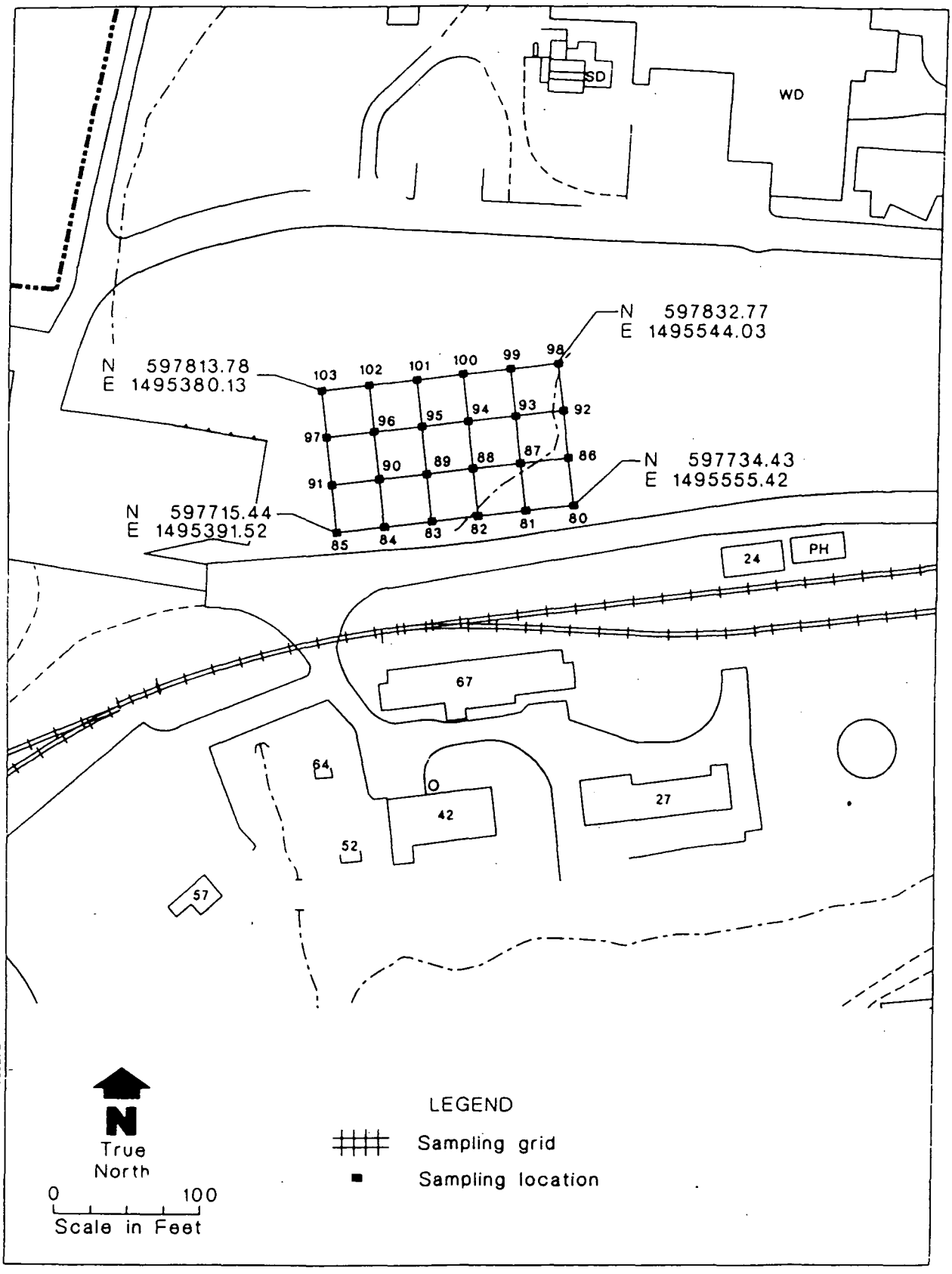


Figure 2.1. Sampling locations in Area 14.

Table II.5. Sample Identifications and Soil Screening Data for Area 14 Samples

WESTON Field Sample Number	WESTON Analytics[a] Sample Number	Field[b] Location	Soil Screening Facility[c]		Notes
			Plutonium-238 (pCi/g)	Thorium-232 (pCi/g)	
MND11-0080-2000	108020	NA	NA	NA	Trip blank (water)
MND11-0080-0001	108001	80	14	1.4	(Soil)
MND11-0080-1001	108011	80	19	2.7	Field duplicate sample (soil)
MND11-0081-0001	108101	81	5	1.1	(Soil)
MND11-0082-0001	108201	82	12	1.1	(Soil)
MND11-0083-0001	108301	83	38	1.1	(Soil)
MND11-0084-0001	108401	84	0	1.1	(Soil)
MND11-0085-0001	108501	85	0	1.3	(Soil)
MND11-0086-0001	108601	86	25	1.0	(Soil)
MND11-0087-0001	108701	87	18	0.7	(Soil)
MND11-0088-0001	108801	88	16	0.9	(Soil)
MND11-0089-0001	108901	89	18	0.8	(Soil)
MND11-0091-0001	109101	91	7	0.9	(Soil)
MND11-0080-2001	108021	NA	NA	NA	Trip blank (water)
MND11-0080-2002	108022	NA	NA	NA	Trip blank (water)
MND11-0090-0001	109001	90	4	1.2	(Soil)
MND11-0092-0001	109201	92	14	0.8	(Soil)
MND11-0092-1001	109211	92	N	N	Field duplicate sample (soil)
MND11-0093-0001	109301	93	23	1.0	(Soil)
MND11-0094-0001	109401	94	11	2.0	(Soil)
MND11-0095-0001	109501	95	15	2.0	(Soil)
MND11-0096-0001	109601	96	12	1.0	(Soil)

Table II.5. (page 2 of 2)

WESTON Field Sample Number	WESTON Analytics[a] Sample Number	Field[b] Location	Soil Screening Facility[c] Plutonium-238 (pCi/g)	Soil Screening Facility[c] Thorium-232 (pCi/g)	Notes
MND11-0097-0001	109701	97	10	1.8	(Soil)
MND11-0098-0001	109801	98	4	1.5	(Soil)
MND11-0099-0001	109901	99	17	1.8	(Soil)
MND11-0100-0001	110001	100	15	1.7	(Soil)
MND11-0101-0001	110101	101	15	1.5	(Soil)
MND11-0102-0001	110201	102	9	1.8	(Soil)
MND11-0102-1001	110211	102	NA	NA	Field duplicate sample (soil)
MND11-0103-0001	110301	103	11	1.8	(Soil)
MND11-BLNK-28AUG91	128A91	NA	NA	NA	Field blank/rinsate sample
MND11-BLNK-29AUG91	129A91	NA	NA	NA	Field blank/rinsate sample

[a]WESTON analytical software packages could not accomodate the original sample number string, so it had to be recodified into a shorter form.
[b]Field sampling locations indicated on Figure 2.1.
[c]Statistical breakdown for these screening values is given in Table V.10.
NA - not applicable

Reference 5

NA800311/004453V11 , 19.7436 , 11:12:38AM Mar/25/1999,
CF-5 , 5890 , 594.000 , CWPF WETLANDS #6 HPG03384 Rec. 3/24/99

COPY

Sample Filename: C5_01388.S0
Sample Identification: NA800311/004453
Title: CWPF WETLANDS #6 HPG03384 Rec. 3/24/99
Begin Collection Time & Date: 11:12:38AM Mar/25/1999
Detector Identification: CF-5
User Identification: 5890
Sample Quantity: 594.000 grams

Isotope	Energy (keV)	Concentration (pCi/gram)	MDA (pCi/gram)	Flag
Pu-238	15-20	7.52882	19.7436	Use MDA value

Density: 1.25053
Efficiency: 0.00358000
Concentration: 7.52882

COPY

Sample Filename: C4 00072.S0
Sample Identification: NA800310/004452
Title: CWPF WETLANDS #5 HPG03383 Rec. 3/25/99
Begin Collection Time & Date: 11:09:53AM Mar/25/1999
Detector Identification: CF-4
User Identification: 5890
Sample Quantity: 588.000 grams

Isotope	Energy (keV)	Concentration (pCi/gram)	MDA (pCi/gram)	Flag
Pu-238	15-20	0.000000	16.9526	Use MDA value

Density: 1.23789
Efficiency: 0.00370700
Concentration: 0.000000

COPY

Sample Filename: C3_01580.S0
Sample Identification: NA800309/004451
Title: CWPF WETLANDS #4 HPG03382 Rec. 3/2599
Begin Collection Time & Date: 10:56:51AM Mar/25/1999
Detector Identification: CF-3
User Identification: 5890
Sample Quantity: 553.000 grams

Isotope	Energy (keV)	Concentration (pCi/gram)	MDA (pCi/gram)	Flag
Pu-238	15-20	0.000000	22.2466	Use MDA value

Density: 1.16421
Efficiency: 0.00355000
Concentration: 0.000000

NA800307 , 0.000000 , 15.9063 , 10:19:44AM Mar/25/1999,
CF-4 , 5890 , 636.000 , CWPF WETLANDS #2 HPG03380 Rec. 3/25/99

COPY

Sample Filename: C4_00071.S0
Sample Identification: NA800307/004449
Title: CWPF WETLANDS #2 HPG03380 Rec. 3/25/99
Begin Collection Time & Date: 10:19:44AM Mar/25/1999
Detector Identification: CF-4
User Identification: 5890
Sample Quantity: 636.000 grams

Isotope	Energy (keV)	Concentration (pCi/gram)	MDA (pCi/gram)	Flag
Pu-238	15-20	0.000000	15.9063	Use MDA value

Density: 1.33895
Efficiency: 0.00370700
Concentration: 0.000000

CF-5 , 5890 , 482.000 , CWPF WETLANDS #3 HPG03381 Rec. 3/25/99

COPY

Sample Filename: C5_01387.S0
Sample Identification: NA800308/004450
Title: CWPF WETLANDS #3 HPG03381 Rec. 3/25/99
Begin Collection Time & Date: 10:21:32AM Mar/25/1999
Detector Identification: CF-5
User Identification: 5890
Sample Quantity: 482.000 grams

Isotope	Energy (keV)	Concentration (pCi/gram)	MDA (pCi/gram)	Flag
Pu-238	15-20	0.000000	23.7018	Use MDA value

Density: 1.01474
Efficiency: 0.00358000
Concentration: 0.000000

COPY

Sample Filename: C3_01579.S0
Sample Identification: NA800306/004448
Title: CWPF WETLANDS #1 HPG03379 Rec. 3/25/99
Begin Collection Time & Date: 10:17:46AM Mar/25/1999
Detector Identification: CF-3
User Identification: 5890
Sample Quantity: 557.000 grams

Isotope	Energy (keV)	Concentration (pCi/gram)	MDA (pCi/gram)	Flag
Pu-238	15-20	0.000000	23.2887	Use MDA value

Density: 1.17263
Efficiency: 0.00355000
Concentration: 0.000000

Page Redacted

Contains Proprietary Information