

3006-0604270012



CH2M HILL  
Mound, Inc.  
1 Mound Road  
P.O. Box 3030  
Miamisburg, OH  
45343-3030

ER/WM-083/05  
February 22, 2005

Ms. Margaret L. Marks, Director  
Miamisburg Closure Project  
U. S. Department of Energy  
1075 Mound Road  
Miamisburg, OH 45342

ATTENTION: Paul Lucas

SUBJECT: Contract No. DE-AC24-03OH20152  
Statement of Work Requirement 055 - Regulator Reports  
**BUILDINGS 36, 37 AND 50 CLOSEOUT REPORT, FINAL**

Dear Ms. Marks:

Attached is the following Final document for your records:

- Buildings 36, 37 and 50 Closeout Report, Final

If you or members of your staff have any questions regarding the document, or if additional support is needed, please contact me at 937-865-4203.

Sincerely,

David A. Rakel  
CERCLA Lead

DAR/ms

Enclosures

- cc: Tim Fischer, USEPA, (1) w/attachments  
 Brian Nickel, OEPA, (1) w/attachments  
 Ruth Vandegrift, ODH, (1) w/attachments  
 Mary Wojciechowski, Tetra Tech, (1) w/attach  
 Frank Schmaltz, DOE/MCP, (1) w/attachments  
 Lisa Rawls, MCP, w/o attachments  
 Randy Tormey, DOE/OH, (1) w/attachments  
 Git Desai, DOE/HQ, (1) w/attachments  
 Frank Bullock, MMCIC, (2) w/attachments  
 Public Reading Room, (4) w/attachments

- Rick Hersemann, Tetra Tech, (1) w/attachs  
 CERCLA Records, CH2M Hill, (1) w/attachs  
 Chris Watson, CH2M Hill, (1) w/attachs  
 ER Records, CH2M Hill, (1) w/attachs  
 DCC (1) w/attachments  
 John Lehew, CH2M Hill, w/o attachments  
 Dave Rakel, CH2M Hill, w/o attachments  
 Val Darnell, CH2M Hill, w/o attachments  
 Bo Wier, CH2M Hill, w/o attachments  
 file



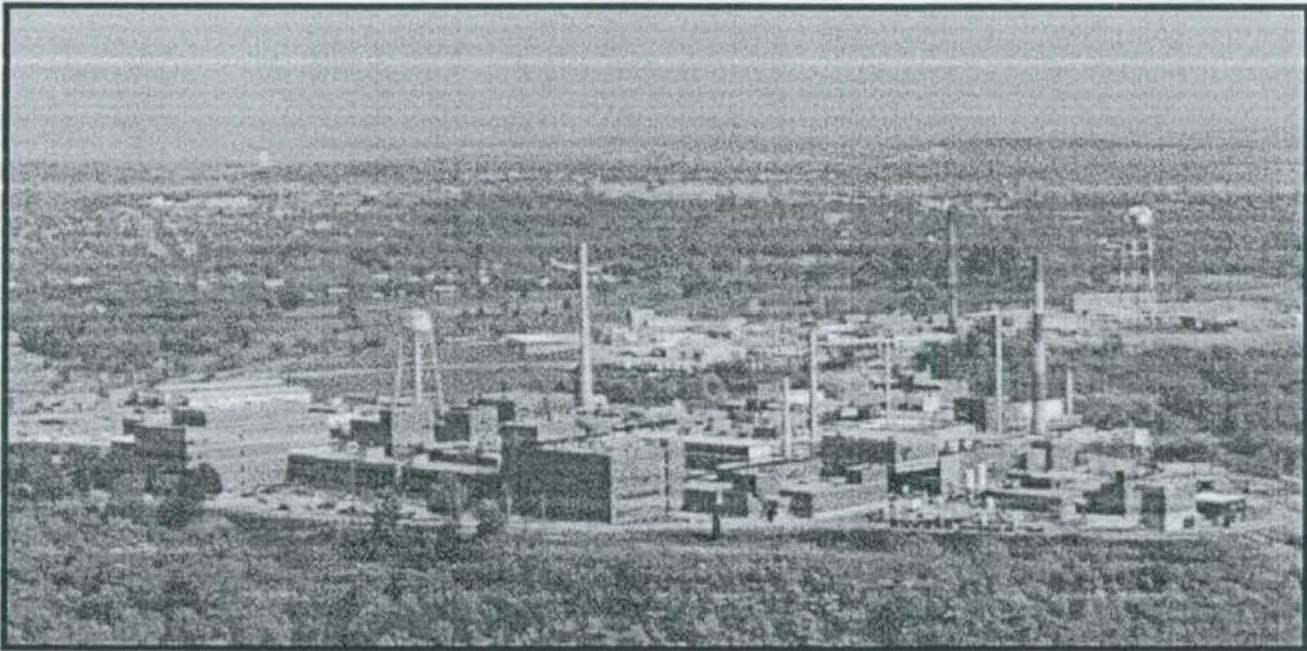
Environmental  
Restoration  
Program



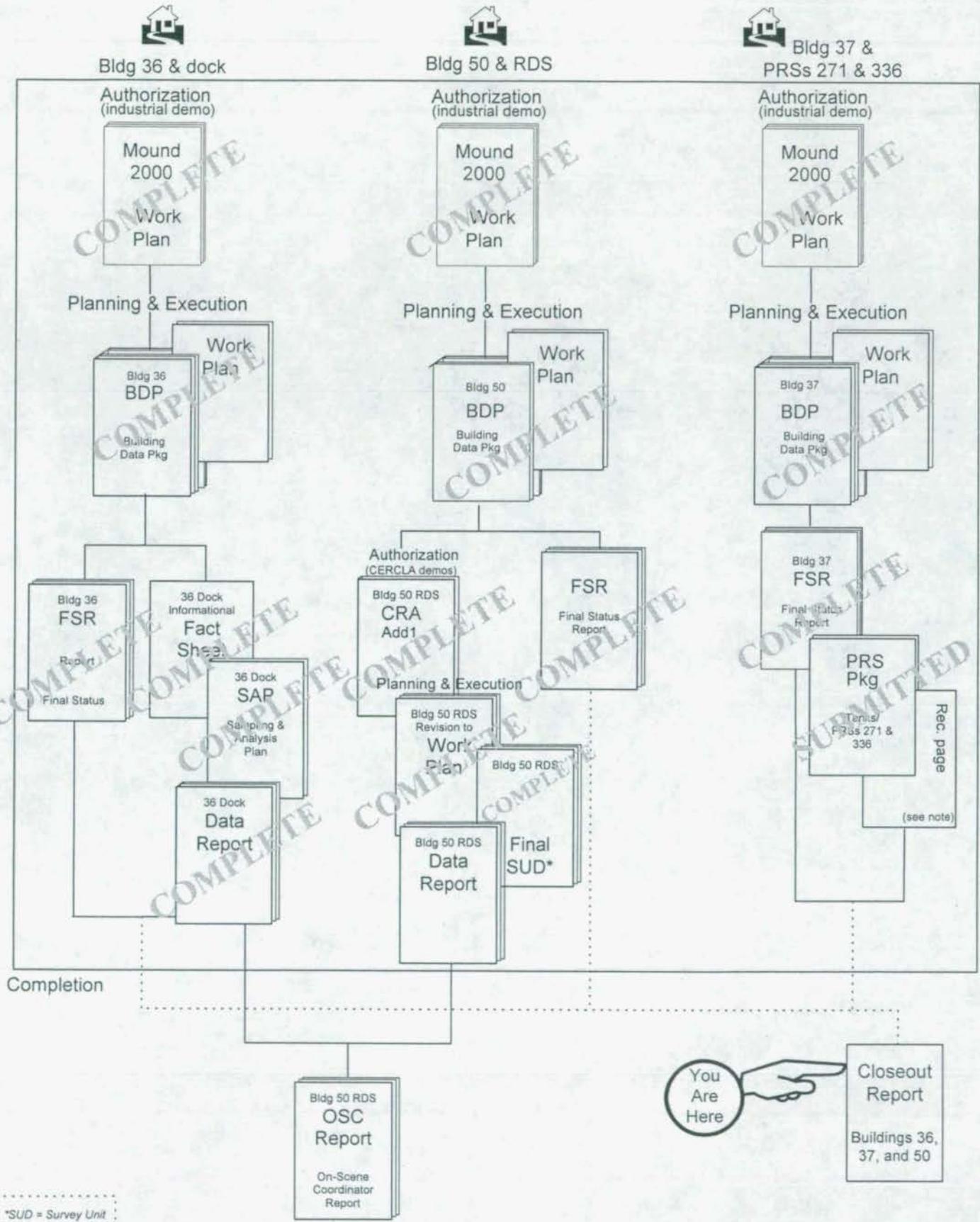
# Miamisburg Closure Project CLOSEOUT REPORT

## Buildings 36, 37 and 50 (Demolition)

Final  
February 2005



# Bldg 36, 36 dock, Bldg 37, 37 tanks (PRs 271 & 336) & Bldg 50 & 50 RDS



\*SUD = Survey Unit Design per Std VSAP

data included in OSC Report per OEPA request

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### Appendix C Building 36 Dock and Soil Data Assessment

### Appendix D Core Team Recommendation for PRS 271/PRS 336

## 1.0 PURPOSE

This is the final report documenting completion of the demolition of Buildings 36, 37 and 50 located at the Department of Energy (DOE) Miamisburg Closure Project (MCP) Site, as shown in the figures provided in Appendix A. The demolition of the buildings, including their slabs and footers, was accomplished per the Work Package for each building (Building 36, BOSS-36952; Building 37, BOSS-36961; and Building 50, BOSS-36965). A copy of the Work Package was included in Appendix O of the Building Data Package (BDP) for the corresponding building. The scope of work relating to these buildings is considered complete. Final site restoration has been completed.

## 2.0 BACKGROUND

### 2.1 Buildings 36, 37 and 50

#### Building 36

Constructed in 1967, Building 36 was located on the east central portion of the site (Figure 1). The facility was a single-story, slab-on-grade structure with a penthouse. It was constructed mainly of reinforced concrete block with the exterior walls being just over 11 inches thick and the interior walls and the walls of the penthouse being 12 inches thick. The floor was a 6-inch thick reinforced concrete slab set on a 6-inch thick gravel bed. The reinforced concrete footer/foundation of the building was set approximately 4 feet below grade. The roof was a built-up membrane of asphalt on a metal frame truss with a suspended ceiling. Building 36 was modified to add one small room (Room 12) and to add some interior walls since its original construction, and contained 4,255 square feet of floor space.

Building 36 was originally built and used as the System and Capsule Design Testing Facility. The building contained office and laboratory areas with facilities and equipment for testing of encapsulated components, including a Capsule Impact Facility, a Re-entry Ablation Facility, welding machines, a vacuum chamber, and a high temperature vacuum furnace. By the late 1980s, Building 36 was used for support functions for RTG (Radioisotope Thermoelectric Generator) assembly and testing operations. Processes housed in Building 36 were a cleaning and degreasing facility for cleaning heat source hardware and tooling, high temperature vacuum bake out ovens for the bake out of graphite modules and cleaning, a long-term temperature facility, and a pressure burst facility. Building 36 was also used for the storage of heat source/RTG program quality records and the storage of raw materials, hardware, and tooling managed by Material Control for the heat source/RTG program.

#### Building 37

Constructed in 1968, Building 37 was located on the east central portion of the site (Figure 1). The facility was a single-story, slab-on-grade structure with a penthouse. It was constructed of concrete block with the exception of the interior walls and the northern

exterior wall at the northeastern corner of the building (Rooms 5 and 6) that were constructed of 12-inch thick poured concrete. The reinforced concrete footer/foundation sections under the penthouse sections of the building were 10½ feet deep and the reinforced concrete footer/foundation sections under the remainder of the building were 8 feet deep. The roofs on the building and the penthouse were a built-up membrane of asphalt. Building 37 had not had any major modifications, other than reconfiguration of some of the interior rooms, and contained 2,464 square feet of floor space. It is believed that no research, development, or production activities using radioactive or energetic materials have occurred in the building.

Building 37 was built as a Radioactive Heat Source Testing Facility, although it was also used for other purposes. It was constructed to handle radionuclides, having change rooms, hot corridors, and a filter bank, and it was previously included on a list of buildings requiring decontamination for the removal of plutonium-238. However, later it was found the building had not handled unsealed radionuclides.

### **Building 50**

Constructed in 1970, Building 50 was located on the east central portion of the site (Figure 1). The facility was a two-story, reinforced concrete block, slab-on-grade structure, containing a row of seven test cells constructed of reinforced concrete within the building. The east wall of the row of test cells was 36 inches thick. The remaining walls of the test cells, as well as the inter-cell walls and ceilings were 27 inches thick. The floor and the ceilings of the building as well as the footer and foundation walls were constructed of reinforced concrete. The roofs (partially above the first floor and partially above the second floor) were a built-up membrane of asphalt. Building 50 had not had any major modifications, other than reconfiguration of some of the interior rooms, and contained 14,849 square feet of floor space.

Building 50 was designed and constructed for the purpose of conducting safe, nondestructive tests on sealed heat sources fueled with alpha-emitting isotopes. The design of the building used features and control systems, such as shielding, remote handling systems, air pressure differentials, and filtered ventilation to prevent or minimize the consequences of a potential accident. The operating side of the test cells was 36 inches thick. Viewing windows (one window in each of the seven test cells) in the operating wall contained glass windows with a 36-inch space filled with a zinc bromide solution to moderate neutron and gamma emission. The rear side of the cells (the west wall, adjacent to the service gallery – Room 114) was 27 inches thick. The access doors to each cell, which opens to the service gallery, were of concrete construction and were 27 inches thick (for shielding). The cells were connected by a water-filled canal, which permitted the transfer of high dose rate heat sources between cells, as well as to and from the storage pool in the floor of Cell 113 (high-radiation-level storage pool). The canal was formed by the installation of a low concrete wall running parallel to and about twenty-one inches from the operating wall (36 inches thick) inside of the cells.

Building 50 had been classified as a Category 3 Nuclear Facility. The facility was downgraded to Standard Industrial Hazard on 24 October 2002 (DOE MB-0018-03). This downgrade was based on DOE's verification that all nuclear materials and chemicals in excess of releasable quantities were removed from the building.

## 2.2 Potential Release Sites (PRSs)

As a result of the investigations and documentation accomplished to comply with the CERCLA cleanup process via the Federal Facilities Agreement (FFA)/DOE Environmental Restoration (ER) Program, DOE and the site contractor tabulated all the PRSs identified under the various regulatory programs in effect at the site. Of these PRSs, eight are at or near Buildings 36, 37 and 50, as identified in Table 1. The PRS locations are shown in Figure 2 and recommendation sheets (except for PRS 271 and PRS 336) for the PRSs near each building are provided in Appendix N of the BDP for that building.

Table 1 - PRSs in Proximity to Buildings 36, 37 and 50

PRS	CERCLA or Bldg. Related	Binning Status	Comments
267*	CERCLA	Removal Action (RA)	Area 9, Thorium Storage and Redrumming Area
269	CERCLA	No Further Assessment (NFA)	Building 36 Historic Gasoline Tanks (Tanks 239 and 240)
270	CERCLA	NFA	Underground Sanitary Sewer Lines G6 and G7
271**	Building	NFA	Building 37 Sanitary Waste Tank (Tank 100)
288*	Building	RA	Area 17, SM Building Soils
336**	Building	NFA	Building 37 Waste Tank (AKA Low Risk Waste Tank 267)
391	CERCLA	NFA	Elevated Soil Gas Location
392	CERCLA	NFA	Elevated Soil Gas Location

\* The Removal Action for PRSs 267 and 288 are authorized by the Building 38 Action Memorandum and will be closed out via the Building 38 Soil OSC Report.

\*\* The Core Team binned PRSs 271 and 336 November 2004 based on data and information collected as part of the Building 37 demolition activities. The Core Team Recommendation is provided in Appendix D.

## 3.0 ACTIONS TAKEN

The Building 36 BDP was submitted for Core Team and public review on 10 November 2003, and the 30-day public review period concluded on 10 December 2003. The Building

37 BDP was submitted for Core Team and public review on 06 October 2003, and the 30-day public review period concluded on 05 November 2003. The Building 50 BDP was submitted for Core Team and public review on 03 November 2003, and the 30-day public review period concluded on 07 December 2003.

The demolition of Buildings 36, 37 and 50 commenced on 09 December 2003 and the final grading and seeding was completed on 26 January 2005. Photographs taken before, during, and after demolition are provided in Appendix B.

Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) studies of Buildings 36, 37 and 50 were performed prior to demolition. During the Building 36 pre-demolition surveys, radiological contamination above surface release criteria was discovered on the top surface of the dock. The dock was removed as Low Specific Activity (LSA) waste in accordance with the Building 36 Demolition Work Plan. The interior and exterior surfaces of Building 36 were also radiologically surveyed, and all surfaces met release criteria. Accordingly, it was believed that the contamination did not originate in Building 36 or as a result of Building 36 processes. It is unknown how the top surface of the dock became contaminated.

To ensure that the soil in the vicinity of the former Building 36 dock location had not been impacted by the dock contamination, additional soil samples were collected as prescribed in a Core Team approved sampling plan. The data collected indicated the soil was below the surface release criteria. The results of the soil assessment are provided in Appendix D herein and are being included in the Building 50 Red Drain Line OSC Report.

During the Building 50 MARSSIM survey, a sediment sample from the red drain line was analyzed and Thorium 232 was observed (13.84 pCi/g) in excess of the cleanup objective (2.1 pCi/g). Thorium 228 was also found in the same sample (12.16 pCi/g) in excess of the cleanup objective (2.6 pCi/g). The Action Memo for Contingent Removal Actions for Contaminated Soils, Addendum 1: Structures, was issued for the Building 50 red drain line and similar structures that are simple removals. The Building 50 Red Drain Line OSC Report will address removal of the Building 50 red drain line.

Soil sampling for PRS 271 and PRS 336 was performed as part of the Building 37 demolition activities. Analytical results are provided in the PRS 271/PRS 336 PRS Package. The Core Team Recommendation is provided in Appendix D.

The MARSSIM studies of Buildings 36, 37, and 50 (provided in the Final BDP for each building) provide details of each survey design and results and indicate that other sections of Buildings 36, 37 and 50 met applicable surface release criteria.

Following demolition, the ground-contact surfaces of the slab were surveyed. All results met surface release criteria. Radiological Survey Data Sheets (RSDSs) for post-demolition surveys are provided in Appendix C.

Building debris was loaded into haulers and taken to a local sanitary landfill. Concrete debris was crushed and used onsite as backfill.

**Table 2 - Materials Disposition**

<b>Building 36 Material</b>	<b>Quantity</b>	<b>Disposal Method</b>	<b>Destination</b>
Asbestos Abatement (Debris)	6.3 cubic yards	Landfill	Stoney Hollow
Construction Debris	2,060.5 cubic yards	Landfill	Stoney Hollow
Clean Hard Fill Debris (concrete) Slab	78.8 cubic yards	Reused Onsite	Concrete Crusher
PCB Light ballasts	0.08 cubic yards	Treatment	Clean Harbors
Glycol	1,905.7 liters	Treatment	Clean Harbors
Rad debris (Dock Surface)	20 cubic yards	Rail	Envirocare
<b>Building 37 Material</b>	<b>Quantity</b>	<b>Disposal Method</b>	<b>Destination</b>
Asbestos Abatement (Debris)	14 cubic yards	Landfill	Stoney Hollow
Construction Debris	1,020 cubic yards	Landfill	Stoney Hollow
Clean Hard Fill Debris (concrete) Slab	46 cubic yards	Reused Onsite	Concrete Crusher
PCB Light ballasts	0.05 cubic yards	Treatment	Clean Harbors
Glycol	1,103 liters	Treatment	Clean Harbor
<b>Building 50 Material</b>	<b>Quantity</b>	<b>Disposal Method</b>	<b>Destination</b>
Asbestos Abatement (Debris)	49 cubic yards	Landfill	Stoney Hollow
Construction Debris	7,179 cubic yards	Landfill	Stoney Hollow
Clean Hard Fill Debris (concrete) Slab	275 cubic yards	Reused Onsite	Concrete Crusher
PCB Light ballasts	0.29 cubic yards	Treatment	Clean Harbors
Glycol	6,650.4 liters	Treatment	Clean Harbors
Rad debris(Pipe & Tank)	20 cubic yards	Rail	Envirocare (See 50 Red Drain Line OSC Report)

#### 4.0 PROBLEMS ENCOUNTERED

Buildings 36, 37 and 50 were successfully demolished per the Work Packages. After demolition of the buildings, the site was used to stage clean foundation demolition rubble from various buildings. The concrete rubble was size reduced and then used onsite as backfill. The area was graded and seeded. The area after final seeding is shown in Appendix B.

#### 5.0 RESOURCES COMMITTED

##### 5.1 Personnel Organization

Table 3 lists the personnel organization for the demolition.

**Table 3 - Personnel Organization for the Demolition**

Agency or Party Involved	Contact	Description of Participation
US EPA (SR-6J) 77 W. Jackson Chicago, IL 60604 312-886-7058	Tim Fischer	Federal agency responsible for MCP oversight.
Ohio EPA 410 E. Fifth Street Dayton, OH 45402-2911 937-285-6468	Brian Nickel	State agency responsible for MCP oversight.
DOE/ MCP P.O. Box 66 1 Mound Road Miamisburg, OH 45343-0066 847-8350, ext. 304	Frank Schmaltz	DOE/ MCP Project Manager responsible for project oversight and success.
CH2M Hill Mound, Inc. SMPP-TFV Project P.O. Box 3030 1 Mound Road Miamisburg, OH 45343-3030 937-608-8007	Chris Watson	Provided the DOE/ MCP Project Manager for demolition, technical assistance, administrative support, sampling, decontamination, photo and site documentation, site safety, and report preparation.

## 5.2 Demolition Cost

Under the site contract, CH2M Hill Mound, Inc. has elected to cluster financial data for multiple buildings together. Buildings 36, 37 and 50 compose Cluster 50. The total cluster cost is presented in Table 4.

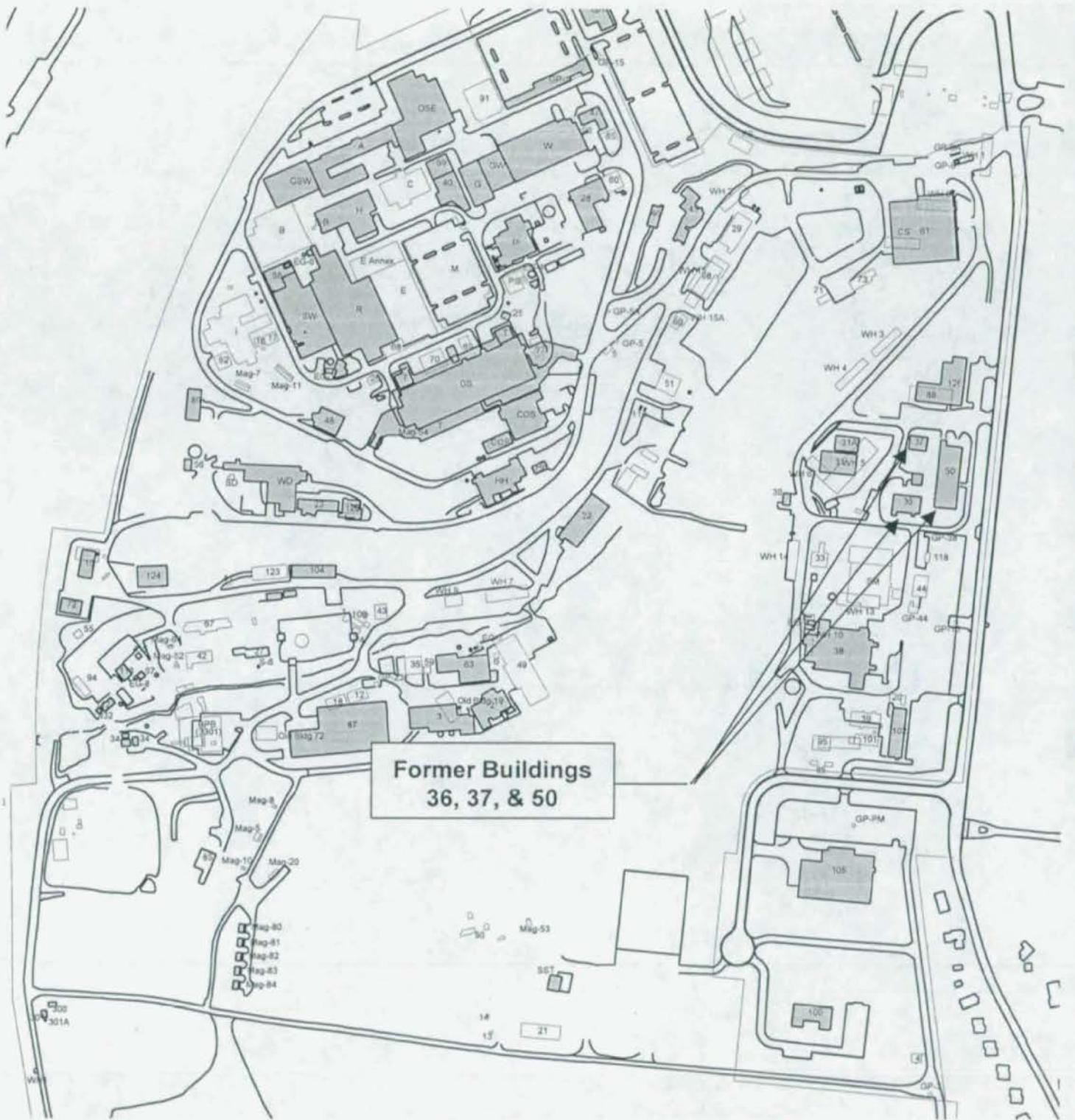
**Table 4 – Cluster 50 Estimated Total Cost**

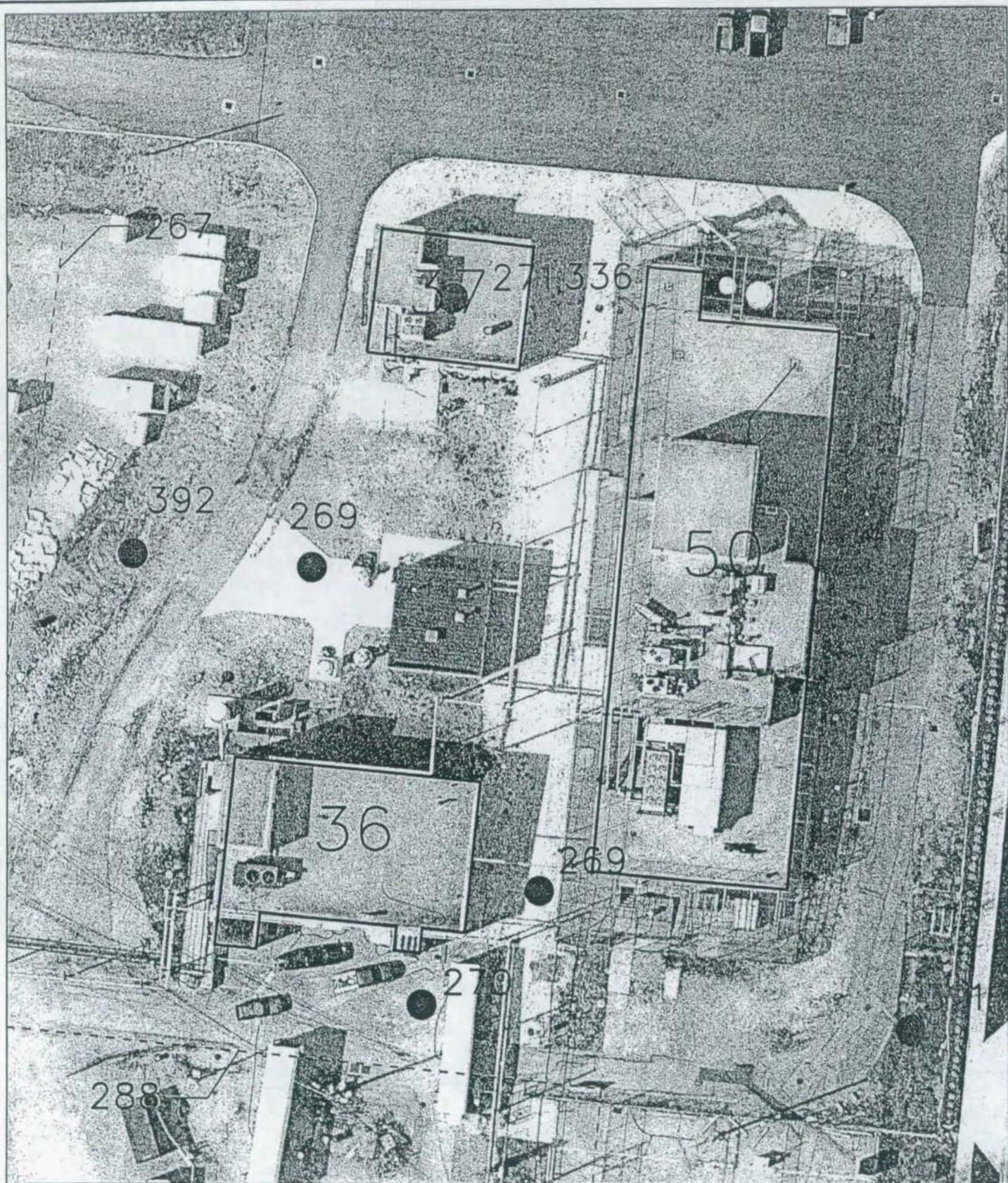
<b>Activity</b>	<b>Cost</b>
Work Planning	\$91,000
Facility Preparation	\$343,000
Demolition	\$265,000
<b>Total</b>	<b>\$699,000</b>

## APPENDIX A

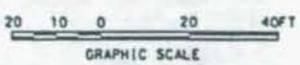
### Figures

Figure 1 - Location of Buildings 36, 37 & 50





- PRS Point
- - - PRS Area
- ~ PRS Line



**MOUND**



Environmental  
Restoration  
Geographic  
Information  
System

SHEET	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
ISSUE																						
SHEET	1	2	3	4	5	6																
ISLK																						
PART CLASSIFICATION																						
DRAWING CLASSIFICATION												SCALE		DRAWING NUMBER		JOB NUMBER						
<b>UNCLASSIFIED</b>														bd36_37_50vicinity_prr.dgn								
DWG TYPE		STE		PRNG		ER-GIS		CADC		SCALE		SHEET 1										
STATUS MD-REL - **/ **/ **												ORGN MSTATION / J										

**Figure 2:**  
Buildings 50, 37 & 36  
and Vicinity

01/25/05		PLAN VIEW		MR							
ISS	DATE	REVISION	BY	CHKR	ENR	UPMC	APVD				

D

C

B

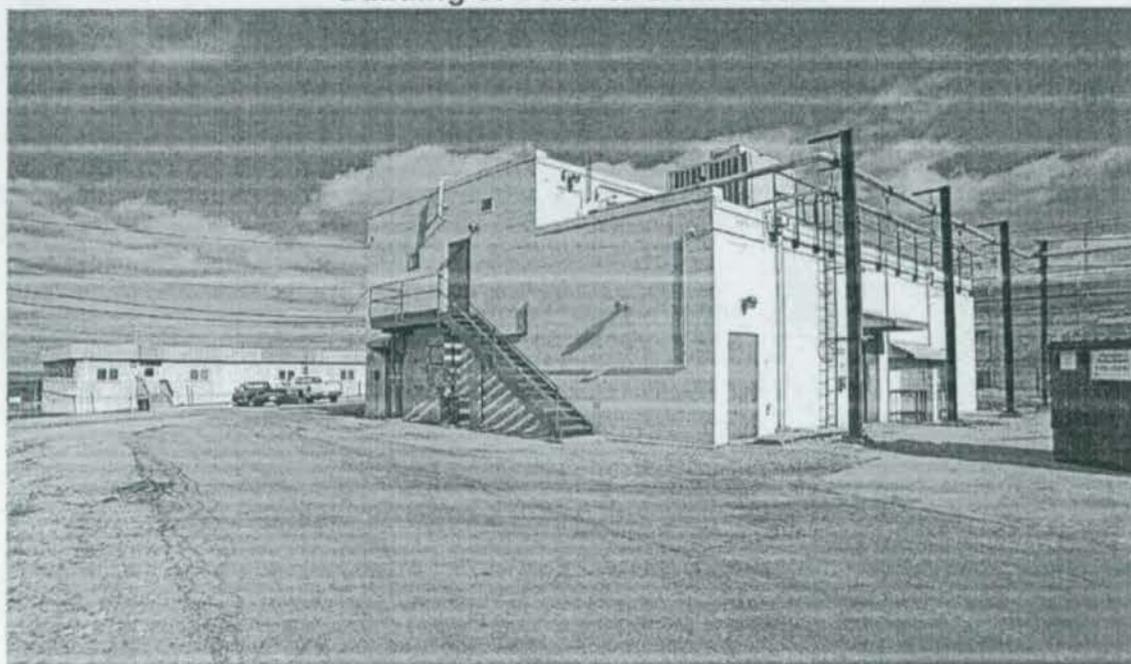
A

**Figures 3 - Building Photos**

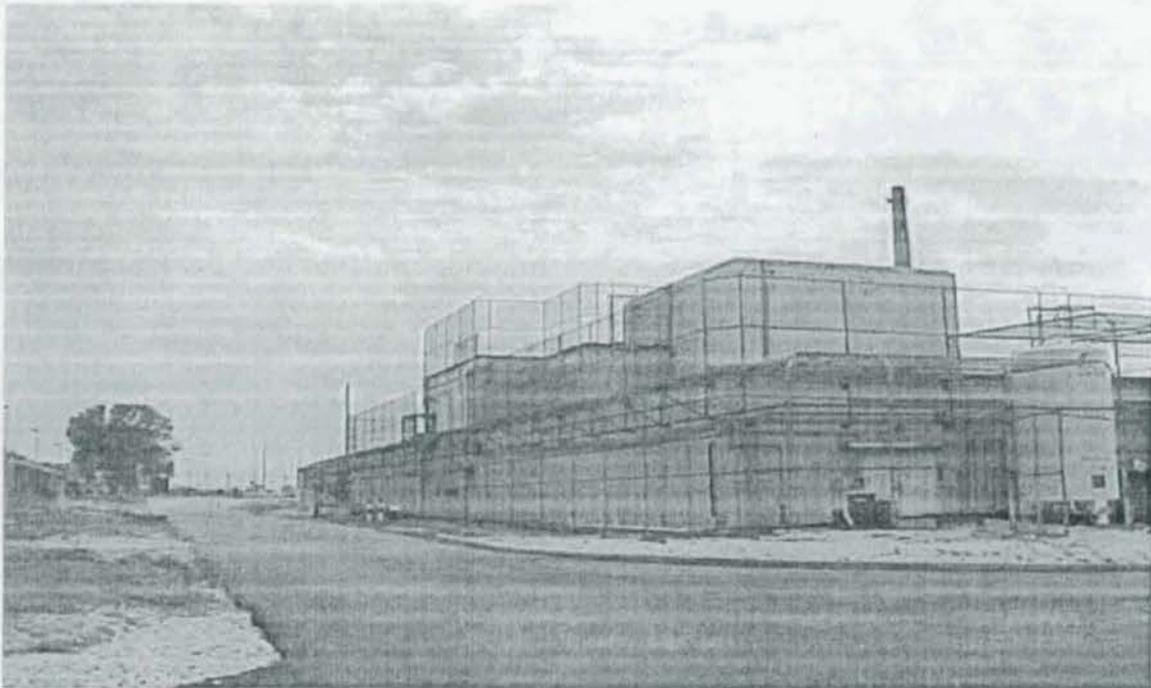
Building 36 Prior To Demolition



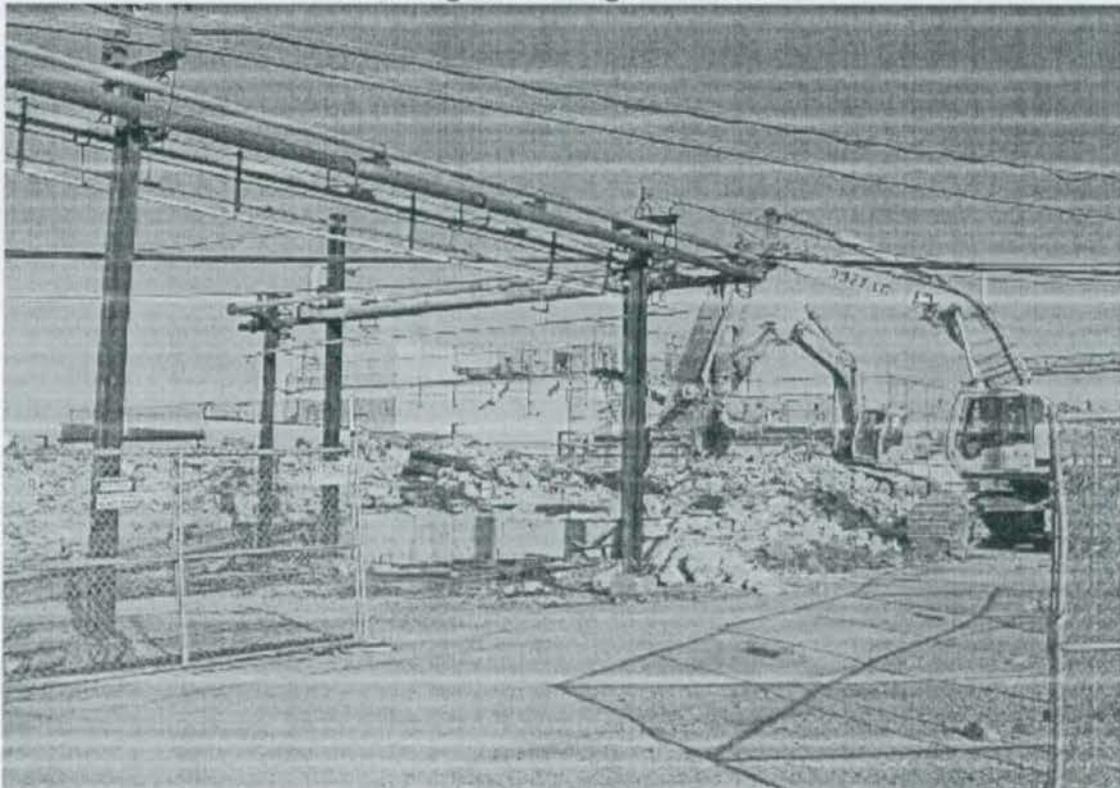
Building 37 Prior to Demolition



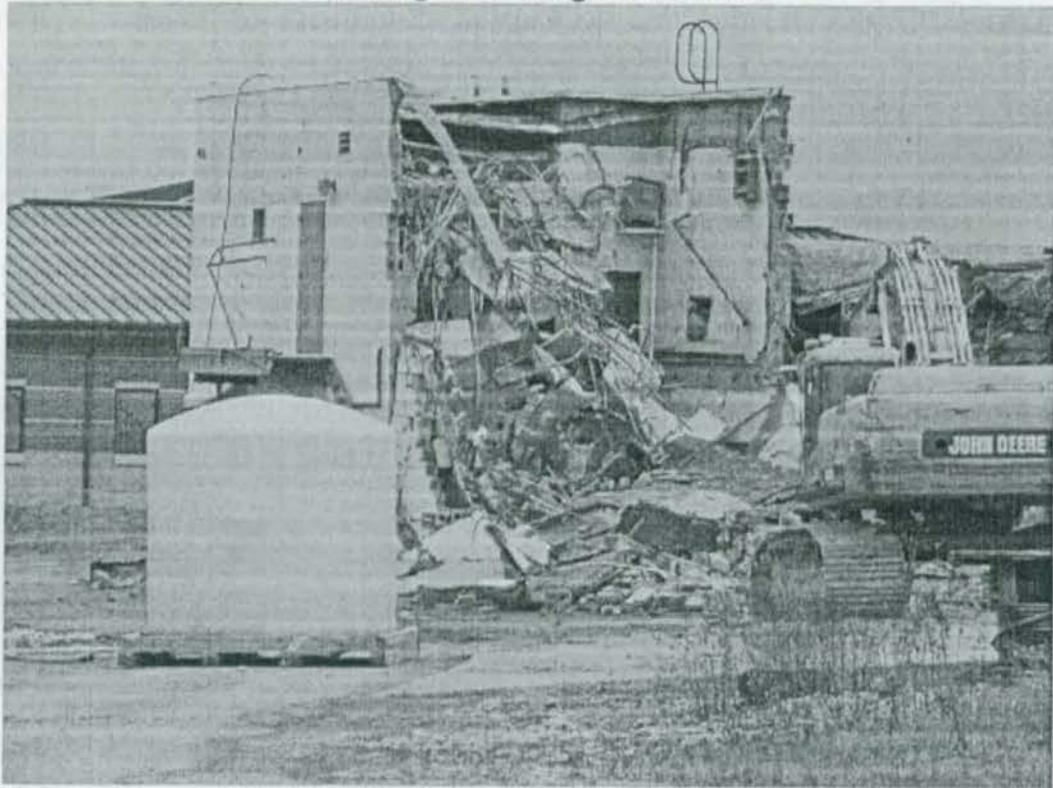
**Building 50 Prior to Demolition**



**Building 36 During Demolition**



Building 37 During Demolition



Building 50 During Demolition



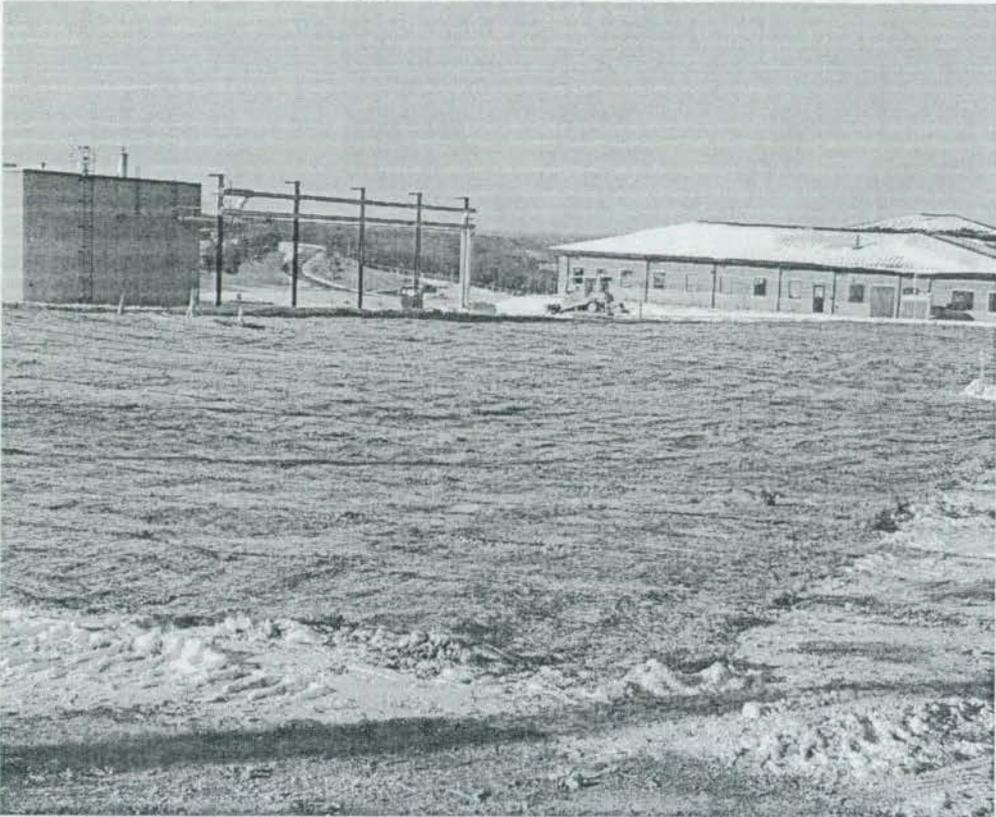
**Building 36 Area Post Demolition**



**Building 37 Area Post Demolition**



Building 50 Area Post Demolition



**APPENDIX B**

**Post-Final Status Survey Report  
Radiological Surveys**

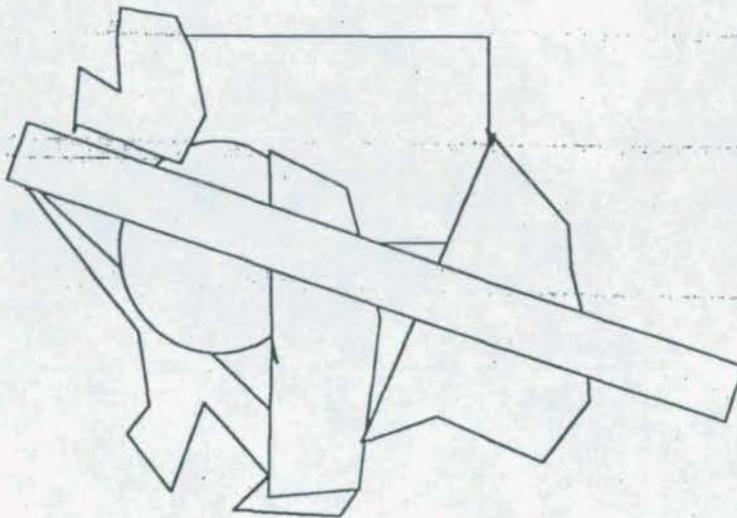
# RADIOLOGICAL SURVEY DATA SHEET

Page 1 of 3

LOCATION: (BLDG./AREA/ROOM)	BUILDING 36	SURVEY NO.	04-TF-0098
PURPOSE: SURVEY CONCRETE DEBRIS FROM BUILDING 36 SLAB FOR RELEASE TO WASTE MANAGEMENT		RWP NO.	N/A
		DATE:	03-17-04
		TIME:	1200

## MAP/DRAWING

20 SMEARS TAKEN ON CONCRETE



Fidler used for indication only. Results were NON-detectable.

Integrated count taken IF audible detected. NO audible detected.

ALL direct readings <100dpm/100cm<sup>2</sup> Alpha and <5000dpm/100cm<sup>2</sup> Beta

**LEGEND:**  
 # = mrem/hr ( $\gamma$ ) whole body  
 # E = mrem/hr ( $\beta + n + \gamma$ ) extremity on contact  
 K = factor of 1000  
 - - - - - = radiological boundary  
 # = mrem/hr neutron  
 # = air sample number  
 # = swipe number  
 # /  $\alpha$  or  $\beta$  = direct contamination measurement in dpm/100cm<sup>2</sup>

### INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2360	5833/5847	03-02-05
FIDLER	5872/3964	01-14-05
	N/A	

Completed by: (Signature)	[Signature]	HP#	[Redacted]	Date:	03-17-04
Completed by: (Print)	DANIEL K. RILEY				
Counted by: (Signature)	[Signature]	HP#		Date:	
Counted by: (Print)	See Attached				
Reviewed/Approved by: (Signature)	[Signature]	HP#	[Redacted]	Date:	3-24-04
Reviewed/Approved by: (Print)					R. Case

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm <sup>2</sup> )				
Sample#	β/γ	Alpha	Tritium	Comments
1				CONCRETE
2				
3				
4				
5				
6				
7				
8				
9			N/A	
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				CONCRETE
21				
22				
23				
24				
25		N/A		
26				
27				
28				
29				
30				
31				
32				
33				
34				
35				

Removable Contamination				
Swipes (dpm/100cm <sup>2</sup> )				
Sample#	β/γ	Alpha	Tritium	Comments
36				
37				
38				
39				
40				
41				
42				
43				
44				
45				
46				
47				
48				
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65				
66				
67				
68				
69				
70				

COMMENTS: 2360 USED TO SCREEN SMears PER TO SUBMITTAL TO COUNT ROOM

- 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.

# Smear Analysis

Unit Type: LB4100/W  
 Counting Unit ID: Aqua  
 Data file name: SMEAR022  
 Batch Ended: 3/17/04 12:51

Crosstalk correction performed.

Recalibration Date: 03/18/05  
 Serial Number: 26966-1

Batch ID: RILEY 04-TF-0098 [20] IC

Detector ID	Sample ID
A1	1
A2	2
A3	3
A4	4
B1	5
B2	6
B3	7
B4	8
C1	9
C2	10
C3	11
C4	12
D1	13
D2	14
D3	15
D4	16
A1	17
A3	19
A4	20
A2	18 NO SAMPLE

Alpha Activity		
DPM	$\sigma$	flags
1.63	2.03	
1.66	2.08	
0.00	2.02	
0.00	1.97	
0.00	2.04	
0.00	2.00	
1.45	1.83	
0.00	1.94	
3.73	2.94	
0.00	2.06	
0.00	1.97	
3.37	2.67	
1.44	2.19	
1.85	2.39	
1.35	1.94	
1.12	2.07	
0.00	2.01	
0.00	1.98	
0.00	1.97	
0.00	2.09	

Beta Activity		
DPM	$\sigma$	flags
2.64	2.49	
0.98	2.08	
6.15	3.19	
0.00	1.18	
2.73	2.85	
0.00	1.17	
0.00	1.70	
5.95	3.21	
4.87	3.27	
0.55	2.14	
2.36	2.40	
0.00	1.65	
5.77	3.24	
0.00	1.20	
1.83	2.35	
0.97	1.94	
0.30	1.76	
2.55	2.41	
0.00	1.19	
2.32	2.40	

QR

QR

P 3/13  
 RSDS 04-TF-0098

Page 1 of 1  
 03-17-04

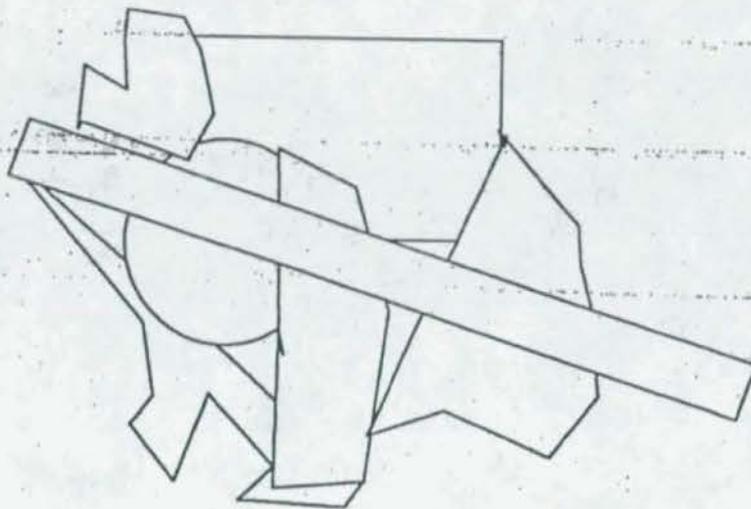
J. Collins

# RADIOLOGICAL SURVEY DATA SHEET

Page 1 of 3

LOCATION: (BLDG./AREA/ROOM)	<u>37 SLAB</u>	SURVEY NO.	<u>04-TF-0115</u>
PURPOSE: <u>RELEASE OF CONCRETE TO WASTEMANAGEMENT</u>		RWP NO.	<u>N/A</u>
		DATE:	<u>3-25-04</u>
		TIME:	<u>1045</u>

## MAP/DRAWING



Fidler used for indication only. Results were NON-detectable.

Integrated count taken IF audible detected. NO audible detected.

ALL direct readings <100dpm/100cm<sup>2</sup> Alpha and <5000dpm/100cm<sup>2</sup> Beta

**LEGEND:**

- # = mrem/hr ( $\gamma$ ) whole body
- # E = mrem/hr ( $\beta + n + \gamma$ ) extremity on contact
- K = factor of 1000
- = radiological boundary
- $\Delta$  # = mrem/hr neutron
- # = air sample number
- # = swipe number
- # /  $\alpha$  or  $\beta$  = direct contamination measurement in dpm/100cm<sup>2</sup>

### INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
<u>2360</u>	<u>5833/5847</u>	<u>3-2-05</u>
<u>FIDLER</u>	<u>3964/5872</u>	<u>1-14-05</u>
	<u>N/A</u>	

Completed by: (Signature)	HP#	Date:
<u>[Signature]</u>		<u>3-29-04</u>
Completed by: (Print)		
<u>DAVID J. HARVEY</u>	<u>JAMIE M. COLLINS</u>	
Counted by: (Signature)	HP#	Date:
Counted by: (Print)		
	<b>See Attached</b>	
Reviewed/Approved by: (Signature)	HP#	Date:
<u>[Signature]</u>		<u>3-30-04</u>
Reviewed/Approved by: (Print)		
	<b>F. Case</b>	

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm <sup>2</sup> )				
Sample#	β/γ	Alpha	Tritium	Comments
1	SEE ATTACHED		N/A	CONCRETE
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20	↓	↓	↓	↓
21				
22				
23				
24				
25				
26				
27				
28		N/A		
29				
30				
31				
32				
33				
34				
35				

Removable Contamination				
Swipes (dpm/100cm <sup>2</sup> )				
Sample#	β/γ	Alpha	Tritium	Comments
36				
37				
38				
39				
40				
41				
42				
43				
44				
45				
46				
47				
48				
49				
50				
51				
52				
53		N/A		
54				
55				
56				
57				
58				
59				
60				
61				
62				
63				
64				
65				
66				
67				
68				
69				
70				

COMMENTS: 2360 USED TO FIELD CHECK SMears BEFORE SENDING TO COUNT LAB

- NOTES:
1. See MD-80038 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.

# Smear Analysis

Unit Type: LB4100/W  
 Counting Unit ID: Aqua  
 Data file name: SMEAR017  
 Batch Ended: 3/25/04 11:52

Crosstalk correction performed.

Batch ID: 04-TF-0115 HARVEY A/B (20) AG

Detector ID	Sample ID	Alpha Activity		
		DPM	$\sigma$	flags
A1	1	0.00	2.01	
A2	2	1.66	2.07	
A3	3	0.00	1.96	
A4	4	0.00	1.99	
B1	5	0.00	2.06	
B2	6	0.00	2.02	
B3	7	0.00	1.85	
B4	8	0.00	1.94	
C1	9	0.00	2.08	
C2	10	1.25	2.07	
C3	11	1.46	1.94	
C4	12	1.49	1.90	
D1	13	1.45	2.15	
D2	14	0.00	2.51	
D3	15	0.00	1.92	
D4	16	0.00	2.07	
A1	17	0.00	2.00	
A2	18	0.00	2.06	
A3	19	1.50	1.96	
A4	20	0.00	1.97	

DGH

Recalibration Date: 03/18/05  
 Serial Number: 26966-1

Beta Activity		
DPM	$\sigma$	flags
0.30	1.76	
0.00	1.70	
0.15	1.70	
1.32	2.05	
5.06	3.30	
1.46	2.03	
2.09	2.41	
5.95	3.21	
1.47	2.47	
1.63	2.48	
0.00	1.20	
0.00	1.65	
2.10	2.45	
4.00	2.69	
0.00	1.66	
1.09	1.94	
0.00	1.25	
0.00	1.20	
0.00	1.70	
0.00	1.18	

DGH

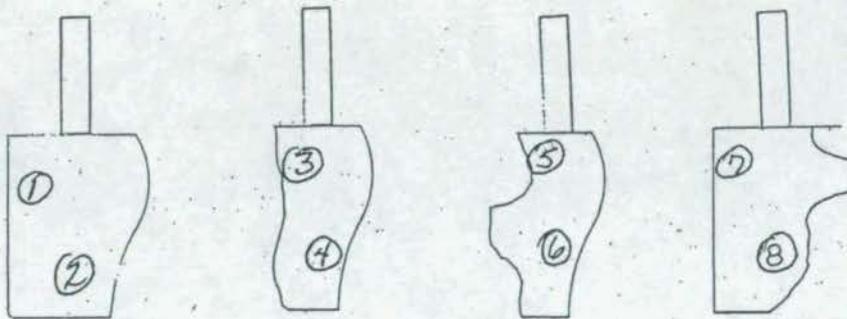
3 of 3  
 Page 1 of 1  
 DGH 3-29-04

Albert Ribon

# RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM) <i>BUILDING 30 OUTSIDE</i>	SURVEY NO. <i>04-TF-0089</i>
PURPOSE: <i>SURVEY PIPE STANCHIONS SECURED IN CONCRETE LOCATED SOUTH EAST OF BUILDING 30</i>	RWP NO. <i>NA</i>
	DATE: <i>03-11-04</i>
	TIME: <i>1015</i>

## MAP/DRAWING



PIPING WITH CONCRETE BASE

INTEGRATED COUNT TAKEN IF AUDIBLE DETECTED. *NONE DETECTED.*

INDICATES DIRECT ALPHA  $< 100 \text{ dpm}/100\text{cm}^2$ , BETA  $< 5000 \text{ dpm}/100\text{cm}^2$

LEGEND: # = mrem/hr ( $\gamma$ ) whole body  
#E = mrem/hr ( $\beta + \eta + \gamma$ ) extremity on contact

$\triangle$  # = mrem/hr neutron  
 $\square$  # = air sample number

$\bigcirc$  # = swipe number  
 $\bigcirc$  #/ $\alpha$  or/ $\beta$  = direct cont. measurement in dpm/100cm<sup>2</sup>

### INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
<i>2360</i>	<i>5833/5847</i>	<i>03-02-05</i>
<i>NA</i>		

Completed by: (Signature) <i>[Signature]</i>	HP # <i>[Redacted]</i>	Date: <i>03-11-04</i>
Completed by: (Print Name) <i>DANNY K. RILEY</i>		
Counted by: (Signature) <i>[Signature]</i>	HP # <i>[Redacted]</i>	Date: <i> </i>
Counted by: (Print Name) <i>ATTACHE D. RESULTS</i>		
Reviewed/Approved by: (Signature) <i>[Signature]</i>	HP # <i>[Redacted]</i>	Date: <i>3-15-04</i>
Reviewed/Approved by: (Print Name) <i>R. Case</i>		



# Smear Analysis

Unit Type: LB4100/W  
Counting Unit ID: Aqua  
Data file name: SMEAR033  
Batch Ended: 3/11/04 13:19

Crosstalk correction performed.

Recalibration Date: 03/18/05  
Serial Number: 26966-1

Batch ID: 04-TF-0089 RILEY A/B (8) AG

Detector ID	Sample ID	Alpha Activity			Beta Activity		
		DPM	$\sigma$	flags	DPM	$\sigma$	flags
A1	1	0.00	2.00		0.00	1.25	
A2	2	0.00	2.08		1.12	2.08	
A3	3	0.00	1.96		0.15	1.70	
A4	4	0.00	1.97		0.00	1.19	
B1	5	0.00	2.00		0.00	2.02	
B2	6	0.00	2.02		1.46	2.03	
B3	7	0.00	1.84		0.89	2.08	
B4	8	0.00	1.90		1.42	2.27	

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al

TSDS 04-TF-0089

383

3-12-04

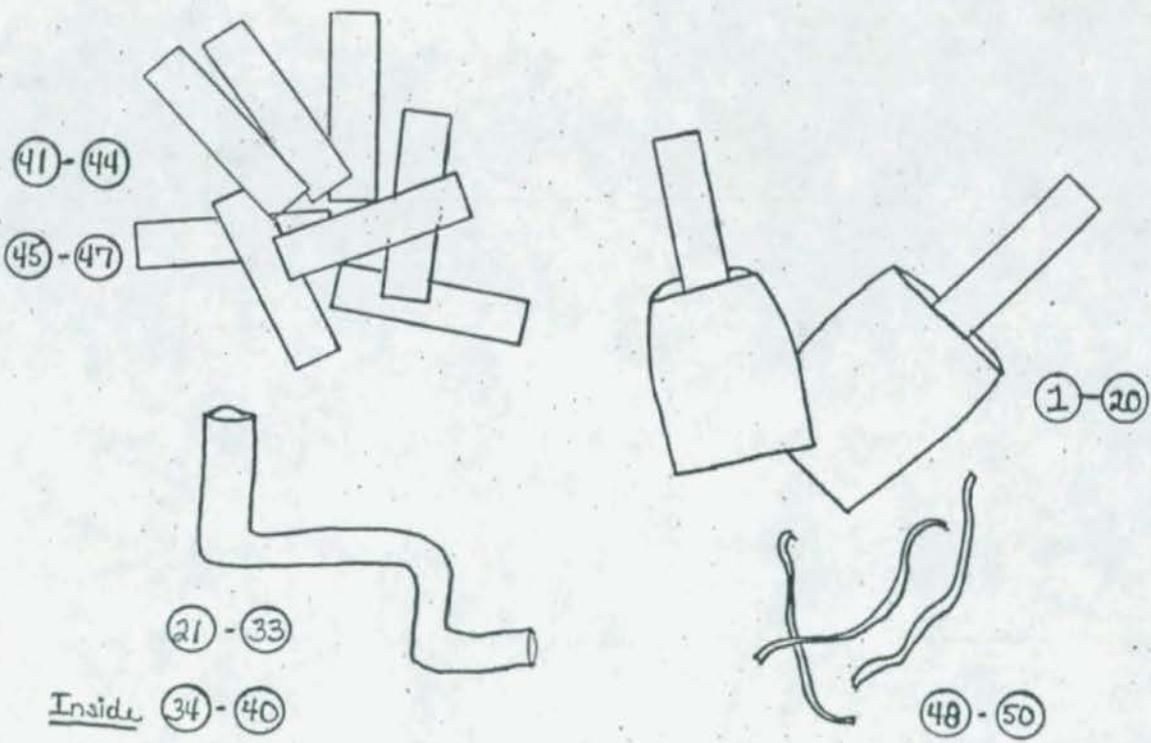
Albert Wilson

# RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG/AREA/ROOM)	50-outside	SURVEY NO.	04-TF-0235
PURPOSE:	Release of concrete and misc metals to Waste Management.	RWP NO.	N/A
		DATE:	7/29/04
		TIME:	0900

## MAP / DRAWING

FIDLER used for indication purposes only. No increase above bkg detected.



Direct scan & pause survey conducted. See attached for required integrated counts, background and D.L.

LEGEND: # = mrem/hr ( $\gamma$ ) whole body  
 #E = mrem/hr ( $\beta + \eta + \gamma$ ) extremity on contact  
 K = factor of 1000  
 - - - - = radiological boundary  
 # = mrem/hr neutron  
 # = swipe number  
 # = air sample number  
 #/ $\alpha$  or  $\beta$  = direct contamination measurement in dpm/100 cm<sup>2</sup>

### INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2360	5707/5718	8-19-04
↓	5775/5720	9-23-04
2360-Fidler	5774/3966	1-13-05
	N A	

Completed by: (Signature)	HP#	Date: 8/2/04
Completed by: (Print Name)		
Counted by: (Signature)	HP#	Date:
Counted by: (Print Name)		
Reviewed/Approved by: (Signature)	HP#	Date: 8-5-04
Reviewed/Approved by: (Print Name)		

## RADIOLOGICAL SURVEY DATA SHEET

Removable Contamination				
Swipes (dpm/100cm <sup>2</sup> )				Comments
Sample #	B/y	Alpha	Tritium	
1	See Attached		N/A	concrete
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				↓ piping
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34				I/s
35	↓	↓	↓	↓ ↓

Removable Contamination				
Swipes (dpm/100cm <sup>2</sup> )				Comments
Sample #	B/y	Alpha	Tritium	
36	See Attached		N/A	piping I/s
37				
38				
39				
40				
41				↓ covert piping
42				
43				
44				
45				I/s
46				
47				↓ ↓
48				conduit
49				↓
50	↓	↓	↓	wires

COMMENTS: I/s = inside NFE = No Further Entries

All smears field checked with 2360 prior to submitting to count lab.

## NOTES:

1. See MD-80036 10002 for calculations of WB, extremity and skin dose rates.
2. To request RO Count Room analysis for B/y, 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 needed, mark N/A.



# Smear Analysis

Unit Type: LB4100/W  
 Counting Unit ID: Aqua  
 Data file name: SMEAR003  
 Batch Ended: 7/29/04 10:24

Crosstalk correction performed.

Recalibration Date: 03/18/05  
 Serial Number: 26966-1

Batch ID: COLLINS 04-TP-0235 [50] Jc

Detector ID	Sample ID	Alpha Activity			Beta Activity		
		DPM	$\sigma$	flags	DPM	$\sigma$	flags
A3	35	0.00	1.97		1.35	2.08	
A4	36	0.00	2.00		2.50	2.37	
B1	37	0.00	2.02		1.57	2.60	
B2	38	0.00	2.05		3.81	2.63	
B3	39	0.00	1.83		0.00	1.70	
B4	40	0.00	1.92		3.69	2.78	
C1	41	0.00	2.07		0.23	2.14	
C2	42	1.25	2.07		1.63	2.48	
C3	43	0.00	1.95		0.00	1.69	
C4	44	0.00	1.93		2.67	2.61	
D1	45	0.00	2.14		1.03	2.12	
D2	46	0.00	2.51		4.00	2.69	
D3	47	0.00	1.91		0.00	1.18	
D4	48	1.12	2.09		3.21	2.51	
A1	49	0.00	2.00		0.00	1.25	
A2	50	0.00	2.11		3.52	2.68	

Jc Jc

Page 2 of 2  
 Jc 8/2/04  
 page 4 of 5

J. Collins

# Smear Analysis

Unit Type: LB4100/W  
 Counting Unit ID: Aqua  
 Data file name: SMEAR003  
 Batch Ended: 7/29/04 10:24

Crosstalk correction performed.

Batch ID: COLLINS 04-TF-0235 [50] JC

Recalibration Date: 03/18/05  
 Serial Number: 26966-1

Detector ID	Sample ID	Alpha Activity			Beta Activity		
		DPM	$\sigma$	flags	DPM	$\sigma$	flags
A1	1	1.63	2.02		1.40	2.16	
A2	2	0.00	2.09		2.32	2.40	
A3	3	1.49	1.98		2.40	2.41	
A4	4	1.58	2.00		2.37	2.37	
B1	5	0.00	2.05		3.89	3.08	
B2	6	0.00	2.01		0.29	1.66	
B3	7	1.41	1.84		0.74	2.08	
B4	8	3.01	2.69		5.68	3.21	
C1	9	0.00	2.08		1.47	2.47	
C2	10	0.00	2.03		0.00	1.24	
C3	11	0.00	1.94		0.00	1.20	
C4	12	0.00	1.90		0.00	1.65	
D1	13	0.00	2.14		1.03	2.12	
D2	14	4.21	3.49		5.94	3.18	
D3	15	0.00	1.93		0.80	2.03	
D4	16	0.00	2.09		3.33	2.51	
A1	17	1.64	2.01		0.16	1.76	
A2	18	0.00	2.08		1.12	2.08	
A3	19	0.00	1.95		0.00	1.21	
A4	20	0.00	2.01		3.69	2.65	
B1	21	0.00	2.02		1.57	2.60	
B2	22	1.34	2.06		4.83	2.88	
B3	23	4.92	3.16		2.86	2.69	
B4	24	1.39	1.89		0.15	1.96	
C1	25	0.00	2.07		0.23	2.14	
C2	26	1.25	2.08		2.87	2.77	
C3	27	0.00	1.96		1.16	2.07	
C4	28	1.48	1.94		3.70	2.86	
D1	29	0.00	2.15		2.25	2.45	
D2	30	1.85	2.60		7.37	3.41	
D3	31	3.25	2.70		0.00	1.18	
D4	32	1.12	2.09		3.21	2.51	
A1	33	1.63	2.03		2.64	2.49	
A2	34	0.00	2.07		0.00	1.70	

JC  
 Page 1 of 2  
 JC 8/2/04  
 page 5 of 5

**APPENDIX C**

**Building 36 Dock Soil Data Assessment**

## 1.0 Introduction

Analytical data assessment can be performed on at least two quality control levels. Data Review involves an assessment of the quality controls used by the laboratory during the performance of the analysis. These include such things as laboratory blanks, system monitoring compound (surrogate) recoveries, matrix spikes, etc. Which controls are assessed and what criteria are applied depend on the analysis performed. The results of field quality control measures such as field duplicates and trip blanks may also be evaluated. Data Review is normally performed on 100% of the analytical data.

Data Validation is a much more detailed review of the entire laboratory data package. It includes all the elements of the Data Review plus verification of such things as proper instrument calibration, proper use of standards and correct performance of data calculations. Data Validation is used to identify systemic problems with the way the laboratory performs and reports analyses.

## 2.0 Description of the Data Set

During demolition of Building 36 some indication of Plutonium (Pu) contamination was found on the Building 36 loading dock on the west side of the building. To ensure that all Pu contamination was removed during demolition an SAP was developed to sample the soil around and on where the dock once stood. Surface soil samples were collected from locations both randomly and selected grid locations. All samples were collected and analyzed as planned.

Since no equipment was field decontaminated, no equipment rinsates samples were collected.

Offsite sample analysis was performed at GEL of Ohio. There were no problems associated with the documentation, shipment, or chain of custody of the samples. There were no problems in achieving the analyte detection goals.

**Table 1 Sampling Event**

Sample Date	LSDG	Number of Samples	Mound Sample IDs
7/19/04	117358	15	B36DS-01 thru B36DS-14 including B36DS-06FD

## 3.0 Data Review

The quality control data submitted with the analytical data packages were reviewed and assessed. The results of the assessment are presented in this section. The following qualification flags are used to indicate data quality problems identified during the data review process.

Table 2 Data Review Qualifications

Flag	Description
J	Estimated sample result
U	Non-detect sample result
UJ	Estimated non-detected sample result
R	Rejected (unusable) sample result

### 3.1 Tracer Recovery

The laboratory spikes every Pu alpha spectrometry sample with Pu-242. The percent recovery of Pu-242 is then used to scale the detected presence of the other Pu isotopes. To fully meet QC criteria the Pu-242 isotope recovery must be between 30 – 110 % and have an accumulated count of at least 200 counts.

Tracer recovery for sample analyses ranged from 63% to 78%. Tracer recovery for all verification samples met QC criteria.

### 3.2 Blanks

The laboratory analyzes one blank for every 20 samples or LSDG. Laboratory blanks are analyzed to determine if laboratory processes are contributing to the detected sample activities. To meet the QC criteria the method blank must be  $\leq 2$  times the MDA.

The method blank associated with the verification samples met QC criteria.

### 3.3 Laboratory Duplicate

A laboratory duplicate analysis is performed to assess the precision and accuracy of the laboratory analysis. One duplicate is performed for every 20 samples or LSDG. To meet QC criteria the Relative Error Ratio of duplicate samples must be  $< 3.0$ .

$$RER = \frac{[\text{Sample Result} - \text{Duplicate Result}]}{[\text{TPU}_{\text{sample}}^2 + \text{TPU}_{\text{dup}}^2]^{1/2}}$$

It is known that for Mound soils plutonium contamination is often distributed non-homogeneously even in dried and ground samples.

The Relative Error Ratios of the duplicate analyses for this LSDG's were within QC criteria.

### 3.4 Matrix Spike

A matrix spike (MS) analysis is performed to assess the precision and accuracy of the laboratory analysis. One matrix spike is performed for every 20 samples or LSDG. It also may indicate analysis bias due to sample matrix effects. For plutonium by alpha spectrometry the sample is spiked with Pu-239/240.

The matrix spike recovery for Pu-239/240 was 103% well within QC criteria.

### 3.5 Laboratory Control Sample

The Laboratory Control Sample (LCS) is a standard sample with a known quantity of the analyte of concern. The LCS recovery is an indication of whether the analytical process was in control during the analysis. For plutonium by alpha spectrometry the LCS is spiked with Pu-239/240.

The LCS recovery for Pu-239/240 was 108% well within QC requirements.

### 3.6 Equipment Rinsates

Equipment rinsates are used to ensure efficacy of equipment field decontamination procedures, and that the sample collection process is not causing cross contamination. Only isotopes at background levels were found in the four equipment rinsates.

No equipment rinsates were collected.

### 3.7 Field Duplicates

Field Duplicates give an indication of the degree of homogeneity within the sample material. As with Laboratory duplicates they are reported as RPD.

Agreement between field duplicates was within acceptable range.

### 4.0 Data Validation

The results of LSDG 115499 were fully data validated. In addition to the items discussed above, the following items were evaluated:

1. Instrument calibration
2. Daily Source checks
3. Background and efficiency measurement
4. Proper frequency and use of blanks
5. All calculations

No additional qualification resulted from this assessment. There was no indication of a systemic deficiency.

### 5.0 Certification

Based upon this review the plutonium analysis data maybe used as presented with no further qualifications.

# Data Review & Validation

Building 36 Dock

Table 3 Building 36 Loading Dock Pu Results (pCi/g)

Sample ID	Data		Data	
	Pu-238	Qualification	Pu-239/240	Qualification
B36DS-01	1.45		< 0.103	U
B36DS-02	1.33		< 0.090	U
B36DS-03	2.51		< 0.089	U
B36DS-04	< 0.137	U	< 0.034	U
B36DS-05	1.34		0.171	
B36DS-06	0.361		< 0.134	U
B36DS-07	0.532		0.106	
B36DS-08	1.89		< 0.104	U
B36DS-09	0.612		0.047	
B36DS-10	0.860		0.045	
B36DS-11	0.975		0.036	
B36DS-12	2.30		0.054	
B36DS-13	24.3		0.732	
B36DS-14	3.89		0.122	
B36DS-06FD	< 0.243	U	< 0.134	U

Values listed as "<" are below the Minimum Detectable Activity (MDA)  
Blank row grids had insufficient non-bedrock material for an analytical sample.

They were verified by swipe and direct readings.

"U" qualifier indicates non-detection at or above the MDA.

APPENDIX D

PRS 271/336  
Core Team Recommendation Sheet

MIAMISBURG CLOSURE PROJECT  
 PRS 271/PRS 336

RECOMMENDATION:

PRS 271 and PRS 336 are the locations of two underground tanks that once received waste water from the former Building 37. PRS 271 received sanitary waste water, while PRS 336 was designed to receive low risk radiological waste water. An historic review and recent sampling have found no evidence to suspect actual presence of radiological contamination in Building 37. Both tanks were removed during a sanitary system upgrade in 2000/2001. Sampling of soils near the two tanks showed no activity exceeding  $10^{-6}$  risk-based Soil Screening Level criteria. Surveys within the PRS 336 tank found no radiological contamination above DOE Order 5400.5 criteria. Remaining underground portions of by-pass and sanitary sewer pipeline to or from these tanks are considered less contaminated than the inside of the PRS 336 tank and have thus been capped and abandoned in place.

The Core Team recommends No Further Assessment for PRS 271 and PRS 336.

A PRS Package with an NFA recommendation signed by the Core Team will be placed in the Public Reading Room for a 30-day review period. Upon closure of the public review comments, if any, the PRS Package will be issued as a final document and made available in the Public Reading Room.

The final Core Team recommendation sheet from this evaluation will be included in the Building 37 Closeout Report.

CONCURRENCE:

DOE/MCP:	<i>Paul Lucas</i>	11/17/04
	Paul Lucas, Remedial Project Manager	(date)
USEPA:	<i>Timothy J. Fischer</i>	11/17/04
	Timothy J. Fischer, Remedial Project Manager	(date)
OEPA:	<i>Brian K. Nickel</i>	11/17/04
	Brian K. Nickel, Project Manager	(date)