30 01 040615 0007

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

CH2MHILL

SM-013/03
March 5, 2003

Mr. Richard B. Provencher, Director
Miamisburg Closure Project
U. S. Department of Energy
P. O. Box 66
Miamisburg, OH 45343-0066

ATTENTION: Robert S. Rothman

SUBJECT: Contract No. DE-AC24-03OH20152
**BUILDING 19 BUILDING DATA PACKAGE, PUBLIC REVIEW DRAFT**

REFERENCE: Statement of Work Requirement C.7.1e - Regulator Reports

Dear Mr. Provencher:

Rob Rothman from your office has approved the release of the following document for review:

- Building 19 Building Data Package, Public Review Draft

The review period will be from 05 March 2003 until 03 April 2003 and the site contractor will respond to any comments received and incorporate the responses into the final document.

If you or members of your staff have any questions regarding the document, or if additional support is needed, please contact Bob Ransbottom at extension 4220.

Sincerely,

K. L. Kehler
SMPP/TFV Project Manager

KLK/DCK

Enclosures

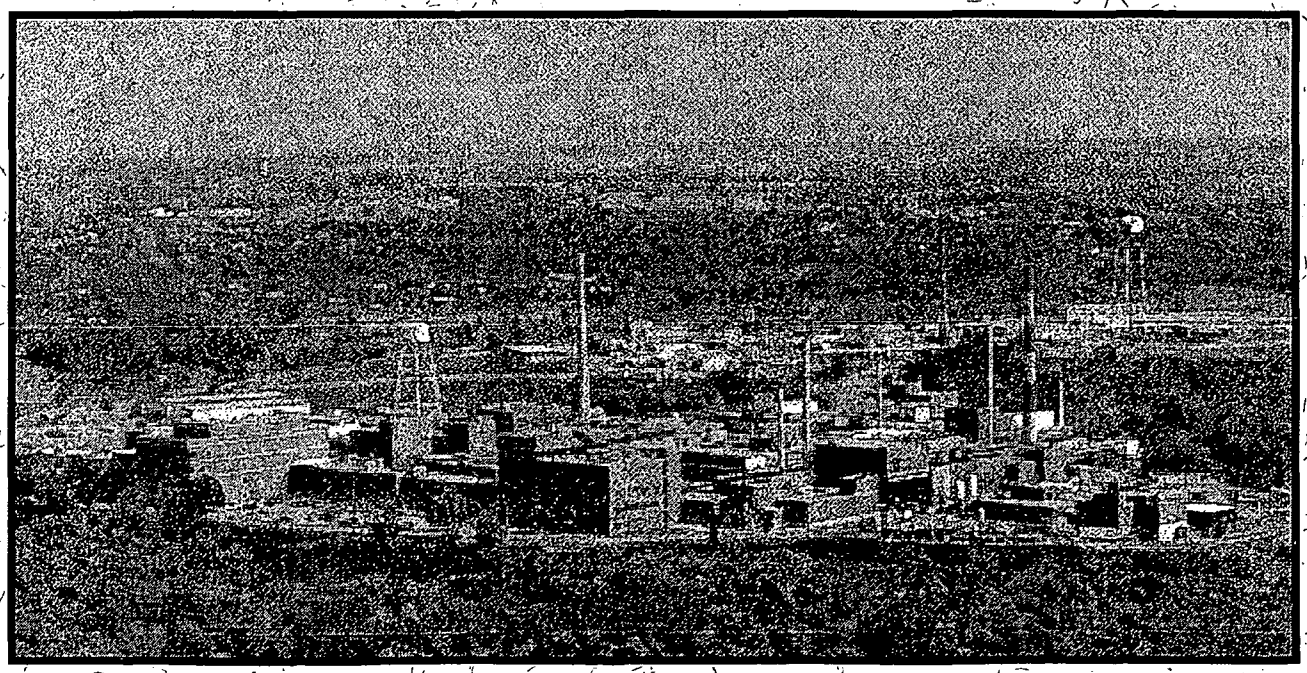
cc: Dave Seely, USEPA, (1) w/attachments
Brian Nickel, OEPA, (4) w/attachments
Ruth Vandegrift, ODH, (1) w/attachments
Frank Schmaltz, DOE/MCP, (1) w/attachments
Randy Tormey, DOE/OH, (1) w/attachments
Dann Bird, MMCIC, (3) w/attachments
J. D. Bonfiglio, MESH, (1) w/attachments
Bob Ransbottom, CH2M Hill, (1) w/attachments
Val Darnell, CH2M Hill, (1) w/attachments
Kurt Kehler, CH2M Hill, (1) w/attachments
Public Reading Room, (4) w/attachments
DCC (1) w/attachments

Environmental
Restoration
Program

# Miamisburg Closure Project
## Building Data Package

# Building 19
(Demolition)

Public Review Draft
March 2003



MOUND

Environmental Restoration Program

# MIAMISBURG CLOSURE PROJECT BUILDING DATA PACKAGE

The following Building Data Packages (BDP) will be available for your information in the CERCLA Public Reading Room, 305 E. Central Ave., Miamisburg, Ohio. Building 19: 5 March 2003, Building 60: 10 March 2003

**BDP Building 19: Salvage and Sales**
**BDP Building 60: Ceramic Facility**

Questions can be referred to Frank Schmaltz at (937) 865-3178.

# BDP Building 19

| REV | DESCRIPTION | DATE |
|---|---|---|
| **WORKING DRAFT (to DOE)** | | **February 2003** |
| **DRAFT (to Core Team)** | BDPs for construction demolitions undergo simultaneous review by the Core Team and public. | **N/A** |
| **DRAFT PROPOSED FINAL (incorporates Core Team comments)** | | **N/A** |
| **PUBLIC REVIEW DRAFT** | The BDP was made available in the CERCLA Public Reading Room on March 5, 2003 | **March 2003** |
| **FINAL** | | |

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Appendix O Work Plan

# 1.0 GENERAL OVERVIEW

## 1.1 Introduction

The purpose of this Building Data Package (BDP) is to prepare for the demolition of Building 19 (Quonset Hut) and to identify, if possible, any recognized environmental conditions (defined below) that may affect the subject property and building.

Recognized Environmental Condition: The presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a likely release, a past release, or a material threat of a release of any hazardous substances or petroleum into structures, or into the air, ground, groundwater, or surface water near the building.

## 1.2 Scope

This document has been prepared in accordance with the agreements and requirements as specified in the *Work Plan for Environmental Restoration of the DOE Mound Site, The Mound 2000 Approach*. This document is a BDP for Building 19 located at the Department of Energy (DOE) Miamisburg Closure Project (MCP) in Miamisburg, Ohio. The investigation performed to support this BDP models procedures found in *ASTM Standard Practice for Environmental Site Assessments; Phase I Environmental Site Assessment Process* (Designation E 1527-97).

The scope of the investigation included Building 19, the soil beneath, and a 15-foot wide perimeter border around the building. The investigation of Building 19 included the following:

A) A building and perimeter inspection.
B) An examination of historical aerial photographs and maps.
C) A review of federal and state regulatory agency records.
D) Personnel interviews.
E) A review of site records for:

   1) History of spills, releases, and chemical inventories
   2) Past sampling data

      - Radiological survey
      - Soil sampling
      - Lead-based paint
      - Asbestos
      - Radon

In addition to the building investigation conducted by site contractor personnel, documents were reviewed. Information used to compile BDPs includes the following:

- Characterization of Mound's Hazardous, Radioactive, and Mixed Wastes, August 1990
- Operable Unit 9 (OU-9) Site Scoping Report, Volumes 1-12
- Mound Facility Physical Characterization, December 1992
- Active Underground Storage Tank Plan, November 1994
- OU-9 Hydrological Investigation, Bedrock Report, January 1994
- OU-9 Hydrological Investigation, Buried Valley Aquifer Report, March 1994
- Environmental Appraisal Report of the Mound Plant, March 1996
- Title Search
- Lease Information
- EDR Report - Radius Map
- Building Prints
- Potential Release Site (PRS) information
- MD-22153, Mound Site Radionuclides By Location, June 1995 Contaminant Surveys
- MLM-3791, Mound Facility Physical Characterization, December 1993

## 2.0 BUILDING 19 OVERVIEW

Building 19 has been used for a number of functions and housed a number of processes during its nearly 57 year history supporting activities at three different locations: first at the Dayton Unit III location (Manhattan Project) (1946-1949), and two locations at the Mound site (1950-1962, and 1962-present).

Building 19 is a prefabricated "classic" Quonset Hut-type (corrugated-metal) building. At the time it was erected at its current location it contained approximately 3,200 square feet (40' x 80') of floor space. The construction of a metal framed/plywood floored mezzanine in the mid-1960s added approximately 1,500 square feet. A second addition in the later 1960s added approximately 32 square feet constructing a "valve room" at the northeastern corner of the building. The valve room was added to allow for the installation of fire sprinklers in the building. Building 19 is supported by a 6-inch thick reinforced concrete slab and 2' 6" footers. A bed of tamped sand or crushed concrete block (6 inches minimum) underlies the slab. The building is bounded on all sides by asphalt pavement. Floor plans of the building are included as Appendix D.

The building is serviced by two forced-air propane heaters and two small electric heaters. A window air conditioner is installed in the small office area. Electric service of 240 volts is

provided by the MCP facility distribution system. According to a diagram of underground utility lines, Building 19 has no potable water service and no sanitary services. There are two storm drains in the vicinity (closest one approximately 15 feet) of Building 19. There are no gutters/downspouts on Building 19. Surface runoff flows overland to either the down gradient storm drain or a nearby concrete stormwater channel.

## 2.1 Past Uses of Building 19

Building 19 was originally located at Dayton Unit III (a precursor site to the Mound Plant) at the intersection of First and Euclid Streets in downtown Dayton, Ohio. In its original location at Dayton Unit III (1946 to 1949), the majority of the building was designated as laboratories supporting the objectives of the Manhattan Project. While specific processes are unknown, it is believed that polonium-210 was the focus of much of the work. When the Dayton facility was closed, the building materials were dismantled and sent to Mound where it was reassembled at its second location.

At its second location near Buildings 2 and 3, the Quonset Hut was used to store drums of radioactive wastes from several site missions including SW Building evaporator material, HH Building bismuth-chloride sludge, Purex waste, and thorium waste. In the early 1960s, the structure was dismantled and reassembled at its present location.

At its current location, on the western edge of the plant site north of Building 72, Building 19 served as a warehouse and a salvage storage and surplus sales facility. During the 1990s it was principally used for storing Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) soil sample drums dating back to 1988 and, on the mezzanine, storing new empty drums. A portion of the building contained a packaging area for samples taken from current CERCLA activities.

Site documentation supports the above reported 'past uses' with an initial construction date of 1946. However, the actual history of Building 19 is questionable. Inspection of Building 19 suggests that this building was a newly manufactured Quonset Hut constructed at its current location in 1963, and had not been previously located in downtown Dayton or at the Building 2 location as the historical documentation suggests. Inspection of the exposed building panels revealed a manufacturer's date stamp of 1962. Further, if the structure had been assembled and disassembled multiple times, it would be reasonable to expect evidence of the multiple assemblies to be apparent on the seams of the panels. However, the exposed seams show no signs of multiple assemblies. Even though inspection of the building indicates a construction date of 1963, the entire documented history of the building has been considered as a worst-case scenario for purposes of identifying potential environmental concerns.

## 2.2 Current Uses of Building 19

Building 19 was vacated in January 2003 and is currently undergoing Safe Shutdown activities in preparation for demolition.

## 2.3 Summary of Environmental Concerns and Findings - Building 19

### Table 1: Summary of Environmental Concerns and Findings

| Description | Comment | Resolution |
|---|---|---|
| Lead-Based Paint | No previous lead surveys or sampling data was found. Paint coatings in a few areas within the building exhibited some damage due to water or impact damage. Representative samples of the damaged paint were analyzed using a Niton Model XL-309 XRF (x-ray fluorescence) lead detector and found to not contain any amount of lead within the instrument's detection limit (Appendix J). No lead paint hazards currently exist within the building and no further action would be necessary unless any of the untested coating were to be disturbed by close worked contact (sanding, grinding, scraping, torching). | If lead-based paint were present, it would not impact the demolition or disposal of the debris. Close worker disturbance of paint coatings will be avoided during demolition. If close disturbance is necessary, the point of contact will be tested for lead and appropriate controls and personal protective equipment (PPE) used for disturbance as required. |
| Chemicals | A list of chemicals or hazardous wastes known to have been used or stored in Building 19 is provided in Appendix K. | Chemicals and hazardous wastes will be removed prior to demolition. |
| Fluorescent Lamps and PCBs | Fluorescent lamps were used in the building. Ballasts may contain polychlorinated biphenyls (PCBs). | Will be removed prior to demolition. |
| Air Emissions | There are no active sources of air emissions. | N/A |
| Asbestos | An asbestos-survey was conducted in accordance with EPA NESHAP requirements. Asbestos containing material (ACM) is present in the building. | Friable ACM will be removed prior to demolition. The roofing-type mastic sealant which is nonfriable does not have to be removed prior to demolition so long as it remains nonfriable up to that point. A copy of the asbestos survey is provided in Appendix I. All work will be performed in accordance with current state and federal regulations. |
| Drainage Sumps | There are no drainage sumps. | N/A |
| Lead | N/A | N/A |
| Mercury | N/A | N/A |

## Table 1: Summary of Environmental Concerns and Findings

| Description | Comment | Resolution |
|---|---|---|
| Radiological | Radiological materials were reportedly handled within the building (see Sections 2.1 and 2.4). The Predemolition Survey Plan is provided in Appendix G. Radiological surveys are not yet complete. | Survey results will be documented in the Final Status Survey which will be reviewed and approved by the Core Team prior to commencement of demolition activities. |
| Septic System | N/A | N/A |
| Wastewater | No sanitary system. | N/A |
| Stains & Corrosion/HVAC | N/A | N/A |
| Storage Tanks | A propane storage tank is located near the building. | Tank will be removed prior to demolition. |
| Solid Waste Disposal | N/A | N/A |
| Migratory Hazards | N/A | N/A |
| Radon | The results of a 1989-90 Mound Indoor Radon study indicated an average radon concentration of 2.6 picoCuries/liter (pCi/L) in Building 19 (Appendix H). The USEPA recommended standard for a maximum radon level is 4.0 pCi/L. | N/A |
| HVAC | Window air conditioner will be removed. | No further action required. |
| Energetic Material | N/A | N/A |
| Soil Contamination | Appendix L contains a graphic and tables of all soil sampling data results within a 15-foot perimeter of Building 19. All results are below applicable screening levels. Common nutrients (such as sodium, potassium, and magnesium) and common anions (such as nitrate, nitrite, sulfate, sulfide, phosphate, fluoride, iodide, nitrogen, and bromide) are not considered in site risk assessments and therefore not evaluated herein.<br><br>Located near Building 19, PRS 63 is a former pipe storage area measuring approximately 2 feet by 2 feet believed to have radiological contamination. | The Environmental Restoration (ER) group will handle the PRS 63 RA separate from the Building 19 demolition. The asphalt covering the PRS 63 location will be left in place and removed by the ER group. |

*N/A: Not applicable*

## 2.4 Radiological Characterization Summary for Building 19

A radiological assessment of Building 19 was performed by reviewing operational history and preliminary radiological survey information. Although under debate, documented operational history indicates that there was a considerable "rad" history associated with this building. Preliminary radiological surveys performed in 2002 indicated that building operations have impacted the building's floor. The radiological status of all building surfaces will be determined to facilitate a free release of the structure consistent with project goals and site procedures. A Predemolition Survey Plan for Building 19 was prepared commensurate with operational history and in accordance with the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM), and is presented in Appendix G. The survey plan is currently being implemented and will provide the necessary data to dictate appropriate demolition and disposal. A Final Status Survey (FSS) will summarize results from implementation of the survey plan and provide justification for the designated disposal of debris. The FSS report will be reviewed and approved by the Core Team prior to proceeding with building demolition.

# 3.0 SITE DESCRIPTION

## 3.1 Site/Vicinity Location and Characteristics

Building 19 is located at the DOE MCP site, formerly known as Mound Plant. The MCP site is situated in the City of Miamisburg, Miami Township, Montgomery County, State of Ohio as shown in Appendix B.

The Mound Plant at one time was situated on approximately 300 acres of land and contained approximately 130 buildings with a total of approximately 1.4 million square feet of floor space (the number of buildings is constantly diminishing as buildings are decommissioned and either sold or demolished). The original 182-acre site, purchased by the Manhattan Engineering District in 1946, consisted of two hills and an intervening valley that runs approximately east and west. The 124-acre tract acquired in 1981 was an undeveloped mixture of fields and woods that undulates and slopes downward to the west, away from the main site. This area was acquired to serve as a buffer and has been used as a staging area and parking area for contractors working onsite.

To the west lies a railroad line and the north-south trending Miami-Erie Canal. The northern boundaries of the site abut the residential area of Miamisburg, Ohio. Mound Road marks the northern half of the eastern perimeter of the facility then veers east, away from the southern half of the eastern boundary. A public golf course (belonging to the City of Miamisburg), the Miamisburg Mound Memorial Park, old agricultural fields, residential lots, and vacant wooded lots border the facility along Mound Road. Benner Road formed the southern property line of the Mound Plant (at the 300-acre stage), with agricultural fields and farms occupying the lands beyond.

## 3.2 Description of Structures, Roads, Other Improvements in Proximity to Building 19

As shown on Figures 2 and 4, Building 19 is bordered on all sides by asphalt pavement. Site traffic passes on the eastside of Building 19. Beyond the pavement to the north and west is a grassy area, a small concrete stormwater channel, and the current site fenceline, with trees and overgrown vegetation beyond. Two trailers, 27 and 28, are adjacent to the asphalt pavement on the west side of Building 19. Building 72 is to the south of Building 19 and Building 124 is to the east of Building 19.

## 3.3 Current and Past Uses of Buildings in Proximity to Building 19

Four buildings are in the vicinity of Building 19. Building 72 is a 2,400 square-foot Resource Conservation and Recovery Act (RCRA) –permitted hazardous waste storage building located south of Building 19. Building 124 is a 5,250 square-foot central waste processing facility located east of Building 19. Trailer 27 and Trailer 28 to the west of Building 19 are used for office and storage space.

# 4.0 RECORDS REVIEW

## 4.1 General/Historical CERCLA Information

In compliance with permit requirements under RCRA, the Clean Water Act (CWA), the Safe Drinking Water Act (SDWA), and the Clean Air Act (CAA), the site has applied for or has received permits for its surface water discharges, air emissions, and hazardous waste program. The site is currently operating a hazardous waste storage facility under a RCRA Part B Permit dated October 18, 1996. The site also maintains a National Pollutant Discharge Elimination System (NPDES) surface water discharge permit with Facility I.D. number OH 0009857. Operations that produce particulate or vaporous emissions are either permitted or registered with RAPCA and the Ohio Environmental Protection Agency (OEPA). The site also submits annual Emergency and Hazardous Chemical Inventory forms to OEPA, pursuant to the Superfund Amendment and Reauthorization Act (SARA), Title III, the Emergency Planning and Community Right-to-Know Act. The March 2002 version of this report indicated that no reportable chemicals are stored in Building 19.

Mound Plant was identified as a contaminated site on the National Priorities List under CERCLA (Superfund) in 1989. Mound Plant was originally listed due to volatile organic compound (VOC) contamination in the western end of the lower valley area. The cleanup of the site was originally to be accomplished under the CERCLA mandated procedures for regulating Superfund Sites using the operable unit system to define and characterize cleanup areas. As the cleanup effort went forward, it became apparent that the site did not fit the profile for a cleanup strategy based on the operable units. The DOE, the United States Environmental Protection Agency (USEPA), and OEPA designed a new decision making process for the cleanup of the site. The new process is known formally as a "removal site evaluation process" and informally as the "Mound 2000 Process." The Mound

2000 Process system divided the site into geographical parcels containing over 400 PRSs with approximately equal numbers of PRSs concerned with potentially contaminated soil and with potential contamination in or associated primarily with building operations. A PRS is an area where knowledge of historic or current use indicates that the site may have had releases of radioactive and/or hazardous materials. For a more detailed description, refer to the *Work Plan for Environmental Restoration of the DOE Mound Site, the Mound 2000 Approach.*

## 4.2 Specific Record Sources for Building 19

### 4.2.1 Occurrence Reports

A search of the occurrence reporting system revealed nine reports, all of which were minor and without environmental impact:

- radioactive contamination found outside of a radiological control area (4) (copies provided in Appendix M),
- fire suppression system actuation (4), and
- measurement machine and gaging system damaged during movement.

### 4.2.2 Spills and Releases

- None

### 4.2.3 Associated PRS Overview

As a result of the investigations and documentation accomplished to comply with the CERCLA cleanup process via the Federal Facilities Agreement (FFA)/DOE ER Program, DOE and the site contractor tabulated all the PRSs identified under the various regulatory programs in effect at the site. Of these 440 PRSs, seven are at or near Building 19. PRSs in the vicinity of Building 19 are identified in Table 3. Additional information is included in Appendix N.

**Table 2: PRSs in Proximity to Building 19**

| PRS | CERCLA or Bldg. Related | Binning Status | Comments |
|---|---|---|---|
| 41* | CERCLA | Removal Action (RA) | Area 3, Thorium Drum Storage and Redrumming Area. |
| 60 | Building | Unbinned, PRSs To Be Dispositioned With Building 72 | Hazardous Waste Storage Area (Building 72). |
| 61 | Building | | Building 72 Outdoor Hazardous Waste Storage Area. |
| 62 | Building | | Building 72 Empty Drum Storage Area. |
| 63** | CERCLA | RA | Building 19 Soils. |
| 64 | CERCLA | No Further Assessment (NFA) | Building 19 Historic Gasoline Tank (Tank 238). |
| 417 | CERCLA | Further Assessment (FA) | Soil Contamination-High Soil Gas near Well 0312. |

* *Soil contamination prompting the PRS 41 RA is located outside of the 15-foot perimeter around Building 19. Since building demolition activities will not disturb areas outside of the 15-foot perimeter, potential exposure to RA levels of thorium-232 related to PRS 41 is not expected to be a concern during demolition. If areas outside of the 15-foot perimeter are to be disturbed, additional soil analytical results in those areas will be evaluated prior to commencement of those activities to confirm potential exposure to elevated contamination is not anticipated.*

** *PRS 63 is a former pipe storage area measuring approximately 2 feet by 2 feet. Because it is believed to have radiological contamination based on historical use, FA was indicated. The PRS was binned as an RA because removal of the contaminated soil was deemed a more cost-effective solution than FA sampling. Because there was no FA, no soil sampling at the PRS location has been performed. The ER group will handle the RA separate from the Building 19 demolition. Soil in the PRS 63 area will not be disturbed during Building 19 demolition activities.*

## 4.3 Review of Building Prints

Building prints were reviewed and no significant items were identified. Floor plans are included in Appendix D.

## 4.4 Aerial Photographs

Aerial photographs from 1959 (prior to construction), 1965 (following assembly at current location), and 1996 (most recent aerial photo) were reviewed and no significant items were identified. Aerial photographs are presented in Appendix E.

## 4.5 Interviews

Past Building Manager, R. A. Ward, was interviewed via a building manager questionnaire (included in Appendix F). The current Building Manager, Gary Weidenbach, was also interviewed regarding past facility operations and current conditions. No significant items related to the building were identified based on the questionnaire or interviews.

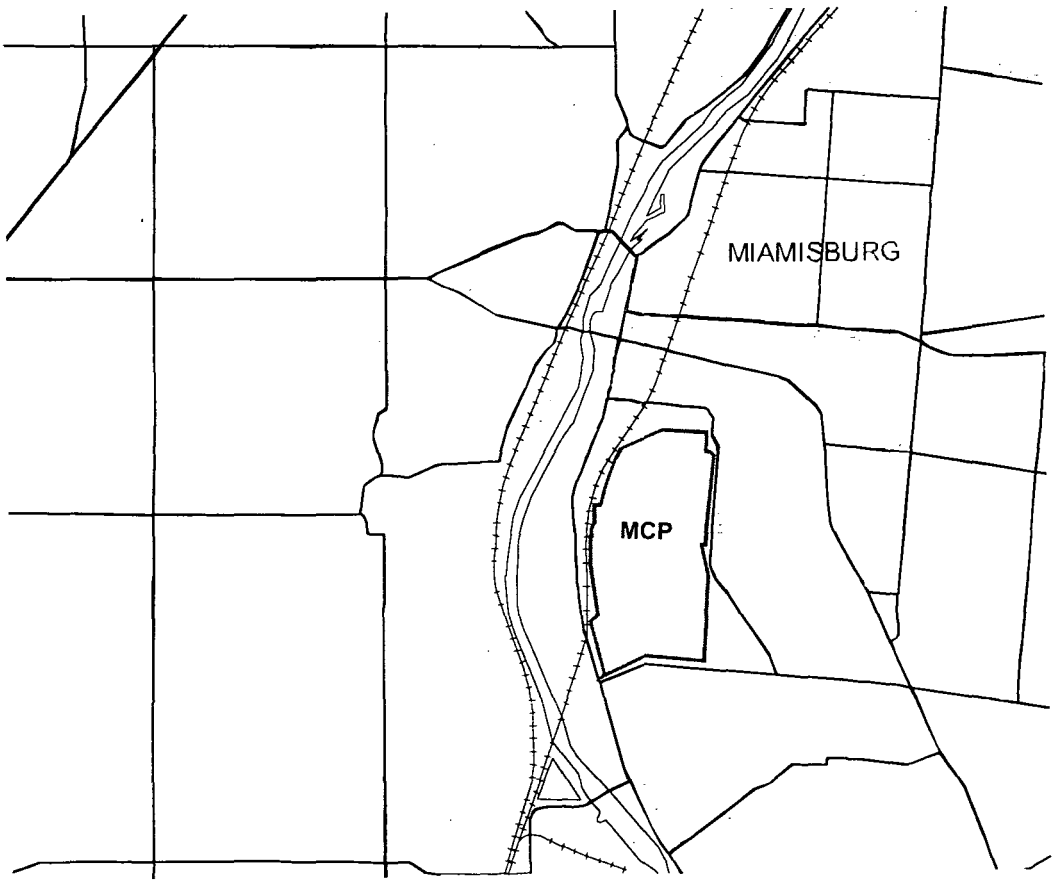
# Appendix A

## General Listing of Acronyms

| | |
|---|---|
| ASTM | American Society for Testing and Materials |
| BDP | Building Data Package |
| CAA | Clean Air Act |
| CERCLA | Comprehensive Environmental Response, Compensation & Liability Act |
| $cm^2$ | centimeters squared |
| CWA | Clean Water Act |
| DOE | United States Department of Energy |
| DPM | disintegrations per minute |
| EPA | United States Environmental Protection Agency |
| ER | Environmental Restoration (Program) |
| FFA | Federal Facility Agreement |
| HAZMAT | hazardous materials |
| MARSSIM | Multi-Agency Radiation Survey and Site Investigation Manual |
| MCP | Miamisburg Closure Project |
| N/A | not applicable |
| NPDES | National Pollutant Discharge Elimination System |
| OEPA | Ohio Environmental Protection Agency |
| OU | Operable Unit |
| PCB | polychlorinated biphenyl |
| pCi/L | picoCuries per liter |
| PRS | Potential Release Site |
| RI/FS | Remedial Investigation/Feasibility Study |
| RAPCA | Regional Air Pollution Control Agency |
| RCRA | Resource Conservation and Recovery Act |
| RSDS | Radiological Survey Data Sheet |
| SARA | Superfund Amendments and Reauthorization Act |
| SDWA | Safe Drinking Water Act |
| USEPA | United States Environmental Protection Agency |
| VOC | volatile organic compound |

# Appendix B

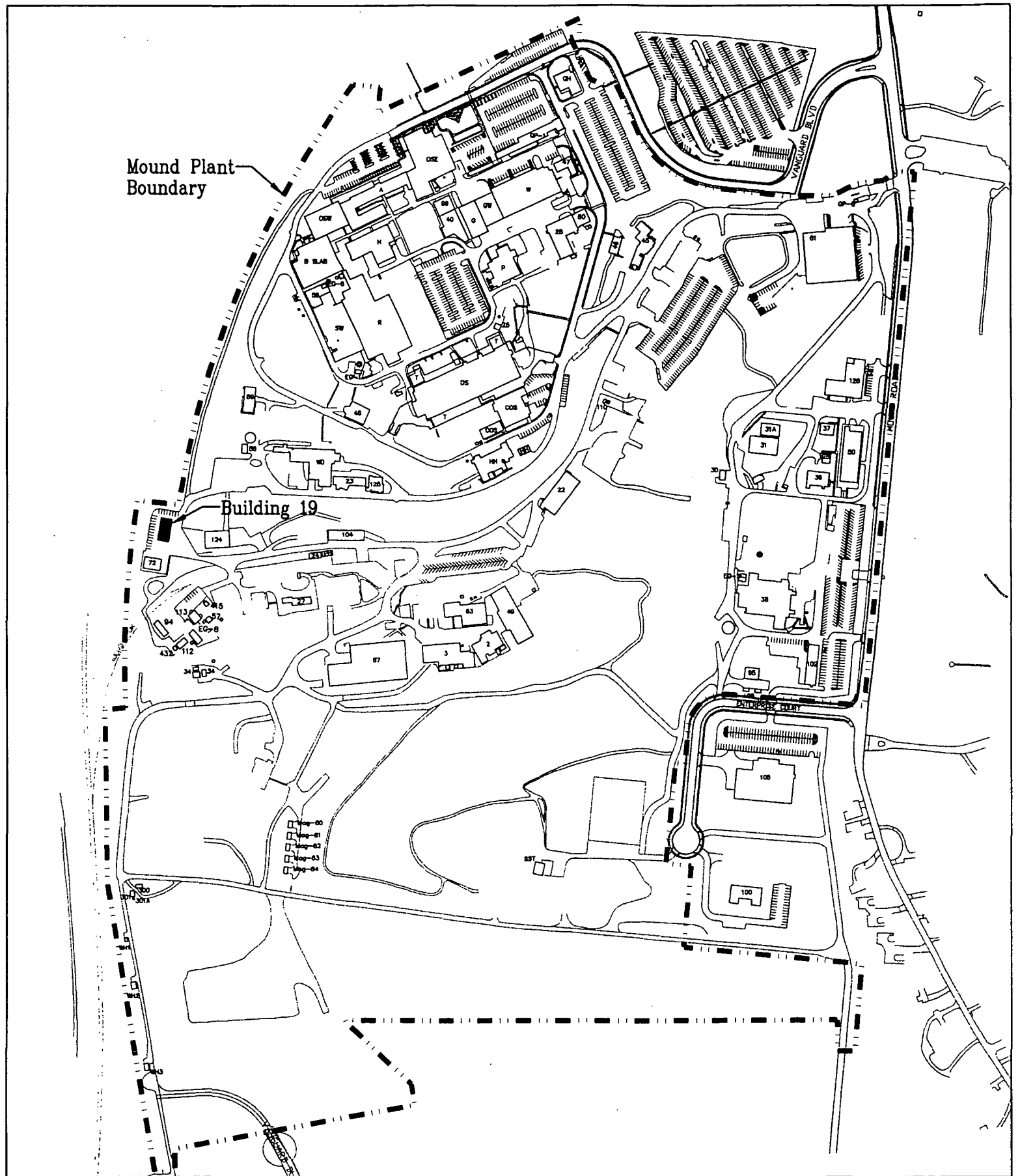
Map of Montgomery County




B 1 of 1

# Appendix C

Figures




**Legend**

45 Structures
Roadway
Mound Spur
Railroad
Mound Plant Boundary

0 225 450 900
SCALE IN FEET

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 |
|---|---|---|---|---|---|---|
| ISSUE | • | | | | | |

PART CLASSIFICATION

DRAWING CLASSIFICATION: UNCLASSIFIED

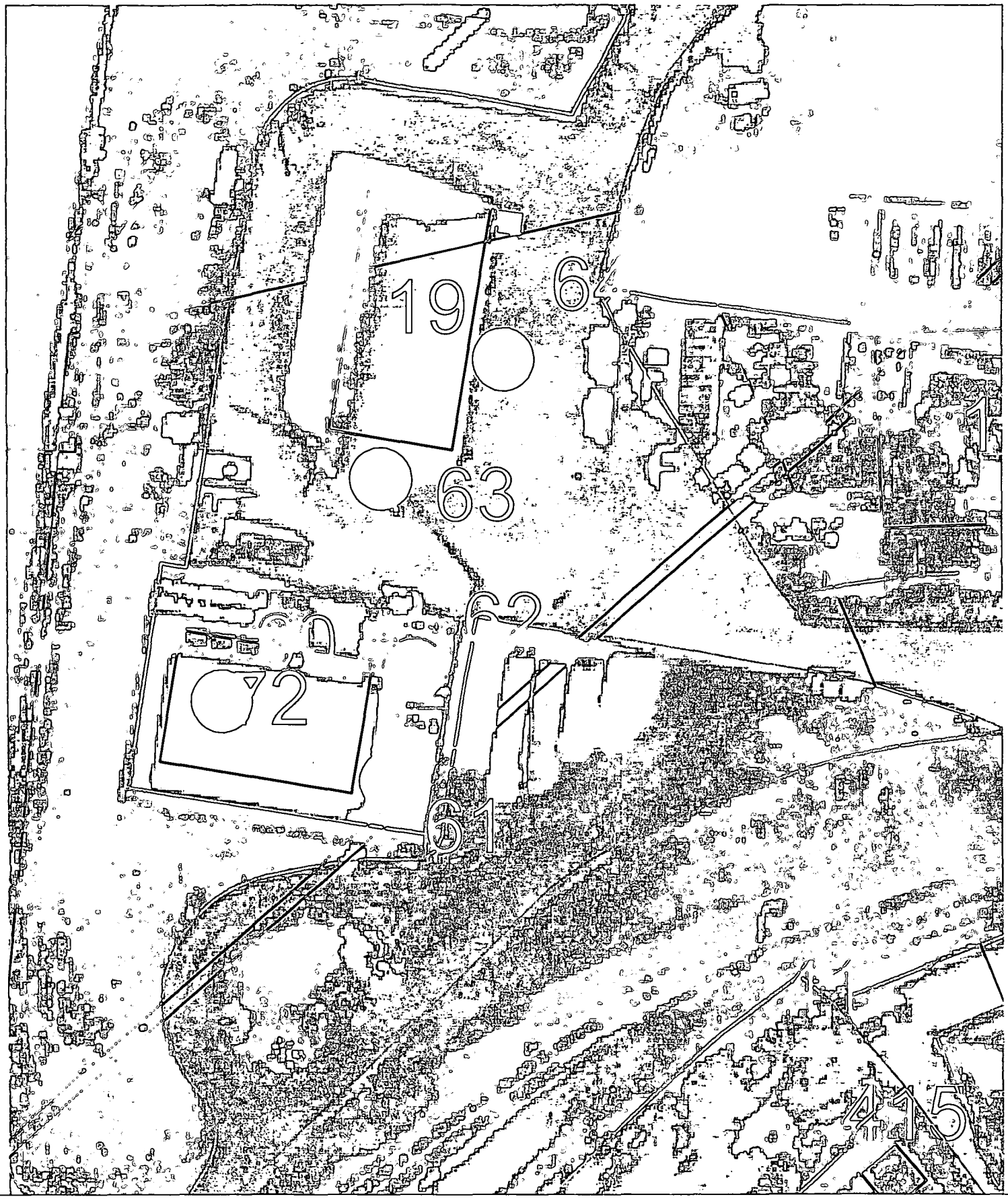
Figure 1
Location of Building 19

SIZE | DRAWING NUMBER: MAPS.DWG | JOB NUMBER

DWG TYPE STE | PRMG ER-GIS | CAGEC | SCALE | SHEET 1 OF

STATUS MD-REL-**/**/** | ORIGIN AUTOCAD

| ISS | DATE | REVISION | BY | CHKR | ENG | LP&EC | APVD | M |
|---|---|---|---|---|---|---|---|---|




**Legend**

- 45 Structures
- PRS Point
- PRS Area
- PRS Line

| ISS | DATE | REVISION | BY | CHKR | ENG | LP&EC | APVD | M |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

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 | | | | | | | | | | | | | | | |
| ISSUE | 0 | | | | | | | | | | | | | | | | | | | | |

PART CLASSIFICATION

**Figure 2**
**Building 19**
**and Vicinity**

DRAWING CLASSIFICATION: UNCLASSIFIED

SIZE | DRAWING NUMBER: MAPS.DWG | JOB NUMBER

DWG TYPE STE | PRMG ER-GIS | CAGEC | SCALE | SHEET 1 OF

STATUS MD-REL-00/00/00 | ORIGIN AUTOCAD

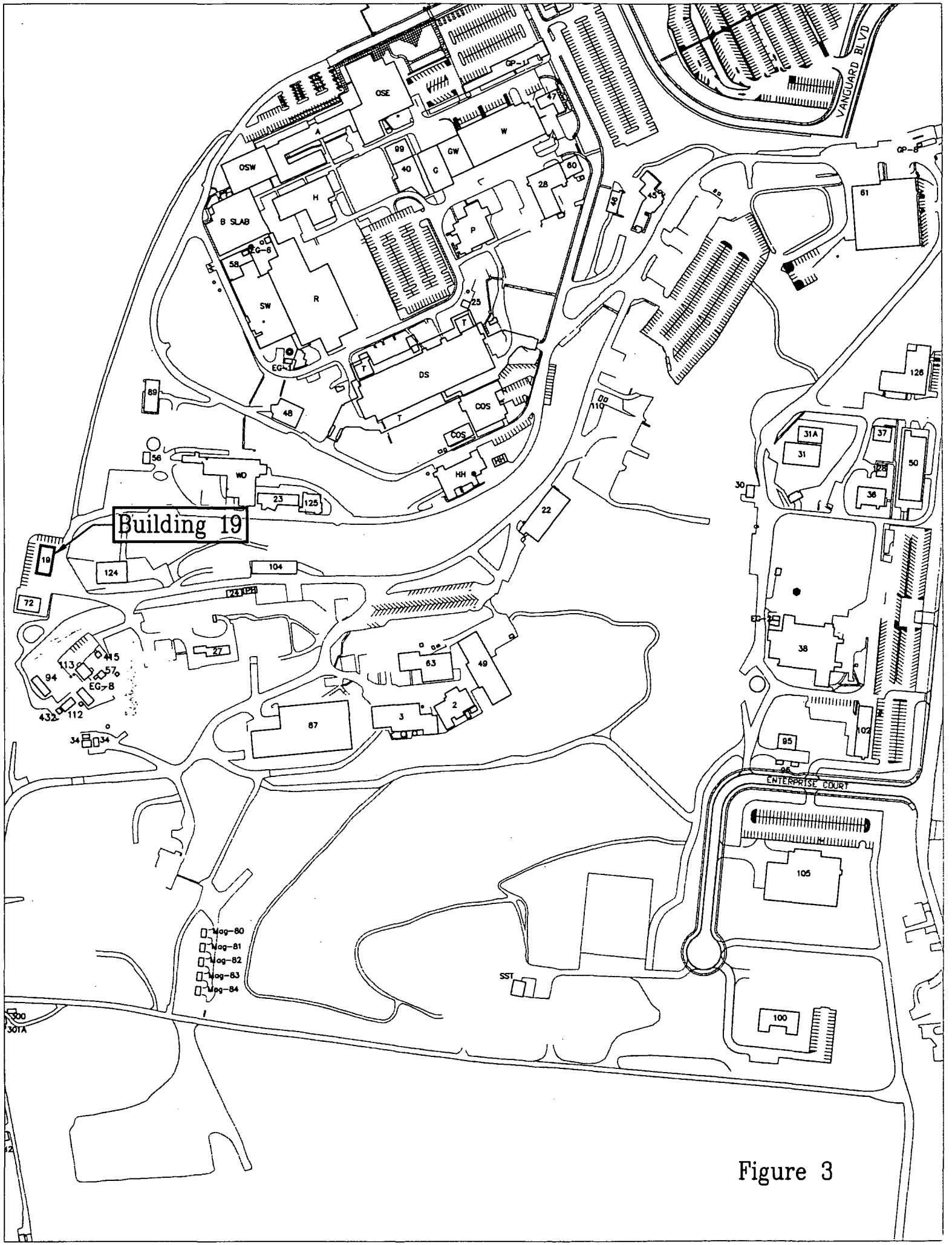
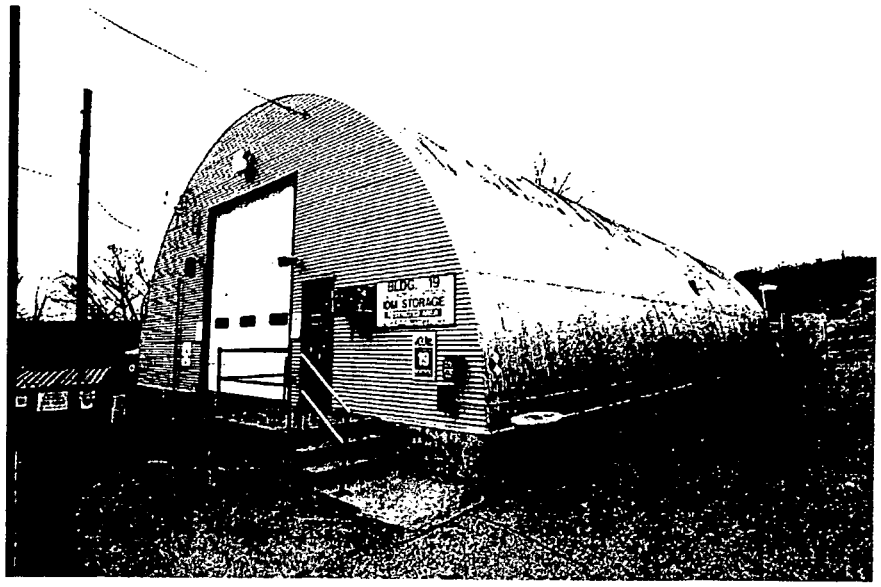

Building 19
VANGUARD BLVD
ENTERPRISE COURT
OSE
OSW
A
W
GW
G
H
B SLAB
P
SW
R
DS
COS
HH
WD
T
EG-8
GP-8
Mag-80
Mag-81
Mag-82
Mag-83
Mag-84
SST

Figure 3



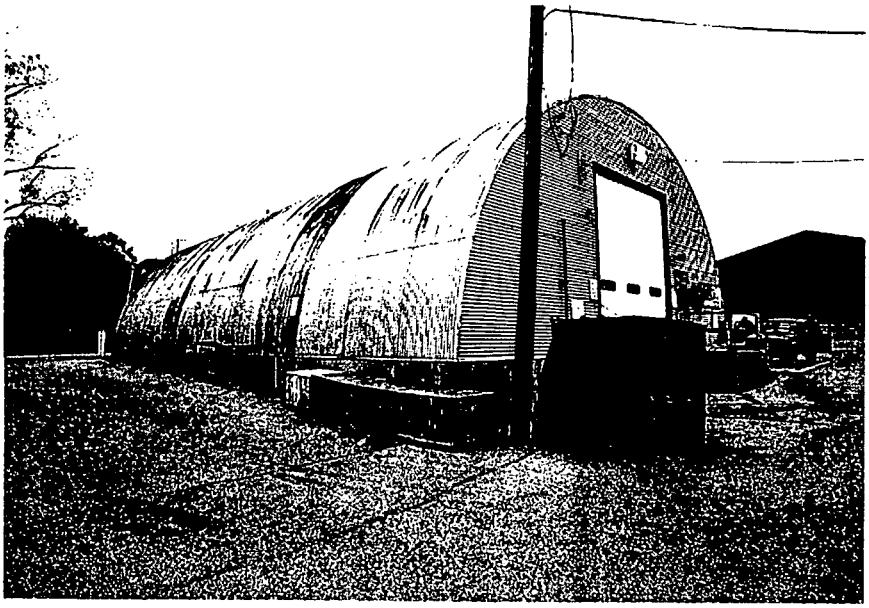
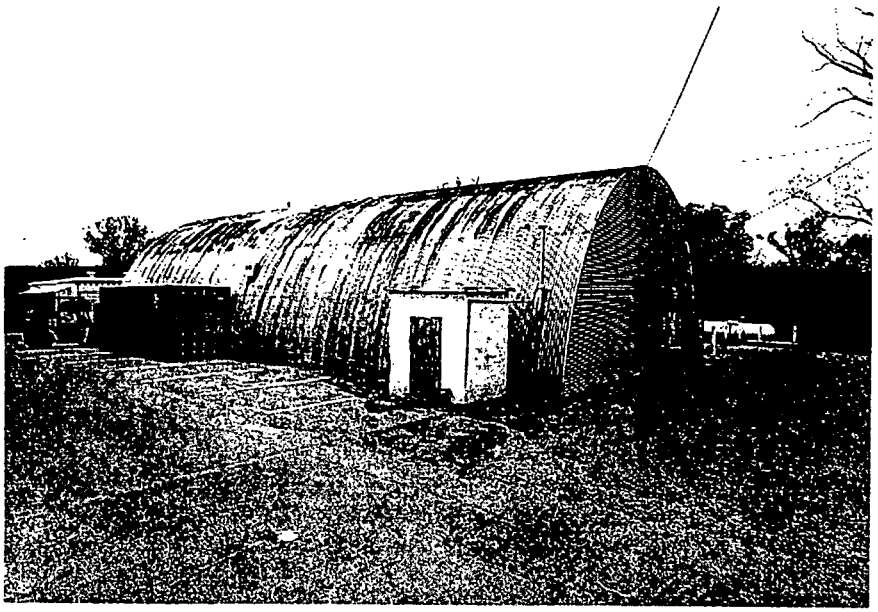



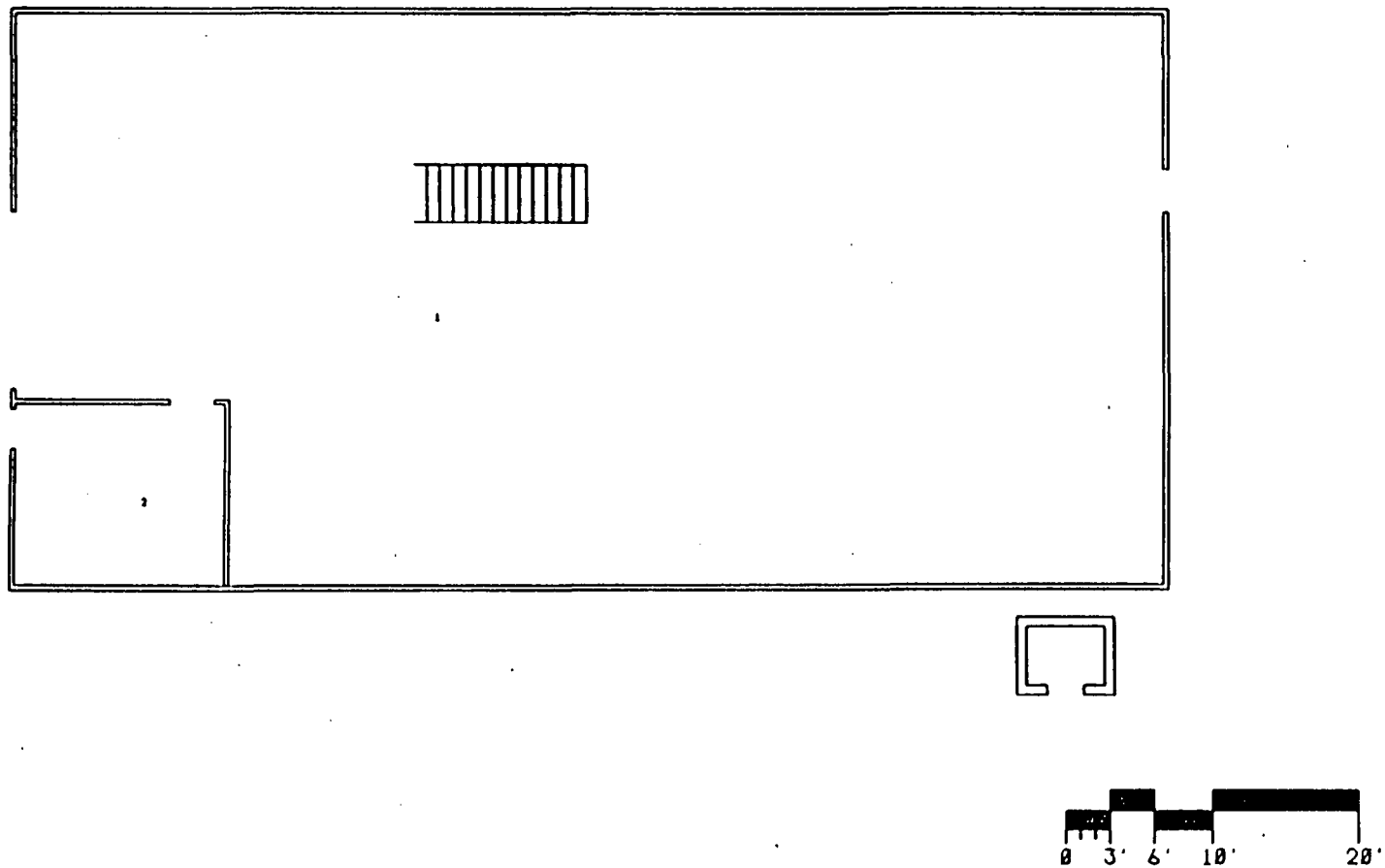
Figure 4
Building 19



# Appendix D

Floor Plans

| ISS | DATE | REVISION | BY | CHKD | DWG | APVD | APVD | R |
|---|---|---|---|---|---|---|---|---|
| 0 | 12/12/91 | ASBUILT ISSUE | DCB | | | | DVD | |




**BLDG #19**
**FIRST FLOOR**
**BLDG CODE:3019**

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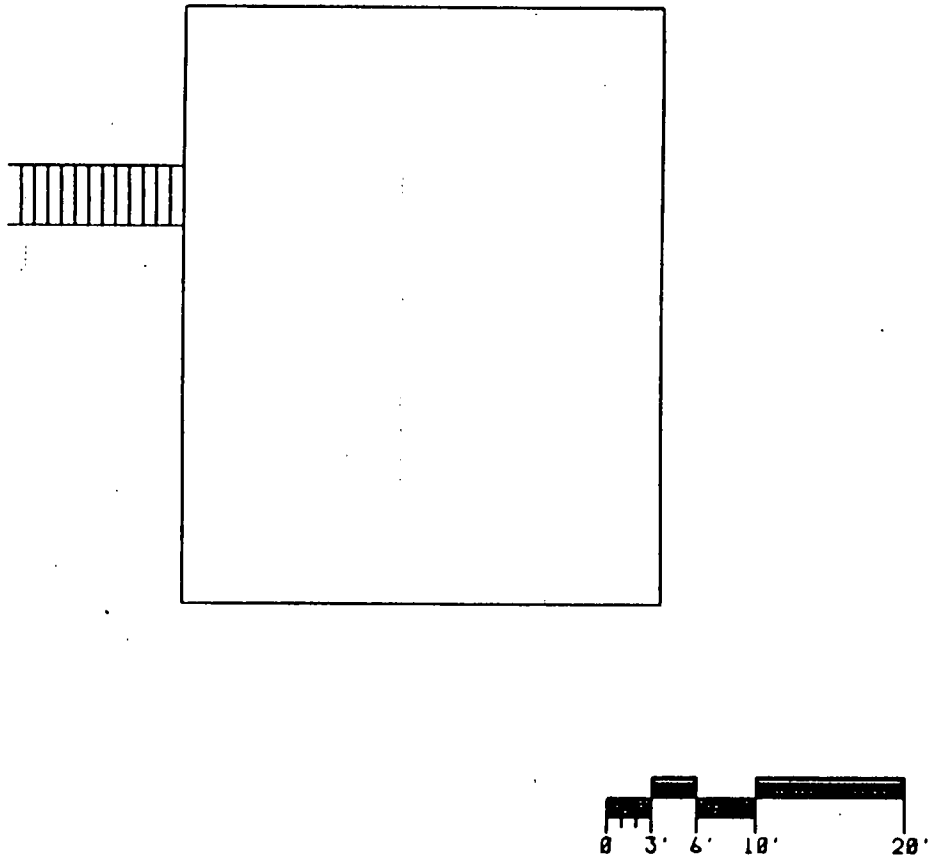
APPROVALS: DATE:
SAFETY COMMITTEE REQUIRED:
___NONE ___SRUDOC ___TDOC ___DVDOC
TECH. REVIEW. ___
SR. MGR. ___
SRUDOC ___
TDOC ___
DVDOC ___

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SYSTEM DWG | PROJ NUM | SHEET | 1 | 2 | 3 | 4 | 5 | 6 | TITLE | | | (U) TITLE CLASSIFICATION | |
| SPCNS | DWG SCPY | TOTAL | 0 | 0 | | | | | BLDG #19 FLOOR PLANS | | | | |
| C.P. & EE | PCCN REV | FIRST CLASSIFICATION | | | | | | | | | | | |
| DWG NUM | | DRAWING CLASSIFICATION | UNCLASSIFIED | | | | | | STAT C | DRAWING NUMBER FSC911232 | | JOB NUMBER 12335 | |
| APVD | DATE | DWG TYPE SFP | | | FROM BLDG #19 | | | | CAGE 14865 | SCALE AS NOTED | | SHEET 1 OF 2 | |
| | | STATUS MD-REL-12/12/91 | | | | | | | ORIGIN MD-BRJ-V3.0 | | | | |




**BLDG #19**
**MEZZANINE**
**BLDG CODE:3019**

| | |
|---|---|
| DRAWING NUMBER FSC911232 | JOB NUMBER 12335 |
| DRAWING CLASSIFICATION UNCLASSIFIED | |
| SIZE C | CODE 14865 / SCALE AS NOTED |
| | SHEET 2 |
| STATUS HO-REL-12/12/91 | |

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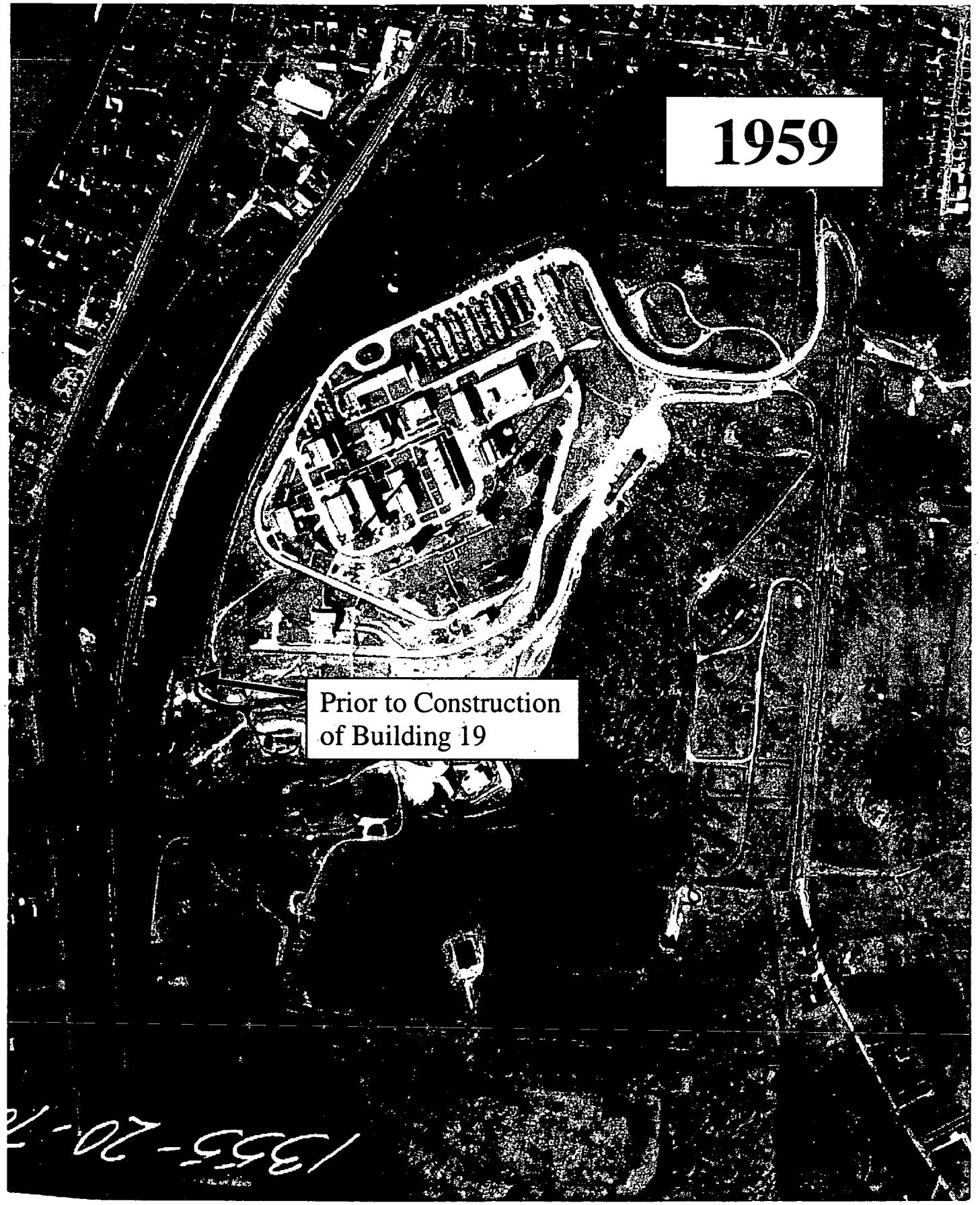
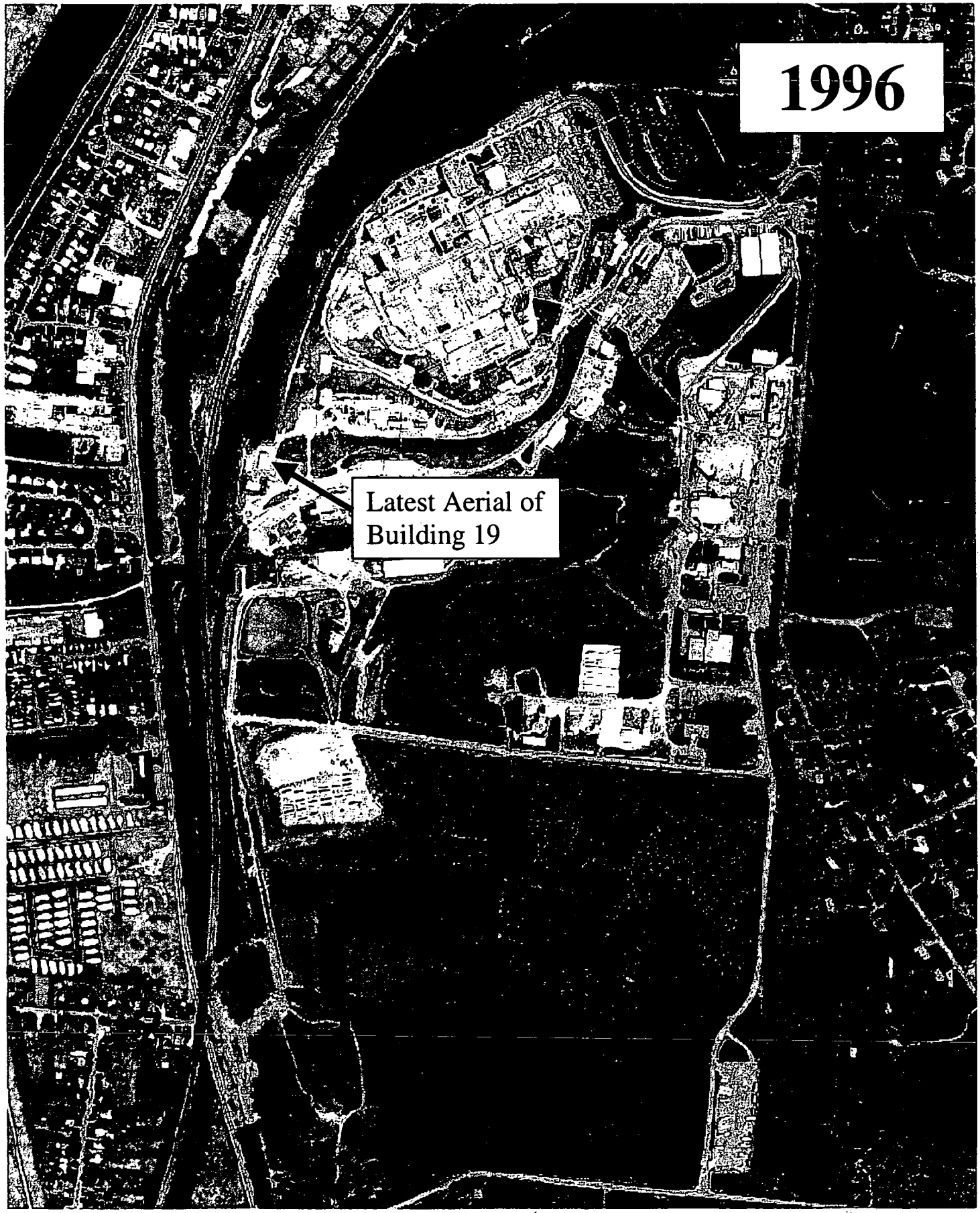
# Appendix E

Aerial Photographs




E 1 of 3

E 2 of 3

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# Appendix F

Environmental Appraisal Report of the Mound Plant (excerpt)

## 9.43 BUILDING 19

### 9.43.1 Scope of Building 19 Report

In late 1995 and the early months of 1996, EG&G MAT performed a review of environmental conditions at the Mound Plant. The purpose was to develop a performance baseline, and to identify areas for improvement on a building and a sitewide basis. EG&G MAT did not perform a "due diligence" or Phase I Environmental Site Assessment as specified by ASTM 1527 or ASTM 1528. The scope of the appraisal effort and a discussion of the appraisal methodology are detailed in Sections 2.0 and 5.0, found in Volume 1 of this report.

The appraisal team performed a walk-through of Building 19 on the morning of February 8, 1996. The Environmental Appraisal Checklist (EAC) was used to record findings. The EAC is presented in Attachment 1 (Section 9.43.6.1).. The appraisers were accompanied by the building manager. A subsequent meeting with the process manager was held on the afternoon of February 19, 1996. The team revisited the building unaccompanied on the morning of February 26, 1996. Other information was supplied by the building manager and recorded on the Building Manager's Questionnaire (BMQ), included as Attachment 2 (Section 9.43.6.2).

### 9.43.2 Description of Building 19

Building 19 is a one-story, 4,480-square-foot metal jumbo Quonset hut. It is a slab-on-grade structure with a 1,500-square-foot mezzanine. The location is shown in Attachment 3 (Section 9.43.6.3). The building is bounded by paved and gravel hardstand. Building 49 is located to the east of Building 19. The building contains a small office cubicle with the remainder used to store Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) soil sample drums and a packaging area for samples taken from current CERCLA activities. Floor plans are presented as Attachment 4 (Section 9.43.6.4). The building is serviced by two forced-air propane heaters and two small electric heaters, a window air conditioner in the small office area, and electric service of 240V (*Mound Facility Physical Characterization*, 12-1-93).

Building 19 was constructed in 1962 (MD-10391, *Asbestos Program Manual*, 9-14-95). The building was initially used for Mound salvage storage and salvage sales.

### 9.43.3 Summary of Findings

Building 19 is used principally for storing CERCLA soil sample drums dating back to 1988 and, on the mezzanine, new empty drums. In addition, it was noted that outside one end of the building (unprotected and with no secondary containment) were five 55-gallon drums labeled to contain low-level waste (LLW) and four 55-gallon drums labeled to contain low-specific activity (LSA) decontamination rinse fluids. All these drums were unprotected and had no secondary containment. Except for the nine drums and potential unlabeled asbestos-containing building material, no other issues of environmental concern were identified during the walk-through or during review of reference materials. A recommendation is included with reference to the two

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propane heaters. The building is not well-maintained and the general housekeeping appeared to be less than adequate.

### 9.43.4 Observations

#### 9.43.4.1 Air Emissions

There are no fumehoods. Potential sources of emissions are two propane fuel-burning space heaters located one on each side of the building. Documentation was not available from the building manager or the Environmental Monitoring Group to indicate that potential emissions have been calculated, nor have they been listed in the Mound Air Emissions Database. No permit application has been submitted for the building, as emissions are considered *de minimis*. There are no data to support this determination, as required under OAC 3745-31. There is no evidence of fugitive dust.

#### 9.43.4.2 Wastewater Emissions

The Mound Facility has three wastewater collection systems: a sanitary wastewater system; a storm water system; and a radioactively contaminated process wastewater system. Sanitary wastewater is treated at an onsite tertiary treatment plant and subsequently discharged by hard pipe to the Great Miami River. Storm water and any non-process wastewater, single pass cooling water, and softener backwash may be discharged directly to the Great Miami River, via the Miami-Erie Canal, or may be diverted to a 3.1-million-gallon holding pond for settling prior to discharge. Radioactively contaminated wastewater is treated in Building WD by physical-chemical treatment. If appropriate, wastewater may be discharged by hard pipe to the Great Miami River. If concentrations of radioactive contaminants cannot be reduced to acceptable levels, wastewater is solidified and shipped to the Nevada Test Site or Envirocare for disposal. All outfalls are permitted under an active NPDES permit. Routine monitoring activities are in place. Based on NPDES monitoring report data reviewed, it appears that the facility is in compliance with qualitative and quantitative conditions of the permit.

##### 9.43.4.2.1 Sanitary Wastewater

The building has no sanitary services. According to a diagram of underground utility lines, presented as Attachment 5 (Section 9.43.6.5), the building is not serviced by a sanitary line. A portable restroom is located outside the building. Upon inspection it was found to be clean and odorless. According to the building manager, the unit is serviced by a vendor.

##### 9.43.4.2.2 Storm Wastewater

The exterior of the building is not directly serviced by storm drains. Storm water from the building becomes surface water and is either absorbed into the ground or flows downhill to a storm water open collection ditch. Inspection showed no sign of odors, colored discharges, or scarring which would indicate that any materials other than storm water has entered the storm drainage system.

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#### 9.43.4.2.3 Process Wastewater

Radioactive process wastewater is contained in four drums outside the back end of the building.

#### 9.43.4.2.4 Chemicals

Some chemicals are stored in Building 19. They are mostly cleaning materials, none of which are considered flammable. The list is included in the BMQ in Attachment 2 (Section 9.43.6.2). The information was gathered as part of the chemical inventory which is conducted annually. The inventory information dates to 1994. Confirmation of the 1994 inventory was not attempted as 1995 data were being compiled at the time of the appraisal.

Storage, handling, and disposal of chemicals listed in the BMQ were reviewed to assure conformance to regulations related to 40 CFR 122, 40 CFR 261-265, 40 CFR 268, and 29 CFR 1910. None of the chemicals listed in the BMQ are Clean Water Act priority pollutants. There is no evidence that chemicals stored in the building have entered the wastewater collection system. There have been no reported spills from Building 19.

Outside the building there is a flammable storage cabinet which meets standard National Fire Protection Association (NFPA) requirements. Flammable chemicals—methanol and hand cans of spray paint—were present in the building. There is no evidence that chemicals enter the wastewater system.

### 9.43.4.3 Potable and Service Water

Potable water and service water are not supplied to the building according to a diagram of underground utility lines, presented as Attachment 5 (Section 9.43.6.5). Bottled water is used for personal consumption.

### 9.43.4.4 Chemical Storage and Hazardous Materials

Chemicals are temporarily stored in the building (CERCLA support vendor was using the methanol) in accordance with applicable standards; however, food products were also stored in the same general area as the spray cans of paint. Immediate corrective action was taken by the building manager. Material Safety Data Sheets (MSDS's) are available in the building.

The building is not equipped with emergency response equipment; however, the building does have appropriate charged fire extinguishers. Each extinguisher is bar-coded. The inspection date database is maintained in the Fire Station, Building 98. There is an Emergency Evacuation Plan, and signs were posted.

There is an aboveground propane gas storage tank, without secondary containment, outside the building. There are no sumps, separators, or catch basins, in or around the building. There are no underground storage tanks associated with this building.

The building has been inspected and is suspected to contain asbestos-containing building material (ACBM) insulation. There is no record which indicated that the insulation was tested (MD-10391, *Asbestos Program Manual*, 9-14-95). On inspection, there was no visual evidence of friable asbestos.

There are no capacitors or transformers containing polychlorinated biphenyls (PCB's) located in the building. There is no record of past presence (1995 PCB Annual Document Log).

No research, development, or production activities using radioactive or energetic materials have occurred in the building (*Mound Facility Physical Characterization*, 12-1-93).

### 9.43.5 Solid, Hazardous, and Radioactive Wastes

Solid wastes generated are primarily paper. There is paper and aluminum can recycling to minimize solid waste. Solid wastes are removed by janitorial personnel to a local collection point, then shipped offsite to a local landfill by a service contractor. The disposal permit is maintained by the Waste Management Group. There is no evidence that hazardous materials or wastes are mixed with solid waste streams.

Outside the rear of the building, the Decontamination and Decommissioning (D&D) Group is using an area immediately outside the rear building entrance to store drums labeled LLW and LSA. The drums are exposed to the elements and have no secondary containment. By the general appearance of the full drums, including the rusty bottom rings, they may have been stored outside for a considerable period of time. According to the process manager's records; five of the drums contain mostly Pu-238 and Th-232 and to a lesser extent other low-level radioactive wastes. The wastes are mostly soils and, to a lesser extent, paper and plastics. The drum contents have not been characterized. Those records also show four drums contain decontamination rinse fluids containing LLW. Those drum contents also have not been characterized. The CERCLA vendor has also staged a partially filled drum of waste methanol, containing soap and dirt. Small quantities are added each day. The contractor employee, whose name was not obtained, did not know what would be done with the drum when full, nor did he understand questions concerning the designation of a satellite accumulation area (SAA).

According to the process manager for CERCLA, storage of materials contained in over 200 55-gallon drums in the building and management of the collected investigation-derived materials is in accordance with the Mound Plant ER Program SOP 1.15, Revision 6, same title.

### 9.43.4.6 Waste Minimization and Pollution Prevention

At Mound there is an active program to minimize waste streams in accordance with state and federal requirements and Executive Order 12856.

Programs for waste minimization are in place including aluminum can recycling. There does not appear to be additional opportunities for waste minimization activities within Building 19.

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### 9.43.5 Findings and Recommendations

Photographs were taken to document environmental appraisal activities. They are included as Attachment 6 (Section 9.43.6.6).

The environmental appraisal of Building 19 indicates that the following action items, in recommended priority, should be planned and scheduled for accomplishment thus assuring that best management and operating practices are in place.

19-1 LSA waste stored outside of Building 19 did not conform to DOE Order 5820.2A or Mound Procedure MD-81240, Issue 8, *Low Level Waste Management Procedures*. If a storage area for LSA Waste is to be continued outside Building 19 then an appropriate storage configuration, (e.g., protection of groundwater, long-term storage performance standards, and monitoring, including dosimeter placement) is required.

19-2 Documentation was not available to confirm that waste stored outside of Building 19 was characterized in accordance with DOE Order 5820.2A, 40 CFR 265, or OAC 3745-52.

19-3 CERCLA materials, i.e., samples for which characterization is incomplete, are wastes. The materials must be characterized in accordance with 40 CFR 261-265 & 268, and OAC 3745-52 to determine if the material is hazardous. If so, it must be handled accordingly.

19-4 No air emissions permit applications have been submitted to the Ohio Environmental Protection Agency (OEPA) for activities in the building. Appropriate documentation should reside with the EG&G Technology and Monitoring Group that the propane heater air emission sources have been inspected and determined to be *de minimis*.

19-5 The building insulation is exposed in the interior and has been protected from damage due to the height of the stored drums. It is recommended that it be tested to determine whether or not asbestos exists. If so, it should be properly labeled as the insulation is exposed throughout the arched building from one end to the other.

19-6 Insure that the CERCLA vendor knows the proper procedures for characterizing and disposing of the hazardous waste drum. EG&G MAT must provide oversight for subcontractors.

19-7 The area where the hazardous waste is being collected should be designated a SAA and treated as such (OAC 3745-52).

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# ENVIRONMENTAL APPRAISAL CHECKLIST

Building Name 19 - SALVAGE WAREHOUSE

Appraisers:

Team #4

| Name | Discipline |
|---|---|
| MARK GILLIAT | ENGINEER |
| MARCIA VANNET | CHEMIST |
| MYRON SMITH, JR | ENGINEER |
| | |

Building Manager: BOB WARD (x-3821)

Process Manager: DENNY GAULT - CERCLA

GEORGE LIBBSON - LSA

Date: 8 FEBRUARY 1996

# ENVIRONMENTAL APPRAISAL CHECKLIST

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| Clean Air Act | 2 |
| Hazardous Materials | 4 |
| Safe Drinking Water Act | 7 |
| RCRA Hazardous Waste | 8 |
| TSCA and NESHAP Requirements for Asbestos | 13 |
| TSCA—PCB | 14 |
| Low-level and Transuranic Waste | 17 |
| Waste Minimization/Pollution Prevention Activities | 22 |

# Environmental Appraisal Checklist

Building Name: 19 Appraisers: Team #4 Date: 2-8-96

## Clean Water Act (CWA) Screening Checklist

| Question | Response | Comments |
|---|---|---|
| Does the outside drain spouting of the building discharge directly to a storm sewer/sanitary system? | Y / (N) | If the answer to any of these questions is yes, proceed with the following checklist. |
| Are there sinks, toilets and floor drains in the building? | Y / (N) | |
| Are chemicals being used in the building? | (Y) / N | |
| Is there a process which discharges to the storm or sanitary system? | Y / (N) | |

## CWA Checklist

| Regulatory Guideline | Question | Response | Comments |
|---|---|---|---|
| 40 CFR 122 Appendix D Table V | If chemicals are used/stored in the building, are they on the attached list?<br>Are they properly contained? | (Y) / N<br>(Y) / N | |
| | Is the building in operation?<br>What are the processes and where do they discharge to? | (Y) / N<br>_____<br>_____ | CERCLA SOIL SAMPLE DRUMS INSIDE LLW & LSA OUTSIDE |
| | Do the floor drains, sinks & toilets appear to be draining properly? | Y / N | NONE |
| OAC 3745-33 | Do the floor drains and sinks drain to a sanitary or storm sewer? | Sanitary<br>Storm | NONE |
| | Is there a sump/pit in the building?<br>If so, what does it contain?<br>How often is it pumped out?<br>Does water collect in sump?<br>Does sump have secondary containment? | Y / (N)<br>_____<br>_____<br>Y / N<br>Y / N | |
| | Are there any manholes, catch basins, drains, or fill pipes in or around the building?<br>If so, are there any unusual appearances, colors, and/or odors? Describe in comment section.<br>Can chemicals flow into the drain? | Y / (N)<br>Y / N<br>Y / N | |

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# Environmental Appraisal Checklist

Building Name: 19 Appraisers: Team #4 Date: 2-8-96

## Clean Air Act (CAA) Screening Checklist

| Regulatory Guideline | Question | Response | Comments |
|---|---|---|---|
| | Are there any rooms that have air emissions sources that vent to the outside of the building, e.g., fumehoods, equipment? If so, note the rooms. | (Y) / N | Propane Space Heaters |
| OAC 3745-35 | Using the air emissions inventory reference for this building, are there any sources in the building that are not documented? | (Y) / N | |
| | Is there evidence of fugitive dust emissions inside or outside of the building | Y / (N) | |

## CAA Checklist

| Regulatory Guideline | Question | Response | Comments |
|---|---|---|---|
| | Are there existing air permits or applications applicable to the building? | Y / (N) | |
| OAC 3745-31,35 | If yes, are the terms and conditions of the permit or the information included on the application (see air emissions database) being followed? Note any differences and update the air emissions database. | Y / N | |
| OAC 3745-31 | Are there any sources that are not included in the air emissions database? If so, note the room, hood number, active or not, POC, and applicable air emission database information on Table B. | (Y) / N | Propane Space Heaters - Single open bay bldg with small office. Nomenclature not visible from floor level |
| OAC 3745-31-03 | Are there sources which are lab equipment of lab fumeheads used exclusively for chemical or physical analyses and bench scale lab equipment? These sources do not require a permit. However, the air emissions database should be updated. | Y / (N) | |
| | Has there been any release of air contaminants from this building? | Y / (N) | |

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## Environmental Appraisal Checklist

Building Name: 19 Appraisers: Team #4 Date: 2-8-96

CAA Checklist

Comments: Note the number of sources/hoods per room, the number that are active, and the POC on the reference document.

**TABLE A**

| Process Source | Room Number | Hood Number | In Database | Active | Chemicals Used | Quantity Used | Quantity to Waste Management | Hours/Yr. Operation | Air Emissions |
|---|---|---|---|---|---|---|---|---|---|
| Propane space heaters | — | N/A | Y / (N) | (Y) / N | Propane | Unknown | N/A | 24 hrs/day during cold weather. No log | De minimus |
| | | | Y / N | Y / N | | | | | |
| | | | Y / N | Y / N | | | | | |
| | | | Y / N | Y / N | | | | | |
| | | | Y / N | Y / N | | | | | |

Source: _____

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9.43-14

# Environmental Appraisal Checklist

Building Name: 19 Appraisers: Team #4 Date: 2-8-96

## Hazardous Materials (HM) Screening Checklist

| Question | Response | Comments |
|---|---|---|
| Are any chemicals used or stored in this building, now or in the past? | (Y) / N | If the answer is yes, proceed with the following checklist. |

## HM Checklist

| Regulatory Guideline | Question | Response | Comments |
|---|---|---|---|
| 29 CFR 1910.1200(b,f) | All containers of hazardous chemicals shall be labeled as to the identity of the chemical and the appropriate hazard warnings. | (Y) / N | |
| 29 CFR 1910.1200(g) | MSDS shall be available to the employees in close proximity to the work area. | Y / N | NONE FOUND |
| 29 CFR 1910.22, 1910.106, 1910.176 | All places of employment, passageways, storerooms and service areas shall be kept clean and orderly and in a sanitary manner. Aisles shall be unobstructed. Drums and containers are not leaking and are tightly sealed. | Y / N | GENERAL HOUSECLEANING RECOMMENDED |
| 29 CFR 1910.106 | Storage cabinets for flammable materials are constantly kept closed, are fire resistant and are labeled "FLAMMABLE - Keep Fire Away". Containers inside should be labeled and closed. No spills inside cabinet. | Y / N | N/A |
| 29 CFR 1910.106(d)(7) | Incompatible chemicals are not stored together. | (Y) / N | |
| 29 CFR 1910.106(d)(4) | Inside Flammable/combustible storage rooms must meet the following: 4 in. raised sill or trench that drains to a safe area, liquid tight wall/floor joints, self-closing doors, gravity or mechanical exhaust providing 6 room changes/hr., exhaust switch located outside room, at least one 3 ft. aisle; no cracks in secondary containment. | Y / N | N/A |

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# Environmental Appraisal Checklist

Building Name: 19 Appraisers: Team #4 Date: 2-8-96

HM Checklist

| Regulatory Guideline | Question | Response | Comments |
|---|---|---|---|
| 29 CFR 1910.106(d)(7) | All flammable/combustible storage locations have at least one 12-B portable fire extinguisher located outside and within 10 ft. of a door opening into any room for storage. No smoking signs are posted. | Y / N | N/A FIRE EXTINGUISHERS ARE CHARGED |
| 29 CFR 1910.151 | Eyewashes/showers shall be provided within the work area. Ensure unit is operational. | Y / N | NO WATER |
| CGA P-1 3.3 & 3.3.10 | All gas cylinders (full or empty) shall carry a legible label or marking identifying the contents. | Y / N | ONLY THE PROPANE TANK OUTSIDE |
| CGA P-1 3.5.3 | Full and empty containers should be stored separately with the storage layout planned so that containers comprising of old stock can be removed first with a minimum handling of other containers. | (Y) / N | EMPTY DRUMS ON THE MEZZANINE |
| CGA P-1 3.5.8 | All compressed gas containers in service or in storage shall be stored standing upright and the container shall be secured. | Y / N | N/A |
| CGA P-1 4.2.2 | Oxygen cylinders shall be separated from flammable gas containers or combustible materials a minimum of 20 ft. or a noncombustible barrier 5 ft. high. | Y / N | N/A |
| 29 CFR 1910.104(2)(10) | Oxygen stored as a liquid shall be on a noncombustible surface. Asphalt is considered combustible. Wood and long dry grass shall be cut back 15 ft. from the container. | Y / N | N/A |
| 29 CFR 1910.104 | Bulk oxygen storage shall be permanently placarded "OXYGEN - NO SMOKING - NO OPEN FLAMES". | Y / N | N/A |
| | Is there a sign posted in each work area regarding emergency egress and emergency response action? | (Y) / N | |
| | Is there an emergency response plan available? | Y / (N) | |

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9.43-15

9.43-16

## Environmental Appraisal Checklist

Building Name: 19 Appraisers: Team #4 Date: 2-8-96

### HM Checklist

| Regulatory Guideline | Question | Response | Comments |
|---|---|---|---|
| | Is there a process area? | Y / (N) | |
| | Does it have proper containment? | Y / N | |
| | Is there a liquid bulk transfer area? | Y / (N) | |
| | Is there proper containment? | Y / N | |
| | Is there an above ground storage tank? If so, complete Table B. | (Y) / ~~(N)~~ | |

### Above Ground Storage Tanks Inventory

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**TABLE B—Above Ground Storage Tanks Inventory**

| Building | Capacity (Gal.) | Contents | Estimated Volume | In Service | Containment | Visual Stains/ Contamination | If Empty, Flushed |
|---|---|---|---|---|---|---|---|
| 19 | 50 | Propane | 50 | (Y) / N | Y / (N) | Y / (N) | Y / N |
| | | | | Y / N | Y / N | Y / N | Y / N |
| | | | | Y / N | Y / N | Y / N | Y / N |
| | | | | Y / N | Y / N | Y / N | Y / N |
| | | | | Y / N | Y / N | Y / N | Y / N |
| | | | | Y / N | Y / N | Y / N | Y / N |
| | | | | Y / N | Y / N | Y / N | Y / N |

Source: Visual

## Environmental Appraisal Checklist

Building Name: 19 Appraisers: Team #4 Date: 2-8-96

### Safe Drinking Water Act (SDWA) Screening Checklist

| | | |
|---|---|---|
| Does this facility have potable water? | Y / (N) | If yes, conduct the following survey. |

### SDWA Checklist

| Regulatory Guideline | Question | Response | Comments |
|---|---|---|---|
| OAC 3745 95-02 (A) | Do actual or potential cross-connections exist between potable (light green) and service water (dark green)? | Y / N | Blank |
| OAC 3745 95-04 (B)(C) | Are backflow prevention devices installed where cross connections (hoses connected to faucets, hot water tank vented directly to a drain) exist? | Y / N | |
| | Are sources of service water (janitorial and laboratory faucets, or outdoor spigots) posted as non-potable water sources? | Y / N | |
| | Does the facility contain any water coolers or fountains that are not lead free? Complete Table C. | Y / N | |

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**TABLE C—Water Fountain Survey**

| Building | Location | Model # | Comments / Date of Analysis for Lead |
|---|---|---|---|
| | | | |
| | | | Blank |
| | | | |
| | | | |
| | | | |

9.43-17

Source: _____

9.43-18

# Environmental Appraisal Checklist

Building Name: 19 Appraisers: Team #4 Date: 2-8-96

## RCRA Screening Checklist

| Does this facility generate waste or use chemicals? | Y / (N) | If yes, conduct the following survey. |
|---|---|---|

## RCRA Checklist

| Regulatory Guideline | Question | Response | Comments |
|---|---|---|---|
| OAC 3745 52-11 | Has any material generated been characterized RCRA hazardous?<br>Was characterization by analysis or by process knowledge?<br>Are lab results or documentation of process knowledge readily available?<br>Note any uncharacterized material in comment section.<br>Is it waste?<br><br>If yes, proceed with next section. | Y / N<br><br>analysis / process<br><br>Y / N<br><br>Y / N | RERCLA SOIL SAMPLE DRUMS STORAGE. |
| OAC 3745 52-11 | Are any of the materials noted RCRA hazardous waste?<br><br>If no, note and stop here.<br><br>If yes, note the location of the management unit, and the method of management, and proceed with the appropriate section below. | Y / (N) | NOT TESTED NOR CHARACTERIZE. DRUMS LABELED AS LLW & LSA SHOULD BE REMOVED FROM OUTSIDE BLDG |

* contents of DRUMS NOT KNOW OTHER THAN "SOIL SAMPLE" RANGING FROM 1988 TO PRESENT

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## Environmental Appraisal Checklist

Building Name: 19 Appraisers: Team # 4 Date: 2-8-96

RCRA Checklist

| Regulatory Guideline | Question | Response | Comments |
|---|---|---|---|
| **I. HAZARDOUS WASTE STORED IN CONTAINERS** | | | |
| | Is there an area in the building that could qualify as a Satellite Accumulation Area?<br>Is it treated as such? | Y / N<br>Y / N | NONE IN BLDG<br>DRUMS ON HAZSTAND OUTSIDE QUALIFIES |
| OAC 3475-52-34 (C) | Has any of the RCRA hazardous waste in this building been managed in Satellite Accumulation Areas?<br><br>If no, proceed to the next section.<br><br>If yes, answer the following. | Y / (N) | OUTSIDE AREA HAS 5-55 gal DRUMS LLW - $Pu^{238}$ & Th-232<br>4-55 gal DRUMS of DECON RINSE WATER MARKED LSA |
| | Are the containers marked with the words hazardous waste, or other words denoting the hazard? | (Y) / N | |
| | Are the containers in good condition? | Y / N | RUSTY Bottom RINGS |
| | Are the waste compatible with the containers? | (Y) / N | |
| | Are containers managing ignitable hazardous waste stored at least 50 feet from the plant site boundary? | Y / N | N/A |
| | Are containers kept closed and locked except during filling? | Y / N | SEALED |
| | Are containers moved within 3 days of being filled? | Y / (N) | |

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9.43-19

9.43-20

# Environmental Appraisal Checklist

Building Name: 19 Appraisers: Team #4 Date: 2-8-96

## RCRA Checklist

| Regulatory Guideline | Question | Response | Comments |
|---|---|---|---|
| OAC 3745-52-11 (A) | If a Satellite accumulation area has been abandoned and/or if waste left in place, and the containers may be subject to the 90-day-storage exclusion.<br><br>If this exclusion does not apply, go to the next section. If the containers have been in storage under this exclusion, answer the following: | | CONTENTS HAVE NOT BEEN CHARACTERIZED EXCLUSION NOT KNOWN |
| | Are the containers in good condition? | Y / N | |
| | Are the waste compatible with the containers? | Y / N | |
| | Are the containers kept closed except during filling? | Y / N | |
| | Are the containers managed in such a way, that they are not ruptured, or leaks caused? | Y / N | |
| | Is the area inspected at least once weekly? | Y / N | |
| | Is the inspection recorded?<br>• Where is the log?<br>Is it properly completed, dated, and signed? | Y / N<br><br>Y / N | |
| | Are containers managing ignitable hazardous waste stored at least 50 feet from the facility boundary? | Y / N | |
| | Are incompatible wastes managed in such a way that they will not react with another incompatible waste? | Y / N | |
| OAC 3745-52-34(B) | Has any of the waste (except in Building 23, Building 72 and the Burn Area) been managed in excess of 90-days? | (Y) / N | ~~EX~~ |
| | If no go to next section. | | |
| | If yes, note. | | |
| | For Building 23, Building 72 & Burn Area use special checklist. | | |

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## Environmental Appraisal Checklist

Building Name: 19 Appraisers: Team #4 Date: 2-8-96

RCRA Checklist

| Regulatory Guideline | Question | Response | Comments |
|---|---|---|---|
| II. HAZARDOUS WASTE STORED IN TANKS | | | |
| OAC 3745-52-32 (B) | Has any chemical waste stored in a tank, piece of process equipment or ancillary equipment been in storage in excess of 90-days? | Y / N | NONE STORED IN A TANK |
| | If the answer was no, then proceed with the following: | Y / N | |
| | Has the tank or piece of equipment had an integrity assessment? | Y / N | |
| | Is there a sump? | Y / N | |
| | Is it dry? | Y / N | |
| | Does the tank or equipment have secondary containment? | Y / N | Blank |
| | Does the tank or equipment have leak detection device(s)? | Y / N | |
| | Has spill control prevention been enacted? | Y / N | |
| | Has any hazardous waste stored in a tank, piece of process equipment or ancillary equipment been in storage in excess of 90-days? | Y / N | |
| | If the answer was no, then proceed with the following: | | |
| | Has the tank or piece of equipment had an integrity assessment? | Y / N | |
| | Does the tank or equipment have secondary containment? | Y / N | |
| | Does the tank or equipment have leak detection device(s)? | Y / N | |
| | Has spill control prevention been enacted? | Y / N | |
| | Is there a closure plan? | Y / N | |
| | If yes, then note. | | |
| OAC 3745-67 | Has any of the waste been managed in a surface impoundment? If yes, then note. Go to the next section. | Y / N | |

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9.43-22

# Environmental Appraisal Checklist

Building Name: 19 Appraisers: Team #4 Date: 2-8-96

RCRA Checklist

| Regulatory Guideline | Question | Response | Comments |
|---|---|---|---|
| OAC 3745-68 | Has any of the waste been managed in a Landfill? If yes, then note. Go to the next section. | Y / N | |
| OAC 3745-68 | Has any of the waste been managed in an Incinerator (other than Burn area units)? If yes, then note. Go to the next section. | Y / N | Blank |
| OAC 3745-68 | Has any of the waste been managed in a Thermal treatment Unit (other than Burn area units)? If yes, then note. Go to the next section | Y / N | |
| OAC 3745-69 | Has any of the waste been managed in a Miscellaneous Treatment Unit (other than Burn area units)? If yes, then not. Go to the next section. | Y / N | |
| OAC 3745-56 | Has any of the waste been managed in a Waste Pile? If yes, then note. Go to the next section. | Y / N | |

General Comments:

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## Environmental Appraisal Checklist

Building Name: 19 Appraisers: Team #4 Date: 2-8-96

### Asbestos Screening Checklist

| Does this facility contain ACBM? | Y / N * | If yes, conduct the following survey. |
|---|---|---|

### Asbestos Checklist

Note: Routinely, the asbestos standard for ACBM in schools has been applied to facilities for purpose of cleanup. In addition to AEHERA, there are additional standards in the NESHAPS that may be of importance.

| Regulatory Guideline | Question | Response | Comments |
|---|---|---|---|
| ADAPTED FROM TSCA ACBM IN SCHOOLS: | | | |
| | Has this building been characterized either through process knowledge, by analyses, or by inspection to determine if it contains asbestos? | Y / N | SURVEY DID NOT DETERMINE SUSPECTED |
| | If no for this building or area note this conclusion in the comment section. | | |
| | Is there any evidence of friable asbestos? | Y / (N) | |
| | Is the asbestos removal properly managed? (See questions listed below) | Y / N | If there is no asbestos removal, do not complete the following section. |
| NESHAPS FOR ASBESTOS FOR ANY ONGOING ASBESTOS REMOVAL: | | | |
| 40 CFR 61.156 | There are no discharges of visible emissions to the outside air from collection, processing, packaging, transporting, or deposition of ACBM during the removal. | Y / N | Blank |
| 40 CFR 61.152(b) (1) | ACBM is treated with water in accordance with 40 CFR 152(b)? | Y / N | |
| 40 CFR 61.154 | Is friable asbestos adequately wetted during stripping? Or, has an adequate ventilation and collection system been installed? | Y / N | |
| 40 CFR 61.152 | Is wetting continued until the waste friable asbestos is collected for disposal? | Y / N | |

SURVEY CONDUCTED. BUILDING INSULATION NOT TESTED NOT LABELED. MAY CONTAIN

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9 43-23

9.43-24

## Environmental Appraisal Checklist

Building Name: 19 Appraisers: Team #4 Date: 2-8-96

### Toxic Substances and Control Act (TSCA) PCB's Screening Checklist

| | | |
|---|---|---|
| Does this facility potentially contain any PCB's or PCB contaminated equipment? | Y / N | If yes, are transformers labeled (Blue or Yellow stickers)? If yes, conduct the following survey. |

### TSCA Checklist

| Regulatory Guideline | Question | Response | Comments |
|---|---|---|---|
| 40 CFR 761 | Has any waste generated in, or from, this building been characterized either through process knowledge or by analyses to determine if it contains PCB's ?<br><br>If the answer is no, note .<br><br>If the answer is yes, proceed with next section. | Y / N | Blank |
| | Based on an inspection, are any of the materials or equipment potentially PCB contaminated?<br><br>If no, note and stop here,<br><br>If yes, note the location of the management unit, and the method of management, and proceed. | Y / N | |
| 40 CFR 761.65 (c) (5) | Are PCB articles or containers stored in this building checked for leaks at least once every 30 days? | Y / N | |
| | If yes, are auditable records maintained. | Y / N | |
| 40 CFR.30 (a) (1) (ix) | Are any PCB transformers in use, or stored for possible reuse, that contain PCB's at concentrations of 500 ppm or greater? | Y / N | |
| | Are they visually inspected quarterly? If yes, are auditable records maintained? | Y / N | |

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Building Name: 19 Appraisers: Team #4 Date: 2-8-96

TSCA Checklist

| Regulatory Guideline | Question | Response | Comments |
|---|---|---|---|
| 40 CFR 761.30 (a) 1,viii | Are all combustible materials (i.e., paints, solvents, plastics, paper, sawn wood, etc.) cleared from areas containing PCB transformers to a distance of five meters? | Y / N | |
| 40 CFR 761.65 (b) (8) | Are all PCB articles and containers labeled with the date they were placed in storage? | Y / N | Blank |
| | Are labeled PCB articles and containers stored so that the labels can be referenced? | Y / N | |
| 40 CFR 761.65 (a) | Are all PCB's and PCB contaminated items at concentrations above 50 PPM, that are stored for disposal, stored no longer than one year from the date they were placed in storage? | Y / N | |
| 40 CFR 761.62 (b) (1) (i) | Do all PCB storage areas have an adequate roof and walls to prevent rainwater from reaching the stored items? | Y / N | |
| 40 CFR 761.62 (b) (1) (iv) | Are storage are floors curbed and constructed of continuous smooth and impervious materials? | Y / N | |
| 40 CFR 761.62 (b) (1) (i) | Are the curbs at least 6 inches high? | Y / N | |
| 40 CFR 761.62 (b) (1) (iii) | No drains are allowed in storage areas. Are there drains in the storage areas? | Y / N | |

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# Environmental Appraisal Checklist

Building Name: 19 Appraisers: Team #4 Date: 2-8-96

TSCA Checklist

| Regulatory Guideline | Question | Response | Comments |
|---|---|---|---|
| 40 CFR 761.65 (c) (2) | Only non-leaking and undamaged large high voltage PCB's capacitators and PCB-containing electrical equipment are allowed to be stored outside of PCB storage areas, on pallets if stored outside, with containment for 10 percent of the volume of the equipment. Do all PCB's stored in this configuration conform with this requirement? | Y / N | Blank |
| 40 CFR 761.45 and .65 | Are all PCB storage areas marked with a large PCB mark as described in 40 CFR 761.45 (a)? | Y / N | |
| 40 CFR 761.65 (c) (5) | Have all leaking PCB articles and containers been transferred to non-leaking containers? | Y / N | |
| 40 CFR 761.65 (c) (6) | Do all PCB storage containers for the storage of liquid and non-liquid PCB's comply with DOT shipping container specifications? | Y / N | |

**GENERAL COMMENTS:**

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## Environmental Appraisal Checklist

Building Name: 19 Appraisers: Team # 4 Date: 2-8-96

### Low-Level Waste and Transuranic Waste Screening Checklist

| Does this facility contain radioactive waste ? | (Y) N | If yes, conduct the following survey. |
|---|---|---|

### Low-Level Waste and Transuranic Waste Checklist

| Regulatory Guideline | Question | Response | Comments |
|---|---|---|---|
| Low-Level Waste | | | |
| DOE Order 5820.2A Chapter III | Can any waste generated in, or from, this building be characterized either through process knowledge or by analyses to determine if it is LLW ?<br><br>If the answer is no, note.<br><br>If the answer is yes, proceed with next section. | (Y) N | |
| DOE Order 5820.2A Chapter III. | Are any of the materials noted by inspection LLW?<br><br>If no, The audit would stop here, because there are no LLW.<br><br>If yes, note the location of the management unit, and the method of management, and proceed with the section below. | (Y) N | 9 - 55 gallon Drums located against the rear end (west) of the Quonset Bldg. |
| DOE Order 5820.2A Chapter III, 3.a. | Have the storage configurations in use in this area been taken into account for keeping external exposures to the general public below 25 mrem/yr? | (Y) N | |
| | Is the waste stored in a configuration that protects ground-water resources? | Y / (N) | open to the weather no containment |
| DOE Order 5820.2A Chapter III, 3.b. | Has monitoring been conducted in this area in accordance with DOE Order 5820.2A in order to evaluate the area against the performance standard? | Y / (N) | |
| | Based on field data, does the monitoring conducted in this area conform to the performance standard? | Y / N | |

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## Environmental Appraisal Checklist

Building Name: 19 Appraisers: Team # 4 Date: 2-8-96

Low-Level Waste and Transuranic Waste Checklist

| Regulatory Guideline | Question | Response | Comments |
|---|---|---|---|
| DOE Order 5820.2A Chapter III, 3.d. | Based on field data, is the characterization of the materials in this area sufficient to assure proper segregation to assure proper segregation, treatment, storage, and disposal? | Y / (N) | NOT CHARACTERIZED |
| | Based on field data does the characterization as documented at the time of generation of the waste ensure that the actual physical and chemical characteristics, and major radionuclide content of this material are recorded and known at all stages of the waste management process? | Y / N | |
| | Do characterization data include the following: | | |
| | Physical and chemical characteristics of the waste? | Y / N | |
| | Volume of the waste (including solidification and absorbent material)? | Y / N | |
| | Weight of the waste (including solidification and absorbent material)? | Y / N | |
| | Major radionuclides and their concentrations? | Y / N | |
| | Packaging date, package weight, external volume? | Y / N | |
| | How were the concentration of radionuclides determined? Direct methods? | _____ | |
| | How were the concentrations of radionuclides determined? Indirect methods? | _____ | |
| DOE Order 5820.2A Chapter III, 3.h | Is the storage configuration in long term storage sufficient to meet the performance standard? | Y / (N) | |
| | Are records maintained at the facility enabling this waste to be traced from its origin? | (Y) / N | |

Building Name: 19 Appraisers: Team #4 Date: 2-8-96

Low-Level Waste and Transuranic Waste Checklist

| Regulatory Guideline | Question | Response | Comments |
|---|---|---|---|
| **TRU WASTE** | | | |
| | Can any waste generated in, or from this building be characterized either through process knowledge or by analyses to determine if it is TRU waste?<br><br>If no, note and stop.<br><br>If yes, proceed with the next section. | Y / N | NO WASTE GENERATED<br>NO TRU WASTE STORED INSIDE OR OUTSIDE. |
| | Are any of the materials noted as being TRU waste during an inspection?<br><br>If no, note and stop.<br><br>If the answer is yes, note the location of the management unit, and the method of management and proceed with the appropriate section below. | Y / N | |
| DOE Order 5820.2A, Chapter II, 3.a | Was this material evaluated as soon as possible in the generating process, to determine if it is TRU (>100nCi/g), if it is recoverable, or if it is waste?<br><br>(Note if the activity level is less than 100nCi/g, the waste is not TRU, and can be managed as LLW.) | Y / N | |
| | Did the determination of TRU radionuclide concentration include the mass of the container, including shielding? These should be included in calculating the specific activity of the waste. | Y / N | |



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9.43-30

## Environmental Appraisal Checklist

Building Name: 19 Appraisers: Team #4 Date: 2-8-96

Low-Level Waste and Transuranic Waste Checklist

| Regulatory Guideline | Question | Response | Comments |
|---|---|---|---|
| DOE Order 5820.2A, Chapter II, 3.b | Has the TRU waste been assayed or otherwise evaluated to determine its radioactive content prior to storage? | Y / N | |
| | Has the TRU waste been characterized or otherwise evaluated to determine if hazardous waste is present? | Y / N | Blank |
| | Has classified TRU waste been treated to destroy the classified characteristics? | Y / N | |
| DOE Order 5820.2A, Chapter II 3.d | Has all newly generated TRU waste been packaged in non-combustible packaging that meets DOT requirements? | Y / N | |
| | Have all Type A TRU waste packages been equipped with a method to prevent pressure buildup? | Y / N | |
| | Have all TRU packages been marked, labeled and sealed in accordance with 40 CFR 261 Subpart C and 49 CFR 172 Subparts D, E and 49 CFR 173 Subpart I? | Y / N | |

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## Environmental Appraisal Checklist

Building Name: 19 Appraisers: Team #4 Date: 2-8-96

Low-Level Waste and Transuranic Waste Checklist

| Regulatory Guideline | Question | Response | Comments |
|---|---|---|---|
| DOE Order 5820.2A, Chapter II 3.e | Has the TRU waste been segregated in manner that will not permit commingling of TRU waste with LLW or high-level waste? | Y / N | |
| | Has the TRU waste been protected from unauthorized access? | Y / N | Blank |
| | Has the TRU waste been monitored periodically to ensure that it is not releasing its radioactive and/or hazardous constituents? | Y / N | |
| | Has this TRU waste storage area been designed, constructed, maintained, and operated to minimize the possibility of fire, explosion, or accidental release of its radioactive and/or hazardous constituents? | Y / N | |
| | Does the facility have a contingency plan designed to minimize the adverse impacts of fire, explosion, or accidental release of its radioactive and/or hazardous constituents? | Y / N | |

GENERAL COMMENTS:

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9.43-32

## Environmental Appraisal Checklist

Building Name: 19 Appraisers: Team #4 Date: 2-8-96

### Waste Minimization/Pollution Prevention Activities Screening Checklist

| | | |
|---|---|---|
| Does this facility generate waste or use chemicals? | Y / N | If yes, conduct the following survey. |

### Waste Minimiaztion/Pollution Prevention Activities Checklist

| Regulatory Guideline | Question | Response | Comments |
|---|---|---|---|
| | Based on available information and a walk through, are there any apparent opportunities to curtail the consumption of raw materials (including but not limited to paper, chemicals, electricity, and etc.).<br><br>If yes, list candidate areas in the comment section. | Y / N | |
| | Are there solvent wastes? | Y / N | |
| | Is vehicle maintenance performed? | Y / N | |
| | Are oils used ? | Y / N | |
| | Are these corrosive wastes? | Y / N | |
| | Are there sludges? | Y / N | Blank |
| | Are there halogenated organic (nonsolvent) wastes? | Y / N | |
| | Are metals recovered from wastewater? | Y / N | |
| | Is waste sludge generated? | Y / N | |
| | Are any waste minimization practices used that reduce the generation of sludge? | Y / N | |
| | Ion exchange process? | Y / N | |
| | Lead in gasoline lowered to reduce tank sludge toxicity? | Y / N | |
| | Storage tank agitators installed? | Y / N | |
| | Corrosive resistant materials used? | Y / N | |
| | Prevention of crude oil oxidation ? | Y / N | |
| | Drying? | Y / N | |

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## Environmental Appraisal Checklist

Building Name: 19 Appraisers: Team #4 Date: 2-8-96

Waste Minimization/Pollution Prevention Activities Checklist

| Regulatory Guideline | Question | Response | Comments |
|---|---|---|---|
| HALOGENATED ORGANIC (NONSOLVENT) WASTES | | | |
| | Are halogenated organic wastes used as fuel in cement kilns? | Y / N | |
| | Are baghouse filters used to collect pesticides and pesticide intermediates? | Y / N | |
| | Are solid wastes generated from the collection of baghouse dust? | Y / N | |
| | Wet instead of dry grinding used? | Y / N | Blank |
| | The output spray dried? | Y / N | |
| | Has baghouse emptying and recycling of baghouse fines been scheduled? | Y / N | |
| | Have operations been evaluated to improve procedures such as handling, storage and spill prevention for increased efficiency? | Y / N | |
| METAL WASTES | | | |
| | Are any technologies for the recovering of metals from waste rinsewater used? | Y / N | |
| | Evaporation of waste rinsewater? | Y / N | |
| | Reverse osmosis? | Y / N | |
| | Ion exchange? | Y / N | |
| | Electrolysis? | Y / N | |
| | Agglomeration? | Y / N | |
| CORROSIVE WASTES | | | |
| | Are acidic or basic cleaning solutions used as treatment for pH adjustment chemicals? | Y / N | |

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9-43-34

## Environmental Appraisal Checklist

Building Name: 19 Appraisers: Team #4 Date: 2-8-96

Waste Minimization/Pollution Prevention Activities Checklist

| Regulatory Guideline | Question | Response | Comments |
|---|---|---|---|
| | Are ion exchange resins used to remove heavy metals and cyanides from acid and base solutions? | Y / N | |
| | Is crystallization used to remove corrosives from solution by cooling? | Y / N | |
| | Is the process of evaporation of liquid wastes by heating used to leave behind a more concentrated solution? | Y / N | |
| CYANIDE AND REACTIVE WASTES | | | |
| | Has non-cyanide or low concentration of cyanide process replaced zinc cyanide bath ? | Y / N | |
| | Are any of these processes used to recycle cyanide wastes? | Y / N | |
| | Refrigeration/crystallization? | Y / N | |
| | Evaporation? | Y / N | |
| | Ion exchange? | Y / N | |
| | Membrane separation which includes reverse osmosis or electrodialysis? | Y / N | |
| VEHICLE MAINTENANCE | | | |
| | How are auto parts cleaned? | Y / N | |
| | Solvent sink? | Y / N | |
| | Solvent dunk bucket? | Y / N | |
| | Solvent dip tank? | Y / N | |
| | Are parts cleaning solvents used for anything else besides cleaning parts? | Y / N | |
| | Are spills reduced by locating sinks or dunk buckets near auto service bays? | Y / N | |

Blank

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## Environmental Appraisal Checklist

Building Name: 19 Appraisers: Team #4 Date: 2-8-96

Waste Minimization/Pollution Prevention Activities Checklist

| Regulatory Guideline | Question | Response | Comments |
|---|---|---|---|
| | Are cleaned parts drained on the sink to minimize solvent spills? | Y / N | |
| | Are drip tanks used to capture losses? | Y / N | |
| | Is a solvent sink used for mineral solvents rather than a dunk bucket or dip tank? | Y / N | |
| | Does a waste hauler collect solvent waste for recycling or treatment? | Y / N | Blank |
| OILS | | | |
| | What kind of oils are used? | | |
| | Hydraulic oil? | Y / N | |
| | Transformer oil? | Y / N | |
| | Metal working fluids? | Y / N | |
| | Spent lubricating oils? | Y / N | |
| | Can the process be modified or changed to use water-based fluids? | Y / N | |
| | Are these good housekeeping and operation practices used to minimize oil waste production? | | |
| | Use oils not contaminated with other liquids? | Y / N | |
| | Oil spills prevented? | Y / N | |
| | Drip pans installed? | Y / N | |
| | Oil soaked rags laundered? | Y / N | |
| | Rags and absorbants used to their limit? | Y / N | |

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## Environmental Appraisal Checklist

Building Name: 19 Appraisers: Team #4 Date: 2-8-96

Waste Minimization/Pollution Prevention Activities Checklist

| Regulatory Guideline | Question | Response | Comments |
|---|---|---|---|
| | Are these treatment techniques used to promote separation of oil/water wastes? | | |
| | Reclaiming process to remove water and solvents by heat? | Y / N | |
| | Gravity setting? | Y / N | |
| | Screening? | Y / N | |
| | Centrifugation? | Y / N | |
| | Filtration? | Y / N | |
| SOLVENT WASTES | | | |
| | Has there been an attempt to reduce volume or toxicity by: | | |
| | Eliminating solvents? | Y / N | |
| | Reducing the use of solvents? | Y / N | |
| | Reducing the loss of solvents? | Y / N | |
| | Increasing recyclability? | Y / N | |
| | Are solvents segregated? | Y / N | |
| | Are waste solvents free from water and garbage? | Y / N | |
| | Are recycled solvent containers labeled as such? | Y / N | |
| | Are containers kept closed? | Y / N | |
| | Free and sheltered from the elements? | Y / N | |
| | Are solvent tanks kept as free from contaminations as possible so that the waste can be recycled? | Y / N | |
| | Is a method used to minimize the use of new materials such as a countercurrent process? | Y / N | |

Blank

## Environmental Appraisal Checklist

Building Name: 19 Appraisers: Team #4 Date: 2-8-96

Waste Minimization/Pollution Prevention Activities Checklist

| Regulatory Guideline | Question | Response | Comments |
|---|---|---|---|
| | If there is a recycling program, what technique is used? | Y / N | |
| | Distillation? | Y / N | |
| | Solids removal? | Y / N | |
| | Dispersion breaking? | Y / N | Blank |
| | Dissolved and emulsified organics recovery? | Y / N | |
| | Are any of these housekeeping procedures used to minimize the production of solvent wastes? | | |
| | Separators cleaned and checked? | Y / N | |
| | Parts not allowed to enter the degreaser while wet? | Y / N | |
| | Sludge from the bottom of the tank not allowed to accumulate? | Y / N | |
| | Lids kept on tanks? | Y / N | |
| | Freeboard space on tanks increased? | Y / N | |
| | Are better operating practices used to reduce waste? | Y / N | |
| | How long is solvent waste stored and where? | _____ _____ | |

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# Building Manager's Questionnaire

Building Name: 19 Building Manager: R.A. Ward Phone: 3821 Date: 12-07-95
Alternate: K. KOEHLER Phone: 4886

1. What are the access requirements ( training, clearance, etc.)?

NONE

2. What protective equipment is required to enter the building?

NONE

3. Are there any restricted areas? Yes (No)
Where are they?

4. Provide a physical description of the building.

Building is a one-story, metal Quonset hut with an area of 4,480 $ft^2$. It contains an office mezzanine. There is forced-air heating (propane) and a window air conditioner. Building is not contaminated with any radioactive or energetic materials.

Source: Mound Facility Physical Characterization, 12-1-93

5. Provide a drawing of the building.

Attached (mezzanine only).

6. What is the current building use?

Building warehouse and one office.

Source: Mound Building, 5-9-95

7. What is the history of building use other than that described in #6?

USED BY CERLA - STORAGE FOR PLASTIC DRUMS & ~~LOW LEVEL~~ SAMPLE WAS.
WESTON IS USING THE BUILDING FOR OFFICES & LAB AREA

Source: Mound Buildings, 5-9-95

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9.43-41

Building Name: 19 Building Manager: R.A. Ward Phone: _____ Date: 12-07-95
Alternate: _____ Phone: _____

8. What are ongoing operations or processes? What are the raw materials and waste streams from each process? Who is the best contact for each process?

Process(es) Housed: ~~Salvage and sales~~ STORAGE & OFFICE SPACE FOR WASTE MANAGEMENT PERSONNEL, CERLA, & WESTON COMPANY
How Wastes Are Generated:

No wastes generated.

Contact:
Phone #

Source: Characterization of Mound's Hazardous, Radioactive, and Mixed Wastes, (8-15-90).

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9.43-42

# Building Manager's Questionnaire

Building Name: 19 Building Manager: R.A. Ward Phone: _____ Date: 12-07-95
Alternate: _____ Phone: _____

9. In the last six months, have any modifications been made to the building or to processes in the building? Yes No

10. Does the building have air emission sources? No

| Process Source | Room Number | Hood Number | Active | Chemicals Used | Quantity Used | Quantity to Waste Management | Lbs./Yr. Operation | Air Emissions |
|---|---|---|---|---|---|---|---|---|
| | | | Y / N | | | | | |
| | | | Y / N | | | | | |
| | | | Y / N | | | | | |
| | | | Y / N | | | | | |
| | | | Y / N | | | | | |

Source: Mound Air Emissions Database 11/30/95

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9.43-43

# Building Manager's Questionnaire

Building Name: 19 Building Manager: R.A. Ward Phone: _____ Date: 12-07-95
Alternate: _____ Phone: _____

11. Describe air pollution control equipment used to reduce emissions for each source. None Listed

| Process Source | Emissions | Control Equipment | Functioning |
|---|---|---|---|
| | | | Y / N |
| | | | Y / N |
| | | | Y / N |
| | | | Y / N |
| | | | Y / N |

Source: Air Permits 2/4/95.

12. For existing permits are emissions monitored? At what frequency? Where are the records maintained?

| Process Source | Permit | Log | Permit Conditions & Frequency of Monitoring |
|---|---|---|---|
| | | Y / N | |
| | | Y / N | |
| | | Y / N | |
| | | Y / N | |
| | | Y / N | |

Source: Air Permits 2/4/95

13. Does the building have domestic water? Yes No
Is there bottled water? Yes No

14. Does the building discharge to the storm sewer? Yes No
Where? ?

no floor drains
no water

15. Does the building discharge to the sanitary sewer? Yes No
Where?

16. Has an asbestos survey been conducted? Yes
What are the results? Suspected none observed

Source: Technical Manual MD-10391, Issue 3 Asbestos Program Manual 9/6/95

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9 43-44

Building Name: 19 Building Manager: R.A. Ward Phone: _____ Date: 12-07-95
Alternate: _____ Phone: _____

17. Does the building contain transformers or capacitors? No

Source: PCB ANNUAL DOCUMENT LOG

18. Has the building been identified as containing PCBs? No

Source: PCB ANNUAL DOCUMENT LOG

19. What chemicals are used or stored inside or outside of the building? Include compressed gasses not in large tanks.

| Chemical Name | State | Amount (MAX) |
|---|---|---|
| NONE | | |
| | | |
| | | |
| | | |
| | | |

Source: Chemical Inventory 1994

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9.43-45

# Building Manager's Questionnaire

Building Name: 19 Building Manager: R.A. Ward Phone: _____ Date: 12-07-95
Alternate: _____ Phone: _____

20. Has there been a reported spill, leak, or other release of any chemical? Yes (No)
What, how much, and what clean-up measures were followed?

| Chemical | Amount | Clean-up Measures |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |

Source: _____

21. Where do waste chemicals go?

NONE

22. What janitorial supplies are stored inside or outside of the building?

STORAGE CABINET OUTSIDE

23. Where do excess janitorial supplies go?

BLDG #72

Source: _____

24. Are pesticides or herbicides stored or used in or around the building? Yes No

| Chemical | Amount | Chemical | Amount |
|---|---|---|---|
| | | | |
| | | | |
| | | | |

Source: _____

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9.43-46

# Building Manager's Questionnaire

Building Name: 19 Building Manager: R.A. Ward Phone: _____ Date: 12-07-95
Alternate: _____ Phone: _____

25. Does the building contain active or inactive above ground storage tanks? Yes No
For each tank, list the content, quantity, last inspection, registration number.

NONE propane tank

26. Is there a sump or pit or underground tank in or around the building?
Yes No Unknown
Is it double-walled? What does it contain? How many days per year is it filled?
Is there an emergency overflow tank? Have there been previous overflows?

| Double-Walled | Contents | Days/Year in Use | Overflow Tank | Previous Overflow |
|---|---|---|---|---|
| Y / N | | | Y / N | Y / N |

Source: _____

27. Does the building generate, store, or dispose of hazardous waste? Yes No

| Materials | Amount |
|---|---|
| Antimony Powder | 15.4 |
| Antimony, Berrlium Powder Mixture | 3.3 |
| Berrylium Pellets | 10.9 |
| Berrylium Powder | 6.5 |
| Berrylium Rods | 45.9 |
| Berrylium Rods | 99.3 |
| Bismuth Chunk | 23.1 |
| Boron Powder | 2.2 |
| Bransonic Ultrasonic Cleaner | 6.7 |
| Calcium Sulfate | 22.9 |
| Eppert Oil Dissolver 200 | 119.7 |
| Henry Latex Liquid Additive | 12.5 |
| Mercury Instruments | 12.8 |
| PL500 Adhesive | 9.1 |
| Spartan SC-200 | 9.2 |
| SYN-Cide NR | 26.1 |
| Tantalum Wire | 2.4 |
| Zip Cleaner | 79.2 |
| Mercury Thermometer | 0.1 |

Source: Characterization of Mounds Hazardous, Radicactive, and Mixed Wastes 08/15/90

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# Building Manager's Questionnaire

Building Name: 19 Building Manager: R.A. Ward Phone: _____ Date: 12-07-95
Alternate: _____ Phone: _____

28. Does the building have abandoned process equipment such as tanks, piping, containers, etc.? Yes (No)

29. Is waste material stored in or around the building for more than 90 days?
(Yes) No

30. Has the building been identified as a 90 day waste accumulation area?
(Yes) No

31. Has any area in the building been identified as a satellite accumulation area? (Yes) No

32. Is mixed waste generated, stored, or disposed of from the building? Yes No
Where are logs found?

| Process | Waste | Stored | Disposed | Logs |
|---|---|---|---|---|
| | | Y / N | Y / N | Y / N |
| | | Y / N | Y / N | Y / N |
| | | Y / N | Y / N | Y / N |
| | | Y / N | Y / N | Y / N |
| | | Y / N | Y / N | Y / N |

Source: _____

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9.43-48

# Building Manager's Questionnaire

Building Name: 19 Building Manager: R.A. Ward Phone: _____ Date: 12-07-95
Alternate: _____ Phone: _____

33. Is TRU radioactive waste generated, stored, or disposed of from the building?
Yes No
Where are logs found?

| Process | Waste | Stored | Disposed | Logs |
|---|---|---|---|---|
| | | Y / N | Y / N | Y / N |
| | | Y / N | Y / N | Y / N |
| | | Y / N | Y / N | Y / N |
| | | Y / N | Y / N | Y / N |
| | | Y / N | Y / N | Y / N |

Source: _____

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9.43-49

# Building Manager's Questionnaire

Building Name: 19 Building Manager: R.A. Ward Phone: _____ Date: 12-07-95
Alternate: _____ Phone: _____

34. Is low-level radioactive waste generated, stored, or disposed of from the building? (Yes) No
Where are logs found?

| Process | Waste | Stored | Disposed | Logs |
|---|---|---|---|---|
| | | Y / N | Y / N | Y / N |
| | | Y / N | Y / N | Y / N |
| | | Y / N | Y / N | Y / N |
| | | Y / N | Y / N | Y / N |
| | | Y / N | Y / N | Y / N |

Source: _____

35. Identify all administrative orders, temporary or permanent injunctions, civil administrative penalties, or criminal activities issued against the building.

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Building Name: 19 Building Manager: R.A. Ward Phone: _____ Date: 12-07-95
Alternate: _____ Phone: _____

36. Is there a waste minimization program in the building? Yes (No)
Discuss your ideas about how to minimize waste.

37. Has a pollution prevention program been developed for the building? Yes (No)

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9.43-51

# Appendix G

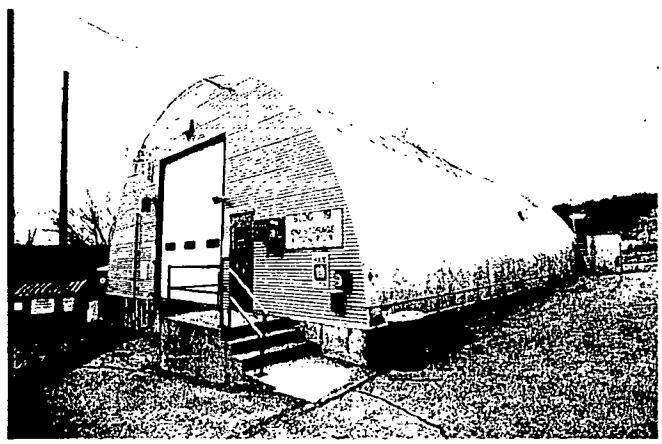
## Radiological Information

# Predemolition Survey Plan

## For

# Building 19

Revision 2



| | | | |
|---|---|---|---|
| Prepared by: | Roderick C. Case | Date: | 2/27/03 |
| Reviewed by: | Galen Tomlinson | Date: | 2/27/03 |
| Approved by: | Danny Riley | Date: | 2/27/03 |

## 1.0 Historical Overview

Building 19 is a prefabricated "classic" Quonset hut-type building as noted in most Mound literature and was constructed in the early 1960s. During Building 19's close to 60-years of existence, it has been located at three different sites, and has also served or has housed a variety of functions, including processing related activities, as well as administrative functions such as storage or materials management and offices. As indicated by 1960s design drawings, Building 19 was actually relocated to its current location from its original location at the Mound site in the plant valley near Buildings 2 and 3. That location was not the first time this building had been used for AEC activities. Prior to the building being located at the Mound site, Building 19, named the "Quonset Hut" or "Building L", was located at the Manhattan Project site called "Dayton Unit III" (1946 to 1949). Dayton Unit III, a precursor site to the Mound site, was located at First and Euclid in the vicinity of downtown Dayton, Ohio.

Building 19, at the time it was erected at its current location was approximately 3,200 $ft^2$. The construction of a mezzanine in the mid-1960s added approximately 1,500 $ft^2$ in floor space. A second addition in the later 1960's added an approximately 32 $ft^2$ "valve room" at the northeastern corner of the building.

In its original location at Dayton III, the majority of the building was designated as laboratories. While the specific processes are unknown it is presumed that polonium (Po210) was the focus of much of the work. It is noted that the Quonset Hut itself was too contaminated to be released when the Dayton III facility was closed. The building materials were sent to Mound where it was reassembled at its second location.

At this location the Quonset Hut was used to store drums of radioactive wastes from several Mound missions including SW-1B evaporator feedstock material, HH bismuth-chloride sludge, Purex waste, and thorium waste. A listing of the various nuclides potentially found in these wastes is contained in Reference 7 and Attachment 2. At one time, approximately 600 drums of radioactive waste were stored in this facility. According to Reference 1, this material was later shipped off site and at some point (~1963) the structure was dismantled and reassembled at its present location.

Building 19 at its current location was used as a storage facility for various items and supplies. Until recently, it was utilized as a central location to disposition excess items and equipment. There is evidence that drums of LSA material were stored inside and outside Building 19 and some of these may have been leaking.

No radiological data was discovered to indicate any decontamination was ever performed, however reference is made to potential contamination being present but "sealed in such a way that an uptake would be unlikely". A complete history of Building 19 can be found in Reference 1.

## 1.1 Current Status

Characterization surveys performed in 2002 indicate that building operations have impacted the building floor. Up to 4000 dpm/100cm2 alpha contamination was found on the floors and isotopic analysis shows the major contaminant is Pu238.

These areas will be remediated to levels below the $DCGL_w$ prior to performing the Final Status Survey.
It was discovered that many of the wall panels were marked with a date of manufacture (1962) that is later than the date of the original building material. It is not known if all the panels were replaced or if the building structural frames were ever replaced. Direct surveys of the walls of the structure also indicated increased levels from 101 dpm/100cm$^2$ to 197 dpm/100cm$^2$. Samples were taken from the walls in three places for isotopic analysis. The analysis indicated the presence of Po-210. Since this polonium may be from either naturally occurring polonium, which is often found on rusted surfaces, or from the decay of the residual Pb-210 from early process operations, additional samples will be taken and analyzed for Po-210 and Pb-210. If the Pb-210 and the Po-210 are in equilibrium, the probable source is the process operations.

Samples and surveys of walls did not indicate the presence of radioactive material other than Po-210, but it is believed that residual material could be present in inaccessible areas. This survey plan will evaluate these areas.

## 2.0 Data Quality Objectives

The Data Quality Objectives (DQO) process is a series of planning steps that have been defined by the EPA (USEPA, 1998) to ensure that the type, quantity, and quality of survey data used in decision making are appropriate for the intended application. The DQO's for this survey plan are derived from Mound procedures and consistent with the Mound 2000 Approach for building disposition (Reference 2).

### 2.1 Problem Statement

Building 19 is scheduled for demolition in accordance with the Miamisburg Closure Project. The radiological status of all building surfaces must be determined to facilitate a free release of the structure consistent with project goals and site procedures. The impact of site operations on this building cannot be completely determined from available information. A thorough characterization study of the radiological condition of this building will direct the appropriate decisions of its final status.

### 2.2 Decision Statement

The purpose of this survey plan is to determine whether or not the residual radioactivity of the surfaces of building materials associated with Building 19 satisfy the site release criteria by hypothesis testing. The null hypothesis is stated as:

> $N_0$ = The residual radioactivity on the survey unit surfaces does not meet the release criteria.

The alternate hypothesis is:

> $N_a$ = The residual radioactivity on the survey unit surfaces does meet the release criteria.

If all the measurements are below the $DCGL_w$, the null hypothesis is rejected in favor of the alternate and the survey unit passes. Any measurement from the survey unit will be considered elevated if it exceeds the $DCGL_w$. However, the elevated

measurement alone does not indicate that the survey unit fails to meet the release criterion, only that further investigation will be necessary to determine the extent and concentration of the elevated area.

This survey plan will provide the necessary data to make this decision.

### 2.3 Inputs to the Decision

The Historical Site Assessment and current survey data are initial inputs to determine area classifications. Gross surface activity measurements for alpha and beta activity will be performed. Removable alpha, beta, and tritium activity will be counted. Sediments will be analyzed for radioisotopes and compared to site screening values.

The instrumentation selected for this survey plan will be appropriate for the radionuclides typical for the Mound site.

Surface scanning will be performed to locate anomalies that might indicate elevated areas of residual activity and that require further investigation or remedial action. A floor scan for alpha contamination will be performed using a Ludlum 2350/43-37 Floor Probe at a scan speed of 1 inch per second, with the probe located within 1/4 inch to the surface being scanned without touching it. The MDA is 85dpm/100 $cm^2$ with 95% detection probability, at a background level equal to or less than 10 cpm. A 30 second integrated count will be performed at locations where elevated measurements are observed. The MDA in the integrated mode is 49dpm/100 $cm^2$ or 286 dpm/probe.

Direct measurements of the floor surface will be made at fixed locations using a Ludlum 2350/43-20 scintillation probe (or equivalent) for alpha contamination. The integrated count time is one minute. The MDA is 45 dpm/100$cm^2$ ($\alpha$) at a background of less than 3 cpm. Integrated beta measurements will be made at the same locations in accordance with MD-80036, Issue 29, Op. No. 30030, *Operation of the Ludlum 2360 Scaler/Ratemeter with Ludlum 43-89 Alpha/Beta Scintillator*, Section 6.3.

The shell of this building is constructed of corrugated steel and a portion of the surface is greater than ¼" from the probe as required by procedure. To correct for this condition, the area within ¼" was calculated as being 124 cm2. The effective area of the probe is then reduced from the full window of 181cm2 to 124cm2 based on these measurements. This correction will be applied to the conversion calculation from the measured counts per minute to dpm/100cm2. While it can be shown that an alpha particle in the energy range of 5.5 MEV (Pu238) will travel ½" in air, the detector efficiency is reduced and it is more conservative to correct the measurement accordingly.

The presence of loose surface activity, including $H^3$ will be determined using coin smears. An area of 100$cm^2$ will be smeared at each data point. Smears will be counted in an alpha/beta counter. A liquid scintillation counter (LSC) will measure removable tritium. Smear samples with gross activity above the $DCGL_w$ will be analyzed by alpha or gamma spectroscopy.

All field and laboratory instrumentation will be specified on the Survey Plan Form and shall be operated in accordance with the appropriate Mound procedures.

All surveys and samples collected for this survey plan will be performed in accordance with the Quality Control requirements of Reference 3. Replicate surveys, sample recounts, instrument performance checks, chain of custody for samples, control of field survey data and databases, and QC investigations provide the highest level of confidence in the data collected to support the survey outcome. The Survey Plan Form (SPF) will specify the QC requirements for this survey.

**2.4 Study Boundaries**

Defining the study boundaries helps ensure the data taken during the final status survey are representative of the survey unit. The area under consideration is the physical surfaces inside and outside of the Building 19 structure. Subsurface material (under-slab, footers, etc) and associated soil is not evaluated in this survey, but will be assessed at a later date as part of a larger soil remediation effort.

Because of its history and current survey data, the main floor is classified as a Class 1 area. Interior walls up to 2 meters are classified as a Class 2 area. Since the mezzanine area floor is constructed of plywood, this area will be dismantled and removed prior to performing the FSS. The remainder of Building 19 is classified as Class 3 areas. Statistical methods will be used to define the number and location of survey data points and the extent of surveys performed in accordance with Reference 5.

Sampling of building materials will include removable loose surface contamination (smears) and sediment sampling of floor drains and ventilation units. Building surfaces obscured by paint or other coverings will be randomly (~10%) sampled by intrusive methods to validate isotopic assumptions. Smears (100cm2) will be collected at survey data point locations. Any areas of elevated activity above the $DCGL_w$ will be evaluated for isotopic content by intrusive sampling or insitu analysis.

Measuring residual radioactivity involves delineating discrete survey units, identifying the nature and number of measurements, and selecting measurement techniques. Survey data points will be placed in each survey unit to satisfy the statistic. Professional judgment surveys will be performed to supplement the random survey data, but will not be combined with the statistical data. Judgmental survey data will be compared directly to the release criteria.

The following table shows the classification of survey units:

| Survey Unit Room Designation | Area ($ft^2$) | Number of Survey Units | Survey Unit Classification | # Data Points/ Survey Unit | % Surface Scan |
|---|---|---|---|---|---|
| Floor | 3200 | 3 | 1 | 20 | 100 |
| Walls to 6' | 1440 | 1 | 2 | 20 | 50 |
| Walls above 6' and ceiling | 4840 | 1 | 3 | 20 | 10 |
| Exterior | 6280 | 1 | 3 | 20 | 10 |

The number of data points is determined by calculating the relative shift ($\Delta/\sigma$) from the DCGL value, the lower bound of the gray region (LBGR), and the standard

deviation of the contaminant in the survey unit ($\Delta/\sigma$ = DCGL-LBGR/$\sigma$). The standard deviation is estimated to be 17dpm/100cm$^2$ based on characterization surveys performed in the building. The LBGR is set at one-half the release limit. The relative shift is calculated as 2.95. The decision error percentiles are obtained from Table 5.2 and the number of data points (n) is calculated using Equation 5-2, Reference 5.

For survey planning, the number of data points ($n$ = 20) in the survey unit was obtained from Table 5.5, Reference 5. The minimum number of samples required to meet the DQO's for this survey plan will be calculated retrospectively based on the actual $\sigma$ in the survey unit. A calculated $n \leq 20$ indicates that sufficient power (probability) exists in the survey plan to demonstrate compliance.

In Class 1 and 2 survey units, the starting point is randomly selected and data points are located within the survey unit using the triangular grid method. The spacing of data points is determined by:

$$L = \sqrt{\frac{A}{0.866n}}$$

Where: A = Survey unit area
n = # of data points

In Class 3 areas, the location of each data point is determined by multiplying the east-west (Y) and the north-south (X) dimensions of each survey unit by a randomly generated number for each dimension. For consistency, the northwest corner of each survey unit will be the origin. A calculator, computer, or tables may be used to determine random numbers. If additional surveys are required due to area reclassification or remediation, the survey design parameters will be specified as necessary in accordance with Reference 5 and incorporated into the Final Status Report.

### 2.5 The Decision Rule

A decision rule relates the concentration of residual radioactivity in the survey unit to the release criterion so that decisions can be made based on the results of the final status survey. Reference 6, DOE Order 5400.5, Radiation Protection of the Public and the Environment, offers generic release criteria for building surfaces. Table 1 lists these permissible surface contamination guidelines which were adapted from NRC Regulatory Guide 1.86. Tritium at the Mound facility is an exception. For tritium, 10,000 dpm/100cm$^2$ was selected based on technical information presented in Reference 4. For purposes of this survey, these limits are considered to be the DCGL's for building and structure release.

**Table 1**

| Allowable Total Residual Surface Contamination (dpm/100cm$^2$)* | | | | |
|---|---|---|---|---|
| **Radionuclides*** | | **Average*** | **Maximum*** | **Removable*** |
| **Group 1** | Transuranics, I-125, I129, Ra-226, Ac-227, Ra-228, Th-228, Th-230, Pa-231 | **100** | **300** | **20** |
| **Group 2** | Th-Natural, Sr-90, I-126, I-131, I-133, Ra-223, Ra-224, U-232, Th-232 | **1,000** | **3,000** | **200** |
| **Group 3** | U-Natural, U-235, U-238 and associated decay products, alpha emitters | **5,000** | **15,000** | **1,000** |
| **Group 4** | Beta-gamma emitters (Radionuclides with decay modes other than alpha emission or spontaneous fission) except for Sr-90 and others noted above | **5,000** | **15,000** | **1,000** |
| **Tritium** | | **N/A** | **N/A** | **10,000** |

* Note: Refer to DOE Order 5400.5, Radiation Protection of the Public and the Environment, for specific information on surface contamination guidelines and additional notes.

The average activity levels shown in Table 1 assumes that the residual contamination is uniformly distributed across the survey unit and are designated $DCGL_W$ in this plan. Biased measurements will be taken and compared directly to the release criteria to support the statistical data. The maximum activity shown in Table 1 represents the $DCGL_{EMC}$. Isotopic analysis of samples collected at random locations will be made to ensure the appropriate values in Table 1 are used. If the average of the measurements is above the $DCGL_W$, the survey unit will not meet the release criterion. If the average surface activity within each survey unit is below the $DCGL_W$ and the maximum activity is less than the $DCGL_W$, then it will be accepted as the Final Status Survey and no further survey action is required. If the average of the residual activity in the survey unit is less than the $DCGL_W$, but some areas are greater than the $DCGL_W$, the Sign test will be used to determine if the release criteria have been met. Each measured value, when subtracted from the DCGL, will yield a positive or negative number. If the sum of the positive signs (S+) is greater than the Critical Value (Table I.3, Reference 5), then the null hypothesis is rejected and survey unit passes. The power of the Sign test is given in Reference 5, I.9.1. A prospective power curve constructed using MARSSIM Power 2000 software demonstrates sufficient power exists at the LBGR to detect residual contamination (Attachment 1). A retrospective power curve will be constructed if the Sign test is used to demonstrate compliance with the release criteria.

The decision rule for the elevated measurement comparison will be a two-stage process. In the first stage, areas will be flagged as potentially elevated if the direct measurement or scanning measurement indicates concentrations above the $DCGL_W$. If the flagged area is greater than the $DCGL_{EMC}$, the area will require remediation. Areas that are remediated will be reclassified as Class 1 areas and resurveyed in accordance with Reference 5.

**2.6 The Limits on Decision Errors**

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A Type I error is made when the null hypotheses, $H_0$, is rejected when it is true. A Type II error is made when the null hypotheses is not rejected when it is false. The error rates are expressed as the probability that a survey unit passes when it should fail ($\alpha$) or fails when it should pass ($\beta$). Because the measurement variability is expected to be small at the DCGL, the $\alpha$ =0.05 and $\beta$ = 0.01 for this survey.

The concentration range between the Lower Bound of the Gray Region (LBGR) and the DCGL defines the gray region of residual radioactivity concentration in which the consequences of Type II decision errors are relatively minor. The statistical test uses the LBGR to define the level that, above which, false positive rates greater than that specified by the limits on decision errors are accepted. The LBGR is limited by the variability exhibited by the measurements and the decision errors chosen. Because the detection limits expected by the direct field measurements are low relative to the $DCGL_w$, it is estimated that an LBGR equal to one-half of the $DCGL_w$ can be achieved.

## 2.7 Optimizing the Design

The DQO process is neither static nor sequential. As new information is gathered it will be incorporated into the planning process. In order to facilitate this process, a Survey Plan Form (SPF) is developed for field use, to direct the specific details required by the overall survey plan. The SPF will specify the types of samples to be collected and the precise locations and analysis to be performed. It will define the specific instruments to be used for the survey and the exact location and type of surveys required. The SPF will specify the Quality Control (QC) requirements of the survey as required by Reference 3. Additional information and comments can be added to clarify or enhance the survey/sample process. The SPF is reviewed and approved prior to beginning the survey and is subsequently reviewed and approved after all data is collected to ensure completeness and accuracy. Data from initial survey efforts may result in altering area classifications. Additional SPF's may be required to complete the final status survey process for a survey unit.

Data reduction and analysis will result in graphical and numeric interpretation and lead to the acceptance or rejection of the hypotheses. A review of the DQO's will ensure that data have appropriately and adequately addressed the stated objectives, or require further investigation. If all of the survey data supports the rejection of the null hypothesis, then no further survey data will be necessary.

It is critical to the DQO process that the survey units are isolated from the potential for recontamination or disturbances that could lead to invalidating the survey results. Access shall be restricted to all areas where surveys have been completed until such time as the survey unit is released.

## 2.8 Final Status Survey Report

When all of the DQO's are satisfied, a report of the final status of the building is prepared and submitted for review. This report called a Final Status Survey (FSS) will summarize and document the MARSSIM survey and the final status of the building. The FSS report will be transmitted to the Mound 2000 Core Team for review and approval prior to proceeding with building demolition.

## 3.0 References


1. BWXTO, EC&AS Department, White Paper: *Building 19 Structural History and Process History Summary Background Document*, October 2002
2. Work Plan, *Mound 2000 Approach*, DOE/MEMP, 1995
3. MARSSIM Implementing Procedures, *Field Quality Control for Building Contamination Surveys*, MD-80046, Op 402
4. DOE, 1991, *Recommended Tritium Surface Contamination Release Guides,* DOE, EH, 0201T, March, 1991; Mound Tritium Committee, Appendix A, Health-Based Risk Assessment for Unconditional Release of Items Contaminated with Tritium
5. NUREG 1575, Rev 1, Aug 2000, *Multi-Agency Radiation Survey and Site Investigation Manual*, (MARSSIM)
6. DOE Order 5400.5, *Radiation Protection of the Public and the Environment*
7. MD-22153, Issue 3,*Mound Site Radionuclides by Location*, Section 1, 1.2.4, 5.2.5


## 4.0 Attachments

1. Sign Test Power Curve
2. MD-22153, Sections 1.2.4,5.2.5



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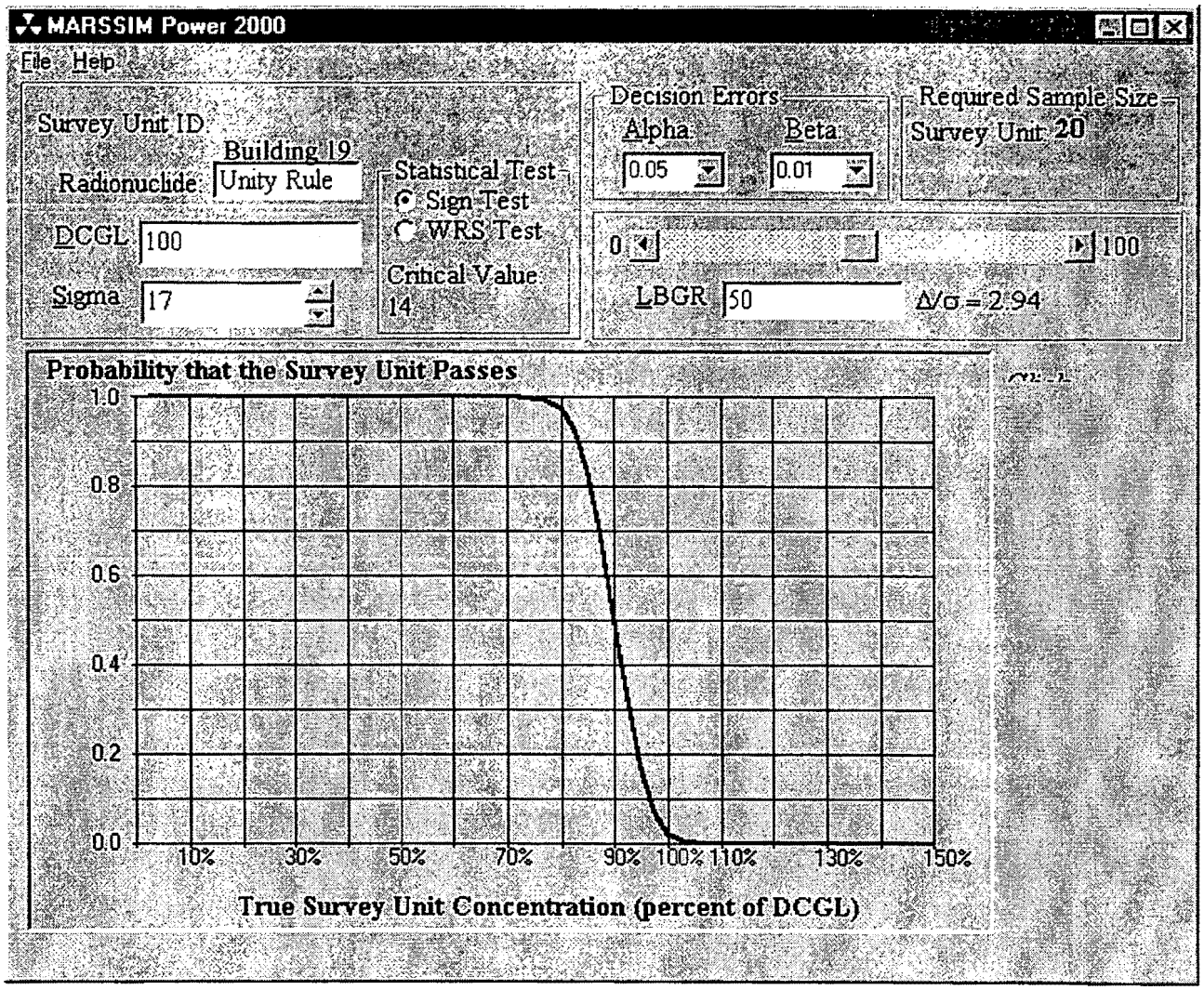


MARSSIM Power 2000 software developed by Dr. Carl Gogolak, DOE/EML is provided on the Health Physics Society Decommissioning website (http://www.serversolutions.com/decomm_sec/index.htm ) and endorsed by the Oak Ridge Institute for Science and Education (ORISE).

ATTACHMENT 2



## 1. HH BUILDING (Continued)

### 1.2 Radionuclides Associated With Specific Rooms (Continued)

1.2.4 Room HH-8

This room had two functions:

[1] (1949 - 1958) Hydrolysis for Po-210 Program - Radioactive aluminum chloride and bismuth chloride waste were received from the processing of the aluminum cans and bismuth in T-Building. Hydrolysis of these compounds produced a gelatinous bismuth oxychloride sludge which was stored in a quonset hut for possible recovery of the bismuth and re-irradiation at Hanford. The bismuth sludge was shipped off site in April of 1954. The aluminum sludge was solidified and shipped off site as it was produced. [48 49]

[a] The sludge possessed high levels of radioactivity at 0.02 Ci/L of alpha, 0.002 Ci/L of beta, and 100 mrem of gamma at a distance of 1.0 foot. Radioisotopes of concern and their compounds are: [50 51 52]

| | |
|---|---|
| **iron-55,59** | **silicon-31** |
| **cobalt-60** | **lead-209** |
| **tin-121** | **zinc-65** |
| **chromium-55** | **vanadium-52** |
| **gallium-70,72** | **cesium-137** |
| **strontium-90** | **selenium-75** |
| **bismuth-210** | **silver-112** |
| **antimony-124** | **tellurium-121-->134?** |
| **mercury-203** | **polonium-208,209,210** |
| **silver polonide** | **tellurium polonide** |
| **polonium chloride** | **polonium nitrate** |

1. Polonium-210 is the major radionuclide of concern with zinc-65 being the second. All others are a distant third.[53]

ATTACHMENT 2



5. SW BUILDING (Continued)

5.2 Radionuclides Associated With Specific Programs In SW Building (Continued)

5.2.4 Room SW-10

(1967 - 1972) A research lab doing characterization studies of vanadium, uranium-238, palladium in a tritide form. The metals were NOT radioactive with only tritium being a concern from an internal dosimetry perspective. Radionuclide of concern is: [632]

**tritium**

5.2.5 Room SW-13 and supporting rooms SW-11, 12, 14, 15, 16 (Area SW-1B)

[1] (1951 - 1953) Decontamination of Bismuth Phosphate Materials -Five shipments of bismuth phosphate materials were received from Hanford which included crib materials and samples from two other stages of the process in the plutonium separation program from irradiated uranium-238. Purex and Tributyl Phosphate materials from Oak Ridge National Laboratory were also received from a similar program and contained the same radionuclides. A study had been done in R-162 and R-167 for the best process to use, and a pilot plant was tested in HH building before the actual decontamination production process in SW-13 (SW-1B). Radioisotopes of concern are: [633 634 635 636]

| | | |
|---|---|---|
| **ruthenium-106** | **cesium-137** | **antimony-125** |
| **tellurium-121,127** | **zirconium-93,95** | **niobium-94** |
| **strontium-90** | **plutonium-238,239** | |
| **yttrium-88,90,91** | **rare earths (especially cerium)** | |

[a] All radionuclides were of equal concern.[637]

[b] It was a ferrous sulfide process and used adsorption and/or coprecipitation followed by clarification of fission products with ferrous sulfide, ferrous hydroxide and calcium phosphate. Feed lines would often break spilling solution with high gamma activity. [638]

ATTACHMENT 2



5. **SW BUILDING (Continued)**

5.2 **Radionuclides Associated With Specific Programs In SW Building (Continued)**

5.2.5 Room SW-13 and supporting rooms SW-11, 12, 14, 15, 16 (Area SW-1B) (Continued)

[2] (1955) Thorium-232 Refinery Program (Monex) - In 1955 A pilot program for the extraction of Th-232 from Brazilian Monazite sludge, thorium oxalate, and sulfate sludge residues was begun in room SW-1B. However, the research was canceled after four months.[639 640]

[a] Warehouse #15 stored 1,650 tons of this material which was already received. It was highly corrosive and continually leaked through the barrels causing much contamination. In 1961 Building 21 stored the material in silo form until 1975.

[b] Over 34 isotopes were identified from the feedstock of this program with most being nonradioactive. Radioisotopes of concern and their compounds are: [641 642]

| | |
|---|---|
| **thorium-232,228** | **radium-228,224** |
| **uranium-238** | **thorium-232 daughters (especially thallium-208)** |

1. Thorium-228,232 and radium-224 are all equal as the major radionuclides of concern. Uranium-238 is a secondary concern. However, when considering the quantity of radionuclides, and not activity, 99% of the mass of radionuclides are thorium-232.[643]

ATTACHMENT 2



**5. SW BUILDING (Continued)**

**5.2 Radionuclides Associated With Specific Programs In SW Building (Continued)**

5.2.5 Room SW-13 and supporting rooms SW-11, 12, 14, 15, 16 (Area SW-1B) (Continued)

[3] (1956) The protactinium-231 purification process which was begun in HH Building was moved to this area in the spring of 1956 to take advantage of the existing equipment from the thorium project discussed above. It uses the residues (referred to as raffinates) from a previous uranium processing called "Sperry cake." The work was completed by June of the same year. Radioisotopes of concern were: [644] [645]

| | | |
|---|---|---|
| **iron-55,59** | **aluminum-26** | **calcium-45** |
| **cobalt-60** | **protactinium-231** | **copper-65** |

[a] Protactinium-231 was the major radionuclide of concern with all others a distant second.[646]

[4] (1959 - 1978) Gas Synthesis System - Tritium and deuterium research and development was conducted with gas synthesis systems in association with various metals. Research and characterization of metal tritides such as depleted uranium tritide, lithium tritide. The characterizations included pressure-composition-temperature relationships between the isotopes of hydrogen and various metals. (i.e. how much hydrogen a metal will hold at various temperatures and pressures.) Radioisotopes of concern and their compounds are: [647]

| | |
|---|---|
| **uranium tritide** | **lithium tritide** |
| **tritium** | **lithium hydroxide tritide** |
| **uranium-238** | |

[a] Tritium is the major radionuclide of concern with uranium-238 being second.[648]

[b] Incident - (tritium, 8/27/64)[649]

[c] See Appendix B.

ATTACHMENT 2



**5. SW BUILDING (Continued)**

**5.2 Radionuclides Associated With Specific Programs In SW Building (Continued)**

5.2.5 Room SW-13 and supporting rooms SW-11, 12, 14, 15, 16 (Area SW-1B) (Continued)

[5] (1959 - 1965) See Appendix B for ranking.

[6] (1964 - 1967) See Appendix B for ranking.

[7] (1969 - 1975) See Appendix B for ranking.

[8] (1975 - 1978) See Appendix B for ranking.

[9] (1968 - PRESENT) Metallurgical analysis is used to analyze radionuclides and metal tritide samples by cutting items into sections and examining using a variety of techniques. Radioisotopes of concern and their compounds are: [650] [651]

**tritium** **uranium-238** **uranium tritide**

[a] Tritium is the major radionuclide of concern with uranium-238 being second.[652]

[b] Incident - (Tritium, 8/28/85)[653]

[c] See Appendix B.

# Appendix H

## Radon Information

UNC Geotech

UNC Geotech
2597 B 3/4 Road
P.O. Box 14000
Grand Junction, Colorado 81502-5504
303/242-8621

April 12, 1990

Dennis Murphy
EG&G Mound Applied Technonogies
P.O. Box 3000
Mound Road
Miamisburg, OH 45343-3000

Dear Mr. Murphy:

I have enclosed the results of the radon measurements made at your site as part of the DOE Indoor Radon Study. A copy of these results can be provided in electronic format if desired. The results will be forwarded to the study sponsor, the DOE Office of Projects and Facilities Management, by the end of April.

Please contact me at FTS 326-6293 or commercial (303) 248-6293 if you have any questions.

Sincerely yours,

Mark D. Pearson

Mark D. Pearson
Project Manager
UNC Geotech

cc: DOE Points of Contact

| Bldg | Bldg Description | Room | pCi/l | pCi/l | Manid | Dupid | Date | Date | Comments |
|---|---|---|---|---|---|---|---|---|---|
| 21 | | ABOVE AIR SAMPLER | 161.1 | 125.0 | 1670055 | 1666782 | 12/14/89 | 2/16/90 | MET - OLD THORIUM STORAGE |
| 21 | | ABOVE AIR SAMPLERS | 116.7 | | 1660500 | | 12/14/89 | 2/16/90 | MET - OLD THORIUM STORAGE |
| | SM | 19 MID EAST WALL | 4.0 | | 1661547 | | 12/12/89 | 2/16/90 | HISTORY OF ELEVATED READINGS |
| 48 | | 114 B CLOSET ON SPRINKLER PIPE | 3.2 | | 1671292 | | 12/12/89 | 2/16/90 | |
| 19 | | ROOM 1 | 2.6 | | 1670051 | | 12/12/89 | 2/16/90 | |
| | OLD SO BLDG | BASEMENT RIGHT CABINET | 2.4 | | 1661595 | | 12/14/89 | 2/16/90 | |
| 55 | | 1 BELOW THERMOSTAT ON E WALL | 2.1 | | 1661515 | | 12/16/89 | 2/16/90 | |
| 57 | | ROOM 1 | 1.9 | | 1661565 | | 12/12/89 | 2/16/90 | |
| 07 | | 143 | 1.5 | | 1661563 | | 12/12/89 | 2/16/90 | |
| 910 | FIRE STATION | ROOM 002 EQUIPMENT ROOM WITH SUMP | 1.4 | | 1654460 | | 12/12/89 | 2/16/90 | |
| 24 | | ROOM 1 PLANT NORTH WALL | 1.3 | | 1672007 | | 12/12/89 | 2/16/90 | |
| | PAINT SHOP | PS 4 | 1.2 | | 1661516 | | 12/12/89 | 2/16/90 | |
| 30 | | ROOM 3 EAST | 1.1 | | 1671262 | | 12/12/89 | 2/16/90 | |
| 100 | | 103 MIDDLE OF NORTH WALL | 1.0 | | 1670060 | | 12/12/89 | 2/16/90 | |
| 37 | | 6 NORTH WALL | 1.0 | | 1670046 | | 12/12/89 | 2/16/90 | |
| 34 | | 34 A WEST WALL | .9 | .6 | 1672062 | 1672042 | 12/12/89 | 2/16/90 | MET |
| 102 | | 123 | .9 | | 1661577 | | 12/14/89 | 2/16/90 | |
| 61 | | RM 221 MIDDLE OF NORTH WALL | .9 | | 1661565 | | 12/12/89 | 2/16/90 | |
| 67 | | 101 M | .9 | | 1670029 | | 12/12/89 | 2/16/90 | |
| G-13 | LOG | G-514 WEST WALL | .9 | | 1661544 | | 12/12/89 | 2/16/90 | |
| | T | CORRIDOR 20 | .9 | | 1670039 | | 1/15/90 | 2/16/90 | |
| | T | 153 | .9 | | 1670067 | | 1/15/90 | 2/16/90 | |
| | T | 70 | .9 | | 1670077 | | 1/15/90 | 2/16/90 | |
| | T | 30 | .9 | | 1661586 | | 1/15/90 | 2/16/90 | |
| 105 | PARTS MACHINING BUILDING | STAIRWELL NEXT TO ROOM 127 | .8 | | 1661564 | | 12/12/89 | 2/16/90 | |
| 25 | ARAC | 3 ON BOOK CASE MIDDLE | .8 | | 1671314 | | 12/15/89 | 2/16/90 | |
| 60 | | 1 ON DOOR TO ROOM 3 | .8 | | 1670049 | | 12/12/89 | 2/16/90 | |
| | A | 153C CENTER CUBICLE WEST WALL | .8 | | 1672056 | | 12/14/89 | 2/16/90 | |
| | C BUILDING OLD CAFETERIA | NORTHEAST SECTION INTERNAL WALL RM2 | .8 | | 1672052 | | 12/12/89 | 2/16/90 | |
| | R BUILDING | 68 NORTH WALL | .8 | | 1670060 | | 12/13/89 | 2/16/90 | |
| | SM | 8 WEST WALL AT OLD RECOVERY | .8 | | 1672057 | | 12/11/89 | 2/16/90 | |
| | MO BLDG | MO 6 | .8 | | 1670045 | | 12/18/89 | 2/16/90 | |
| 07 | | 124 | .8 | | 1670032 | | 12/12/89 | 2/16/90 | |
| 60 | | ROOM 116 ON NORHT WALL RIGHT OF CEN | .7 | .5 | 1661524 | 1661635 | 12/12/89 | 2/16/90 | |
| 09 | | 101 NEAR BACK CORNER BY ROOF DRAIN | .7 | .5 | 1666703 | 1660532 | 12/15/89 | 2/16/90 | |
| 22 | | RM 1 EAST CORRIDOR ON STORAGE RACK | .7 | | 1670070 | | 12/13/89 | 2/16/90 | |
| 56 | FIRE PUMP HOUSE | ROOM 1 THERE IS ONLY 1 ROOM | .7 | | 1670066 | | 12/12/89 | 2/16/90 | |
| | E ANNEX | E 225 EAST WALL | .7 | | 1661552 | | 12/18/89 | 2/16/90 | |
| | POWER HOUSE PH-1 | REPAIR SHOP NORTH EAST CORNER | .7 | | 1670040 | | 12/12/89 | 2/16/90 | |
| | M BLDG | M-135 | .7 | | 1661553 | | 12/12/89 | 2/16/90 | |
| 26 | | ROOM 84 SOUTH WEST WALL | .6 | .9 | 1672048 | 1667159 | 12/13/89 | 2/16/90 | |
| 69 | | RM 7 ON NORTH WALL | .6 | .4 | 1672044 | 1672077 | 12/12/89 | 2/16/90 | |
| 26 | | ROOM 84 SOUTH WEST WALL | .6 | | 1671270 | | 12/13/89 | 2/16/90 | |
| 35 | | RM 7 | .6 | | 1654459 | | 12/14/89 | 2/16/90 | |
| 38 | PP BLDG | PP CORR 136 | .6 | | 1670016 | | 12/14/89 | 2/16/90 | |
| 72 | | ON OVERHEAD DOOR BEAM | .6 | | 1672069 | | 1/03/90 | 2/16/90 | |
| 93 | | HALLWAY 107 (MIDWAY) | .6 | | 1661628 | | 12/13/89 | 2/20/90 | |
| 90 | FIRE STATION | ROOM 114 DORM | .6 | | 1661507 | | 12/12/89 | 2/16/90 | |
| | COS | NW STAIRWELL AT BASEMENT LEVEL | .6 | | 1672006 | | 12/14/89 | 2/16/90 | |
| | OSW | 120 C | .6 | | 1661573 | | 12/12/89 | 2/16/90 | |
| | SM | 150 WEST END GAS BOX | .6 | | 1670043 | | 12/11/89 | 2/16/90 | |
| | A | 34 EAST WALL | .5 | .7 | 1672075 | 1672051 | 12/14/89 | 2/16/90 | |
| 47 | | 102 MIDDLE OF EAST WALL | .5 | .5 | 1650110 | 1666819 | 12/12/89 | 2/16/90 | |

H 2 of 4

| Area | Bldg | Bldg Description | Room | Avg Radon pCi/l | Duplicate Radon pCi/l | Monid | Dupid | Monitor Install Date | Monitor Retrieve Date | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| | 45 | | WORK STATION AREA | .4 | | 1681568 | | 12/14/89 | 2/19/90 | |
| | 46 | | 81 EAST WALL | .4 | | 1672070 | | 12/12/89 | 2/19/90 | |
| | 49 | | WALL OUTSIDE RM 125 | .4 | | 1670020 | | 12/14/89 | 2/19/90 | |
| | 51 | | 107 TOP OF FUME HOOD | .4 | | 1681575 | | 12/12/89 | 2/19/90 | |
| | 63 | | ROOM 134 | .4 | | 1672059 | | 12/13/89 | 2/20/90 | |
| | 63W | | RM 4 | .4 | | 1670070 | | 12/14/89 | 2/19/90 | |
| | 65 | | ROOM 10 CONFERANCE ROOM | .4 | | 1671204 | | 12/14/89 | 2/19/90 | |
| | 66 | | OFFICE AREA | .4 | | 1681554 | | 12/12/89 | 2/19/90 | |
| | 68 | | EAST WALL CENTER BEAM | .4 | | 1681555 | | 12/14/89 | 2/19/90 | |
| | 69 | | RM 10A | .4 | | 1681576 | | 12/12/89 | 2/19/90 | |
| | 70 | | 170 MEETING ROOM CENTER WALL | .4 | | 1670041 | | 12/12/89 | 2/19/90 | |
| | 88 | | ROOM 116 | .4 | | 1671205 | | 12/12/89 | 2/19/90 | |
| | 95 | SR/PP | 95- BLD-ROOM61 | .4 | | 1661531 | | 12/12/89 | 2/20/90 | |
| | | OS BUILDING | CORRIDOR 2 - 6 FT. ABOVE FLOOR | .4 | | 1670071 | | 12/13/89 | 2/19/90 | |
| | | I | I HALLWAY | .4 | | 1667104 | | 12/12/89 | 2/19/90 | |
| | | H BUILDING | H 21 WEST WALL | .4 | | 1670057 | | 12/15/89 | 2/20/90 | |
| | | POWER HOUSE PH-1 | OFFICE SUPERVISOR | .4 | | 1670035 | | 12/12/89 | 2/19/90 | |
| | | R BUILDING | 12 SOUTH WALL | .4 | | 1681566 | | 12/13/89 | 2/19/90 | |
| | 34 | | BURN ROOM | | | 1654481 | | 12/12/89 | | BURNT (NOT AVAILABLE) |
| | 61 | | RM 151 | | | 1681567 | | 12/13/89 | | MISSING |

| Bldg | Bldg Description | Room | Avg Radon pCi/l | Duplicate Radon pCi/l | Monitor Monid | Monitor Dupid | Monitor Install Date | Monitor Retrieve Date | Comments |
|---|---|---|---|---|---|---|---|---|---|
| | R BUILDING | 143 NEXT TO NORTH WALL | .5 | .5 | 1666533 | 1666816 | 12/12/89 | 2/16/90 | |
| 101 | | ROOM 5 ON SOUTH WEST WALL IN OFFSET | .5 | | 1671288 | | 12/12/89 | 2/19/90 | |
| | "B" 175 | 175 WEST WALL | .5 | | 1678068 | | 12/12/89 | 2/16/90 | |
| .6 | | ELECTRICAL PANEL RM IN ELEC/RONICS | .5 | | 1678062 | | 12/12/89 | 2/19/90 | |
| 40 | | 100 | .5 | | 1654480 | | 12/12/89 | 2/16/90 | |
| 43 | | 1 EAST WALL OVER WATER DISPENSER | .5 | | 1678076 | | 12/12/89 | 2/20/90 | |
| 44 | | ON BULLETIN BOARD | .5 | | 1678067 | | 12/12/89 | 2/16/90 | |
| 47 | | 102 MIDDLE OF EAST WALL | .5 | | 1678059 | | 12/12/89 | 2/16/90 | |
| 50 | | CELL 113 | .5 | | 1681582 | | 12/13/89 | 2/19/90 | |
| 70 | | CENTRAL HALLWAY WEST OF DOOR TO RM7 | .5 | | 1681605 | | 12/18/89 | 2/16/90 | |
| 89 | | 101 NEAR BACK CORNER BY ROOF DRAIN | .5 | | 1678079 | | 12/15/89 | 2/19/90 | |
| 91 | | 1ST FLOOR | .5 | | 1661525 | | 12/15/89 | 2/16/90 | |
| 91 | | 2ND FLOOR OUTSIDE RM215 | .5 | | 1681593 | | 12/15/89 | 2/16/90 | |
| 92 | | HALLWAY RIGHT OFF ROOM 8 | .5 | | 1661509 | | 12/12/89 | 2/19/90 | |
| 94 | | BAY 2 NORTH WALL | .5 | | 1654477 | | 12/12/89 | 2/19/90 | |
| | A | 215 WEST WALL | .5 | | 1681572 | | 12/14/89 | 2/16/90 | |
| | A | 1040 WEST WALL | .5 | | 1681580 | | 12/14/89 | 2/16/90 | |
| | COS | 110 N WALL NEAR PUNCH PRESS | .5 | | 1654456 | | 12/12/89 | 2/19/90 | |
| | COS | 210 WALL CABINET TO RIGHT OF SINK | .5 | | 1681590 | | 12/12/89 | 2/19/90 | |
| | E BUILDING | 158 WEST WALL | .5 | | 1678033 | | 12/14/89 | 2/16/90 | |
| | E BUILDING | 103 WEST WALL | .5 | | 1678072 | | 12/14/89 | 2/16/90 | |
| | E ANNEX | E 212 NORTH WALL | .5 | | 1681587 | | 12/18/89 | 2/16/90 | |
| | GH BUILDING | ROOM 2 | .5 | | 1678065 | | 12/12/89 | 2/16/90 | |
| | GP 81 | 1A MIDDLE OF WEST WALL | .5 | | 1678054 | | 12/12/89 | 2/19/90 | |
| | H BLDG | ROOM 127 | .5 | | 1681571 | | 12/12/89 | 2/16/90 | |
| | HH | HH-8 | .5 | | 1671269 | | 12/18/89 | 2/19/90 | |
| | I BUILDING | BASEMENT LEFT CRAWL SPACE DOOR | .5 | | 1671260 | | 12/12/89 | 2/19/90 | |
| | N BUILDING | N 108 | .5 | | 1678056 | | 12/15/89 | 2/19/90 | |
| | OSE | CORRIDOR 437 | .5 | | 1661536 | | 12/15/89 | 2/16/90 | |
| | OSE | CORRIDOR 301 ACROSS FROM WATER FOUN | .5 | | 1672064 | | 12/15/89 | 2/16/90 | |
| | OSH | 4HT FLOOR | .5 | | 1678028 | | 12/12/89 | 2/16/90 | |
| | OSE | CORR 212 SOUTH WALL NEAR 218 DOOR | .5 | | 1678036 | | 12/15/89 | 2/16/90 | |
| | OSH | 319 | .5 | | 1678069 | | 12/13/89 | 2/16/90 | |
| | OSH | 2ND FLOOR | .5 | | 1681611 | | 12/12/89 | 2/16/90 | |
| | POWER HOUSE PH-1 | STATIONARY BOARD CORNER | .5 | | 1678073 | | 12/12/89 | 2/19/90 | |
| | R BUILDING | 145 WEST WALL ABOVE BALANCE | .5 | | 1654538 | | 12/14/89 | 2/16/90 | |
| | SW/R TRITIUM COMPLEX | 128 OVER LARGE METAL FLOOR DISC | .5 | | 1678019 | | 12/12/89 | 2/16/90 | |
| | W BLDG | W135 WEST CENTRAL WALL | .5 | | 1671293 | | 12/12/89 | 2/16/90 | |
| | WO BLDG | WOA 110 | .5 | | 1671301 | | 12/18/89 | 2/16/90 | |
| | "B" 124 | EAST WALL | .5 | | 1667189 | | 12/12/89 | 2/16/90 | |
| | OSE | 113 BULLETIN BOARD OPPOSITE ELEVATO | .5 | | 1678027 | | 12/15/89 | 2/16/90 | |
| TF-2 | | 114 EAST WALL CENTER OF ROOM | .4 | | 1678064 | | 12/12/89 | 2/19/90 | |
| | HH | HH-24 | .4 | | 1667187 | | 12/14/89 | 2/19/90 | |
| | OS BUILDING | CORRIDOR 7 NEXT TO ROOM 216 | .4 | | 1661614 | | 12/12/89 | 2/19/90 | |
| | GP 81 | 1A MIDDLE OF WEST WALL | .4 | .6 | 1672135 | 1661542 | 12/12/89 | 2/19/90 | |
| 105 | PARTS MACHINING BUILDING | 136 QC OFFICE | .4 | | 1678017 | | 12/12/89 | 2/19/90 | |
| 27 | | CELL 8 - WALL | .4 | | 1681583 | | 12/12/89 | 2/19/90 | |
| 28 | CERAMIC PRODUCTION | 101 | .4 | | 1672061 | | 12/12/89 | 2/19/90 | |
| 29 | | HALLWAY | .4 | | 1672105 | | 12/14/89 | 2/19/90 | |
| | TEST FIRE BUILDING 3 | 3-315 | .4 | | 1672036 | | 12/12/89 | 2/19/90 | |
| 38 | PP BLDG | PP CORR 16/BAY 2 WALL | .4 | | 1681578 | | 12/14/89 | 2/19/90 | |
| 39 | | BREAK RM | .4 | | 1678050 | | 12/14/89 | 2/19/90 | |
| 42 | | 101 B EAST WALL | .4 | | 1678031 | | 12/13/89 | 2/19/90 | |

# Appendix I

## Asbestos Information

**From:** Christopher Ahlquist
**To:** Darnell, Val
**Date:** 10/31/02 12:14PM
**Subject:** Building 19

Val -

I performed a walk-through survey of Building 19 for lead paint and asbestos concerns. The following is provided for your use:

**Lead**

No previous lead surveys or sampling data could be found for Building 19. The paint coatings in a few areas within the building exhibited some damage due to water or impact damage. Representative samples of the damaged paint were analyzed in the field using a Niton Model XL-309 XRF lead detector. The sampled paints were found not to contain any amount of lead within the instrument's limit of detection. A copy of the Niton's lead sample readout will be forwarded for your use.

No lead paint hazards currently exist within the building, and no further action would be necessary unless any of the untested coatings were to be disturbed by close worker contact (sanded, grinded, scraped, torch cut, etc.). These determinations were made by Mr. Christopher Ahlquist who is an Ohio Department of Health Licensed Lead Risk Assessor.

**Asbestos**

An asbestos survey was conducted in accordance with EPA NESHAP requirements prior to demolition. Three materials were found to contain asbestos, two of which will have to be removed prior to demolition. A copy of the survey report will be forwarded for your use.

Let me know if I can be of further assistance.

Chris Ahlquist
SMPP/TFV Safety & Health

**CC:** Koehmstedt, Lee

# BWXT of Ohio, Inc.

## Interoffice Correspondence

Date: October 31, 2002

From: Christopher Ahlquist
Industrial Hygienist, SMPP/TFV

To: Lee Koehmstedt
Engineer, SMPP/TFV

Re: Building 19: Asbestos-Containing Materials

During the month of October 2002, Mr. Christopher A. Ahlquist, an Industrial Hygienist with BWXT of Ohio, Inc. (BWXTO), conducted a survey of Building 19 at the Mound site in Miamisburg, Ohio for purpose of identifying asbestos-containing materials contained therein. Mr. Ahlquist is an Ohio Department of Health Certified Asbestos Hazard Evaluation Specialist as required by Ohio Department of Health regulations. During the course of the survey, Mr. Ahlquist reviewed previous survey reports and sampling data and collected additional bulk samples of materials found within Building 19 as necessary in order to determine the asbestos content of said materials. A room-by-room inspection of all accessible spaces was then conducted in order to prepare an inventory of the location and approximate quantities of identified asbestos-containing materials. Three (3) of the suspect materials within Building 19 were found to contain greater than one percent (>1%) asbestos content which defines a material as asbestos-containing by EPA and OSHA regulations. These materials included transite panels behind wall heaters in the building office, a no-drip type of insulating material packed in around the office outside door frame, and a roof mastic type of sealant.

**Sample Method**

During BWXTO's survey, bulk samples were collected utilizing sampling methods and protocol specified in the EPA's Asbestos Hazard Emergency Response Act (AHERA). Each sample was collected and placed in a clean, sealable hard-shell container and labeled with a unique sample identification number. Pertinent information was recorded on a Bulk Sample Data Sheet including sample identification number, date of inspection, name of inspector, building name, a brief description and location of the sample, and the type of material sampled (e.g., preformed-block pipe insulation, aircell-paper pipe insulation, etc.).

**Analysis of Samples**

The samples were submitted to DataChem Laboratories of Cincinnati, Ohio and analyzed for asbestos content by PLM and dispersion staining (Method Reference: 40 CFR Part 763, Volume 47, No. 103, May 27, 1982 pg. 23376). This analytical method, which the

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EPA currently recommends for the determination of asbestos in bulk samples of suspect materials, can be used for qualitative identification of six morphologically different types of asbestos fibers: chrysotile, amosite, crocidolite, anthophyllite, tremolite, and actinolite asbestos. The method specifies that the asbestos content in a bulk sample shall be estimated and reported as a finite percentage (rounded to the nearest percentage) within the range of 0 to 100. The result of the bulk sample analysis is reported in a standard written laboratory report. This report includes the client name, the project number, the laboratory identification number, the sample number assigned to the bulk sample upon receipt at the laboratory, and the field number assigned to the bulk sample upon collection at the site. If the bulk sample contains more than one distinct layer of material, each layer is analyzed separately. The composition of the bulk sample is reported in percentages of asbestos (i.e., cellulose, fiberglass, or other) components. The results of the sample analyses can be found on the laboratory reports.

DataChem Laboratories is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP Lab Code #101917-0). NVLAP is the agency sponsored by the National Institute of Standards and Technology providing EPA accreditation of laboratories analyzing bulk samples for asbestos content.

**Conclusions**

Twelve (12) square feet of "Transite" asbestos cement board was located behind the wall heaters in the office (Room 2), and eighteen (18) linear feet of an asbestos-containing no-drip type of packing material was located around the office (Room 2) outside door frame. These materials will have to be removed from the building prior to demolishing the structure.

In addition, the building contains approximately two-hundred and fifty (250) linear feet of roofing-type mastic sealant which is nonfriable (Category I). This nonfriable material does not have to be removed prior to demolition so long as it remains nonfriable prior to that point. Since the building is scheduled for demolition, the EPA will have to be notified in writing on the proper forms before demolition can occur, and these quantities of nonfriable materials must be specified.

Respectfully,

Christopher Ahlquist
Industrial Hygienist

# Appendix J

## Lead Information

**From:** Christopher Ahlquist
**To:** Darnell, Val
**Date:** 10/31/02 12:14PM
**Subject:** Building 19

Val -

I performed a walk-through survey of Building 19 for lead paint and asbestos concerns. The following is provided for your use:

**Lead**

No previous lead surveys or sampling data could be found for Building 19. The paint coatings in a few areas within the building exhibited some damage due to water or impact damage. Representative samples of the damaged paint were analyzed in the field using a Niton Model XL-309 XRF lead detector. The sampled paints were found not to contain any amount of lead within the instrument's limit of detection. A copy of the Niton's lead sample readout will be forwarded for your use.

No lead paint hazards currently exist within the building, and no further action would be necessary unless any of the untested coatings were to be disturbed by close worker contact (sanded, grinded, scraped, torch cut, etc.). These determinations were made by Mr. Christopher Ahlquist who is an Ohio Department of Health Licensed Lead Risk Assessor.

**Asbestos**

An asbestos survey was conducted in accordance with EPA NESHAP requirements prior to demolition. Three materials were found to contain asbestos, two of which will have to be removed prior to demolition. A copy of the survey report will be forwarded for your use.

Let me know if I can be of further assistance.

Chris Ahlquist
SMPP/TFV Safety & Health

**CC:** Koehmstedt, Lee

J 1 of 2

**Serial #XL309-U1059NR1794 Site: Mound Building 19 Date: 10/2/2002**

| No | XLNo | Site | Insp | Flr | Side | Room | Strc | Sub | Feat | Cnd | Clr | Note | Ssec | Date/Time | Cycle | DI | Res | Pbl ± Prec | Pbk ± Prec | Pbc ± Prec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 24 | 19 | CAA | Ground | Office | 2 | Wall - E | Drywall | Impact | Damage | Creme | | 80.4 | 10/2/2002 16:59:45 | 1 of 1 | 2.3 | NEG | 0.01 ± 0.03 | -0.32 ± 0.25 | 0.01 ± 0.03 |
| 2 | 25 | 19 | CAA | Ground | Office | 2 | Wall - W | Drywall | Impact | Damage | Creme | | 61.6 | 10/2/2002 17:03:39 | 1 of 1 | 1.0 | NEG | 0.00 ± 0.01 | -0.18 ± 0.29 | 0.00 ± 0.01 |
| 3 | 26 | 19 | CAA | Ground | Open Bay | 1 | Wall - SE | Wood | | Peeling | Green | | 61.1 | 10/2/2002 17:07:04 | 1 of 1 | 1.0 | NEG | 0.03 ± 0.01 | -0.38 ± 0.25 | 0.03 ± 0.01 |
| 4 | 27 | 19 | CAA | Ground | Open Bay | 1 | Wall - SE | Wood | | Peeling | Red | | 44.4 | 10/2/2002 17:10:23 | 1 of 1 | 1.0 | NEG | 0.01 ± 0.01 | 0.19 ± 0.33 | 0.01 ± 0.01 |
| 5 | 28 | 19 | CAA | Ground | Below | Mezzanine | Ceiling - E | Wood | | Peeling | White | | 19.2 | 10/2/2002 17:24:30 | 1 of 1 | 1.0 | NEG | 0.00 ± 0.00 | -0.16 ± 0.51 | 0.00 ± 0.00 |
| 6 | 29 | 19 | CAA | Ground | Below | Mezzanine | Ceiling - W | Wood | | Peeling | White | | 21.5 | 10/2/2002 17:26:00 | 1 of 1 | 1.0 | NEG | 0.00 ± 0.00 | 0.39 ± 0.47 | 0.00 ± 0.00 |
| 7 | 30 | 19 | CAA | 2nd | | Mezzanine | Floor - Middle | Wood | | Peeling | Green | | 19.2 | 10/2/2002 17:27:52 | 1 of 1 | 1.0 | NEG | 0.00 ± 0.00 | -0.24 ± 0.51 | 0.00 ± 0.00 |
| 8 | 31 | 19 | CAA | 2nd | | Mezzanine | Floor - Middle | Wood | | Peeling | Green | | 21.5 | 10/2/2002 17:28:54 | 1 of 1 | 1.0 | NEG | 0.00 ± 0.00 | -0.20 ± 0.48 | 0.00 ± 0.00 |

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# Appendix K

## Chemical Information

**Chemicals previously used or hazardous waste previoulsy stored in Building 19**

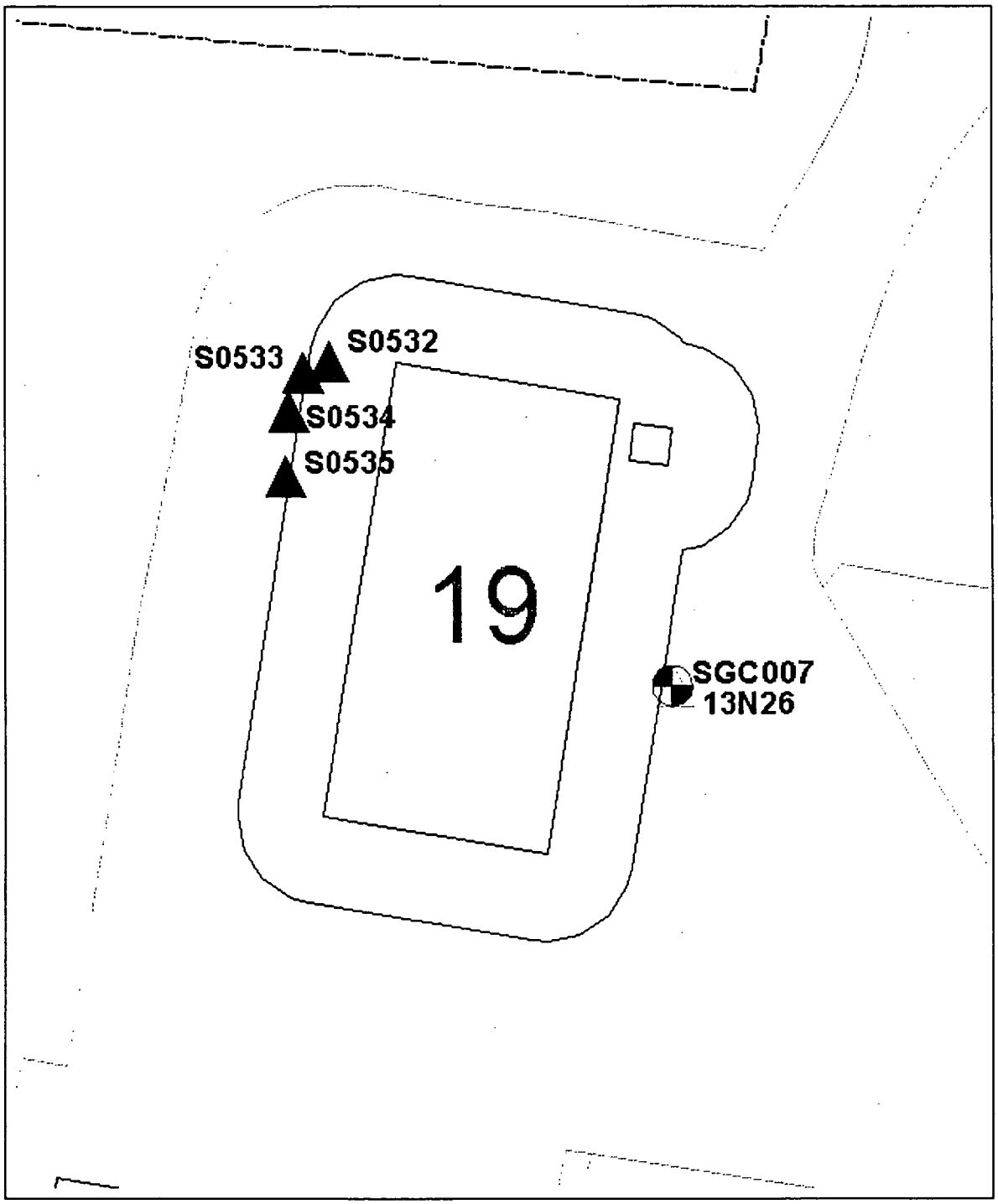
Adhesive
Antimony Powder
Antimony, Beryllium Powder Mixture
Beryllium Pellets
Beryllium Powder
Beryllium Rods
Bismuth Chloride Residues
Bismuth Chunk
Boron Powder
Bransonic Ultrasonic Cleaner
Calcium Sulfate
Eppert Oil Disolver 200
Henry Latex Liquid Additive
Mercury Instruments
Mercury Thermometer
Methanol
Paint
PL500 Adhesive
Propane
Spartan SC-200
SYN-Cide NR
Tantalum Wire
Thorium
Zip Cleaner

*All remaining chemicals and hazardous waste were removed from Building 19 in January 2003*

# Appendix L

Soil Sampling, Vicinity

# Historic Sample Locations within 15 feet of Building 19




Sample Detect
Sample Nondetect

10 0 10 20 30 40 50 Feet

N
W E
S

MOUND

11/25/02

2 1 of 17

# Building 19 Detects

| Location_name | Sample_id | Collection_date | Value_name | Measured_value | Value_units | Detection_limit | Chem_class | Start_depth | End_depth | Lab | Data_ | Project_code | Media | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SGC007 | NAC007 | 19960220 | Acetone | 22.0000 | UG/KG | | ORVOA | 0.0 | 1.5 | B | | SGCSP | Soil | |
| SGC007 | NAC007 | 19960220 | Aluminum | 10200.0000 | MG/KG | | INORG | 0.0 | 1.5 | | | SGCSP | Soil | |
| SGC007 | NAC007 | 19960220 | Arsenic | 1.9000 | MG/KG | | INORG | 0.0 | 1.5 | B | | SGCSP | Soil | |
| SGC007 | NAC007 | 19960220 | Barium | 26.2000 | MG/KG | | INORG | 0.0 | 1.5 | B | | SGCSP | Soil | |
| SGC007 | NAC007 | 19960220 | Beryllium | 0.2800 | MG/KG | | INORG | 0.0 | 1.5 | | | SGCSP | Soil | |
| SGC007 | NAC007 | 19960220 | Cadmium | 0.3300 | MG/KG | | INORG | 0.0 | 1.5 | B | | SGCSP | Soil | |
| SGC007 | NAC007 | 19960220 | Calcium | 83900.0000 | MG/KG | | INORG | 0.0 | 1.5 | | | SGCSP | Soil | |
| SGC007 | NAC007 | 19960220 | Chromium | 14.3000 | MG/KG | | INORG | 0.0 | 1.5 | | | SGCSP | Soil | |
| SGC007 | NAC007 | 19960220 | Cobalt | 11.0000 | MG/KG | | INORG | 0.0 | 1.5 | B | | SGCSP | Soil | |
| SGC007 | NAC007 | 19960220 | Copper | 16.2000 | MG/KG | | INORG | 0.0 | 1.5 | | | SGCSP | Soil | |
| SGC007 | NAC007 | 19960220 | Dichloromethane (Methylene Chloride) | 13.0000 | UG/KG | | ORVOA | 0.0 | 1.5 | B | | SGCSP | Soil | |
| SGC007 | NAC007 | 19960220 | Iron | 23000.0000 | MG/KG | | INORG | 0.0 | 1.5 | | | SGCSP | Soil | |
| SGC007 | NAC007 | 19960220 | Lead | 7.2000 | MG/KG | | INORG | 0.0 | 1.5 | | | SGCSP | Soil | |
| SGC007 | NAC007 | 19960220 | Lithium | 3.2000 | MG/KG | | INORG | 0.0 | 1.5 | B | | SGCSP | Soil | |
| SGC007 | NAC007 | 19960220 | Magnesium | 21600.0000 | MG/KG | | INORG | 0.0 | 1.5 | | | SGCSP | Soil | |
| SGC007 | NAC007 | 19960220 | Manganese | 493.0000 | MG/KG | | INORG | 0.0 | 1.5 | | | SGCSP | Soil | |
| SGC007 | NAC007 | 19960220 | Molybdenum | 0.6300 | MG/KG | | INORG | 0.0 | 1.5 | B | | SGCSP | Soil | |
| SGC007 | NAC007 | 19960220 | Nickel | 22.6000 | MG/KG | | INORG | 0.0 | 1.5 | | | SGCSP | Soil | |
| SGC007 | NAC007 | 19960220 | Nitrate/Nitrite | 1.6000 | MG/KG | 0.2400 | ANION | 0.0 | 1.5 | | | SGCSP | Soil | |
| SGC007 | NAC007 | 19960220 | Percent Solids | 83.9000 | % | 0.1000 | GENERA | 0.0 | 1.5 | | | SGCSP | Soil | |
| S0533 | 10496 | 19850801 | Plutonium-238 | 1.8400 | PCI/G | 0.0100 | RAD | 0.0 | 0.0 | | | RSS | Soil | 2 |
| S0534 | 10495 | 19850801 | Plutonium-238 | 1.1300 | PCI/G | 0.0100 | RAD | 0.0 | 0.0 | | | RSS | Soil | 2 |
| SGC007 | NAC007 | 19960220 | Plutonium-238 | 0.5370 | PCI/G | 0.0065 | RAD | 0.0 | 1.5 | | | SGCSP | Soil | 2 |
| S0535 | 10494 | 19850801 | Plutonium-238 | 0.5100 | PCI/G | 0.0100 | RAD | 0.0 | 0.0 | | | RSS | Soil | 2 |
| S0532 | 10498 | 19850801 | Plutonium-238 | 0.4800 | PCI/G | 0.0100 | RAD | 0.0 | 0.0 | | | RSS | Soil | 2 |
| SGC007 | NAC007 | 19960220 | Potassium | 1590.0000 | MG/KG | | INORG | 0.0 | 1.5 | | | SGCSP | Soil | |
| SGC007 | NAC007 | 19960220 | Potassium-40 | 10.8000 | PCI/G | 0.0000 | RAD | 0.0 | 1.5 | | | SGCSP | Soil | 1 |
| SGC007 | NAC007 | 19960220 | Radium-226 | 0.5370 | PCI/G | 0.4210 | RAD | 0.0 | 1.5 | | | SGCSP | Soil | 1 |
| SGC007 | NAC007 | 19960220 | Sodium | 246.0000 | MG/KG | | INORG | 0.0 | 1.5 | B | | SGCSP | Soil | 2 |
| SGC007 | NAC007 | 19960220 | Thorium-228 | 0.4310 | PCI/G | 0.0211 | RAD | 0.0 | 1.5 | | | SGCSP | Soil | 1 |
| SGC007 | NAC007 | 19960220 | Thorium-230 | 0.5820 | PCI/G | 0.0187 | RAD | 0.0 | 1.5 | | | SGCSP | Soil | 1 |

| Location_name | Sample_id | Collection_date | Value_name | Measured_value | Value_units | Detection_limit | Chem_class | Start_depth | End_depth | Lab | Data_ | Project_code | Media | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SGC007 | NAC007 | 19960220 | Thorium-232 | 0.3280 | PCI/G | 0.0187 | RAD | 0.0 | 1.5 | | | SGCSP | Soil | 1 |
| 13N26 | 13N26 | 19941004 | Total Aromatic Hydrocarbons | 7570760.0000 | IC | | GENERA | 0.0 | 1.5 | | | 2680 | Soil | |
| 13N26 | 13N26 | 19941004 | Total C5 TO C11 Petroleum Hydrocarbons | 30786838.0000 | IC | | GENERA | 0.0 | 1.5 | | | 2680 | Soil | |
| 13N26 | 13N26 | 19941004 | Total Semivolatile Hydrocarbons | 1200505.0000 | IC | | GENERA | 0.0 | 1.5 | | | 2680 | Soil | |
| SGC007 | NAC007 | 19960220 | Trichloroethylene (TCE) | 7.0000 | UG/KG | | ORVOA | 0.0 | 1.5 | | | SGCSP | Soil | |
| SGC007 | NAC007 | 19960220 | Uranium-234 | 0.5510 | PCI/G | 0.0265 | RAD | 0.0 | 1.5 | | | SGCSP | Soil | |
| SGC007 | NAC007 | 19960220 | Uranium-238 | 0.5740 | PCI/G | 0.0233 | RAD | 0.0 | 1.5 | | | SGCSP | Soil | |
| SGC007 | NAC007 | 19960220 | Vanadium | 14.2000 | MG/KG | | INORG | 0.0 | 1.5 | | | SGCSP | Soil | |
| SGC007 | NAC007 | 19960220 | Zinc | 53.8000 | MG/KG | | INORG | 0.0 | 1.5 | | | SGCSP | Soil | |

*Comments

1 Exceeds the 10-6 Risk-Based Guide Value
2 Exceeds the OU9 Soil Background Value
3 Exceeds screening level
5 Exceeds MCL
6 Exceeds the Guide Value based on the hazard index

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# Building 19 Non-Detects

| Location _name | Sample _id | Collection _date | Value_name | Measured _value | Value _units | Detection _limit | Chem _class | Start _depth | End _depth | Lab | Data_ | Project _code | Media |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SGC007 | NAC007 | 19960220 | 1,1,1-Trichloroethane | 6.0000 | UG/KG | 6.0000 | ORVOA | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 1,1,2,2-Tetrachloroethane | 6.0000 | UG/KG | 6.0000 | ORVOA | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 1,1,2-Trichloroethane | 6.0000 | UG/KG | 6.0000 | ORVOA | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 1,1-Dichloroethane | 6.0000 | UG/KG | 6.0000 | ORVOA | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 1,1-Dichloroethene | 6.0000 | UG/KG | 6.0000 | ORVOA | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 1,2,4-Trichlorobenzene | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 1,2-Dichlorobenzene | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 1,2-Dichloroethane | 6.0000 | UG/KG | 6.0000 | ORVOA | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 1,2-Dichloroethene | 6.0000 | UG/KG | 6.0000 | ORVOA | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 1,2-Dichloropropane | 6.0000 | UG/KG | 6.0000 | ORVOA | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 1,3,5-Trinitrobenzene | 220.0000 | UG/KG | 220.0000 | OREXP | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 1,3-cis-Dichloropropene | 6.0000 | UG/KG | 6.0000 | ORVOA | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 1,3-Dichlorobenzene | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 1,3-Dinitrobenzene | 218.0000 | UG/KG | 218.0000 | OREXP | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 1,3-trans-Dichloropropene | 6.0000 | UG/KG | 6.0000 | ORVOA | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 1,4-Dichlorobenzene | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 1-chloro-4-phenoxybenzene | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 2,2'-oxybis(1-chloropropane) | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 2,4,5-Trichlorophenol | 1000.0000 | UG/KG | 1000.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 2,4,6-Trichlorophenol | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 2,4,6-Trinitrotoluene | 220.0000 | UG/KG | 220.0000 | OREXP | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 2,4-Dichlorophenol | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 2,4-Dimethylphenol | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 2,4-Dinitrophenol | 1000.0000 | UG/KG | 1000.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 2,4-Dinitrotoluene | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 2,4-Dinitrotoluene | 218.0000 | UG/KG | 218.0000 | OREXP | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 2,6-Dinitrotoluene | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 2,6-Dinitrotoluene | 227.0000 | UG/KG | 227.0000 | OREXP | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 2-Butanone | 11.0000 | UG/KG | 11.0000 | ORVOA | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 2-Chloronaphthalene | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 2-Chlorophenol | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 2-Hexanone | 11.0000 | UG/KG | 11.0000 | ORVOA | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 2-Methylnaphthalene | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 2-Methylphenol | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 2-Nitroaniline | 1000.0000 | UG/KG | 1000.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |

| Location _name | Sample _id | Collection _date | Value_name | Measured _value | Value _units | Detection _limit | Chem _class | Start _depth | End _depth | Lab | Data_ | Project _code | Media |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SGC007 | NAC007 | 19960220 | 2-Nitrophenol | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 3,3'-Dichlorobenzidine | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 3-Nitroaniline | 1000.0000 | UG/KG | 1000.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 4,4'-DDD | 4.0000 | UG/KG | 4.0000 | ORPPB | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 4,4'-DDE | 4.0000 | UG/KG | 4.0000 | ORPPB | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 4,4'-DDT | 4.0000 | UG/KG | 4.0000 | ORPPB | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 4,6-Dinitro-o-Cresol | 1000.0000 | UG/KG | 1000.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 4-Amino-2,6-Dinitrotoluene | 437.0000 | UG/KG | 437.0000 | OREXP | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 4-Bromophenyl-phenyl Ether | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 4-Chloro-3-methylphenol | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 4-Chloroaniline | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 4-Methyl-2-pentanone | 11.0000 | UG/KG | 11.0000 | ORVOA | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 4-Methylphenol | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 4-Nitroaniline | 1000.0000 | UG/KG | 1000.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | 4-Nitrophenol | 1000.0000 | UG/KG | 1000.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Acenaphthene | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Acenaphthylene | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Aldrin | 2.0000 | UG/KG | 2.0000 | ORPPB | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Alpha Chlordane | 2.0000 | UG/KG | 2.0000 | ORPPB | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Alpha-BHC | 2.0000 | UG/KG | 2.0000 | ORPPB | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Americium-241 | 0.2980 | PCI/G | 0.2980 | RAD | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Anthracene | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Antimony | 0.2100 | MG/KG | | INORG | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Aroclor-1016 | 40.0000 | UG/KG | 40.0000 | ORPPB | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Aroclor-1221 | 80.0000 | UG/KG | 80.0000 | ORPPB | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Aroclor-1232 | 40.0000 | UG/KG | 40.0000 | ORPPB | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Aroclor-1242 | 40.0000 | UG/KG | 40.0000 | ORPPB | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Aroclor-1248 | 40.0000 | UG/KG | 40.0000 | ORPPB | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Aroclor-1254 | 40.0000 | UG/KG | 40.0000 | ORPPB | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Aroclor-1260 | 40.0000 | UG/KG | 40.0000 | ORPPB | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Benzene | 6.0000 | UG/KG | 6.0000 | ORVOA | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Benzo(a)anthracene | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Benzo(a)pyrene | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Benzo(b)fluoranthene | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Benzo(g,h,i)perylene | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Benzo(k)fluoranthene | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Beta-BHC | 2.0000 | UG/KG | 2.0000 | ORPPB | 0.0 | 1.5 | U | | SGCSP | Soil |

| Location _name | Sample _id | Collection _date | Value_name | Measured _value | Value _units | Detection _limit | Chem _class | Start _depth | End _depth | Lab | Data_ | Project _code | Media |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SGC007 | NAC007 | 19960220 | Bis(2-chloroethoxy)methane | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Bis(2-chloroethyl)ether | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Bis(2-ethylhexyl)phthalate | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Bismuth | 1.1000 | MG/KG | | INORG | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Bismuth-207 | 0.0983 | PCI/G | 0.0983 | RAD | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Bismuth-210 | 0.1280 | PCI/G | 0.1280 | RAD | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Bromodichloromethane | 6.0000 | UG/KG | 6.0000 | ORVOA | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Bromoform | 6.0000 | UG/KG | 6.0000 | ORVOA | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Bromomethane | 11.0000 | UG/KG | 11.0000 | ORVOA | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Butyl Benzyl Phthalate | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Carbazole | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Carbon Disulfide | 6.0000 | UG/KG | 6.0000 | ORVOA | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Carbon Tetrachloride | 6.0000 | UG/KG | 6.0000 | ORVOA | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Cesium-137 | 0.1320 | PCI/G | 0.1320 | RAD | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Chlorobenzene | 6.0000 | UG/KG | 6.0000 | ORVOA | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Chloroethane | 11.0000 | UG/KG | 11.0000 | ORVOA | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Chloroform | 6.0000 | UG/KG | 6.0000 | ORVOA | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Chloromethane | 11.0000 | UG/KG | 11.0000 | ORVOA | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Chrysene | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Cobalt-60 | 0.1316 | PCI/G | 0.1320 | RAD | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Cyanide | 0.6000 | MG/KG | | INORG | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Delta-BHC | 2.0000 | UG/KG | 2.0000 | ORPPB | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Dibenz(a,h)anthracene | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Dibenzofuran | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Dibromochloromethane | 6.0000 | UG/KG | 6.0000 | ORVOA | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Dieldrin | 4.0000 | UG/KG | 4.0000 | ORPPB | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Diethyl Phthalate | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Dimethyl Phthalate | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Di-n-butyl Phthalate | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Di-n-octyl Phthalate | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Endosulfan I | 2.0000 | UG/KG | 2.0000 | ORPPB | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Endosulfan II | 4.0000 | UG/KG | 4.0000 | ORPPB | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Endosulfan Sulfate | 4.0000 | UG/KG | 4.0000 | ORPPB | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Endrin | 4.0000 | UG/KG | 4.0000 | ORPPB | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Endrin Aldehyde | 4.0000 | UG/KG | 4.0000 | ORPPB | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Endrin Ketone | 4.0000 | UG/KG | 4.0000 | ORPPB | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Ethylbenzene | 6.0000 | UG/KG | 6.0000 | ORVOA | 0.0 | 1.5 | U | | SGCSP | Soil |

| Location _name | Sample _id | Collection _date | Value_name | Measured _value | Value _units | Detection _limit | Chem _class | Start _depth | End _depth | Lab | Data_ | Project _code | Media |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SGC007 | NAC007 | 19960220 | Fluoranthene | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Fluorene | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Gamma Chlordane | 2.0000 | UG/KG | 2.0000 | ORPPB | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Gamma-BHC (Lindane) | 2.0000 | UG/KG | 2.0000 | ORPPB | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Heptachlor | 2.0000 | UG/KG | 2.0000 | ORPPB | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Heptachlor Epoxide | 2.0000 | UG/KG | 2.0000 | ORPPB | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Hexachlorobenzene | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Hexachlorobutadiene | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Hexachlorocyclopentadiene | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Hexachloroethane | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | HMX | 1920.0000 | UG/KG | 1920.0000 | OREXP | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Indeno(1,2,3-cd)pyrene | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Isophorone | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Mercury | 0.0600 | MG/KG | | INORG | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Methoxychlor | 20.0000 | UG/KG | 20.0000 | ORPPB | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Naphthalene | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Nitrobenzene | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Nitrobenzene | 227.0000 | UG/KG | 227.0000 | OREXP | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | N-Nitroso-di-n-propylamine | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | N-Nitrosodiphenylamine | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Pentachlorophenol | 1000.0000 | UG/KG | 1000.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | PETN | 873.0000 | UG/KG | 873.0000 | OREXP | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Phenanthrene | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Phenol | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Plutonium-239/240 | 0.0054 | PCI/G | 0.0054 | RAD | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Pyrene | 400.0000 | UG/KG | 400.0000 | ORSVO | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | RDX | 873.0000 | UG/KG | 873.0000 | OREXP | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Selenium | 0.4500 | MG/KG | | INORG | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Silver | 0.1900 | MG/KG | | INORG | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Styrene | 6.0000 | UG/KG | 6.0000 | ORVOA | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Tetrachloroethene | 6.0000 | UG/KG | 6.0000 | ORVOA | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Tetryl | 655.0000 | UG/KG | 655.0000 | OREXP | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Thallium | 0.2100 | MG/KG | | INORG | 0.0 | 1.5 | U | | SGCSP | Soil |
| S0533 | 10496 | 19850801 | Thorium-232 | 2.0000 | PCI/G | 2.0000 | RAD | 0.0 | 0.0 | U | | RSS | Soil |
| S0532 | 10498 | 19850801 | Thorium-232 | 2.0000 | PCI/G | 2.0000 | RAD | 0.0 | 0.0 | U | | RSS | Soil |
| S0535 | 10494 | 19850801 | Thorium-232 | 2.0000 | PCI/G | 2.0000 | RAD | 0.0 | 0.0 | U | | RSS | Soil |
| S0534 | 10495 | 19850801 | Thorium-232 | 2.0000 | PCI/G | 2.0000 | RAD | 0.0 | 0.0 | U | | RSS | Soil |

| Location _name | Sample _id | Collection _date | Value_name | Measured _value | Value _units | Detection _limit | Chem _class | Start _depth | End _depth | Lab | Data_ | Project _code | Media |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SGC007 | NAC007 | 19960220 | Tin | 0.8800 | MG/KG | | INORG | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Toluene | 6.0000 | UG/KG | 6.0000 | ORVOA | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Toxaphene | 200.0000 | UG/KG | 200.0000 | ORPPB | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Uranium-235 | 0.0310 | PCI/G | 0.0310 | RAD | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Vinyl Acetate | 11.0000 | UG/KG | 11.0000 | ORVOA | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Vinyl Chloride | 11.0000 | UG/KG | 11.0000 | ORVOA | 0.0 | 1.5 | U | | SGCSP | Soil |
| SGC007 | NAC007 | 19960220 | Xylenes, Total | 6.0000 | UG/KG | 6.0000 | ORVOA | 0.0 | 1.5 | U | | SGCSP | Soil |

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**LABORATORY DATA QUALIFIERS (LABQUAL)**

The following qualifiers will be applied to the organic analysis results by the laboratory in accordance with CLP SOW direction:

ORGANICS

| | |
|---|---|
| U | Indicates compound was analyzed for but not detected. The associated sample quantitation limit will be the CRQL, corrected for dilution and for percent moisture. |
| J | Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) assuming a 1:1 response, 2) when the qualitative data indicated the presence of a compound that meets the volatile, semivolatile, and pesticide/Aroclor identification criteria, and the result is less than the CRQL but greater than zero. |
| N | Indicates presumptive evidence of a compound. This flag is used only for tentatively identified compounds, where identification is based on a mass spectral library search. |
| P | Used for pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns. |
| C | Applies to pesticide results where the identification has been confirmed by GC/MS. |
| B | Used when the analyte is found in the associated blank as well as in the sample. This flag must be used for a TIC as well as for a positively identified target compound. |
| E | Identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis. |
| D | Identifies all compounds identified in an analysis at a secondary dilution factor. |
| A | Indicates that a TIC is a suspected aldol-condensation product. |

INORGANICS

| | |
|---|---|
| B | Indicates that the reported value was obtained from a reading that was less than the CRDL but greater than or equal to the Instrument Detection Limit (IDL). |
| U | Indicates that the analyte was analyzed for but not detected. |
| E | Indicates the reported value is estimated because of the presence of interferences. |
| M | Duplicate injection precision was not met. |
| N | Spiked sample recovery not within control limits. |
| S | Reported value was determined by the Method of Standard Additions (MSA). |
| W | Post-digestion spike for Furnace AA analysis is out of control limits, while sample absorbency is less than 50% of spike absorbency. |
| * | Duplicate analysis not within control limits. |
| + | Correlation coefficient for the MSA is less than 0.995. |

**DATA QUALIFIER CODES (DATAQUAL)**

ORGANICS AND INORGANICS

| | |
|---|---|
| U | The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit. |
| J | The associated numerical value is an estimated quantity. |
| R | The data are unusable (compound may or may not be present). Resampling and reanalysis is necessary for verification. |
| N | Presumptive evidence of the presence of the material. |
| NJ | Presumptive evidence of the presence of the material at an estimated quantity. |
| UJ | The material was analyzed for, but was not detected. The sample quantitation limit is an estimated quantity. |

**SUB-QUALIFIER CODES**

ORGANICS

| | |
|---|---|
| D | Duplicates |
| B | Qualified due to blank |
| C | Qualified due to calibration |
| H | Holding time exceeded |
| K | Qualified due to surrogate recovery |
| L | Qualified due to Laboratory Control Sample |
| S | Qualified due to matrix spike recovery |
| I | Qualified due to internal standard |
| N | Tentative identification (only for TICs) |
| P | Pesticide/PCB results have >25 percent difference on two different columns |
| + | Positive bias (added after subqualifier) |
| - | Negative bias (added after subqualifier) |

INORGANICS

| | |
|---|---|
| D | Duplicates |
| B | Qualified due to blank |
| C | Qualified due to calibration |
| H | Holding time exceeded |
| L | Qualified due to Laboratory Control Sample |
| S | Qualified due to matrix spike recovery |
| I | Qualified due to interference |
| + | Positive bias (added after subqualifier) |
| - | Negative bias (added after subqualifier) |
| Examples of final qualification might be J-C, UJ-S(+), UJ-BC(-), etc. | |

The subqualifiers have been included to clarify any reports you may use. The subqualifiers have been captured when it was included in the electronic data submitted by the contractor. Most of the data in MEIMS does not include them.

The above data was extracted from the OU9 Site Wide Quality Assurance Project Plan, pages 9-16 and Appendix H page 3-1. It was updated from the Methods Compendium.

# Comparisons for Soil Analytical Results

| 10-6 Risk-Based Guideline Values | | | |
|---|---|---|---|
| 107-06-2 | 1,2-Dichloroethane | 3.20E+00 | MG/KG |
| 118-96-7 | 2,4,6-Trinitrotoluene | 1.91E+02 | MG/KG |
| 72-55-9 | 4,4'-DDE | 9.00E+00 | MG/KG |
| 50-29-3 | 4,4'-DDT | 9.00E+00 | MG/KG |
| 309-00-2 | Aldrin | 1.80E-01 | MG/KG |
| 5103-71-9 | Alpha Chlordane | 8.50E+00 | MG/KG |
| 12672-29-6 | Aroclor-1248 | 3.85E-01 | MG/KG |
| 11096-82-5 | Aroclor-1260 | 3.85E-01 | MG/KG |
| 7440-38-2 | Arsenic | 1.20E+03 | MG/KG |
| 71-43-2 | Benzene | 8.90E+00 | MG/KG |
| 56-55-3 | Benzo(a)anthracene | 4.10E+00 | MG/KG |
| 50-32-8 | Benzo(a)pyrene | 4.10E-01 | MG/KG |
| 205-99-2 | Benzo(b)fluoranthene | 4.10E+00 | MG/KG |
| 207-08-9 | Benzo(k)fluoranthene | 4.10E+01 | MG/KG |
| 7440-41-7 | Beryllium | 7.00E-01 | MG/KG |
| 319-85-7 | Beta-BHC | 1.65E+00 | MG/KG |
| 117-81-7 | Bis(2-ethylhexyl)phthalate | 2.15E+02 | MG/KG |
| 75-27-4 | Bromodichloromethane | 4.80E+01 | MG/KG |
| 75-25-2 | Bromoform | 3.75E+02 | MG/KG |
| 7440-43-9 | Cadmium | 1.00E+04 | MG/KG |
| 56-23-5 | Carbon Tetrachloride | 4.60E+00 | MG/KG |
| 67-66-3 | Chloroform | 3.10E+00 | MG/KG |
| 7440-47-3 | Chromium | 1.50E+03 | MG/KG |
| 218-01-9 | Chrysene | 4.10E+02 | MG/KG |
| 53-70-3 | Dibenz(a,h)anthracene | 4.10E-01 | MG/KG |
| 124-48-1 | Dibromochloromethane | 3.55E+01 | MG/KG |
| 75-09-2 | Dichloromethane | 3.95E+02 | MG/KG |
| 60-57-1 | Dieldrin | 1.85E-01 | MG/KG |
| 5103-74-2 | Gamma Chlordane | 8.50E+00 | MG/KG |
| 58-89-9 | Gamma-BHC (Lindane) | 2.30E+00 | MG/KG |
| 76-44-8 | Heptachlor | 0.66 | MG/KG |
| 1024-57-3 | Heptachlor Epoxide | 0.33 | MG/KG |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 4.10E+00 | MG/KG |
| 78-59-1 | Isophorone | 3.15E+03 | MG/KG |
| 86-30-6 | N-Nitrosodiphenylamine | 6.00E+02 | MG/KG |
| 87-86-5 | Pentachlorophenol | 2.50E+01 | MG/KG |
| 121-82-4 | RDX | 2.70E+01 | MG/KG |
| 79-01-6 | Trichloroethene (or trichloroethylene) | 5.09E+00 | MG/KG |
| 7440-41-7 | 1,1,1,2-Tetrachloroethane | 1.10E-02 | MG/L |
| 7440-38-2 | 1,1,2,2-Tetrachloroethane | 1.40E-03 | MG/L |
| 7440-34-8 | Actinium-227 | 4.50E-01 | PCI/G |
| 14596-10-2 | Americium-241 | 6.30E+00 | PCI/G |
| 13982-38-2 | Bismuth-207 | 1.60E-01 | PCI/G |
| 10045-97-3 | Cesium-137 | 3.40E-01 | PCI/G |
| 10198-40-0 | Cobalt-60 | 7.00E-02 | PCI/G |
| 14255-04-0 | Lead-210 | 6.20E-01 | PCI/G |
| 13981-16-3 | Plutonium-238 | 6.10E+00 | PCI/G |
| 15117-48-3 | Plutonium-239 | 5.50E+00 | PCI/G |

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| | | |
|---|---|---|
| PU239/240 | Plutonium-240 | 6.10E+00 PCI/G |
| 13966-00-2 | Potassium-40 | 1.42E+00 PCI/G |
| 14331-85-2 | Protactinium-231 | 3.90E-01 PCI/G |
| 13982-63-3 | Radium-226 | 9.00E-02 PCI/G |
| 10098-97-2 | Strontium-90 | 9.40E+00 PCI/G |
| 14274-82-9 | Thorium-228 | 1.10E-01 PCI/G |
| 14269-63-7 | Thorium-230 | 9.00E-02 PCI/G |
| 7440-29-1 | Thorium-232 | 7.00E-02 PCI/G |
| 10028-17-8 | Tritium | 2.35E+04 PCI/G |
| 13968-55-3 | Uranium-233 | 9.68E-01 PCI/G |
| 13966-29-5 | Uranium-234 | 1.05E+01 PCI/G |
| 15117-96-1 | Uranium-235 | 1.60E+00 PCI/G |
| 24678-82-8 | Uranium-238 | 1.00E-01 PCI/G |
| 14596-10-2 | Americium-241 | 4.90E-01 PCI/L |
| 14331-79-4 | Bismuth-210 | 2.20E+01 PCI/L |
| 15262-20-1 | Radium-228 | 3.30E-01 PCI/L |
| 13967-73-2 | Strontium-85 | 1.10E+02 PCI/L |
| 10098-97-2 | Strontium-90 | 3.90E+00 PCI/L |
| 15623-47-9 | Thorium-227 | 4.00E+00 PCI/L |
| 14274-82-9 | Thorium-228 | 6.90E-01 PCI/L |
| 14269-63-7 | Thorium-230 | 1.20E-01 PCI/L |
| 7440-29-1 | Thorium-232 | 3.10E-01 PCI/L |
| 24678-82-8 | Uranium-238+D | 2.02E-01 PCI/L |
| | **OU9 Soil Background Values** | |
| 72-54-8 | 4,4'-DDD | 4.2 MG/KG |
| 72-55-9 | 4,4'-DDE | 4.3 MG/KG |
| 50-29-3 | 4,4'-DDT | 13 MG/KG |
| 309-00-2 | Aldrin | ND MG/KG |
| 5103-71-9 | Alpha Chlordane | ND MG/KG |
| 319-84-6 | Alpha-BHC | ND MG/KG |
| 7429-90-5 | Aluminum | 19000 MG/KG |
| 14596-10-2 | Americium-241 | ND MG/KG |
| 12672-29-6 | Aroclor-1248 | ND MG/KG |
| 11097-69-1 | Aroclor-1254 | 58 MG/KG |
| 11096-82-5 | Aroclor-1260 | ND MG/KG |
| 7440-38-2 | Arsenic | 8.6 MG/KG |
| 7440-39-3 | Barium | 180 MG/KG |
| 7440-41-7 | Beryllium | 1.3 MG/KG |
| 319-85-7 | Beta-BHC | ND MG/KG |
| 7440-69-9 | Bismuth | ND MG/KG |
| 13982-38-2 | Bismuth-207 | ND MG/KG |
| 14331-79-4 | Bismuth-210m | ND MG/KG |
| 7440-43-9 | Cadmium | 2.1 MG/KG |
| 7440-70-2 | Calcium | 310000 MG/KG |
| 7440-47-3 | Chromium | 20 MG/KG |
| 7440-48-4 | Cobalt | 19 MG/KG |
| 7440-50-8 | Copper | 26 MG/KG |
| 57-12-5 | Cyanide | ND MG/KG |
| 60-57-1 | Dieldrin | ND MG/KG |
| 959-98-8 | Endosulfan I | ND MG/KG |
| 1031-07-8 | Endosulfan Sulfate | ND MG/KG |



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| | | | |
|---|---|---|---|
| 72-20-8 | Endrin | ND | MG/KG |
| 7421-93-4 | Endrin Aldehyde | ND | MG/KG |
| 53494-70-5 | Endrin Ketone | ND | MG/KG |
| 5103-74-2 | Gamma Chlordane | ND | MG/KG |
| 58-89-9 | Gamma-BHC (Lindane) | ND | MG/KG |
| 76-44-8 | Heptachlor | ND | MG/KG |
| 1024-57-3 | Heptachlor Epoxide | ND | MG/KG |
| 77-47-4 | Hexachlorocyclopentadiene | ND | MG/KG |
| 7439-89-6 | Iron | 35000 | MG/KG |
| 7439-92-1 | Lead | 48 | MG/KG |
| 7439-93-2 | Lithium | 26 | MG/KG |
| 7439-95-4 | Magnesium | 40000 | MG/KG |
| 7439-96-5 | Manganese | 1400 | MG/KG |
| 7439-97-6 | Mercury | ND | MG/KG |
| 72-43-5 | Methoxychlor | 30 | MG/KG |
| 7439-98-7 | Molybdenum | 27 | MG/KG |
| 7440-02-0 | Nickel | 32 | MG/KG |
| 7440-09-7 | Potassium | 1900 | MG/KG |
| 7782-49-2 | Selenium | ND | MG/KG |
| 7440-22-4 | Silver | 1.7 | MG/KG |
| 7440-23-5 | Sodium | 240 | MG/KG |
| 7440-28-0 | Thallium | 0.46 | MG/KG |
| 7440-31-5 | Tin | 20 | MG/KG |
| 7440-62-2 | Vanadium | 25 | MG/KG |
| 7440-66-6 | Zinc | 140 | MG/KG |
| 7440-34-8 | Actinium-227 | 1.10E-01 | PCI/G |
| 10045-97-3 | Cesium-137 | 0.42 | PCI/G |
| 14255-04-0 | Lead-210 | 1.20E+00 | PCI/G |
| 13981-16-3 | Plutonium-238 | 0.13 | PCI/G |
| 15117-48-3 | Plutonium-239 | 1.80E-01 | PCI/G |
| PU239/240 | Plutonium-240 | 1.80E-01 | PCI/G |
| 13966-00-2 | Potassium-40 | 37 | PCI/G |
| 14331-85-2 | Protactinium-231 | 1.10E-01 | PCI/G |
| 13982-63-3 | Radium-226 | 2 | PCI/G |
| 10098-97-2 | Strontium-90 | 0.72 | PCI/G |
| 14274-82-9 | Thorium-228 | 1.5 | PCI/G |
| 14269-63-7 | Thorium-230 | 1.9 | PCI/G |
| 7440-29-1 | Thorium-232 | 1.4 | PCI/G |
| 10028-17-8 | Tritium | 1.6 | PCI/G |
| 13966-29-5 | Uranium-234 | 1.1 | PCI/G |
| 15117-96-1 | Uranium-235 | 0.11 | PCI/G |
| 24678-82-8 | Uranium-238 | 1.2 | PCI/G |



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| | Core Team Determined Screening Levels | | |
|---|---|---|---|
| 7439-92-1 | Lead | 400 | MG/KG |
| 7440-34-8 | Actinium-227 | 5.60E-01 | PCI/G |
| 14596-10-2 | Americium-241 | 6.3 | PCI/G |
| 13982-38-2 | Bismuth-207 | 0.175 | PCI/G |
| 10045-97-3 | Cesium-137 | 0.76 | PCI/G |
| 10198-40-0 | Cobalt-60 | 7.00E-02 | PCI/G |
| 14255-04-0 | Lead-210 | 1.80E+00 | PCI/G |
| 13981-16-3 | Plutonium-238 | 55 | PCI/G |
| 14331-85-2 | Protactinium-231 | 4.00E+00 | PCI/G |
| 13982-63-3 | Radium-226 | 2.1 | PCI/G |
| 14274-82-9 | Thorium-228 | 1.61 | PCI/G |
| 14269-63-7 | Thorium-230 | 2 | PCI/G |
| 7440-29-1 | Thorium-232 | 1.47 | PCI/G |
| 15117-96-1 | Uranium-235 | 1.7 | PCI/G |
| 24678-82-8 | Uranium-238+D | 1.3 | PCI/G |
| | | | |
| | **Maximum Contaminant Level for Drinking Water** | | |
| 71-55-6 | 1,1,1-Trichloroethane | 0.2 | MG/L |
| 79-00-5 | 1,1,2-Trichloroethane | 0.005 | MG/L |
| 75-35-4 | 1,1-Dichloroethene | 0.007 | MG/L |
| 120-82-1 | 1,2,4-Trichlorobenzene | 0.07 | MG/L |
| 156-59-2 | 1,2-cis-Dichloroethene | 0.07 | MG/L |
| 106-93-4 | 1,2-Dibromoethane | 0.00005 | MG/L |
| 95-50-1 | 1,2-Dichlorobenzene | 0.6 | MG/L |
| 107-06-2 | 1,2-Dichloroethane | 0.005 | MG/L |
| 78-87-5 | 1,2-Dichloropropane | 0.005 | MG/L |
| 156-60-5 | 1,2-trans-Dichloroethene | 0.01 | MG/L |
| 106-46-7 | 1,4-Dichlorobenzene | 0.075 | MG/L |
| 95-95-4 | 2,4,5-Trichlorophenol | 0.05 | MG/L |
| 94-75-7 | 2,4-D | 0.07 | MG/L |
| 7440-36-0 | Antimony | 0.0006 | MG/L |
| 7440-38-2 | Arsenic | 0.05 | MG/L |
| 7440-39-3 | Barium | 2 | MG/L |
| 71-43-2 | Benzene | 0.005 | MG/L |
| 50-32-8 | Benzo(a)pyrene | 0.002 | MG/L |
| 7440-41-7 | Beryllium | 0.004 | MG/L |
| 117-81-7 | bis(2-ethylhexyl)phthalate | 0.006 | MG/L |
| 75-27-4 | Bromodichloromethane | 0.008 | MG/L |
| 75-25-2 | Bromoform | 0.008 | MG/L |
| 7440-43-9 | Cadmium | 0.005 | MG/L |
| 56-23-5 | Carbon Tetrachloride | 0.005 | MG/L |
| 57-74-9 | Chlordane | 0.002 | MG/L |
| 108-90-7 | Chlorobenzene | 0.1 | MG/L |
| 67-66-3 | Chloroform | 0.008 | MG/L |
| 7440-47-3 | Chromium | 0.1 | MG/L |
| 7440-50-8 | Copper | 1.3 | MG/L |
| 57-12-5 | Cyanide | 0.2 | MG/L |
| 96-12-8 | Dibromochloropropane | 0.0002 | MG/L |
| 75-09-2 | Dichloromethane (Methylene Chloride) | 0.005 | MG/L |
| 88-85-7 | Dinoseb | 0.007 | MG/L |
| 1746-01-6 | Dioxin | 0.00000003 | MG/L |

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| | | |
|---|---|---|
| 72-20-8 | Endrin | 0.002 MG/L |
| 100-41-4 | Ethylbenzene | 0.07 MG/L |
| 16984-48-8 | Flouride | 4 MG/L |
| 58-89-9 | Gamma-BHC (Lindane) | 0.0002 MG/L |
| 76-44-8 | Heptachlor | 0.0004 MG/L |
| 1024-57-3 | Heptachlor Epoxide | 0.0002 MG/L |
| 118-74-1 | Hexachlorobenzene | 0.001 MG/L |
| 77-47-4 | Hexachlorocyclopentadiene | 0.05 MG/L |
| 7439-92-1 | Lead | 0.015 MG/L |
| 7439-97-6 | Mercury | 0.002 MG/L |
| 72-43-5 | Methoxychlor | 0.04 MG/L |
| 7440-02-0 | Nickel | 0.1 MG/L |
| NO3 | Nitrate | 10 MG/L |
| 14797-65-0 | Nitrite | 1 MG/L |
| 87-86-5 | Pentachlorophenol | 0.001 MG/L |
| 7782-49-2 | Selenium | 0.05 MG/L |
| 100-42-5 | Styrene | 0.1 MG/L |
| 127-18-4 | Tetrachloroethene | 0.005 MG/L |
| 7440-28-0 | Thallium | 0.002 MG/L |
| 108-88-3 | Toluene | 1 MG/L |
| 8001-35-2 | Toxaphene | 0.003 MG/L |
| 79-01-6 | Trichloroethene | 0.005 MG/L |
| 75-01-4 | Vinyl Chloride | 0.002 MG/L |
| 1330-20-7 | Xylenes, Total | 10 MG/L |
| 7440-34-8 | Actinium-227 | 0.4 PCI/L |
| 14596-10-2 | Americium-241 | 1.2 PCI/L |
| 13982-38-2 | Bismuth-207 | 1200 PCI/L |
| 10045-97-3 | Cesium-137 | 120 PCI/L |
| 10198-40-0 | Cobalt-60 | 400 PCI/L |
| 13981-16-3 | Plutonium-238 | 1.6 PCI/L |
| 13982-63-3 | Radium-226 | 4 PCI/L |
| 10098-97-2 | Strontium-90 | 40 PCI/L |
| 14274-82-9 | Thorium-228 | 16 PCI/L |
| 14269-63-7 | Thorium-230 | 12 PCI/L |
| 7440-29-1 | Thorium-232 | 2 PCI/L |
| 10028-17-8 | Tritium | 20000 PCI/L |
| 13968-55-3 | Uranium-233 | 20 PCI/L |
| 13966-29-5 | Uranium-234 | 20 PCI/L |
| 15117-96-1 | Uranium-235 | 24 PCI/L |
| 24678-82-8 | Uranium-238 | 24 PCI/L |
| | | |
| | **Guideline Values based on the Hazard Index** | |
| 76-13-1 | 1,1,2-Trichloro-1,2,2triflouroethane | 7.00E+04 MG/KG |
| 75-34-3 | 1,1-Dichloroethane | 7.80E+00 MG/KG |
| 120-82-1 | 1,2,4-Trichlorobenzene | 2.04E+04 MG/KG |
| 156-59-2 | 1,2-cis-Dichloroethene | 2.13E+03 MG/KG |
| 156-60-5 | 1,2-trans-Dichloroethene | 4.30E+03 MG/KG |
| 99-65-0 | 1,3-Dinitrobenzene | 2.00E+02 MG/KG |
| 118-96-7 | 2,4,6-Trinitrotoluene | 1.00E+03 MG/KG |
| 78-93-3 | 2-Butanone | 9.30E+03 MG/KG |
| 95-57-8 | 2-Chlorophenol | 1.06E+03 MG/KG |
| 108-10-1 | 2-Methyl-4-pentanone | 7.00E+02 MG/KG |



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| | | | |
|---|---|---|---|
| 50-29-3 | 4,4'-DDT | 1.10E+02 | MG/KG |
| 106-44-5 | 4-Methylphenol | 1.10E+03 | MG/KG |
| 67-64-1 | Acetone | 2.10E+04 | MG/KG |
| 309-00-2 | Aldrin | 6.4 | MG/KG |
| 5103-71-9 | Alpha Chlordane | 110 | MG/KG |
| 7429-90-5 | Aluminum | 210000 | MG/KG |
| 120-12-7 | Anthracene | 6.40E+04 | MG/KG |
| 7440-36-0 | Antimony | 8.50E+01 | MG/KG |
| 11097-69-1 | Aroclor-1254 | 4.30E+00 | MG/KG |
| 7440-38-2 | Arsenic | 6.40E+01 | MG/KG |
| 7440-39-3 | Barium | 1.50E+04 | MG/KG |
| 65-85-0 | Benzoic Acid | 8.50E+05 | MG/KG |
| 7440-41-7 | Beryllium | 1.10E+03 | MG/KG |
| 117-81-7 | Bis(2-ethylhexyl)phthalate | 4.30E+03 | MG/KG |
| 75-27-4 | Bromodichloromethane | 4.30E+03 | MG/KG |
| 75-25-2 | Bromoform | 4.30E+03 | MG/KG |
| 85-68-7 | Butyl Benzyl Phthalate | 4.30E+04 | MG/KG |
| 7440-43-9 | Cadmium | 2.10E+02 | MG/KG |
| 75-15-0 | Carbon Disulfide | 2.80E+02 | MG/KG |
| 56-23-5 | Carbon Tetrachloride | 1.50E+02 | MG/KG |
| 75-00-3 | Chloroethane | 1.60E+02 | MG/KG |
| 67-66-3 | Chloroform | 2.10E+03 | MG/KG |
| 7440-47-3 | Chromium | 1.10E+03 | MG/KG |
| 18540-29-9 | Chromium-VI | 6.39E+02 | MG/KG |
| 7440-50-8 | Copper | 7.90E+03 | MG/KG |
| 57-12-5 | Cyanide | 4.30E+03 | MG/KG |
| 53-70-3 | Dibenz(a,h)anthracene | 4.08E-02 | MG/KG |
| 124-48-1 | Dibromochloromethane | 4.30E+03 | MG/KG |
| 75-09-2 | Dichloromethane | 1.00E+03 | MG/KG |
| 60-57-1 | Dieldrin | 1.10E+01 | MG/KG |
| 84-74-2 | Di-n-butyl Phthalate | 2.10E+04 | MG/KG |
| 117-84-0 | Di-n-octyl Phthalate | 4.30E+03 | MG/KG |
| 959-98-8 | Endosulfan I | 1300 | MG/KG |
| 33213-65-9 | Endosulfan II | 1300 | MG/KG |
| 100-41-4 | Ethylbenzene | 4.80E-01 | MG/KG |
| 86-73-7 | Flourene | 8.50E+03 | MG/KG |
| 206-44-0 | Fluoranthene | 8.50E+03 | MG/KG |
| 5103-74-2 | Gamma Chlordane | 110 | MG/KG |
| 58-89-9 | Gamma-BHC (Lindane) | 64 | MG/KG |
| 76-44-8 | Heptachlor | 110 | MG/KG |
| 1024-57-3 | Heptachlor Epoxide | 2.8 | MG/KG |
| 110-54-3 | Hexane | 9.10E+01 | MG/KG |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 4.08E-01 | MG/KG |
| 78-59-1 | Isophorone | 4.30E+04 | MG/KG |
| 7439-96-5 | Manganese | 2.70E+04 | MG/KG |
| 7439-97-6 | Mercury | 6.40E+01 | MG/KG |
| 72-43-5 | Methoxychlor | 1100 | MG/KG |
| 7440-02-0 | Nickel | 4.30E+03 | MG/KG |
| 87-86-5 | Pentachlorophenol | 6.40E+03 | MG/KG |
| 108-95-2 | Phenol | 1.30E+05 | MG/KG |
| 129-00-0 | Pyrene | 6.40E+03 | MG/KG |
| 7782-49-2 | Selenium | 1100 | MG/KG |



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| | | | |
|---|---|---|---|
| 7440-22-4 | Silver | 1.10E+03 | MG/KG |
| 127-18-4 | Tetrachloroethene | 2.10E+03 | MG/KG |
| 7440-28-0 | Thallium | 17 | MG/KG |
| 7440-31-5 | Tin | 130000 | MG/KG |
| 108-88-3 | Toluene | 2.50E+02 | MG/KG |
| 75-69-4 | Trichlorofluoromethane | 7.30E+02 | MG/KG |
| 7440-62-2 | Vanadium | 1.50E+03 | MG/KG |
| 1330-20-7 | Xylenes, Total | 4.30E+05 | MG/KG |
| 7440-66-6 | Zinc | 6.40E+04 | MG/KG |
| 7440-41-7 | 1,1,1,2-Tetrachloroethane | 2.90E-01 | MG/L |
| 7440-38-2 | 1,1,2,2-Tetrachloroethane | 2.50E-01 | MG/L |
| 71-55-6 | 1,1,1-Trichloroethane | 1.80E+00 | MG/L |
| 76-13-1 | 1,1,2-Trichloro-1,2,2triflouroethane | 2.50E+03 | MG/L |
| 7429-90-5 | Aluminum | 100 | MG/L |
| 7440-42-8 | Boron | 9.00E+00 | MG/L |
| 18540-29-9 | Chromium-VI | 3.00E-01 | MG/L |
| 7440-48-4 | Cobalt | 6 | MG/L |
| 7440-50-8 | Copper | 4.00E+00 | MG/L |
| 7439-98-7 | Molybdenum | 0.5 | MG/L |
| 7782-49-2 | Selenium | 0.5 | MG/L |
| 7440-28-0 | Thallium | 0.008 | MG/L |
| 7440-31-5 | Tin | 60 | MG/L |
| 2691-41-0 | HMX | 1.10E+04 | UG/KG |
| 121-82-4 | RDX | 6.40E+04 | UG/KG |

# Appendix M

## Occurrence Reports

A search of the occurrence reporting system revealed nine reports, all of which were minor and without environmental impact:

- radioactive contamination found outside of a radiological control area (4), (copies provided in Appendix M),
- fire suppression system actuation (4), and
- measurement machine and gaging system damaged during movement.

ALO-DA-EGGM-EGGMAT01-1991-0004 Final Report

# Occurrence Report

Tritium Facilities
(Name of Facility)

Unknown
(Facility Function)

Mound Plant EG&G Mound Applied Technologies
(Laboratory, Site, or Organization)

**Name:** Woltermann, H. Anthony
**Title:** Director, Technology Department **Telephone No.:** (513) 865-3415
(Facility Manager/Designee)

**Name:** Coco, L. M.
**Title:** Mgr, Radiological & Industrial Sfty **Telephone No.:** (513) 865-3928
(Originator/Transmitter)

**Name:** **Date:**
(Authorized Classifier (AC))

1. **Occurrence Report Number:** ALO-DA-EGGM-EGGMAT01-1991-0004

Tritium contaminated excess equipment outside of radiation control area. Group 2, Subgroup C, page G2-5, Off-Normal.

2. **Report Type and Date:** Final

| | Date | Time |
|---|---|---|
| **Notification:** | 02/08/1991 | |
| **Initial Update:** | 02/21/1991 | |
| **Latest Update:** | 02/21/1991 | |
| **Final:** | 03/22/1991 | |

3. **Occurrence Category:** Off-Normal

4. **Number of Occurrences:** 1 **Original OR:**

5. **Division or Project:** EG&G Mound

6. **Secretarial Office:** DP - Defense Programs

7. **System, Bldg., or Equipment:** Excess Eqpmt Bldg 19

8. **UCNI?:** No

9. **Plant Area:** Test Fire

10. **Date and Time Discovered:** 02/07/1991 15:00 (ETZ)

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**11. Date and Time Categorized:** 02/07/1991 16:15 (ETZ)

**12. DOE Notification:**

| Date | Time | Person Notified | Organization |
|---|---|---|---|
| 02/08/1991 | 13:35 (ETZ) | | |

**13. Other Notifications:**

**14. Subject or Title of Occurrence:**

Tritium contaminated excess equipment outside of radiation control area. Group 2, Subgroup C, page G2-5. Off-Normal.

**15. Nature of Occurrence:**

**16. Description of Occurrence:**

During a routine check of excess equipment at Building 19, an electric pump motor and gear drive were found to be tritium contaminated. Liquid scintillation counting indicated 26,600 DPM per 100 square centimeters on the motor and 4,200 DPM per 100 square centimeters on the gear drive. This excess equipment has been in storage for approximately 10 years.

**17. Operating Conditions of Facility at Time of Occurrence:**

Normal

**18. Activity Category:**

- Unknown

**19. Immediate Actions Taken and Results:**

The items have been triple bagged and marked as contaminated. They have been secured pending an investigation.

**20. Direct Cause:**

2) Procedure Problem
~. Procedure Problems Reported Prior to 04/01/91

**21. Contributing Cause(s):**

**22. Root Cause:**

2) Procedure Problem
~. Procedure Problems Reported Prior to 04/01/91

**23. Description of Cause:**

Because of the length of time this pump has been stored, the documentation history is not clear. There is no positive

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evidence that the pump was ever used in a tritium control area. There is the possibility that the pump was contaminated secondarily by touching with contaminated hands. In any case, proper care in taking wipes was not taken.

**24. Evaluation (by Facility Manager/Designee):**

Having the proper procedures in place along with heightened ES&H awareness precludes a similar incident from occurring in the future. The present system in place prevents the shipping of contaminated equipment off site.

**25. Is Further Evaluation Required?:** No

**26. Corrective Actions**

(* = Date added/revised since final report was approved.)

1. A copy of this report will be sent to all tritium managers to further heighten awareness of the need to follow wipe procedures and to discuss the need to follow procedures with their staffs.

| | |
|---|---|
| **Target Completion Date:** 03/20/1991 | ***Completion Date:** 03/26/1991 |

**27. Impact on Environment, Safety and Health:**

None

**28. Programmatic Impact:**

None

**29. Impact on Codes and Standards:**

**30. Lessons Learned:**

While such an incident is highly unlikely today, we must continue to increase our ES&H awareness in these matters as well as continually reviewing procedures and discussing these matters with the appropriate staffs. A copy of this report will be sent to all tritium managers by 1991/04/01.

**31. Similar Occurrence Report Numbers:**

1. None

**32. User-defined Field #1:**

**33. User-defined Field #2:**

**34. DOE Facility Representative Input:**

**35. DOE Program Manager Input:**

**36. Approvals:**

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**Approved by:** Woltermann, H. A., Facility Manager/Designee
**Date:** 03/20/1991
**Telephone No.:** (513) 865-3415

**Approved by:** Gartrell, G. R., Facility Representative/Designee
**Date:** 03/20/1991
**Telephone No.:**

**Approved by:** Illegible, Program Manager/Designee
**Date:** 03/22/1991
**Telephone No.:**

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ALO-DA-EGGM-EGGMAT02-1991-1003 Final Report

# Occurrence Report

Nuclear Energy Facilities
(Name of Facility)

Plutonium Processing and Handling
(Facility Function)

Mound Plant EG&G Mound Applied Technologies
(Laboratory, Site, or Organization)

**Name:** Woltermann, H. Anthony
**Title:** Director, Technology **Telephone No.:** (513) 865-3415
(Facility Manager/Designee)

**Name:** L. M. Coco
**Title:** Manager, Radiological & Ind. Safety **Telephone No.:** (513) 865-3928
(Originator/Transmitter)

**Name:** **Date:**
(Authorized Classifier (AC))

1. **Occurrence Report Number:** ALO-DA-EGGM-EGGMAT02-1991-1003

Discovery of fixed alpha contamination on vacuum gage being surveyed for release for unrestricted use.

2. **Report Type and Date:** Final

| | Date | Time |
|---|---|---|
| **Notification:** | 06/05/1991 | 15:49 (MTZ) |
| **Initial Update:** | 06/19/1991 | 13:15 (MTZ) |
| **Latest Update:** | 06/19/1991 | 13:15 (MTZ) |
| **Final:** | 05/15/1992 | 11:45 (MTZ) |

3. **Occurrence Category:** Off-Normal

4. **Number of Occurrences:** 1 **Original OR:**

5. **Division or Project:** EG&G MOUND APPLIED TECHNOLOGIES

6. **Secretarial Office:** DP - Defense Programs

7. **System, Bldg., or Equipment:** BUILDING 19

8. **UCNI?:** No

9. **Plant Area:** TEST FIRE

10. **Date and Time Discovered:** 04/15/1991 08:00 (ETZ)

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**11. Date and Time Categorized:** 06/05/1991 09:00 (ETZ)

**12. DOE Notification:**

| Date | Time | Person Notified | Organization |
|---|---|---|---|
| 06/05/1991 | 12:00 (ETZ) | I. H. Schmidt | DOE/DAO |

**13. Other Notifications:**

**14. Subject or Title of Occurrence:**

Discovery of fixed alpha contamination on vacuum gage being surveyed for release for unrestricted use.

**15. Nature of Occurrence:**

02) Environmental
C. Hazardous Material Contamination

**16. Description of Occurrence:**

On April 15, 1991, a large vacuum gage transferred from Building 36, a non-radiologically controlled facility, to Building 19, also a non-radiologically controlled facility, was discovered to have fixed only alpha contamination present on the external case. The contamination was discovered during a routine survey of excess equipment scheduled for lot sale. A small area on the side of the gauge read approximately 15,000 dpm/100 cm2 fixed alpha contamination. Decontamination attempts were unsuccessful in removing the source of the reading. The item was transferred to the Environmental Laboratory for alpha pulse height analysis. The large size of the unit (18 inches in diameter) required the construction of a special vacuum chamber and modification of alpha spectrometry equipment. The contamination has been determined to be Pu-238. The cause of the contamination is unknown. An investigation was conducted to determine the origin of the gauge. Its origin prior to its use in Building 36, could not be determined. The gauge was secured in the

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health physics office in Building 30 pending further decontamination and release.

Group 2C; Off-Normal; page G2-5.

This occurrence report was reviewed by an authorized derivative classifier (J. F. Lemming) and contains no classified nor UCNI information.

**17. Operating Conditions of Facility at Time of Occurrence:**

Building 19 is a warehouse for storage of excess equipment.

**18. Activity Category:**

01 - Construction

**19. Immediate Actions Taken and Results:**

Upon discovery of the fixed contamination, the item was isolated, subsequently transferred to the Analytical Laboratory, and remained secured in the Health Physics Laboratory. An investigation was conducted to determine the origin of contamination. The origin of the gauge prior to its use in Building 36 could not be determined.

**20. Direct Cause:**

3) Personnel Error
D. Other Human Error

**21. Contributing Cause(s):**

3) Personnel Error
D. Other Human Error

**22. Root Cause:**

3) Personnel Error
A. Inattention to Detail

**23. Description of Cause:**

Because of the length of time this gage has been stored, the documentation history is not clear. There is no positive evidence that

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the gage was ever used in a radiation control area. In any case, proper care in monitoring this gage was not taken.

**24. Evaluation (by Facility Manager/Designee):**

The discovery of the fixed contamination on an item improperly released for unrestricted use on site several years before the current planned release, is evidence of our improved health physics monitoring program. The current procedures in place along with heightened environment, safety and health awareness precludes a similar incident from occurring in the future. The present system in place prevents the shipping of contaminated equipment off site.

**25. Is Further Evaluation Required?:** No

**26. Corrective Actions**

(* = Date added/revised since final report was approved.)

1. 1. This incident was discussed with all Health Physics personnel within two weeks after the incident. A copy of this final report will be sent to all managers with responsibility for equipment in radiation control areas to further heighten awareness of the need to follow wipe procedures and to discuss the need to follow procedures with their staffs.

| | |
|---|---|
| **Target Completion Date:** 03/19/1992 | **Completion Date:** 03/10/1992 |

**27. Impact on Environment, Safety and Health:**

None

**28. Programmatic Impact:**

None

**29. Impact on Codes and Standards:**

**30. Lessons Learned:**

Current Health Physics survey practices are adequate to assure that materials released for unrestricted use from the Mound Plant site are acceptable for release.

**31. Similar Occurrence Report Numbers:**

1. ALO-DA-EGGM-EGGMAT-OF-91-01 and
2. ALO-DA-EGGM-EGGMAT-TR-91-04

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**32. User-defined Field #1:**

**33. User-defined Field #2:**

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**34. DOE Facility Representative Input:**

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**35. DOE Program Manager Input:**

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**36. Approvals:**

**Approved by:** Woltermann, H. Anthony, Facility Manager/Designee
**Date:** 03/18/1992
**Telephone No.:** (513) 865-3415

**Approved by:** GARTRELL, GEORGE R., Facility Representative/Designee
**Date:** 04/28/1992
**Telephone No.:**

**Approved by:** HAGAN, RALPH A., Program Manager/Designee
**Date:** 05/15/1992
**Telephone No.:**

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ALO-DA-EGGM-EGGMAT02-1992-0010 Final Report

# Occurrence Report

Nuclear Energy Facilities

(Name of Facility)

Plutonium Processing and Handling

(Facility Function)

Mound Plant EG&G Mound Applied Technologies

(Laboratory, Site, or Organization)

**Name:** Woltermann, H. Anthony
**Title:** Director, Technology **Telephone No.:** (513) 865-3415

(Facility Manager/Designee)

**Name:** Wayne R. Amos
**Title:** Programs Manager **Telephone No.:** (513) 865-3058

(Originator/Transmitter)

**Name:** H. F. Anderson **Date:** 06/22/1993

(Authorized Classifier (AC))

**1. Occurrence Report Number:** ALO-DA-EGGM-EGGMAT02-1992-0010

Contaminated Shipment

**2. Report Type and Date:** Final

| | Date | Time |
|---|---|---|
| **Notification:** | 10/08/1992 | 16:54 (MTZ) |
| **Initial Update:** | 10/22/1992 | 09:12 (MTZ) |
| **Latest Update:** | 10/22/1992 | 10:53 (MTZ) |
| **Final:** | 06/29/1993 | 05:12 (MTZ) |

**3. Occurrence Category:** Off-Normal

**4. Number of Occurrences:** 1 **Original OR:**

**5. Division or Project:** EG&G Mound Applied Technologies

**6. Secretarial Office:** DP - Defense Programs

**7. System, Bldg., or Equipment:** saw

**8. UCNI?:** No

**9. Plant Area:** Off-Site

**10. Date and Time Discovered:** 09/24/1992 12:00 (ETZ)

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**11. Date and Time Categorized:** 10/08/1992 15:30 (ETZ)

**12. DOE Notification:**

| Date | Time | Person Notified | Organization |
|---|---|---|---|
| 09/24/1992 | 16:00 (ETZ) | Paul Matthews | DOE/DAO |

**13. Other Notifications:**

| Date | Time | Person Notified | Organization |
|---|---|---|---|
| 10/08/1992 | 15:00 (ETZ) | Paul Matthews (update) | DOE/DAO |

**14. Subject or Title of Occurrence:**

Contaminated Shipment

**15. Nature of Occurrence:**

06) Transportation

**16. Description of Occurrence:**

On September 24, 1992, a Health Physics technician surveyed an equipment lot which was sent off-site to be sold at auction. This material was transported in a vendor vehicle but not released to the public. One of the items, a metallographic saw, was found to wipe 126 dpm per 100 centimeters squared based on 3 wipes of the top of the saw surface. (This saw was previously wiped at Mound and found to be free of contamination). The saw was placed in a plastic bag and returned to Mound. The wipe taken on the saw was initially subjected to gamma ray spectroscopy. Based on the spectroscopic results and the history of the saw, the contamination was reported to be U-238. U-238 has a contamination control level of 1000 dpm/100 centimeters squared. This incident originally was thought not to be reportable, but a decision was made to investigate it from a "lessons learned" perspective. As part of the investigation, a gross alpha pulse height analysis indicated that the contamination on the saw could be Pu-238, rather than U-238. More detailed analysis completed on 10/8/92 confirmed that Pu-238 was the single contaminant. The 126 dpm/100 centimeters squared, for Pu-238 is below the Department of Transportation regulation of 220 dpm/100 centimeters squared, but above the Mound administrative control limit of 20 dpm/100 centimeters squared.

This occurrence report was reviewed by an Authorized Derivative Classifier (H. F. Anderson) on 06/22/93 at 1530 hours and contains no Classified or UCNI Information.

**17. Operating Conditions of Facility at Time of Occurrence:**

Normal Operating Conditions

**18. Activity Category:**

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08 - Transportation

**19. Immediate Actions Taken and Results:**

After the initial discovery of contamination, the saw was bagged and returned to Mound. The area where the saw was originally located was surveyed and found to be free of contamination as well as the Building 19 storage area and the vendor truck used to transport the saw. An investigation team was formed to review the adequacy of the procedural controls for release of equipment and materials from the Mound Plant for use by the general public.

**20. Direct Cause:**

3) Personnel Error
A. Inattention to Detail

**21. Contributing Cause(s):**

2) Procedure Problem
A. Defective or Inadequate Procedure

4) Design Problem
C. Error in Equipment or Material Selection

**22. Root Cause:**

2) Procedure Problem
A. Defective or Inadequate Procedure

**23. Description of Cause:**

A careful investigation indicated that the contamination on the saw was from a small area located near the edge of brown masking tape which was left on the saw. The masking tape was used as a label to mark the equipment for excess. When the saw was surveyed at Mound with a portable alpha counter, the tape blocked detection of the contamination. The saw was carefully surveyed off site with a FIDLER which detected the contamination. The direct cause was that all masking tape was not removed from the object before surveying. A contributing cause was that a careful scan of the item with a FIDLER instrument was not done at Mound prior to shipment. A survey using this instrument may have detected the contamination despite the presence of the tape. Both direct and contributing causes were in turn caused by a lack of an adequate documented procedure for transferring materials off site. The root cause was thus determined to be lack of an adequate documented procedure.

**24. Evaluation (by Facility Manager/Designee):**

The importance of controlling radioactive contamination at both the radiation control area boundary and at the site boundary cannot be over emphasized. Carefully written procedures and adherence to these procedures are essential. Resources should be applied to prevent contamination from leaving the site. Off site surveys should only be required

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for unusual situations or for auditing purposes.

**25. Is Further Evaluation Required?:** No

**26. Corrective Actions**

(* = Date added/revised since final report was approved.)

1. Procedures to control transfer of materials off site will be finalized and will include details on removing foreign materials such as tape before surveying, the use of FIDLER units in surveying and the use of official material transfer tags instead of tape to mark excess equipment.

| | |
|---|---|
| ***Target Completion Date:** 12/15/1993 | ***Completion Date:** 01/12/1995 |

2. Material transfer personnel and Health Physics personnel will be trained in this procedure.

| | |
|---|---|
| ***Target Completion Date:** 08/15/1995 | ***Completion Date:** 08/25/1995 |

**27. Impact on Environment, Safety and Health:**

None

**28. Programmatic Impact:**

None

**29. Impact on Codes and Standards:**

None

**30. Lessons Learned:**

The need for well documented adequate procedures cannot be over emphasized. Informal practices must be replaced by strict conduct of operations.

**31. Similar Occurrence Report Numbers:**

1. None

**32. User-defined Field #1:**

**33. User-defined Field #2:**

**34. DOE Facility Representative Input:**

**35. DOE Program Manager Input:**

**36. Approvals:**

M 13 of 18

**Approved by:** Woltermann, H. Anthony, Facility Manager/Designee
**Date:** 06/22/1993
**Telephone No.:** (513) 865-3415

**Approved by:** MATTHEWS, PAUL O., Facility Representative/Designee
**Date:** 06/24/1993
**Telephone No.:**

**Approved by:** KUMAR, RAMENDRA, Program Manager/Designee
**Date:** 06/29/1993
**Telephone No.:** (301) 903-2865

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OH-MB-BWO-BWO01-1999-0013 Final Report

# Occurrence Report

Tritium Facilities
(Name of Facility)

Tritium Activities
(Facility Function)

Mound Plant Babcock and Wilcox of Ohio, Inc.
(Laboratory, Site, or Organization)

**Name:** ALLISON, JERRY L
**Title:** BUILDING MGR SW/R TRITIUM COMPLEX **Telephone No.:** (513) 865-4533
(Facility Manager/Designee)

**Name:** ALLISON, JERRY L
**Title:** BUILDING MGR SW/R TRITIUM COMPLEX **Telephone No.:** (513) 865-4533
(Originator/Transmitter)

**Name:** Allison, Jerry L. **Date:** 08/09/1999
(Authorized Classifier (AC))

1. **Occurrence Report Number:** OH-MB-BWO-BWO01-1999-0013

   Discovery of Radioactive Contamination Outside a Radiological Area

2. **Report Type and Date:** Final

| | Date | Time |
|---|---|---|
| **Notification:** | 06/24/1999 | 15:16 (MTZ) |
| **Initial Update:** | 08/09/1999 | 04:28 (MTZ) |
| **Latest Update:** | 08/09/1999 | 04:28 (MTZ) |
| **Final:** | 09/27/1999 | 13:19 (MTZ) |

3. **Occurrence Category:** Off-Normal

4. **Number of Occurrences:** 1 **Original OR:**

5. **Division or Project:** Babcock and Wilcox of Ohio, Inc.

6. **Secretarial Office:** EM - Environmental Management

7. **System, Bldg., or Equipment:** R Building, Room 7

8. **UCNI?:** No

9. **Plant Area:** Main Hill Area

10. **Date and Time Discovered:** 06/24/1999 09:30 (ETZ)

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**11. Date and Time Categorized:** 06/24/1999 09:45 (ETZ)

**12. DOE Notification:**

**13. Other Notifications:**

| Date | Time | Person Notified | Organization |
|---|---|---|---|
| 06/24/1999 | 10:00 (ETZ) | Fred Holbrook | DOE/MEMP |

**14. Subject or Title of Occurrence:**

Discovery of Radioactive Contamination Outside a Radiological Area

**15. Nature of Occurrence:**

01) Facility Condition
D. Loss of Control of Radioactive Material/Spread of Radioactive Contamination

**16. Description of Occurrence:**

At approximately 1730 hours (ETZ) on June 23, 1999, a Radiological Control Technician (RCT) performing release surveys on equipment, discovered radioactive contamination (in the form of a gray powder) in a desk in Research (R) Building, Room 7. The gray/black powder residue was within normally inaccessible interior of the desk behind a rolled edge where the formed metal of the desk provides a flush surface for the drawer fronts. The initial readings of the swipe taken on the material using a NE Electra Alpha/Beta Meter were 2500 dpm alpha and 52,000 dpm beta. A scan of the immediate contamination area with the meter showed direct readings of 350,000 dpm beta. The swipe sample was sent to Gamma Spectroscopy to identify the isotope. The isotopes were identified on June 24, at 0930 hours (ETZ) as Thorium 232 and all of its daughter decay products. The Gamma Spectroscopy reading for Thorium 232 was 23,100 dpm. The readings for thorium and the daughter products were in equilibrium. Therefore, the amount of contamination exceeded the 10 CFR 835 Appendix D limit by greater than 10 times.

The investigation into the occurrence revealed that the desk was obtained on or about April, 1981 from the excess equipment storage area in Building 19. The first occupant who obtained the desk also noted that the desk was refurbished sometime in the 1980's when it was painted and had a new top installed. He had never had thorium in the desk during his tenure from 1981 until 1995. Subsequent occupants in R-7 from 1996 until March, 1999 were two RCTs. In the course of conducting their daily tasks, meters were performance checked in the office an no extraneous readings were ever seen. As well, source checks of R Building including offices were completed about 1995 and again in 1997. Nothing indicated the presence of thorium in R-7 at that time. Thorium was however found in R-23/24/25 and in Building 68; thus indicating that the instrument sensitivity would have found the thorium in the desk had it been present. Previous surveys of office equipment moved for the RCTs when they left R-7 had not resulted in any found contamination. The office has been an unoccupied shutdown area for approximately three months.

**17. Operating Conditions of Facility at Time of Occurrence:**

Does not apply.

**18. Activity Category:**

03 - Normal Operations

**19. Immediate Actions Taken and Results:**

The area was posted as a Contamination Area. Swipe samples were sent to Gamma Spectroscopy to identify the isotope. The swipe samples were then sent to Alpha Spectroscopy to get confirming activity levels. Bioassay samples for the former occupants of the room will be requested as needed.

**20. Direct Cause:**

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8) Radiological/Hazardous Material Problem
A. Legacy Contamination

**21. Contributing Cause(s):**

**22. Root Cause:**

8) Radiological/Hazardous Material Problem
A. Legacy Contamination

**23. Description of Cause:**

The direct and root causes of this occurrence could only be attributed to legacy contamination. The investigation into the origin of the thorium was that it was in the desk over 18 years when it was obtained from the Building 19 storage area.

**24. Evaluation (by Facility Manager/Designee):**

Form the critique meeting and talks with the occupants of R-7 over the years, it is believed that the only explanation for the thorium contamination is that it was inside the desk when it was obtained from Building 19.

The radiological controls required and in place at this time would have prevented the desk from being released from a contamination area some 18 years ago. This was demonstrated by the identification of the thorium during the release surveys to remove the desk from the Radiological Material Management Area.

**25. Is Further Evaluation Required?:** No

**26. Corrective Actions**
(* = Date added/revised since final report was approved.)

| | |
|---|---|
| Perform additional surveys of R-7 | |
| **Target Completion Date:** 07/08/1999 | **Completion Date:** 07/08/1999 |

| | |
|---|---|
| Size reduce and remove desk as LSA trash | |
| **Target Completion Date:** 11/01/1999 | ***Completion Date:** 10/13/1999 |

**27. Impact on Environment, Safety and Health:**

None

**28. Programmatic Impact:**

None

**29. Impact on Codes and Standards:**

None

**30. Lessons Learned:**

As the Mound Exit Project continues, there are likely to be times when contamination is found on equipment and office furniture inside Radiological Control Areas but outside identified contamination areas.

**31. Similar Occurrence Report Numbers:**

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1. 0H-MB-BWO-BWO01-1999-0004

**32. User-defined Field #1:**

**33. User-defined Field #2:**

**34. DOE Facility Representative Input:**

**35. DOE Program Manager Input:**

**36. Approvals:**

**Approved by:** ALLISON, JERRY L, Facility Manager/Designee
**Date:** 08/09/1999
**Telephone No.:** (513) 865-4533

**Approved by:** DEV, MADAN, Facility Representative/Designee
**Date:** 09/27/1999
**Telephone No.:** (513) 865-4714

**Approved by:** Approval delegated to FR
**Date:** 09/27/1999
**Telephone No.:**

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# Appendix N

## PRS Information

Recommendation pages are not generated for PRSs that require Further Assessment (FA) or that have been unbinned. Accordingly, there are no recommendation pages included for PRSs 60, 61, 62, and 417.

# MIAMISBURG CLOSURE PROJECT
# PRS 41

**RECOMMENDATION:**

Potential Release Site (PRS) 41 is located on the western portion of the site (Figure 1) and was binned Further Assessment by the Core Team on 2 October 1996. PRS 41 was identified based on potential impacts from historic thorium staging and re-drumming operations. Based on elevated historic soil sample results for plutonium-238, a portion of a small drainage feature within PRS 41 (41 Ditch) was also assessed. Further Assessment was performed and confirmed that thorium-232 (at PRS 41) and plutonium-238 (at 41 Ditch) exceed the cleanup objectives of 2.1 pCi/g and 55 pCi/g respectively. The cleanup objective is the $10^{-5}$ RBGV plus background.

Therefore, the Core Team recommends a **Removal Action** for PRS 41 and 41 Ditch.

This Removal Action will be performed under a specific Action Memorandum or under the Action Memorandum for Contingent Removal Actions. Successful completion of the Removal Action will be documented via an On-Scene Coordinator (OSC) Report signed by the Core Team, which will be placed in the Public Reading Room.

**CONCURRENCE:**

DOE/MCP: _____ 2/19/03
Robert S. Rothman, Remedial Project Manager (date)

USEPA: _____ 2/19/03
David P. Seely, Remedial Project Manager (date)

OEPA: _____ 2/19/03
Brian K. Nickel, Project Manager (date)

# MOUND PLANT
# PRS 63
# Soil Contamination – Building 29

## RECOMMENDATION:

This site became a PRS because of potential Cobalt-60 and Cesium-137 contamination. On May 31, 1984, a drainpipe, contaminated with these radionuclides, was removed from T Building and placed in a salvage area near Building 19. Contamination from the pipe was spread over a two square foot area of pavement outside Building 19. The pavement was decontaminated the following day.

In October 1996, a FIDLER detector indicated elevated gamma ray emissions. Subsequent measurements using a germanium detector confirmed these elevated readings, but could not confirm which isotopes were present.

The Core Team originally recommended Further Assessment for PRS 63. Subsequently, the cost of further investigation versus the cost of removing the potentially contaminated soils was evaluated. Cost estimates indicate that the cost of removal is not significantly greater than the cost of further assessment at PRS 63. Additionally Further Assessment findings may indicate the need for a Response (removal) Action, resulting in costs associated with both Further Assessment and Response Action. Therefore, the Core Team recommends a RESPONSE ACTION as a more cost-effective course of action for PRS 63.

## CONCURRENCE:

DOE/MEMP: Arthur W Kleinrath 8/13/97
Arthur W. Kleinrath, Remedial Project Manager (date)

USEPA: Timothy J. Fischer 8/18/97
Timothy J. Fischer, Remedial Project Manager (date)

OEPA: Brian K. Nickel 8/13/97
Brian K. Nickel, Project Manager (date)

## SUMMARY OF COMMENTS AND RESPONSES:

Comment period from 9/15/97 to 10/15/97

☐ No comments were received during the comment period.

☒ Comment responses can be found on page 1, 2 of this package.

V 2 of 3

# MIAMISBURG CLOSURE PROJECT
## PRS 64

**RECOMMENDATION:**

Potential Release Site (PRS) 64 is located on the western portion of the site (Figure 1) and was binned Further Assessment (FA) by the Core Team on 2 October 1996. PRS 64 is the location of an underground storage tank that was reportedly removed but soil sampling results could not be found. Further Assessment was performed and confirmed that all sample results were below screening levels for BTEX and TPH.

Therefore, the Core Team recommends **No Further Assessment** for PRS 64.

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.

**CONCURRENCE:**

DOE/MCP: _____ 2/19/03
Robert S. Rothman, Remedial Project Manager (date)

USEPA: _____ 2/19/03
David P. Seely, Remedial Project Manager (date)

OEPA: _____ 2/19/03
Brian K. Nickel, Project Manager (date)

# Appendix O

Work Plan

WORK PACKAGE / PRELIMINARY HAZARD ANALYSIS

☐~ Office Master Copy (Original Approval Signatures) ☐ ~ Field Working Copy (Original Field Sign -Offs) ☐ ~ Review Copy [Note: Mark this section in color] ☐ ~ Other Copy

*The Project Engineer is responsible for completing Sections 1 through 10. On subcontractor projects, the subcontractor shall complete sections 6, 9, and 10.*

**1. WORK PACKAGE TITLE: Building 19 Demolition**

**2. WORK PACKAGE NUMBER.** ***SMPP/TFV- 30046-00*** | **REQUESTOR: Lee Koehmstedt X 3659**

**8. WORK PACKAGE SCOPE:**

The purpose of this effort is to demolish Building 19, see Figure 1.0. Using heavy equipment to demolish the facility, remove and dispose of the debris, provide site restoration grading and provide erosion/restoration protection with gravel. Safe shutdown activities will have already been completed prior to demolition.

Allow access to the trailers behind building 19.

**4. WORK PACKAGE PHASES:**

1. **Perform pre-demolition activities**
2. **Demolish structure.**
3. **Demolish slab and foundation.**
4. **Locate and note final condition of capped and plugged piping.**
5. **Restore area for erosion protection and drainage.**

*Insert the proper sequence of Work Package phases for the job. A phase is a separately definable portion of the project.*

**5. WORK LOCATION:**

Building #: **19**

Room #: **N/A**

Other: **Spoils Area**

**6. SPECIAL MATERIALS AND EQUIPMENT:**

1. Tracked excavator with shear, grapple, hoe ram, concrete cracker/pulverizer, or bucket attachment.
2. Rubber tired and tracked front-end loaders.
3. Transport equipment for debris as required.
4. Other equipment as needed.

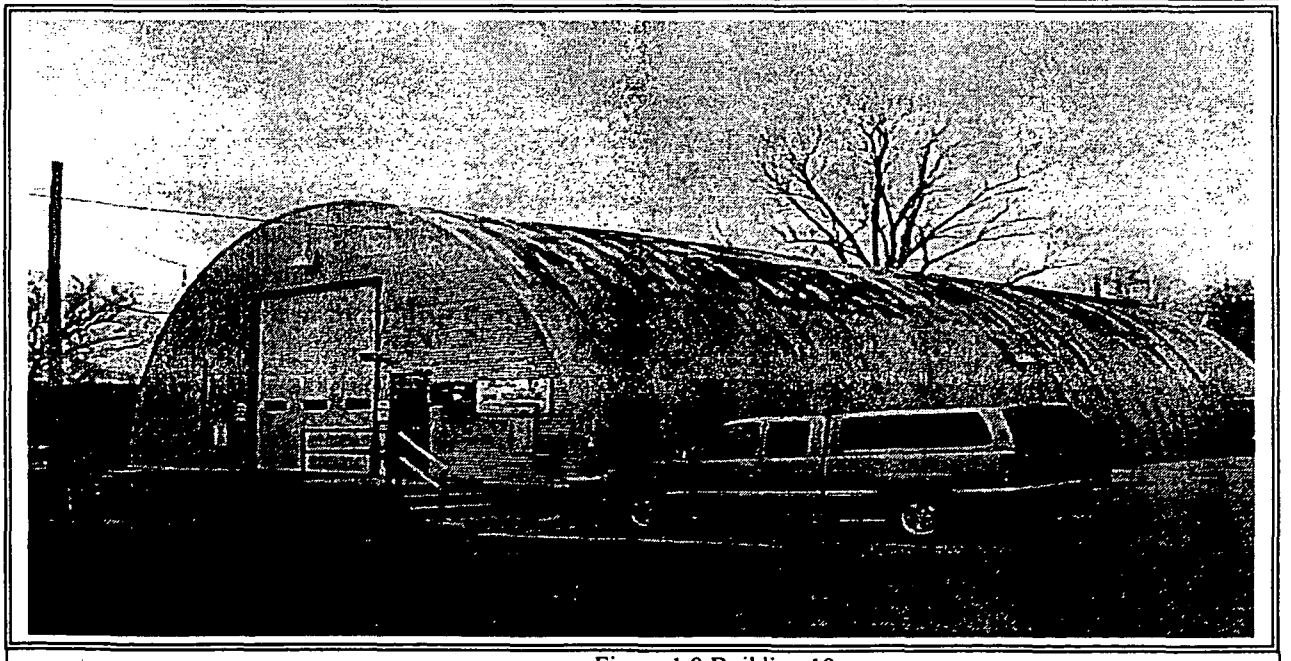

Figure 1.0 Building 19

**7. DETAILED WORK STEPS: See the attached Job Specific Work Plan (JSWP)**

*Insert the activities to be performed during the job. Describe the specific methods of accomplishing these activities. Activities listed must be grouped under the Work Package phases listed in item 4.*

**8.** *Note: Comments, to identify activities/hazards that are common to multiple phases of the project. Identification of these items will facilitate the option of addressing the items once in the pre-job briefing, as opposed to redundantly listing them in the JSHAs for different phases.*

**COMMENTS:**

*Enter any review comment or issues in this section and/or information generated as a result of completing detailed work steps.*

**9. REVIEW SIGNATURES:**

Written by: _____ Date: 2/18/03 Phone: 3659

Job Foreman: _____ Date: / / Phone: _____

Superintendent/ Constr. Mgr: _____ Date: / / Phone: _____

Project Eng. Mgr: R C Dansbottom Date: 2/18/03 Phone: 4220

Industrial Safety & Hygiene: _____ Date: 2/18/03 Phone: 4096 / 3737

Rad. Controls: _____ Date: 02/19/03 Phone: 4235

ES&C: _____ Date: / / Phone:

Waste Mgmt: _____ Date: 2/19/03 Phone: x 3822

Bldg. Mgr: _____ Date: / / Phone:

Craft Review: _____ Trade _____ Date: / / Phone:

Craft Review: _____ Trade _____ Date: / / Phone:

Craft Review: _____ Trade _____ Date: / / Phone:

Craft Review: _____ Trade _____ Date: / / Phone:

If more sign-off lines are needed see attached pages.

**10. USQ SCREEN / DETERMINATION REQUIRED?** ☐ YES ☐ NO

Brief Explaination _____

USQ Trained Person: _____ Date: / / Phone:

**10. AUTHORIZATION SIGNATURE:**

Project Manager: _____ Date: / / Phone:

**11. WORK PACKAGE CLOSURE:**

Job Supervisor: _____ Date: / / Phone:

Project Manager: _____ Date: / / Phone:

RETURN PHA TO IS&H AT JOB COMPLETION.

# PRELIMINARY HAZARD ANALYSIS (PHA)
# FOR WORK PACKAGE ACTIVITIES

**SECTION A, INDUSTRIAL SAFETY** - TO BE COMPLETED BY THE INDUSTRIAL SAFETY AND HEALTH REPRESENTATIVE
*Identify engineering/administrative controls or PPE as required, keyed to the following checklist items. Insert any required and or other special actions to be taken because of the particular hazard (i.e lead compliance plans, confined space plans, hearing conservation programs, etc.), including any notations for future Hazard Analyses. Additionally, identify any activities which DOE prescribed Occupational Safety and Health standards, that require protective measures be designed, inspected, or approved by a professional engineer or other competent person.* (Use Section D if additional space is needed.)

| Item | Exist | Work Package Phase | Comments, Controls, Methods of Compliance |
|---|---|---|---|
| Blockage of exits or means of egress | YES | 2,3 | [EGRESS] Weston trailers, bldg 72 |
| Blockages/obstructions (Identify) | YES | 2,3 | Weston trailers, bldg 72 |
| Burning, welding, hot-work (Fire Watch) | YES | Demolition of slab and foundation | [BURN] Possible use of cutting torch during demolition. Administrative Controls, Permit required. Keep fire extinguisher near by during cutting. |
| Chemical compatibility of corrosives/flammables | NO | N/A | |
| Chemical process safety | NO | N/A | |
| Compressed gas cylinders | NO | N/A | |
| Confined space entry | NO | N/A | [CONFINE] |
| Crane operations, overhead or mobile | NO | N/A | |
| Critical lifts (heavy or high value loads) | NO | N/A | [CLIFT] |
| Electrical hazards | NO | N/A | [LIVEL] Electrical Isolation of facility was accomplished during safe shutdown activities. |
| Elevated work/fall protection | NO | N/A | [ELEV] |
| Emergency eyewash/shower available | NO | N/A | [EWASH] |
| Emergency alarms or evacuation plans required | YES | All | [EMERG] Plant Public Address system will be used to announce any plant emergency over the plant radio channel, cell phones will be used also, no specific added hazards exist in the demolition of this building. |
| Explosive/flammable atmosphere | NO | N/A | |
| Explosives | NO | N/A | |
| Fire protection system/equipment outage | YES | Structural Demolition | [FIRE/EFIRE] Fire Alarm System isolation prior to start of structural demolition. |
| Fire Hazards Analysis Required of Demolition | NO | N/A | [FHA/ADJA] |
| Flammable liquids/gases | YES | Structural Demolition | [FLAM] Possible use of cutting torch during demolition. Administrative Controls, Permit required. Keep fire extinguisher near by during cutting. |
| Forklifts, aerial lifts or material handling equipment | NO | N/A | |
| Grounding of electrical equipment | YES | Structural Demolition | Temp. power to portable equipment. All hand held electrical tools must be equipped with GFCI. |
| Hazards due to condition of facility or terrain (Identify) | NO | N/A | |
| Hoisting and rigging | NO | N/A | [HOIST] |
| Lighting/illumination/adequacy | NO | N/A | [MLITE] |
| Excavation and Soil disturbance | YES | Slab and Foundation Demolition | An excavation and soil disturbing permit is required. |

**SECTION A, INDUSTRIAL SAFETY** - TO BE COMPLETED BY THE SAFETY AND HEALTH REPRESENTATIVE
*Identify engineering/administrative controls or PPE as required, keyed to the following checklist items. Insert any required and/or other special actions to be taken because of the particular hazard (i.e. lead compliance plans, confined space plans, hearing conservation programs, etc.). Including any notations for future Job Safety and Health Analysis(JSHA). Additionally, identify any activities which DOE prescribed Occupational Safety and Health standards that require protective measures be designed, inspected, or approved by a professional engineer or other competent person.* (Use Section D if additional space is needed.)

| Item | Exist | Work Package Phase | Comments, Controls, Methods of Compliance |
|---|---|---|---|
| Lockout/tagout of hazardous sources: | NO | N/A | [LOTO/ISO] Electrical/Mechanical Isolation of facility was accomplished during safe shutdown activities. |
| • Electrical | NO | N/A | See Above |
| • Mechanical (steam, hydraulic, pneumatic) | NO | N/A | See Above |
| • Interlocks | NO | N/A | [ILOCK] |
| • Chemical | NO | N/A | |
| • Radiological | NO | N/A | |
| Machine guards | NO | N/A | |
| Modification to Fire Wall/Door | NO | N/A | [FIREWAL] |
| Obstruction of fire protection equipment (pull boxes, hydrants, fire department connections, control panels, fire extinguishers, etc.) | NO | N/A | |
| Off-shift work | NO | N/A | |
| Outages of the plant public announcement (PA) system or the emergency notification system | YES | Demolition | [OUTAGE] The plant radio system transmits public announcements, which will be use to monitor for emergencies. |
| Overhead or underground utilities (Identify) | NO | N/A | [UITL] Electrical/Mechanical Isolation of facility was accomplished during safe shutdown activities. |
| Penetrations into walls, floors, etc. | NO | N/A | [PENETR] |
| Plastic sheeting or wood framing/enclosures | NO | N/A | |
| Powder-actuated tools | NO | N/A | |
| Plant utilities (Identify) | NO | N/A | [WATER] Electrical/Mechanical Isolation of facility was accomplished during safe shutdown activities. |
| Repetitive work | NO | N/A | [ERGO] |
| Structural Modification | YES | Demolition | [STRUCT] Building is being demolished. |
| Special Fire Protection Equipment Required | NO | N/A | [FIREQU] |
| Trenching/Shoring | NO | N/A | [DIG] |
| Temporary heating facilities | NO | N/A | |
| Temporary/portable buildings or structures | NO | N/A | [FACIL] |
| Temporary service hook-ups (Identify) | YES | Demolition | Temp. electrical and water service (for dust control). |
| Traffic control/flagman | NO | N/A | [TRAFIC] |
| Work in attics, ceilings, chases, or crawlspaces | NO | N/A | |
| Work impacting adjacent normally occupied areas | NO | N/A | [ADJAC/BMAPP/SIGNS/NOTIF] |
| Work Requiring Scaffolding, construction and inspection | NO | N/A | [SCAFF] |
| Other (Specify) | N/A | N/A | |

**SECTION B, INDUSTRIAL HYGIENE** - TO BE COMPLETED BY INDUSTRIAL HYGIENE REPRESENTATIVE

*Identify engineering/administrative controls or PPE as required, keyed to the following checklist items. Insert any required and/or other special actions to be taken because of the particular hazard (i.e. lead compliance plans, confined space plans, hearing conservation programs, etc.), including any notations for future Job Safety and Health Analysis (JSHA). Additionally, identify any activities which DOE prescribed Occupational Safety and Health standards that require protective measures be designed, inspected, or approved by a professional engineer or other competent person.* (Use Section D if additional space is needed.)

| Item | Exist | Work Package Phase | Comments, Controls, Methods of Compliance |
|---|---|---|---|
| Abrasive blast ( MSDS available)* | NO | N/A | |
| Asbestos | NO | N/A | [ASBEST |
| Beryllium | NO | N/A | |
| Blood-borne pathogens* | NO | N/A | |
| Cadmium | NO | N/A | |
| Carcinogens ( MSDS available)* | NO | N/A | [CARC] |
| Chemicals/solvents ( MSDS available)* | NO | N/A | [CHEM/MSDS] |
| Chlorofluorocarbon (CFC) | NO | N/A | [CFC] |
| Coal, tar or asphalt products | NO | N/A | |
| Coating/painting ( MSDS available)* | NO | N/A | |
| Corrosives/acids/caustics ( MSDS available)* | NO | N/A | |
| Dusty operations | YES | demolition | [POWDER ] Potential dust generation controlled via water misting. |
| Hazardous Waste Operations (HAZWOPER)* | NO | N/A | |
| High Pressure systems | NO | N/A | [HIPRES] |
| Insulation/man-made mineral fibers ( MSDS available)* | NO | N/A | |
| Lasers | NO | N/A | |
| Lead | YES | demolition | Paint may contain lead, do not torch cut painted surfaces. |
| Foam in Place Operations | NO | N/A | |
| Mercury | NO | demolition | |
| Noise in excess of 85 dBA | YES | demolition | [NOISE] Hearing protection will be used. |
| Polychlorinated biphenyls (PCBs) | NO | N/A | |
| Removal of ceiling tiles* | NO | N/A | |
| Spraying/generation of mists* | YES | demolition | Demolition dust control via water mist. |
| Temperature extremes (heat or cold stress) | YES | ALL | [CRYRO/COLD/HEAT] Provide heating or cooling for personnel. |
| Ventilation or Air Monitoring requirements | YES | demolition | [VENTIL/IH] Air monitoring for potential silica during demolition activities will be performed, as needed basis. |
| Welding, brazing, or thermal cutting operations | YES | demolition | [BURN] Cutting of rebar and etc. will require a permit. |
| Other (specify) | N/A | N/A | |

***NOTE:** Requires a description of the materials involved which present a hazard. Identify the physical location of the MSDS.

**SECTION C. RADIOLOGICAL PROTECTION** - TO BE COMPLETED BY RADIOLOGICAL CONTROLS REPRESENTATIVE
*Identify engineering/administrative controls or PPE as required, keyed to the following checklist items. Insert any required and/or other special actions to be taken because of the particular hazard (i.e. RWP, ALARA Plan, etc.). Additionally, identify any activities which DOE prescribed Occupational Safety and Health standards that require protective measures be designed, inspected, or approved by a professional engineer or other competent person.* (Use Section D if additional space is needed.)

| Item | | Exist | Work Package Phase | Comments, Controls, Methods of Compliance |
|---|---|---|---|---|
| *Location:* | Controlled Area | NO | N/A | |
| | Contamination Area | NO | N/A | [STP] |
| | High Contamination Area | NO | N/A | [STP] |
| | Radioactive Materials Storage Area | NO | N/A | |
| | Airborne Radioactivity Area (STP or OBT) | NO | N/A | |
| | Radiation Area | NO | N/A | |
| | High Radiation Area | NO | N/A | |
| | Very High Radiation Area | NO | N/A | |
| | Other (Specify) | NO | N/A | |
| *Activities:* | Criticality Safety Concerns | NO | N/A | |
| | Digging/Soil Removal | YES | Demolition/slab and foundation | [DIG] Water mist to control potential dust. Air monitoring during demolition. |
| | Surface destruction of radioactively contaminated materials or equipment? | NO | N/A | [SURFAC] |
| | Welding, burning, or grinding? | YES | demolition | [SURFAC] Possible use of cutting torches |
| | Hammering, chipping or scraping? | NO | N/A | [SURFAC] |
| | Abrasive blasting? | NO | N/A | [SURFAC] |
| | Dust-collecting equipment or systems? | NO | N/A | |
| | Decontamination and clean-up? | NO | N/A | |
| | Rad Waste Storage and Disposal Required | NO | N/A | [RWSTOR/WASTE/CHAR]. |
| | Other (Specify) | N/A | | |
| *Sources:* | X-Ray machine/generator | NO | N/A | [XRAY] |
| | Sealed radioactive sources | NO | N/A | |
| | Unsealed radioactive sources | NO | N/A | |
| *Controls:* | Radiological Work Permit | NO | N/A | [RWP/RWP=JS/RWP=N/R/RPGEN] |
| | ALARA Plan | NO | N/A | [ALARA] |
| | Air Flow Studies | NO | N/A | [AIRFLOW/CAM] |
| | Urinalysis program | NO | N/A | |
| | Preliminary or in-process characterization | NO | N/A | [SURVPS/SURVIP] |
| | Anti-contamination clothing | NO | N/A | |
| | Respiratory protection | NO | N/A | [RESP] |
| | Needs Analysis Evaluation | NO | N/A | |
| | Hazards Analysis | NO | N/A | |
| | Engineering Controls | YES | ALL | Dust control via misting. |
| | Administrative Controls | YES | N/A | Barricades of construction zone |
| | Supplemental dosimetry | NO | N/A | |
| | Shielding | NO | N/A | |
| | Personnel monitoring (frisking) | NO | N/A | |

| SECTION D - OTHER CONDITIONS, CONCERNS, OR SUPPLEMENTAL INFORMATION FROM SECTIONS A THROUGH C |
| --- |
| Identify Assembly Points: Assembly area is south of building 19 on the north side of the building 72. ***Be aware of threatening weather and take shelter when life-threatening storms are imminent.*** Take shelter area is in building 104, -See Appendix E |

# Work Package Revision Form

| Work Package Revision Form | | | |
|---|---|---|---|
| Work Package No.SMPP/TFV-30046-00 | | Revision No. | |
| Revision Description: (attach page revisions to form) | | | |
| | Name | Signature | Date |
| **PREPARED BY:** | | | |
| Revision Preparer: | | | |
| **REVIEWED BY:** | | | |
| Project Engr. Manager: | | | |
| Project Foreman: | | | |
| Project Superintendent/ Constr. Mgr.: | | | |
| Industrial Safety & Hygiene P o C: | | | |
| Radiological Point of Contact: | | | |
| Environmental Safeguards & Compliance P o C: | | | |
| Waste Management PoC: | | | |
| Building Manager: | | | |
| Other: | | | |
| Other: | | | |
| USQ Trained Person | | | |
| **USQ SCREEN / DETERMINATION REQUIRED?** ☐YES ☐NO<br>Brief Explaination _____ | | | |
| **APPROVED BY:** | | | |
| Project Manager: | | | |

## Work Package Revision History Form

| WORK PACKAGE REVISION HISTORY FORM | | | |
|---|---|---|---|
| REV. NO. | REASON | SIGNATURE | DATE |
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# Job Specific Work Plan
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## Job Specific Work Plan

# 1. WORK SCOPE

### 1.1 Introduction

This Job Specific Work Package (JSWP) follows the outline of PP-1059A, Integrated Work Control Program at the Mound Site, Miamisburg, Ohio. Included are a Preliminary Hazard Analysis (PHA) and a Job Safety & Hazard Analysis (JSHA). A Pre-Job Briefing Form (ML-9657) and the Project Manager's Authorization to Commence Work signature will be completed to document that the workers were briefed on the activities covered in this JSWP before work begins.

### 1.2 Work Package Scope

The purpose of this effort is to demolish the superstructure, slab, and foundation, to 3 foot beneath grade of Building 19, remove the debris, and to provide site restoration, grading area with gravel to prevent erosion. This will be accomplished by confirming that all utilities have been isolated during safe shutdown activities, maintaining a safe work zone, and the demolition of the building using heavy-duty equipment, and removing of debris as directed by Waste Management.

### 1.3 Site Information

Building 19 at its current location is used as a storage facility for various items and supplies. Until recently, it was utilized as a central location to disposition excess items and equipment. The building currently has no radiological postings and no radioactive material is stored in or near the building. There is evidence that drums of LSA material were stored inside and outside Building 19 and some of these may have been leaking. According to the Building 19 White Paper, there is a considerable "rad" history associated with this building.

### 1.4 Current Uses of Building 19

Building 19 is currently vacant and inactive. Safe shutdown is in process.

### 1.5 Past Uses of Building 19

Building 19 (Quonset Hut) has been used for many purposes during its history at three different locations. It was first used at the Dayton Unit III site to support Manhattan Project objectives and then moved to Mound where it served primarily as a storage facility at two different locations on site.

## 1.6 Summary of Environmental Concerns and Findings – Building 19

**Table 1: Summary of Environmental Concerns and Findings**

| Description | Comment | Resolution |
|---|---|---|
| Lead-Based Paint | No previous lead surveys or sampling data was found. Paint coatings in a few areas within the building exhibited some damage due to water or impact damage. Representative samples of the damaged paint were analyzed using a Niton Model XL-309 XRF (x-ray fluorescence) lead detector. The sampled paints were found to not contain any amount of lead within the instrument's detection limit. | Lead-based paint would not impact the demolition or disposal of the facility. Close worker disturbance of paint coatings (sanding, grinding, scraping, torching) will be avoided during demolition. If close disturbance is necessary, point of contact will be tested for lead and appropriate controls and personal protective equipment (PPE) used for disturbance as required. |
| Chemicals | A list of chemicals known to have been in the building is provided in Appendix K of the building data package. | Chemicals will be removed prior to demolition. |
| Fluorescent Lamps and PCBs | N/A | N/A |
| Air Emissions | There are no active sources of air emissions. | N/A |
| Asbestos | A complete asbestos survey was performed. The survey identified asbestos materials. | Some asbestos-containing material (ACM) will be removed prior to building demolition. The roofing-type mastic sealant which is non friable does not have to be removed prior to demolition so long as it remains non friable up to that point. |
| Drainage Sumps | There are no drainage sumps. | N/A |
| Lead | N/A | N/A |
| Mercury | N/A | N/A |
| Radiological | Any contamination will be removed under a separate package prior to this demolition package. | The building will be demolished with free release of debris. |
| Septic System | N/A | N/A |
| Wastewater | No sanitary system. | N/A |
| Stains & Corrosion/HVAC | N/A | N/A |
| Storage Tanks | A propane storage tank is located near the building. | Tank will be removed prior to demolition. |
| Solid Waste Disposal | N/A | N/A |
| Migratory Hazards | N/A | N/A |

**Table 1: Summary of Environmental Concerns and Findings**

| Description | Comment | Resolution |
|---|---|---|
| Radon | Within acceptable limits. | N/A |
| HVAC | Window air conditioner will be removed. | No further action required. |
| Energetic Material | N/A | N/A |

N/A: Not applicable

## 2. DRAWINGS AND REFERENCES

PP-1059A, Issue 9, "Integrated Work Control Program"

MD-50000, Issue 11, "Maintenance Work Order and Material Processing"

## 3. INITIAL CONDITIONS AND PREREQUISITES

### 3.1 Lessons Learned

A search of the Lessons Learned Database found the following relevant item:

- 480-Volt Underground Electrical Conduit Broken During Hand Excavation

See Appendix F for the full report. The result of the Lessons Learned is the trace of an underground conduit should be accurately defined by electronic or other means prior to any excavation activities in the vicinity of the buried conduit. Hand drawn location maps may not be accurate enough to preclude the breach of the conduit.

### 3.2 Industrial Safety and Health Requirements

3.2.1 A Job Specific Hazards Analysis (JSHA) is required. The construction zone, as defined in Appendix E, identifies evacuation routes, the take shelter area, and the assembly area. Debris will be cleared from the immediate construction zone as required to promote safe equipment activity.

3.2.2 Prior to beginning any field demolition activities, verify underground utilities have been identified and field located and disconnected during safe shutdown. Lock-out-tag-out procedures will be followed and electrical energy detection will be performed prior to any electrical demolition activities.

3.2.3 An excavation/soil disturbance permit will be required prior to slab and foundation demolition activities.

3.2.4 Monitoring for fugitive dust will be performed periodically as determined by previous monitoring results and site Safety and Health. Site Safety and Health will be notified before the demolition of concrete begins.

3.2.5 Whole body vibration will be administratively controlled and by reviewing topic at pre-job meeting.

3.2.6 A Hot Work Permit will be required if a torch is used for cutting. Coordinate with site Safety and Health.

3.2.7 Monitoring of noise levels will be performed as determined by previous monitoring results and site Safety and Health. Earplugs (or other hearing protection) will be worn, as appropriate.

## 4. RADIATION PROTECTION REQUIREMENTS

Any contamination will be removed under a separate package prior to this demolition package. .

## 5. ENVIRONMENTAL PROTECTION REQUIREMENTS

### 5.1 CERCLA

5.1.1 General/Historical CERCLA Information

Demolition work for this facility will be handled as a non-CERCLA deconstruction . There is no history of spills or releases from this building.

5.1.2 Specific Record Sources for Building 19

5.1.2.1 Occurrence Reports

A search of the occurrence reporting system revealed nine reports, all of which were minor and without environmental impact:

- radioactive contamination found outside of a radiological control area (4)
- fire suppression system actuation (4), and
- measurement machine and gauging system damaged during movement.

5.1.2.2 Spills and Releases

- None

5.1.2.3 Associated PRS Overview

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 CH2MHILL have tabulated all the PRSs identified under the various regulatory programs in effect at the site. Of these 440

PRSs, seven are at or near Building 19. PRSs in the vicinity of Building 19 are identified in Table 3. Additional information is included in Appendix N.

**Table 2: PRSs in Proximity to Building 19**

| PRS | CERCLA or Bldg. Related | Binning Status | Comments |
|---|---|---|---|
| 41 | CERCLA | Removal Action (RA)* | **Area 3, Thorium Drum Storage and Redrumming Area.** |
| 60 | Building | Unbinned, to be Dispositioned with Building 72 | **Hazardous Waste Storage Area (Building 72).** |
| 61 | Building | | **Building 72 Outdoor Hazardous Waste Storage Area.** |
| 62 | Building | | **Building 72 Empty Drum Storage Area.** |
| 63 | CERCLA | RA | **Building 19 Soils.**** |
| 64 | CERCLA | No Further Assessment (NFA) | **Building 19 Historic Gasoline Tank (Tank 238).** |
| 417 | CERCLA | FA | **Soil Contamination-High Soil Gas near Well 0312.** |

* *Soil contamination prompting the PRS 41 RA is located outside of the 15-foot perimeter around Building 19. Since building demolition activities will not disturb areas outside of the 15-foot perimeter, potential exposure to RA levels of thorium-232 related to PRS 41 is not expected to be a concern during demolition. If areas outside of the 15-foot perimeter are to be disturbed, additional soil analytical results in those areas will be evaluated prior to commencement of those activities to confirm potential exposure to elevated contamination is not present.*

** *PRS 63 is a former pipe storage area measuring approximately 2 feet by 2 feet. Because it is believed to have radiological contamination, the PRS was binned as an RA based on historical use. In this instance, removal of the contaminated soil is a more cost-effective solution than FA sampling, and therefore no soil sampling at the PRS location has been performed. The Environmental Restoration (ER) group will handle the RA separate form the Building 19 demolition.*

## 5.2 National Emissions Standards for Hazardous Air Pollutants (NESHAPs)

Per Environmental Practice 2.2, if buildings to be demolished have a surface area less than 72 million square feet, direct readings below MDA, and wipe results below applicable action levels, additional dose calculations are not necessary. Since Building 19's surface area is significantly less then 72 million square feet, additional calculations are not necessary.

## 5.3 Notification

A Notification of Demolition and Renovation form must be filed with the Regional Air Pollution Control Agency (RAPCA) at least 10 business days before planned building demolition.

**HOLD POINT:**

_____ _____

Environmental Compliance –Ron Paulick Date

## 5.4 Restriction of emission of fugitive dust (OAC 3745-17-08)

Site goal is no visible fugitive dust emissions. Reasonably available control measures must be employed to prevent fugitive dust from becoming airborne during building 19 demolition.

Appropriate control measures would include:

Water misting, or other suitable dust suppression, will be used to minimize fugitive dust resulting from demolition activities and during hauling.

Periodic application of water, or other suitable dust suppression, to adjacent roadways and parking lots will be used to prevent dust from becoming airborne.

## 5.5 Clean Water Act & Storm Water Pollution Prevention

All inlets to the sanitary and storm systems will be plugged to prevent accidental discharges to the wastewater treatment plant or the environment.

The Site's National Pollutant Discharge Elimination System (NPDES) Permit No. 11O00005*HD requires the use of control measures to ensure the quality of storm water leaving the site. These control measures and practices are outlined in the site's Storm Water Pollution Prevention Plan OPA980099. Appropriate activities would include, Redirect flow patterns around the project site to prevent storm water run-on. Provide inlet protection to the storm sewer system by covering catch basins immediately adjacent to the project site and plugging roof drains at ground level until which time the underground pipes can be appropriately abandoned. Exercise good housekeeping techniques by segregating materials in a timely manner, including the prompt disposal of wastes, and sweeping debris from the streets to prevent storm water pollution. Water that has collected in an open excavation or in sumps, must be monitored prior to discharging to the sanitary or storm sewer systems. Contact Environmental Monitoring at extension 3208 for monitoring and review of these non-routine discharges.

## 5.6 National Historic Preservation Act (NHPA)

Building 19 is not listed as a historic structure with the Ohio Historic Preservation Office (OHPO). No mitigative documentation package is required. However, if any items or artifacts are discovered as this project progresses, the Cultural Resource Representative will be notified at extension 3691. Work will be temporarily suspended until which time the items or artifacts have been recovered.

## 5.7 Safe Drinking Water Act

There is not potable water supply to Building 19, therefore this section doesn't apply to this building.

### 5.8 Emergency Spill Response

Building 19 has been disconnected from all utility services and the lines drained. There should be no regulated component that will be encountered. In the event of a major spill of any regulated substances, or the rupture of a non-isolated utility line (fire, domestic water, ethylene glycol) call 911 if using an onsite phone or 937-865-4040 if using a cell or other outside phone to report it, also see Emergency Preparedness section. All spills must be contained onsite and should be prevented from entering the storm drains if possible. If spills enter the storm drains, all effluent must be retained onsite at the overflow pond.

## 6. CHEMICAL AND WASTE MANAGEMENT REQUIREMENTS

All waste will be managed in accordance with the Waste Management Plan for the Mound Exit Project, MD-10499. The Waste Coordinator will ensure that this is accomplished and summarize in a Job Specific Waste Management Plan See. Appendix G.

## 7. EMERGENCY PREPAREDNESS

### 7.1 Site Notification Procedures

Use **911** for all emergency services onsite. This is the first response for any emergency, spill, or release. If using a cell phone, dial **865-4040**. This number will ring into the plant 911 system.

Any injury, no matter how minor, shall be reported immediately to the Medical Department for evaluation and treatment. The injured employee shall report any injury to the supervisor in charge or designee.

Employees will be notified of emergency or abnormal conditions by the plant paging system or project two-way radios. Additionally, unique sheltering and evacuation signals are available should site-wide protective actions be necessary.

### 7.2 Evacuation Route/Assembly Areas

Assembly area is south of building 19 on the north side of the building 72.

**CAUTION**

***Be aware of threatening weather and take shelter when life-threatening storms are imminent.***

Take shelter area is in building 104, -See Appendix E

# 8. PRE-DEMOLITION SEQUENCE OF WORK

## 8.1 Site Preparation

8.1.1. Site Access Control

The demolition area will be identified during safe shutdown activities utilizing construction fencing around the building, or at the discretion of the project construction manager/foreman, marked off with barricade tape/fencing.

8.1.2. Temporary Utilities

Temporary utilities that may be required are water and electricity. Coordinate with site Safety and Health. Water will be used to control dust emissions.

8.1.3. Temporary Facilities

This project will use the existing SMPP/TFV project new trailer complex located in the existing Mound "C" parking lot.

8.1.4. Temporary Communications

Temporary communications are required (cell phone, radios) due to the difficulty of hearing plant announcements and emergency notifications. At the job site, plant announcements and emergency notifications can be heard on the Plant radio channel.

8.1.5. Staging Areas

The project site is of sufficient size to also be used as a staging area.

## 8.2 Preliminary Activities

Verify domestic water, firewater, electrical, fire alarm system and communications lines have been disconnected under separate safe shutdown MSR. 30045. An excavation/soil disturbance permit for slab and footing removal will be required prior to excavation activities.

Verify all mercury-containing switches have been removed during safe shutdown. If found, dispose through Waste Management.

Confirm all Freon has been previously removed and recycled from HVAC units inside and outside of the building.

| HAZARD | MITIGATION |
|---|---|
| Fall hazard | Follow requirements of MD-10286 M-14 |

## 9. BUILDING DEMOLITION SEQUENCE OF WORK

### 9.1 Establish Work Zone

Proper signage will be placed at all access points to the site. This zone is not to be entered by anyone not directly involved with the demolition unless they have contacted the Project Manager/Foreman first. Do not begin any demolition activities until the following items are completed.

**All new workers assigned to this project have received a pre-job briefing prior to performing work and a walk down of the project area. The following must be completed prior to starting work.**

**Review of the *Preliminary Hazard Analysis* for work package activities must be complete.**

9.1.1 The Pre-Job Briefing Record must be completed and signed.

9.1.2 The Job Specific Hazards Analysis (JSHA) must be reviewed.

**NOTE: All workers have Stop Work Authority. Situations where stop work authority is to be exercised are:**

- **To stop unsafe work.**
- **To stop unauthorized work, for example, work outside the scope of this work package.**

9.1.3 Verify Safe Shutdown activities have isolated all the connections to Building 19, including the following systems: electric/communication/fire alarm systems. propane gas heat and potable water systems.

9.1.4 Verify that all pre-demolition notifications have been made and permits are in place.

9.1.5 Install sediment/storm water control fence around designated construction area as necessary. Exercise extreme care as to not create an upset condition.

9.1.6 Prepare water distribution system for the control of dust.

9.1.7 Final building/structure walk down to ensure all exit signs, fire extinguishers and noted removal items from safe shutdown and demolition have been removed.

9.1.8 Remove temporary lighting and final electrical isolation check.

**CAUTION**

**9.1.9 Mark the boundaries of PRS 63 on asphalt and direct workers not to disturb or excavate area. See figure 2 in appendix E for coordinates.**

## 9.2 Structural Demolition

### 9.2.1 Structure Demolition

Demolish the steel corrugated siding and structural frame using heavy equipment. Use the existing slab for load out surface for loading debris and placing into appropriate hauling containers or trucks.

**Note: The progression of the building demolition will ultimately be determined in the field. Exact sequence of demolition will be left up to the skill of the craft.**

| HAZARD | MITIGATION |
|---|---|
| Contact overhead power lines with heavy-duty equipment. | If an part of heavy-duty equipment has the potential to come within 10' of overhead powers, perform LOTO. |
| Struck by flying debris<br>Struck by moving equipment | Establish construction boundary.<br>Wear hardhat safety glasses, safety shoes, and reflective vest inside construction area.<br>Maintain the following distances from operating equipment:<br>Shear – 75 feet<br>Hoe Ram – 50 feet<br>Other heavy duty equipment – 30 feet<br>Bobcat – 15 feet |
| Noise Hazard | Wear hearing protection while running heavy-duty equipment. Follow the requirements of MD-10286 D9. |
| Burns from torch cutting | Obtain and follow Hot Work permit per MD-10286 O2 |
| Heat/Cold Stress | Follow the requirements of MD-10286 D13/D16 |

### 9.2.2 Slab and Foundation Demolition

Using heavy equipment, break apart the concrete slab, foundation, and footers in order to eliminate the occurrence structural concrete to 3-feet below grade, torch cut the rebar if required (Hot Work Permit is required if used) to support demolition and downsizing. During the concrete demolition, use heavy equipment to assist radiological control personnel to perform radiological

screening of all concrete surfaces. Based on radiological screening results, transport to Mound's spoils area, offsite disposal, or rail spur as directed by Waste Management.

| HAZARD | MITIGATION |
|---|---|
| Burns/fire | Burn permit, fire protection, and PPE. |
| Strike underground utilities | Obtain Excavation permit and follow its requirements per MD-10286 O5 |

9.2.3 Organize area for future soil remediation

The last step will be to restore the area by grading with gravel to drain. Remove any unnecessary remaining sediment/storm water control fences. Scan equipment for radiological contamination. If contamination is detected or found during radiological surveys only then the equipment will be decontaminate prior to leaving area. Remove dust control water distribution system, temporary power, fencing and any traffic control.

# Appendix A
# JSHA/HASP

Project/Activity: Building 19 Demolition
Name: Lee Koehmstedt

| JSHA CRITERIA CHECKLIST | YES | NO | N/A |
|---|---|---|---|
| 1. Work performed with a 6 ft. or greater fall hazard, excluding portable ladders. See Item 9 for further requirements. | | X | |
| 2. Roof work requiring the use of fall protection (within 6 ft of an unprotected edge) or special fall protection procedures. | | X | |
| 3. Potential hazardous chemical exposure above action levels or permissible exposure limits (PELs), or ACGIH Threshold Limit Values (TLVs). | | X | |
| 4. Work activity in an immediately dangerous to life or health (IDLH) breathing hazard environment. | | X | |
| 5. Fire or explosion hazards. Are fire hazards beyond a Hot Work Permit? (Reference O2, MD-10286) | | X | |
| 6. Work within close proximity of live electrical greater than 50 volts, conductors, and/or work that requires multiple locks, multiple hazard sources, or complicated lockout/tagout circumstances. (Reference MD-10444, *Lockout/Tagout Procedure Manual*, for multiple energy lockout/tagout.) | | X | |
| 7. Any maintenance or repair of equipment under pressure where the pressure cannot be shut off and de-energized. | | X | |
| 8. Work with high or extreme exposure to ionizing or nonionizing radiation (reference MD-80036, Op 10002), noise, or heat or cold stress (reference D9, D13 & D16, MD-10286). | X | | |
| 9. Determined by an appropriate core team, building manager, member of general or executive management, or the IS&H manager to require a JSHA. | X | | |
| 10. Any onsite construction or service project directed to have JSHAs based on this procedure and/or instruction from project personnel or IS&H staff. | X | | |
| 11. Near-miss event with the potential for loss of life or limb or disabling injury/illness if repeated. | | X | |
| 12. Excessive trauma/motion/vibration work situations or manual lifting involving heavy, large, and/or awkward-to-handle objects (reference MD-10407, *Ergonomics Program*. | | X | |
| 13. Unguarded, unmarked close clearance, pinch point, exposed moving machinery parts. | | X | |
| 14. Known potential falling object hazards (e.g., employees working above other employees, potential for dropping tools, falling equipment or material) or working in areas with the potential for flying objects (flying chips, sandblasting, etc.), exposure to sharp or protruding objects (e.g., working inside plenums, air mover ducts, etc.). | X | | |

**MANDATORY JSHA REQUIRED TO ADDRESS ANY/ALL (YES) RESPONSES**

## JOB SAFETY & HEALTH ANALYSIS

**JSHA MASTER DOCUMENT CONTROL NO:**
**SMPP/TFV – 30046-0**

**SIGNATURES**

| | |
|---|---|
| ORIGINATOR: Lee Kochmstedt | |
| REVIEW/REV: Jared Willis/Chris Ahlquist | |
| REVIEW/REV: Bill Wahler/ Jim Harvey | |
| REVIEW/REV: Gary Weidenbach | |
| APPROVED: Kurt Kehler | |

| | | | |
|---|---|---|---|
| **DATE:** 2/18/2003 | _X_ NEW<br>___ REV | **BUILDING:** 19 | **JOB:** Demolish Building 19 |
| **DEPARTMENT/COMPANY:** SMPP/TFV | | | **SECTION:** N/A |

**OCCUPATIONS:** : Heavy Duty Operators, Demo Tech's, Constr. Crafts, Pipefitter/Welders, Electricians, Fab. Mechanics
Supported by Project Personnel e.g., Supervision, Engineering, RAD Control, Ind. Hygiene, and Safety

**REQUIRED PERSONAL PROTECTIVE EQUIPMENT:**
Hard Hat, Safety Glasses with side shields, safety shoes, safety vest

**MSDS(s)/CHEMICALS ASSOCIATED WITH THE JOB:**
Insecticide

| BASIC JOB STEPS | POTENTIAL ACCIDENT/ILLNESSES OR KNOWN HAZARDS | SAFE JOB PROCEDURES |
|---|---|---|
| Break the job down into basic steps that tell what is done first, what is done next, and so on.<br><br>Record the job steps in their normal order of occurrence. Describe what is done, not the details of how it is done. Usually, three or four words are sufficient to describe each job step. For example, the job of "replacing a light bulb" may break down into basic steps as follows:<br><br>1. Bring and set up ladder<br>2. Ascend ladder<br>3. Remove light globe & bulb<br>4. Replace light bulb<br>5. Replace light globe<br>6. Descend ladder<br>7. Remove and store ladder | Ask yourself for each job what accidents/illnesses could occur to the employee doing the job.<br><br>Record potential accidents/illnesses by combining one of the abbreviations below with the agent of contact. For example, "struck by a crane hook" is recorded "SB-crane hook." Number each potential accident<br><br>SB - Struck by<br>CB - Contacted by<br>SA - Struck against<br>CW - Contact with<br>CI - Caught in<br>CO - Caught on<br>IB - Caught between<br>F - Fall<br>SO - Strain-overexertion*<br>E - Exposure (occ. illness)<br>*Show ergonomic stresses as SO (repetitive trauma, single event strain, or awkward position) | For each potential accident/illness, ask yourself exactly what the employee should do or not do to avoid the accident/illness<br><br>Describe specific precautions in detail. Give each precaution the same number given in the potential accident (center column) to which it applies. Avoid generalities such as "Be alert," "Be careful," and "Take caution." Use simple do or don't statements, e.g., "Lock out main power switch," "Stand clear of lift before signaling," or "Check wrench grip before exerting full force." If necessary, explain how, as well as what, to do. Amount of detail is a matter of judgment<br><br>Describe ergonomic solutions (job redesign, new tools, worker lift assistance, etc.) |
| 1) Establish work zone | **General Safety Note** A wide variety of incidents occur on a regular basis that potentially could result in injury or illness | 1) Be cognizant of your own safe work practices as well as those of your co-workers<br>2) Review any related safety procedures of which you are unsure<br>3) Utilize STOP WORK Authority as necessary |
| 1a) Pre-job meeting with involved personnel to discuss the work plan and safety requirements. | NA | This project engages in Enhanced Work Planning(EWP), a ISM process that evaluates and improves the approach by which work is identified, planned, approved, controlled, and executed. |
| 1b) Area preparation | Standard construction hazards. | A) Demolition preparation is defined by 29CFR1926.850; workers, unfamiliar with construction standards must notify the project supervision and/or project health and safety personnel.<br>B) Once the work area is defined, only authorized personnel are permitted in the construction perimeter.<br>C) Unescorted, Non-project and Non-emergency personnel, must have acceptance of the SMPP/TFV Project Manager for entry. |
| 1c) Utility protection | Running into PIV's, etc. or grates over field drains. | A) Post indicators to be removed and valves to be left intact.<br>B) Cover field grates with steel sheeting to protect. |
| 1d) Emergency egress/access | Blocked access | A) Emergency access to the work zone will be maintained. |

# JOB SAFETY AND HEALTH ANALYSIS FORM
## (CONTINUATION SHEET)



| BASIC JOB STEPS | POTENTIAL ACCIDENT/ILLNESSES OR KNOWN HAZARDS | SAFE JOB PROCEDURES |
|---|---|---|
| 1e) Utility isolation | Electrical shock or electrocution | A) Utilities to the building including electrical have been disconnected by project electricians at a point away from the building.<br>B) Identify sources outside the building that may require LOTO to prevent incidental contact by Heavy Duty Equipment. |
| 2/3) Demolition of building and slab | Personnel in proximity with heavy duty equipment | Heavy duty equipment will be used to provide an additional margin of safety vs. putting workers in harms way. – stay clear of operating equipment. |
| Operation of heavy equipment near electric overhead lines | Electrocution | LOTO all electrical overhead lines. |
| Demolish building, and slab using excavator mounted shear, hoe ram, grapple, loader, and bobcat | Struck by flying debris<br>Struck by moving equipment<br><br>Noise Hazard | Establish construction boundary.<br>Wear hard hat safety glasses, safety shoes, and reflective vest inside construction area. Make eye contact with operator when working around equipment. Use hand signals to communicate intent.<br>Maintain the following distances from operating equipment:<br>Shear – 75 feet<br>Hoe Ram – 50 feet<br>Other heavy duty equipment – 30 feet<br>Bobcat – 15 feet<br>Make sure equipment is in safe working order. Use spotter if operator vision is obstructed. Install traffic control.<br>Wear hearing protection while running heavy duty equipment Follow the requirements of MD-10286 D9 |
| Torch cut rebar or to weaken structural members | Burns, fire<br>Potential lead paint | Obtain and follow Hot Work permit per MD-10286 O2. Wear proper PPE, have fire extinguishers in the construction zone. Test for lead paint; do not torch cut lead paint. |
| Working in excessive heat/cold | Heat Stress/Cold Stress | Follow the requirements of MD-10286 D13/D16 |
| Working outside. | Adverse weather conditions | Be aware of adverse weather conditions, assembly and take shelter areas. |
| Slab removal | Strike underground utilities<br>Silica exposure | Obtain Excavation permit and follow its requirements per MD-10286 O5<br>Monitor for silica, keep area wet for fugitive dust suppression. |
| 4) Restore area | **General Safety Note** A wide variety of incidents occur on a regular basis that potentially could result in injury or illness | 1) Be cognizant of your own safe work practices as well as those of your co-workers<br>2) Review any related safety procedures of which you are unsure |

0 2 4 7 5 0

| | | |
|---|---|---|
| | | 3) Utilize STOP WORK Authority as necessary |
| 4a) Rough grading | Equipment/ personnel mixture | Ground personnel stay clear and in sight of the equipment operator. |
| 4b) Covering ground | Slip – Trip – Fall<br>Lifting /twisting strain | Uneven walking and/or working surfaces - use extra caution.<br>Follow accepted practices |
| 4c) Protecting / filtering field drains | Lifting /twisting strain | 2 man rule follow standard practice lifting grates. |
| 4d) Dismantling fence | Slip trips and falls<br>Cuts and abrasions<br>Lifting /twisting strain | 1) Be cognizant of your own safe work practices as well as those of your co-workers<br>2) Review any related safety procedures of which you are unsure<br>3) Utilize STOP WORK Authority as necessary |

**SIGN-OFF SHEET**

3.2.9 I have read and understand the attached Job Specific Work Plan and JSHA:

| SIGNATURE | **Date** | **Department** |
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# Appendix B

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# Appendix C
# PRE-JOB BRIEFING

# JOB SPECIFIC WORK PLAN
# PRE-JOB UPDATE

| MSR/PROCEDURE (if applicable): | JOB SUPERVISOR |
|---|---|
| | |

| | |
|---|---|
| **A.** | Time, Date and Location of PJB: |
| **B.** | Applicable Procedure Number: |
| **C.** | Job Description: |
| **D.** | Personnel Attending: |

| HP# | SIGNATURE | HP# | SIGNATURE |
|---|---|---|---|
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**JOB SUPERVISOR** – This is a reminder checklist for the update. The supervisor need only discuss and note changes from the previous day's briefing or update. (Use NC for No Change).

| | |
|---|---|
| 1. | Any changes/revisions to safety envelope for work:<br>a. New/added assignments and responsibilities of any individual<br>b. Changes in facility conditions, tagouts, valve lineups<br>c. New or changed precautions/hazards<br>d. Valid RWP or other required work permits still in effect |
| 2. | Adequate supply of PPE |
| 3. | New training, any training coming up on expiration |
| 4. | New changes to relevant Category "A" or Category "B" procedures. |
| 5. | Equipment and tools calibrations in effect |
| 6. | Relevant lessons learned, critique reports |
| 7. | RWP revisions:<br>a. Changes to radiological conditions of the workplace, particularly with respect to postings.<br>b. Change in scope, especially if it is a reduction in scope or Stop Work Levels. |
| 8. | Changes to radiological and/or health monitoring. |
| 9. | Open the floor to questions. |

**The above minimum requirements have been met; this PJB has been conducted in sufficient detail to maximize continued safe conduct of the job, and all personnel have been through a previous Pre-Job Brief.**

_____ _____

Job Supervisor/Foreman Date

NOTE: Completed pre-job update sheet must be retained with the work package or maintained in your record file.

# JOB SPECIFIC WORK PLAN

**Daily Toolbox Safety Meeting**

| **Project:** | **Date:** |
|---|---|
| **Safety Topic of Meeting:** | |
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| **Work Description of Meeting:** | |
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**Review the following to determine if conditions have changed since the last Pre-Job Meeting**
**If this is the 1st meeting with a subcontractor, has Safe Work Authorization been done?**
***Check off each item that applies or mark N/A if it doesn't apply.***

| | | | |
|---|---|---|---|
| Hot Work Permit (torch cutting, spark producing grinding, open flame heaters, welding) | | Signage and Barricades (construction area, hazard notification, rad postings, etc). | |
| Penetration Permit (penetrating walls, ceilings, or floors in a building) | | Air Monitoring (as required by Environmental Compliance and/or Industrial Hygiene) | |
| Excavation Permit (digging in soil) | | Dust Suppression (misting, etc.) | |
| Trench Plan (shoring, soil layback, etc. if over 4 feet below grade) | | Water Runoff Prevention (silt fence, straw bales, collection pond, etc.) | |
| Confined Space Entry Permit (manhole, tank, or other confined space entry) | | Radiation Work Permit (as required by Rad Controls) | |
| Fall Protection (person's feet over 6 feet above ground) | | TLDs (as required by RWP and rad postings) | |
| Lockout/Tagout (all energy sources to equipment being worked on) | | Waste Containers (rolloffs, sealands, dumpsters, LSA boxes, drums, etc.) | |
| PPE (respirators, Tyveks, safety shoes, safety glasses, hard hats, gloves, reflective vests, etc.) | | Utility review especially for asbestos abatement contractor (label live utilities e.g. FAS, phone, electric) | |
| Personnel Training up-to-date for assigned work (Radworker II, Asbestos, Lead, etc.) | | Hoisting and Rigging Review | |

# JOB SPECIFIC WORK PLAN
# PRE-JOB UPDATE

**Continuation Sheet for _____/_____/_____**

| HP# | SIGNATURE | HP# | SIGNATURE |
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# JOB SPECIFIC WORK PLAN

## PRE-JOB UPDATE

| MSR/PROCEDURE (if applicable): | JOB SUPERVISOR |
|---|---|

| | |
|---|---|
| A. | Time, Date and Location of PJB: |
| B. | Applicable Procedure Number: |
| C. | Job Description: |
| D. | Personnel Attending: |

| HP# | SIGNATURE | HP# | SIGNATURE |
|---|---|---|---|
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**JOB SUPERVISOR** – This is a reminder checklist for the update. The supervisor need only discuss and note changes from the previous day's briefing or update. (Use NC for No Change).

| | |
|---|---|
| 2. | Any changes/revisions to safety envelop for work:<br>e. New/added assignments and responsibilities of any individual<br>f. Changes in facility conditions, tagouts, valve lineups<br>g. New or changed precautions/hazards<br>h. Valid RWP or other required work permits still in effect |
| 2. | Adequate supply of PPE |
| 3. | New training, any training coming up on expiration |
| 4. | New changes to relevant Category "A" or Category "B" procedures. |
| 5. | Equipment and tools calibrations in effect |
| 6. | Relevant lessons learned, critique reports |
| 8. | RWP revisions:<br>c. Changes to radiological conditions of the workplace, particularly with respect to postings.<br>d. Change in scope, especially if it is a reduction in scope or Stop Work Levels. |
| 8. | Changes to radiological and/or health monitoring. |
| 9. | Open the floor to questions. |

**The above minimum requirements have been met; this PJB has been conducted in sufficient detail to maximize continued safe conduct of the job, and all personnel have been through a previous Pre-Job Brief.**

_____

Job Supervisor/Foreman Date

# Appendix D

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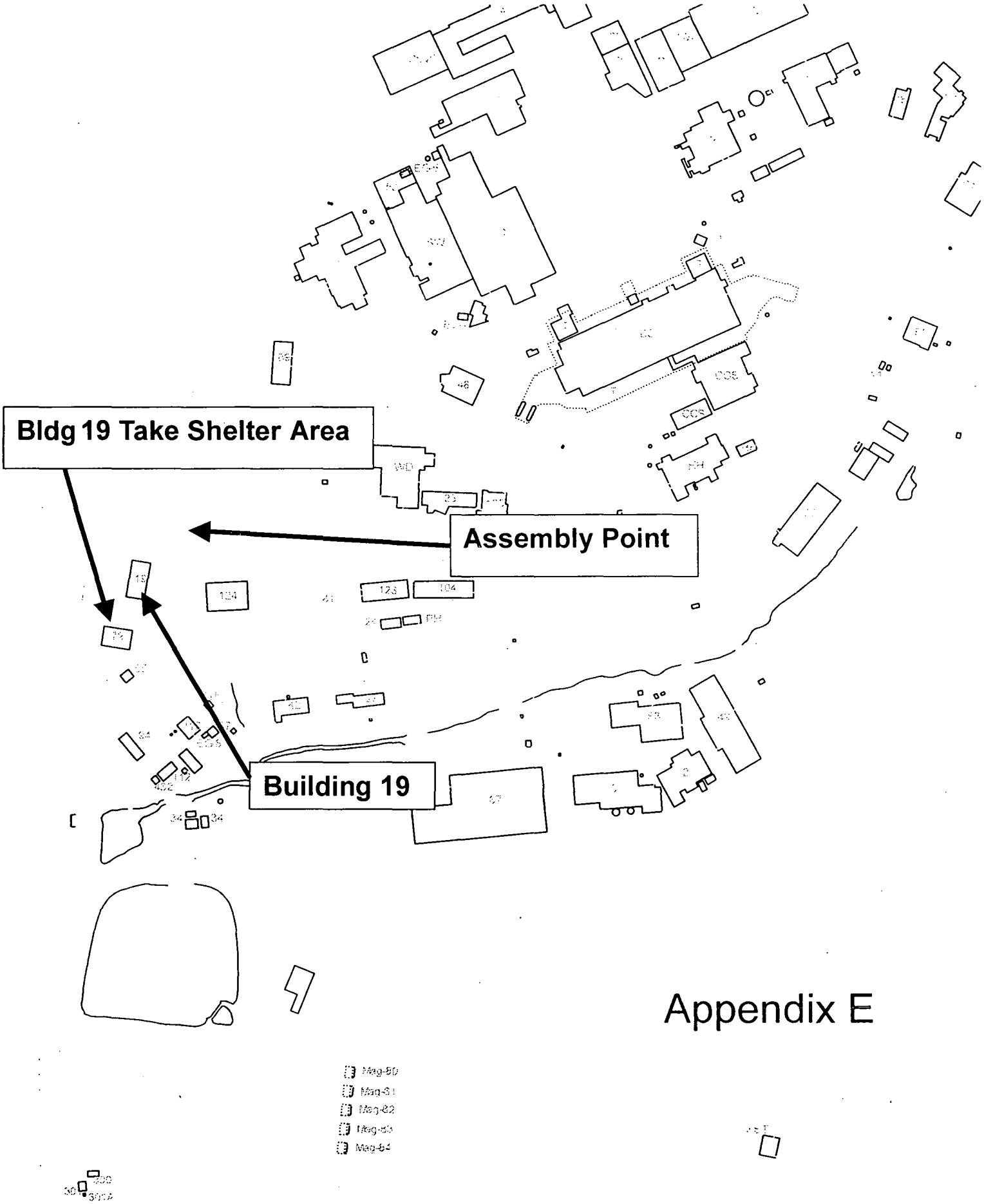
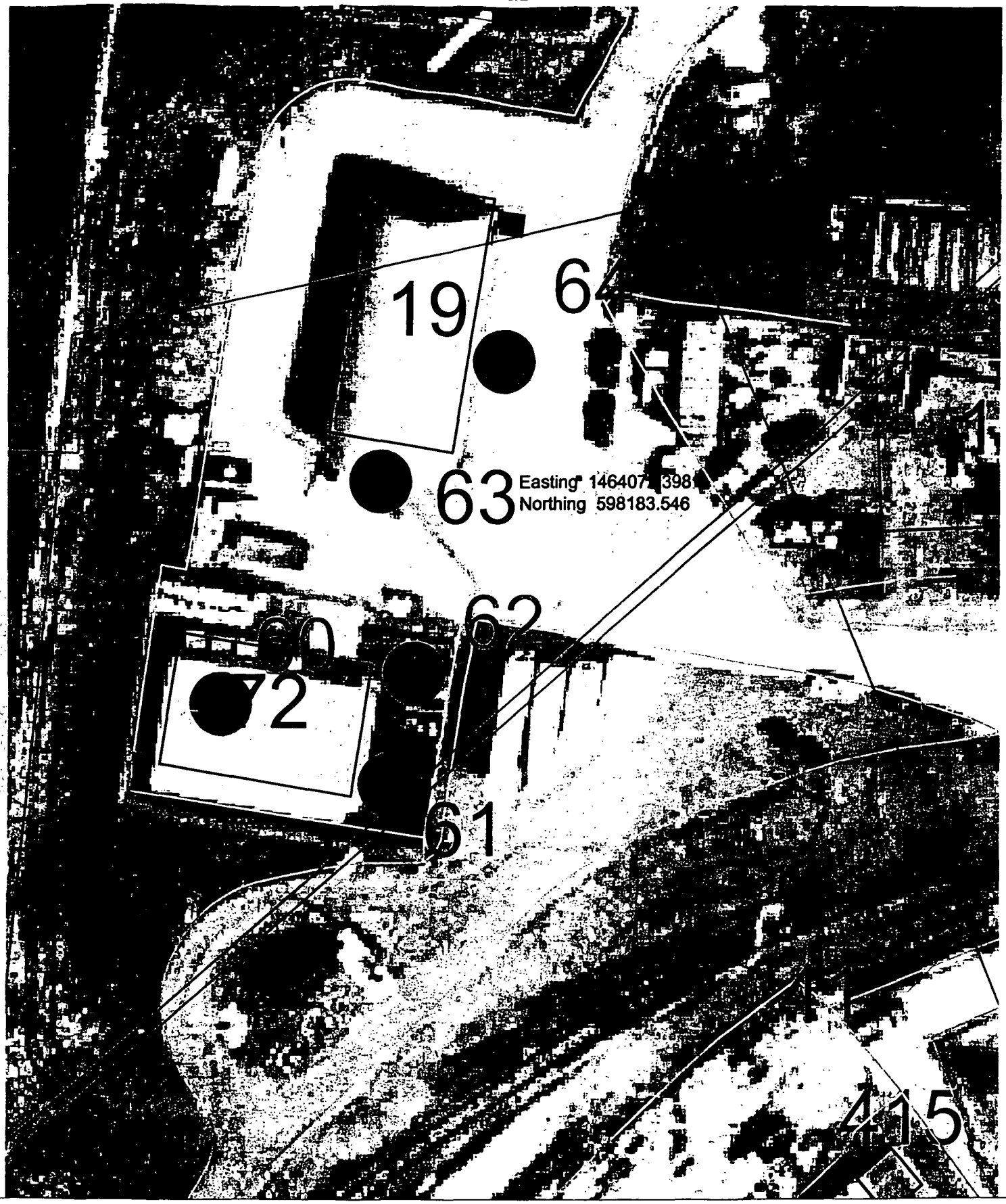
# Appendix E
# DRAWINGS/SKETCHES




Appendix E




**Legend**

- 45 Structures
- 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ISSUE | | | | | | | | | | | | | | | | | | | | |

| SHEET | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| ISSUE | • | | | | | |

PART CLASSIFICATION

DRAWING CLASSIFICATION: UNCLASSIFIED

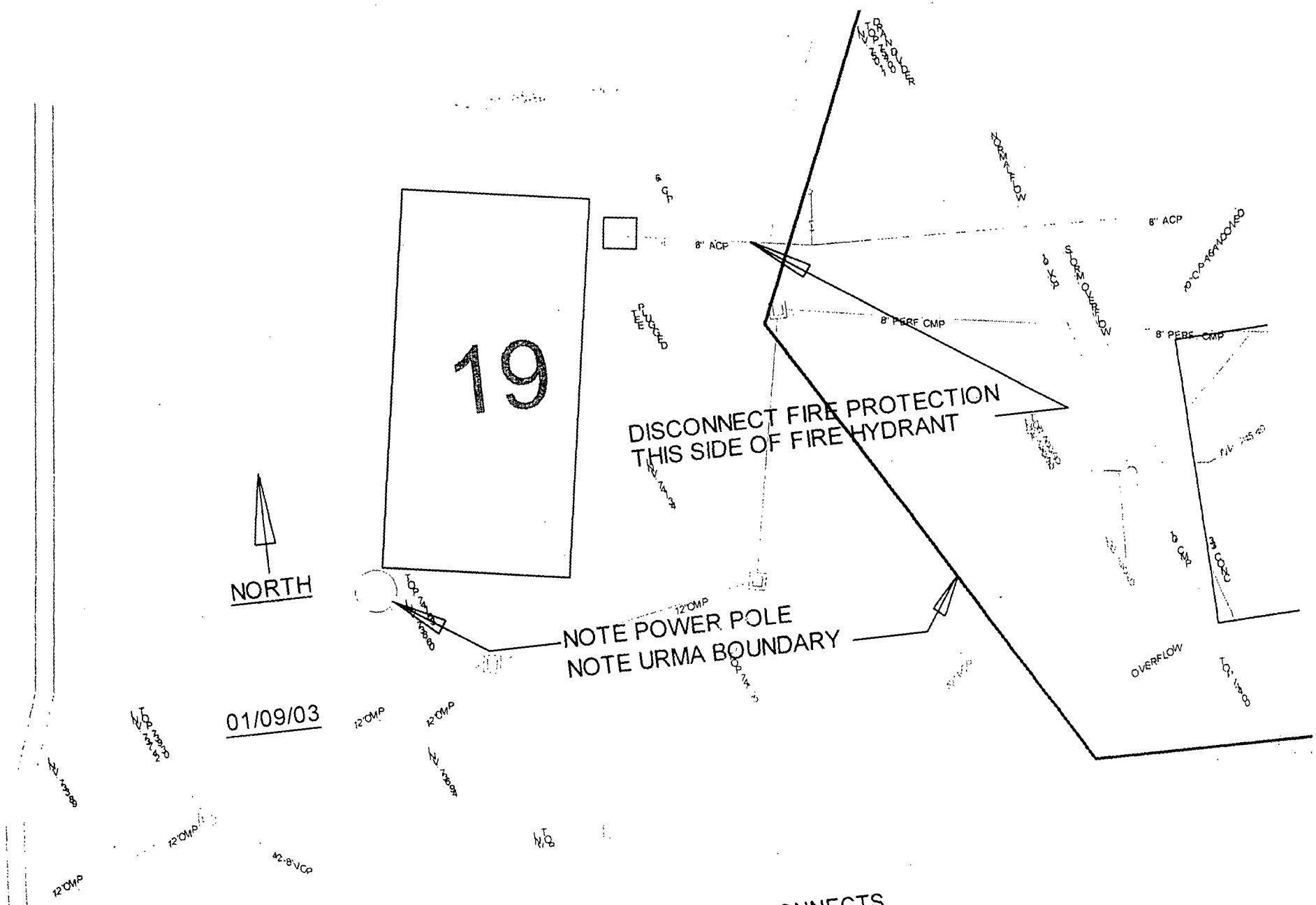
SIZE | DRAWING NUMBER: MAPS.DWG | JOB NUMBER

DWG TYPE STE | PRIMO ER-GIS | CAGEC | SCALE | SHEET 1 OF

STATUS MD-REL-00/00/00 | ORIGIN AUTOCAD

**Figure 2**
**Building 19 and Vicinity**

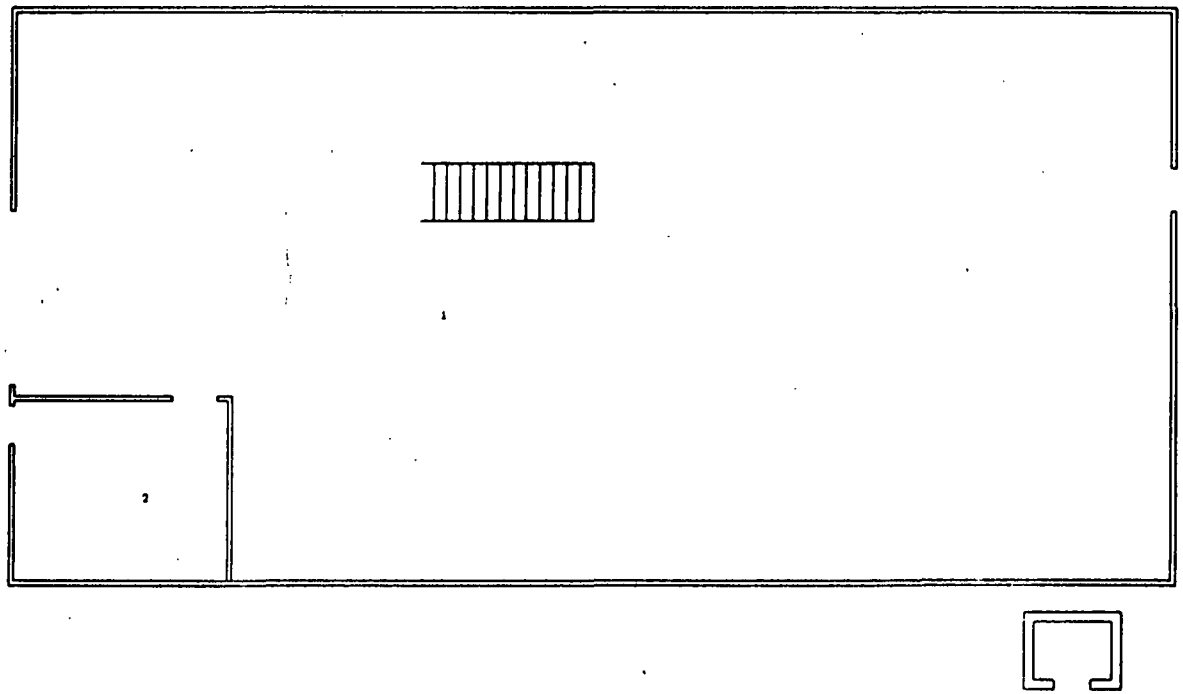
| ISS | DATE | REVISION | BY | CHKR | ENG | LP&EC | APVD | M |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |




BUILDING 19 MECHANICAL DISCONNECTS.
FIELD VERIFY VISTA MAP SKETCH.

0 39 of 50

| ISS | DATE | REVISION | BY | CHKD | DWD | UPKD | APVD | R |
|---|---|---|---|---|---|---|---|---|
| 0 | 12/12/91 | ASBUILT ISSUE | DCW | | | | DVD | |



0 3' 6' 10' 20'

N

# BLDG #19
# FIRST FLOOR
# BLDG CODE:3019

APPROVALS: DATE:
SAFETY COMMITTEE REQUIRED:
___NONE ___TRUEDOC ___TEDOC ___EHDOC
TECH. REDIP. _____ _____
SR. MGR. _____ _____
TRUEDOC _____ _____
TEDOC _____ _____
EHDOC _____ _____

| | |
|---|---|
| DESIGN DWG | PROJ MGR |
| SPONS | DWG SUPV |
| LP & EE | PROD REV |
| DWG MGR | |
| APVD | DATE |

| | | | | | | |
|---|---|---|---|---|---|---|
| SHEET | 1 | 2 | 3 | 4 | 5 | 6 |
| ISSUE | 0 | 0 | | | | |

PART CLASSIFICATION

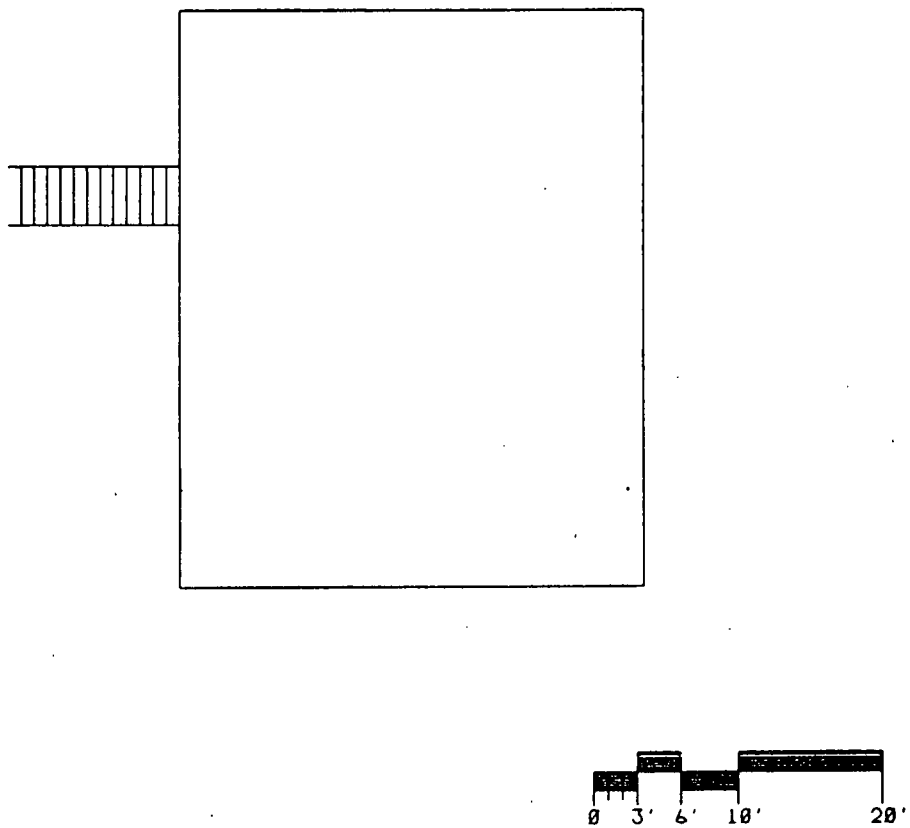
TITLE (U) TITLE CLASSIFICATION
BLDG #19
FLOOR PLANS

| DRAWING CLASSIFICATION | SIZE | DRAWING NUMBER | JOB NUMBER |
|---|---|---|---|
| UNCLASSIFIED | C | FSC911232 | 12335 |

| DWG TYPE | PROM | CABIN | SCALE | SHEET |
|---|---|---|---|---|
| SFP | BLDG #19 | 14865 | AS NOTED | 1 OF 2 |

STATUS MD-REL-12/12/91 ORIGIN MD-BR3-V3.0

0 of 50




**BLDG #19**
**MEZZANINE**
**BLDG CODE:3019**

| | |
|---|---|
| DRAWING NUMBER FSC911232 | JOB NUMBER 12335 |
| DRAWING CLASSIFICATION UNCLASSIFIED | |
| SIZE C | CAGE 14065 / SCALE AS NOTED |
| | ISSUE 0 / SHEET 2 |
| STATUS MD-REL-12/12/91 | |

0 41 of 50

# Appendix F
# REFERENCES/ LESSONS LEARNED

Derivative Classifier: N/A

UCNI Reviewing Official: N/A

References: ORPS ID-BNFL-AMWTP-2002-0008, NTS ID-BNFL-AMWTF-2002-0008

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Back to Lessons Learned

# Appendix G
# MISCELLANEOUS
# (USQ, RWP, Permits, etc.)

**INTER OFFICE MEMO CH2MHILL MOUND, INC.**

Date: January 30, 2003 cc. L. Koehmstedt

From: W. L. Johanan – OSW-430

Subject: Structural Survey of Building 19, RE: 29 CFR 1926.850 (a)

To: Kurt Kehler-Project Manager

Please be advised that we have performed a structural review and walk down of the subject building and found them to be satisfactory based on the demolition process and work plan.

Please call me if you have any further questions.

W. L. Johanan P.E.
Site Structural Engineer

STATE OF OHIO
WILLIAM
L.
JOHANAN
E-44883
REGISTERED
PROFESSIONAL ENGINEER

**No USQs or RWPs are required at this time. An excavation permit will be required for the slab removal and a burn permit will be required for torch cutting rebar.**

CH2MHILL

**SMPP/TFV PROJECT**
**Waste Disposition Plan**
**Building 19 Demolition**



The purpose of this waste disposition plan is to identify waste streams that will be generated during the demolition of building 19. Characterization of waste streams will be summarized and disposal options specified.

The plan will outline types of waste/waste quantities expected. Information will be provided on the schedule for waste generation, RCRA characterization, radiological characterization, packaging requirements/mode of disposal, and any specific waste acceptance criteria that must be met for disposal.

Waste types and estimates are based on a physical examination of the room conducted on Jan. 9, 2003 and review of the processes that were performed in the building. These areas are not considered to be contamination areas. The majority of the waste that will be generated in the demolition process of the building will be disposed of as demolition debris/solid waste. The waste will include all associated removable piping located inside/outside Bld. 19.
Sealed pressure vessels will need to be at < 1.5 atmospheres. Wastes are listed in expected order of generation.

| | |
|---|---|
| Waste Type | Demolition debris/solid waste: Concrete, Steel and Copper Piping, Sheet Metal, Elect. Wiring, FG Installation, |
| Quantity expected | 31,933 cu ft **100% Solid Waste** |
| Asbestos | In-house Asbestos abatement will be performed with an expected quantity of 2 cu ft. |
| Schedule for waste generation | April- May, 2003 |
| RCRA characterization | Non-hazardous |
| Radiological characterization | Radiological surveys of the building /equipment indicate no elevated radioactivity levels. Building was non-impacted from site Radiological Operations. |
| Packaging requirements | 30 Cu Yd. Roll-Off will be use for disposal |
| Mode of disposal | Offsite disposal via Waste Management Operations |
| *** NOTE: Sealed pressure vessels will need to be at < 1.5 atmosphere if present** | |

**Any unusual or unexpected items not addressed in this plan should be set aside for examination and evaluation by the project engineer and waste coordinator.**

Prepared by Willis Daniel
Waste Programs Date: 02/19/03

# Appendix H
# POST-JOB CONFERENCE

| Title: | |
|---|---|
| **Work Package No.** (JSWP or MSR) | |

Items Requiring Further Action:

POST-JOB CONFERENCE ATTENDEES

| NAME | HP | NAME | HP |
|---|---|---|---|
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| **Title:** | |
| **Work Package No.** (JSWP or MSR) | |

# LESSONS LEARNED INPUT FORM

What Happened? (Describe in as little or as much detail as necessary the situation and what occurred. Do not mention any names, only job functions and activities)

What did you learned? (Describe how the job could have been done better, how a hazard could have been eliminated, etc.)

**Submitted by:** _____ **Date:** _____

***OPTIONAL***

**Mail to: Lessons Learned Program Manager, W-219 or appropriate Project or Functional Manager**