3006-0604190004

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

CH2MHILL

SMO-058-05
April 25, 2005

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

ATTENTION: Paul Lucas

SUBJECT: Contract No. DE-AC24-03OH20152
Contract Clause C.2.1.1
Contract Deliverable #36
BUILDING 104, BUILDING DATA PACKAGE, FINAL

Dear Ms. Marks:

Attached is the following final document:

- Building 104, Building Data Package, Final

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

Sincerely,

John Lehew
Site Manager

JL/ms
Enclosures

cc: T. Fischer, USEPA, (1) w/attachments
B. Nickel, OEPA, (1) w/attachments
R. Vandegrift, ODH, (1) w/attachments
M. Wojciechowski, Tetra Tech, (1) w/attach.
F. Schmaltz, DOE/MCP, (1) w/attachments
L. Rawls, DOE/MCP, w/o attachments
R. Tormey, DOE/OH, (1) w/attachments
G. Desai, DOE/HQ, (1) w/attachments
CERCLA Documents, (1) w/attachments
C. Watson, (1) w/attachments
F. Bullock, MMCIC (3) w/attachments
Public Reading Room (4) w/attachments
ER Records, (1) w/attachments
DCC (1) w/attachments
Admin Record (2) w/attachments
J. Lehew, w/o attachments
D. Rakel, w/o attachments
V. Darnell, w/o attachments
B. Wier, w/o attachments
W. Webb, w/o attachments
M. McDougal, w/o attachments
MOAT Coordinator, w/o attachments
File

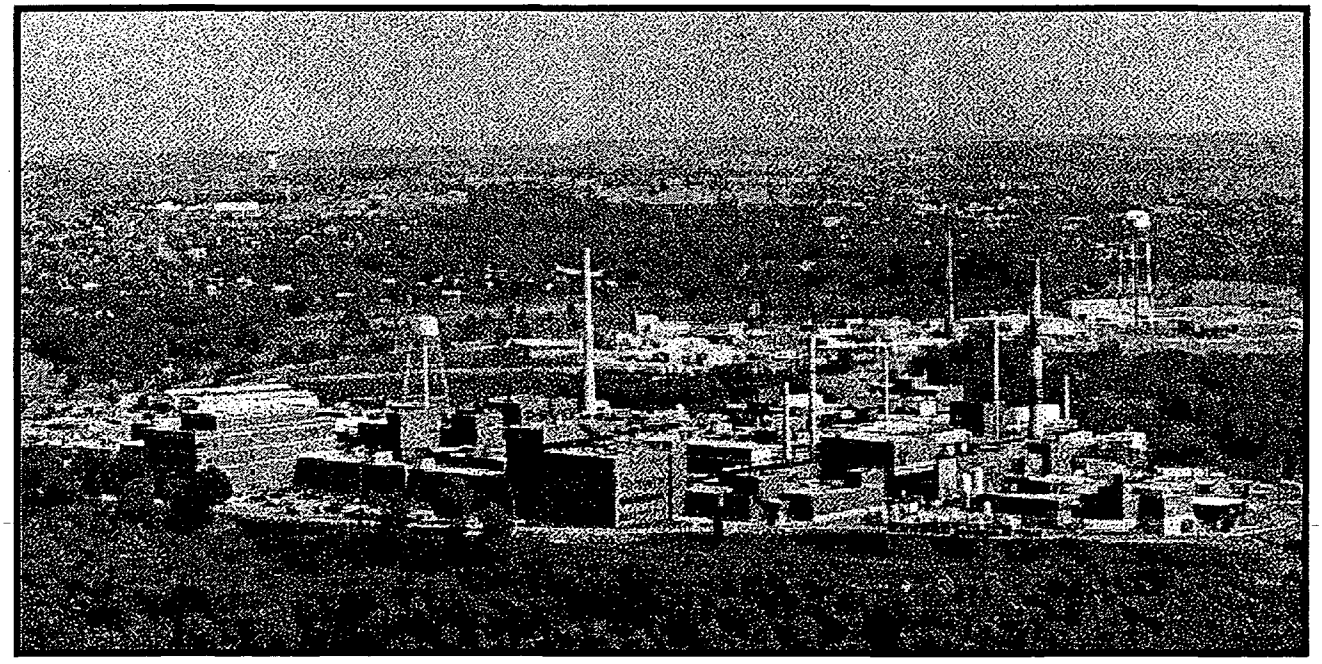
3006-0604190004

Environmental
Restoration
Program

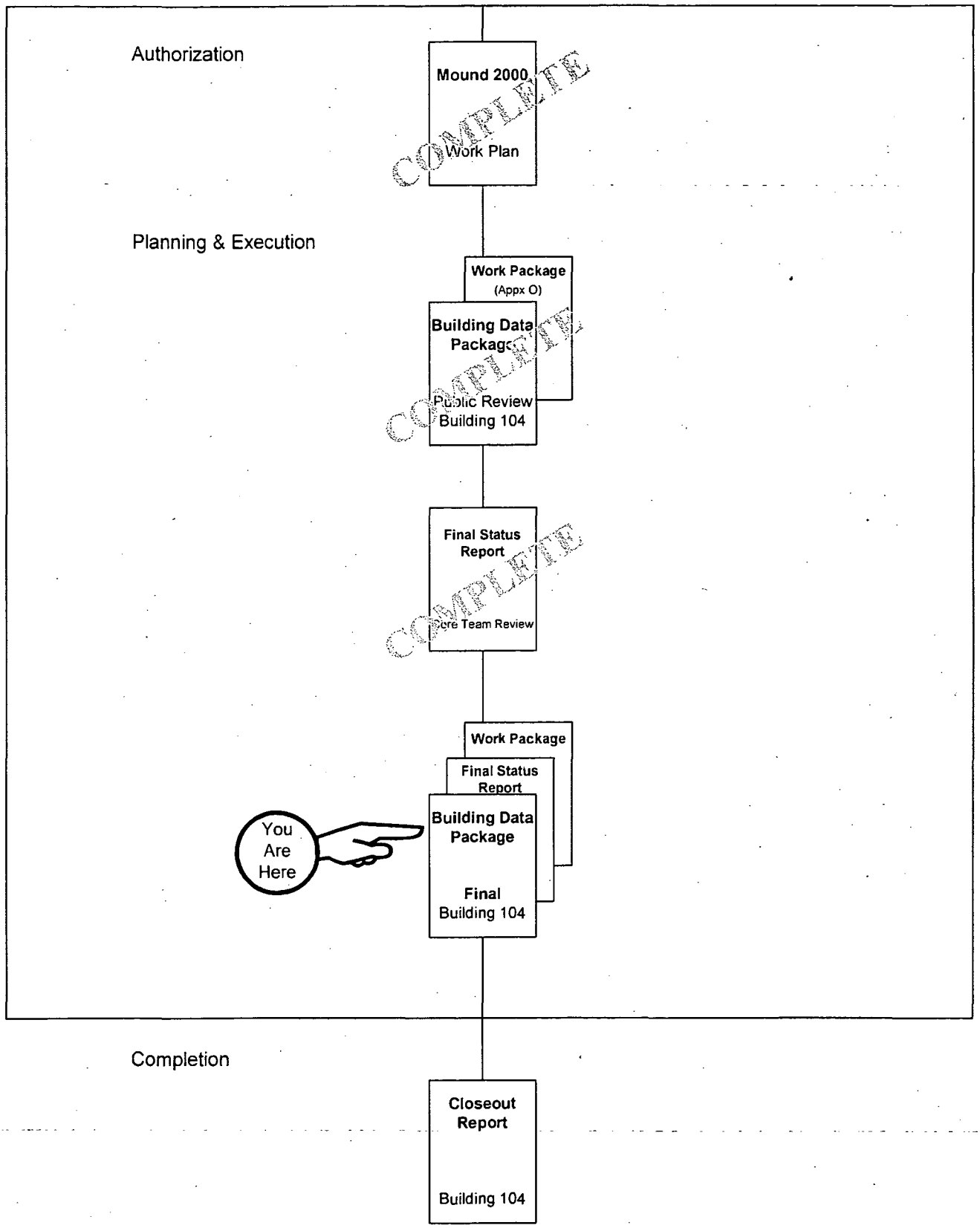
Miamisburg Closure Project
Building Data Package

Building 104
(Demolition)

Final
April 2005



Building 104



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The Mound Core Team
500 Capstone Circle
Miamisburg, OH 45342

April 2005

Mr. Frank Bullock, PE
Director of Operations
Miamisburg Mound Community Improvement Corporation
720 Mound Road
COS Bldg. 4221
Miamisburg, Ohio 45342-6714

Dear Mr. Bullock:

The Core Team, consisting of the U.S. Department of Energy Miamisburg Closure Project (DOE-MCP), U.S. Environmental Protection Agency (USEPA), and the Ohio Environmental Protection Agency (OEPA), appreciates your comments on the Building 104 Building Data Package, Public Review Draft, March 2005.

Attached is our response.

Should the responses to comments require additional detail, please contact Paul Lucas at (937) 847-8350, x314 and we will gladly arrange a meeting or telephone conference.

Sincerely,

DOE/MCP:	Paul Lucas Paul Lucas, Remedial Project Manager	4/19/05 date
USEPA:	Timothy J. Fischer Timothy J. Fischer, Remedial Project Manager	4/19/05 date
OEPA:	Brian K. Nickel Brian K. Nickel, Project Manager	4/19/05 date

Response to MMCIC/ EHS Technology Group, LLC Comments on the Building 104 Building Data Package
Public Review Draft
March 2005

Comment 1. EHS concurs with the planned demolition action for Building 104. We understand that all chemicals will be removed prior to demolition and all equipment will either be removed prior to demolition or demolished with the structure.

Response 1. Thank you for your review and input to the document.

Comment 2. EHS understands that contaminated soils detected in Borehole 47 are not included within a PRS boundary and that these sample location will be included in the residual risk evaluation of Parcel 8.

Response 2. Your understanding is correct.

Comment 3. Coordination between CH2M Hill, The DOE and MMCIC is important to ensure the building area (after demolition) is left in a condition consistent with the Mound Reuse Plan.

Response 3. MMCIC is encouraged to coordinate with DOE and the clean-up contractor regarding demolition activities. The demolition Work Plan specifies any site restoration activities following structure removal. The Core Team understands MMCIC's request and encourages MMCIC to meet with DOE to obtain an agreeable end state.

AFFIDAVIT OF PUBLICATION

State of Ohio

SS: CH2M HILL MOUND

Montgomery County

MIAMISBURG CLOSURE PROJECT

BUILDING DATA PACKAGE

The following document is available (March 25, 2005) for public information in the CERCLA Public Reading Room, 305 E. Central Ave., Miamisburg, Ohio.

Building 104: Maintenance Shop Building Data Package

Questions can be referred to Paul Lucas at (937) 847-8350 ext. 314

U.S. Department of Energy
U.S. Environmental Protection Agency
Ohio Environmental Protection Agency

4987875

3-25/05

Before me, the undersigned, a Notary public in and for said County, personally came Tina Sears, who being first duly sworn says she is the Legal Advertising Agent of the DAYTON DAILY NEWS, which she says is a newspaper of general circulation in Montgomery, Clark, Warren, Butler, Clinton, Greene, Preble, Miami, Darke, Mercer, Shelby, Fayette, Logan, Auglaize, and Champaign Counties, and State of Ohio, and she furthur says that the Legal Advertisement, a copy of which is hereunto attatched, has been published in the said DAYTON DAILY NEWS

18 Lines, **1** Time(s), last day of publication

being **3/25/05**, and he/she furthur says

that the bona fide daily paid circulation of the said DAYTON DAILY NEWS was over Twenty-five Thousand (25,000) at the time the said advertisement was published, and that the price charged for same does not exceed the rates charged on annual contract for the like amount of space to other advertisers in the general display advertising columns.

Signed Tina Sears

Sworn or affirmed to, and subscribed before me, this

25 day of **March** 2005

In Testimony Whereof, I have hereunto set my hand and affixed my official seal, the day and year aforesaid.

Notary Public in and for the State of Ohio

NOTARIAL SEAL
STATE OF OHIO

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BDP Building 104

REV	DESCRIPTION	DATE
WORKING DRAFT (to DOE)		**March 2005**
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	Public review was from March 25, 2005 through April 24, 2005.	**March 2005**
FINAL	Responses to public comments are included in the front of this document. The Final Status Report is included in Appendix G.	**April 2005**

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1.0 GENERAL OVERVIEW

1.1 Introduction

The purpose of this Building Data Package (BDP) is to prepare for the demolition of Building 104 (Maintenance Shop) 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 104 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 *American Society for Testing and Materials (ASTM) Standard Practice for Environmental Site Assessments; Phase I Environmental Site Assessment Process* (Designation E 1527-00).

The scope of the investigation included Building 104, the soil beneath, and a 15-foot wide perimeter border around the building. The investigation of Building 104 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 104 OVERVIEW

Constructed in 1991 as the Test Fire Maintenance Facility, Building 104 is located on the west central portion of the site (Figure 1). The facility is a 4,025 square-foot one-story steel frame Butler Brand building with corrugated steel siding and roof. The building was constructed with reinforced concrete footers and a 6-inch thick reinforced concrete slab-on-grade. The interior wall separating the shop from the office area is constructed of grout-filled concrete block. A concrete loading dock and ramp is located at the east end of the building. There have been no room additions to Building 104 altering the original footprint. A floor plan is provided in Appendix D.

Building 104 previously used central steam for heating and chilled water for cooling. Currently, the building uses a heat pump for heating and cooling. Electrical service is 480 volts. The building has potable and service water, a fire sprinkler system, sanitary services, and storm drains.

2.1 Past Uses of Building 104

At the time of construction, Building 104 contained offices, a lavatory, an electronics and small parts assembly room, a storage area, and a fabrication/maintenance shop. Building 104 continued to function as a maintenance area until the mid-1990s when the building was made available to the Miamisburg Mound Community Improvement Corporation (MMCIC) as a "user facility" and leased to a commercial entity. In 2002, the building was returned to site use as an office area and was still used in that capacity until March 2005, when personnel were moved out of the building in preparation for Safe Shutdown activities.

No research, development, or production activities using radioactive or energetic materials have occurred in the building.

2.2 Current Uses of Building 104

Building 104 is currently inactive. The equipment is in the process of being removed. All required equipment will be removed from the building (in accordance with 41 CFR 101-200), and any remaining equipment will be left in place and demolished/disposed of with the building. Safe Shutdown activities will be conducted prior to the commencement of demolition.

2.3 Summary of Environmental Concerns and Findings – Building 104

Table 1: Summary of Environmental Concerns and Findings

Description	Comment	Resolution
Lead-Based Paint	No previous lead surveys or sampling data could be found for Building 104. Since the building is scheduled for imminent demolition, painted surfaces will be tested for lead content as planned work indicates the need for such testing in order to avoid worker exposure to lead (Appendix J).	No further action would be necessary to protect occupant or worker health unless any coatings were to be disturbed by close worker contact (sanding, grinding, scraping, torch cutting, etc.). If these types of activities are planned, the affected paint coatings will be tested to verify the absence of lead. Waste Management performed worst-case scenario calculations to determine that building demolition debris containing lead-based paint meets the waste acceptance criteria at Stoney Hollow Landfill.
Chemicals	Appendix K provides a list of chemicals and products reportedly used or stored in Building 104.	All chemicals will be removed prior to demolition, and dispositioned by Waste Management.
Ballasts associated with Fluorescent Lamps	Fluorescent lamps were used in the building. Ballasts may contain polychlorinated biphenyls (PCBs).	Ballasts that may contain PCBs will be removed prior to demolition, and disposed of by Waste Management.
Air Emissions	There were no processes that created air emissions in Building 104.	N/A

Table 1: Summary of Environmental Concerns and Findings

Description	Comment	Resolution
Asbestos	During November of 2004 a comprehensive walk-through survey of the accessible areas of Building 104 was performed in order to identify any existing asbestos-containing materials (ACMs) and collect samples of suspect materials for verification of asbestos content in accordance with the Environmental Protection Agency's (EPA's) National Emission Standards for Hazardous Air Pollutant (NESHAP) regulations for buildings prior to demolition of the facility (Appendix I). Following sampling and analysis of suspect materials, no ACMs were found in Building 104.	N/A
Drainage Sumps	There are no drainage sumps.	N/A
Lead	N/A	N/A
Mercury	N/A	N/A
Radiological	No research, development, or production activities using radiological materials occurred in Building 104. The summary of radiological information is provided in Section 2.4, and the Final Status Report is provided in Appendix G.	The structure meets surface release criteria. However, due to the close proximity of Building 104 to the rail spur soil staging area (PRS 441), a confirmatory radiological survey will be performed of the south exterior building surface (facing the rail spur) just prior to demolition of the building to confirm that contamination of the exterior building surface facing the rail spur has not occurred.
Septic System	N/A	N/A
Wastewater	Handled by site wastewater facility.	N/A
Stains & Corrosion/HVAC	N/A	N/A
Storage Tanks	There are no aboveground or underground storage tanks within 15 feet of the Building 104 perimeter.	N/A
Solid Waste Disposal	N/A	N/A
Migratory Hazards	N/A	N/A
Radon	Radon level is not applicable for open-air demolitions.	N/A
HVAC	HVAC refrigerant will be drained and disposed of during Safe Shutdown.	No further action required.

Table 1: Summary of Environmental Concerns and Findings

Description	Comment	Resolution
Energetic Materials	N/A	N/A
Soil Contamination	Appendix L contains a graphic showing all soil sample locations within 15 feet of the Building 104 perimeter, and provides tables for detected compounds (results above laboratory detection limits) and non-detected compounds (results below laboratory detection limits). Borehole location 47 had two results that exceed the Cleanup Objective for Thorium-232. The highest value is shown in Table 2. All other results are equal to or below applicable screening levels (Core Team approved or the more stringent of either 10^{-6} Risk-Based Guideline Value [RBGV] plus background or Hazard Index = 1).	The borehole location (Borehole 47) with the elevated levels of Thorium-232 is not within a PRS boundary. This sample location will be included in the residual risk evaluation for Parcel 8.

N/A: Not applicable

Table 2: Maximum Results Exceeding Screening Levels (pCi/g)

Analyte	Maximum Result	Background	RBGV (10^{-6})	Screening Level
Thorium-232	3.30*	1.4	0.07	1.47

RBGV: most stringent of construction and office worker scenarios per Risk-Based Guideline Values, March 1997, Final, as performed using April 2001 Health Effects Assessment Summary Table (HEAST) slope factors.

* Result exceeds Cleanup Objective (2.1 pCi/g).

2.4 Radiological Information for Building 104

A radiological assessment of Building 104 was performed by reviewing operational history and radiological survey information. Building 104 was originally constructed as the Test Fire Maintenance Facility and contained an office area, a storage area, and a fabrication/maintenance shop. The building continued to function in this capacity until the mid-1990s when the Department of Energy leased the building to the City of Miamisburg, who leased it to a private entity. In 2002, the building was returned to site use as an office area. No radiological process systems were ever a part of the facility and no radioactive material was used or stored there. Surveys were performed throughout the building in accordance with the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM). A review of all of the radiological survey data supports the conclusion that Building 104 was not impacted by site operations. The review team concluded that the building meets radiological surface release criteria established by DOE Order 5400.5 (See Table 3), and no further radiological surveys are required. However, due to close proximity

of Building 104 to the rail spur staging area (PRS 441), a confirmatory radiological survey will be performed of the south exterior building surface just prior to demolition of the building to confirm that contamination of the exterior building surface facing the rail spur has not occurred.

Supporting documentation for the information summarized in the following table is contained in Appendix G.

Table 3: Radiological Summary

TYPE	RSDS (Radiological Survey Data Sheet)	LOCATION	SURVEY RESULTS (dpm/100 cm^2) (Note 1)	SURFACE CONTAMINATION GUIDELINES (dpm/100 cm^2) (Note 2)
Highest Alpha Smearable Activity	05-TF-0133	Floor	3.46	20
Highest Group 1 Alpha Fixed Activity	05-TF-0106	Exterior Wall	48	100
Highest Group 3 Alpha Fixed Activity	05-TF-0153	Roof	748	5,000
Highest Beta Smearable Activity	05-TF-0135	Floor	5.55	1,000
Highest Beta Fixed Activity	05-TF-0143	Floor Drain	2,350*	5,000
Highest Tritium Smearable Activity	05-TF-0106	Exterior Wall	21.15	10,000

Note 1: Residual radiological activity may be present and not be a concern (within applicable limits). This may result from or be a function of counting statistics, instrument variances, the randomness of decay, radon presence, and/or natural fluctuations in background levels.

Note 2: Guideline values per DOE Order 5400.5, Radiation Protection of the Public and the Environment.

**Note: This value was obtained from a biased floor drain survey, which is the maximum beta reading found in the building. The maximum Survey Unit beta measurement was 1,307 dpm/100cm2, taken on the floor in Survey Unit 3 (RSDS 05-TF-0135).*

3.0 SITE DESCRIPTION

3.1 Site/Vicinity Location and Characteristics

Building 104 is located at the DOE MCP site, formerly known as the 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 Engineer 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 lie 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, and Other Improvements in Proximity to Building 104

As shown in the Appendix C figures, Building 104 is bordered on the north by a down-gradient grass-covered hillside and an asphalt roadway; on the east by an asphalt-paved loading/unloading area adjacent to the Building 104 dock and a concrete ramp up to the dock; on the south by an asphalt roadway, Trailer 12, PH Building, Building 24, and the Rail Spur; and on the west by Trailer 4.

3.3 Current and Past Uses of Buildings in Proximity to Building 104

Buildings currently in the vicinity (Figure 1) of Building 104 include:

- PH Building (Pump House), located south of Building 104, is a single-story reinforced concrete 646 square-foot structure constructed in 1948. The building was built to provide a facility to pump fuel oil and brine water to P Building (Power House). PH Building is scheduled for demolition as an industrial demolition project in Spring 2005.

- Building 24 (Water Treatment Plant) is a single-story concrete-block 840 square-foot structure constructed in 1965. The building contains equipment for water softening, rust inhibition, and chlorination. Building 24 is currently supplying treated water to the majority of the remaining site structures. Building 24 water treatment operations are projected to cease in the April 2005 timeframe. The building is scheduled for demolition as an industrial demolition project in Spring 2005.

- Trailer 4, located west of Building 104, is a 2,100 square-foot triple-wide modular structure used as an office trailer. The trailer was purchased and set in place in August 2002 to provide temporary office space and has always been used in that capacity. The structure is sited at the former location of Building 123. The plan is to demolish the structure as an industrial demolition when it is no longer needed as an office area.

- Trailer 12, located south of Building 104, is a 450 square-foot single-wide modular structure used as an office trailer. The trailer was moved to its current location in

approximately 1996 and has been used at several other locations around the site. The trailer was purchased to provide temporary office space and has always been used in that capacity. The plan is to demolish the structure as an industrial demolition when it is no longer needed as an office area.

Buildings previously in the vicinity (Figure 1) of Building 104 include:

- WD Building (Radiological Liquid Processing/Waste Disposal) was located north/ northwest of Building 104. It was constructed in 1948 as a 28,222 square-foot multistory facility with penthouses, a full basement, and a partial sub-basement. The building was the treatment facility for low specific activity (LSA) radioactive wastes generated by process activities at Mound. WD Building was demolished in May 2004 as a CERCLA RA.

- SD Building (Sanitary Disposal) was located northwest of Building 104. It was a one-story (with a basement) 1,593 square-foot facility constructed in 1948. The building was used for sanitary treatment and sewage disposal. SD Building remained in service until 1975. The building was demolished in mid-1997 as an industrial demolition project.

- Building 23 (Waste Material Storage Facility) was located north of Building 104. Constructed in 1966 as a warehouse for the staging and shipping of low-level radioactive waste, it was a single-story reinforced concrete block 3,422 square-foot structure. The building was later used to store mixed and transuranic (TRU) waste. Building 23 was demolished in May 2004 as a CERCLA RA.

- Building 79 (Office Modular) was located north of Building 104 and west of Building 23. Building 79 was erected in 1983 as a 1,650 square-foot modular wooden building used exclusively for offices. In October 1997, the building was removed from the site and sold at auction. The Core Team identified Building 79 as one of several modular buildings to be sold and removed from site without requiring a Building Data Package. This decision was based on the building's past use (offices) and the review process established for auctioned items.

- Building 125 (Alpha Treatment System) was located north of Building 104 on the site formerly occupied by Building 79. Constructed in 1998, it was a single-story pre-engineered metal building having 2,000 square foot of floor space. The facility was used for treating, processing, and packaging low-level alpha-containing wastewater for offsite disposal. Building 125 was demolished in January 2004 as a CERCLA RA.

- Building 1, constructed in 1958, was a one-story 986 square-foot concrete block structure, with a sheet metal addition on one side. The roof was of built-up membrane coal tar and asphalt. The building was located to the southeast of Building 104. Building 1 was sited in between Building 106 (on the north) and Building 74 (on the south). Building 1 was constructed and used for the

development, production, packaging, and testing of energetic materials. The building was demolished (1998 – 2000) as a standard industrial demolition.

- Building 123 was a steel-framed Rubb®-Brand tent-type building, located west of Building 104, in the location presently occupied by Trailer 4. It was a 3,838 square-foot structure built in 1993 or 1994 as a temporary structure to house containers of LSA radioactive waste. Processes conducted in the building included loading, unloading, sampling, and transferring contaminated soil in and out of LSA containers, and included staging soil on sheeting placed atop the dirt and gravel building floor. In 1999 all containers with radiological waste were removed from the building and the building was subsequently used to house heavy equipment. Decontamination of the heavy equipment was also conducted within the tent. The structure was demolished as a standard industrial demolition in July 2002.

- Building 41 was a 234 square-foot Waste Transfer Station, located west of Building 104, used to pump contaminated wastewater from the SM/PP area buildings to the WD facility. The structure was demolished between 1983 and 1994 (based on aerial photos).

- Building 106, constructed in 1985 as a general storage facility, was a one-story, 200 square-foot, metal walled and roof structure was located to the southeast of Building 104. The commercial Butler building was built slab-on-grade. It was sited on the east side of Building 1. It was used to store cartons, wooden cases, and metal shipping containers for packaging items containing explosives. The building was demolished (1998 – 2000) as a standard industrial demolition.

- Building 74, constructed in 1984, was a one-story, 400 square-foot, slab-on-grade structure. The facility was a manufactured Butler Building with metal arched walls and roof. The building was located to the southeast of Building 104. The building was sited adjacent to the south side of Building 1. It was used for packaging items containing explosives. Building 74 was used for the same purpose since construction until activities were discontinued. The structure was sold by auction in January 1998 and removed from site in February 1998. The concrete slab for the structure was demolished in February 1999 and site restoration was completed in March 1999.

These structures are believed to have had no adverse environmental impact on Building 104.

4.0 RECORDS REVIEW

4.1 General/Historical CERCLA Information

In compliance with permit requirements under Resource Conservation and Recovery Act (RCRA), the Clean Water Act (CWA), the Safe Drinking Water Act (SDWA), and the Clean Air Act (CAA), Mound Plant has applied for or has received permits for its surface water discharges, air emissions, and hazardous waste program. The site had operated a

hazardous waste storage facility under a RCRA Part B permit dated October 18, 1996. The site currently 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 indicates that no reportable chemicals were stored in Building 104.

The Mound Plant was identified as a contaminated site on the National Priorities List (NPL) under CERCLA (Superfund) in 1989. The 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 (OU) 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." For a more detailed description, refer to the *Work Plan for Environmental Restoration of the DOE Mound Site, the Mound 2000 Approach*. The Mound 2000 Process system divided the site into geographical parcels containing more than 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. The PRSs were initially identified and documented as part of the Mound site scoping process under the Federal Facility Agreement (FFA). The original list of PRSs can be found in the OU9- Site Scoping Report Volume 12, Site Summary Report, 1994. One of the objectives of the Site Scoping report was to provide a comprehensive summary of PRSs identified through the scoping process. Subsequent to the 1994 Site Scoping Report, additional PRSs have been identified as information became available. The assignment of a PRS does not necessarily mean that there is a threat to human health or the environment. The tabulation of all PRSs simply provides an explicit means of tracking and evaluating all potential releases onsite, the need for further action, and the identification of the authority responsible for action.

Through the process described above, the specific PRSs in the vicinity of Building 104 (Section 4.2.3) are listed in Table 4 along with their binning status. Their locations are shown on Figure 2. Of the three PRSs in the vicinity of Building 104, one is a Removal Action (RA) and two have been determined by the Core Team to require No Further Assessment (NFA). For a PRS to be binned NFA, the Core Team has reviewed the PRS data and agrees that all existing environmental issues associated with that PRS have been resolved and the PRS is protective of human health and the environment. No other PRSs associated with Building 104 have been identified.

4.2 Specific Record Sources for Building 104

4.2.1 Occurrence Reports

A search of the occurrence reporting system revealed one report that mentions the Building 104 parking lot (but did not involve Building 104). The occurrence was minor and without impact to Building 104 or the environment:

- *Unauthorized Discharge of Ethylene Glycol at Outfall 002 Under NPDES Permit (October 2000):* On October 13, 2000, an ethylene glycol leak from the heating, ventilation, and air conditioning (HVAC) unit in the Hydrolysis House (HH) Building penthouse (located east northeast and up gradient of Building 104) caused a strong odor in the storm drain by the Building 104 parking lot and the drainage ditch east of the building. Foam was observed on the water in the drainage ditch. The sluice gate was closed and all storm sewer drainage was sent to the holding pond. The total quantity that could have been potentially released to Outfall 002 was estimated to be eight gallons over a thirty-two day period. A sample from Outfall 002 showed non-detectable for glycol. Based on the effluent volume for Outfall 002, it is unlikely that the quantity of ethylene glycol released would have been detected at the outfall (Minimum Detectable Level (MDL) is 1.0 milligram/liter). The OEPA was contacted and a glycol spill report was made because Mound's permit was interpreted as being any glycol going to the Outfall is a potential for a release at the Outfall and is therefore reportable. While there were no actual measurable amounts of ethylene glycol in the discharge from the plant site, the OEPA considers any ethylene glycol going into the sewer system at any point to be a violation of the NPDES permit. Leaks in the HVAC unit were repaired. Rain and the resulting run off eliminated the foam in the drainage ditch. On October 30, 2000, after confirming that glycol was no longer present in the storm sewer drains from HH Building, the sluice gate was opened back up to its normal configuration.

4.2.2 Spills and Releases

The site occurrence reporting system indicates no spills or releases originating in Building 104. An ethylene glycol release from HH Building was observed near the Building 104 parking lot (reference Section 4.2.1).

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 Environmental Restoration (ER) Program, DOE and the site contractor tabulated all the PRSs identified under the various regulatory programs in effect at the site. Three PRSs are at or near Building 104, as identified in Table 4. The PRS locations are shown on Figure 2, and recommendation sheets are provided in Appendix N.

Table 4: PRSs in Proximity to Building 104

PRS	CERCLA or Bldg. Related	Binning Status	Comments
59	CERCLA	NFA	Contaminated Soil Box Storage Area
300	CERCLA	NFA	Area 19, Underground Waste Transfer Line
441*	CERCLA	RA	Soil Staging Area & Expansion

* The Core Team binned PRS 441 as an RA on 1 March 2005; the recommendation sheet is not currently available.

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 1983 (prior to construction), 1994 (following construction), and 1996 (most recent aerial photo) were reviewed and no significant items were identified. Aerial photographs are presented in Appendix E.

4.5 Interviews

The current Building Manager, Gary Weidenbach, was interviewed regarding past facility operations and current conditions. No significant items, other than those identified herein, were identified based on the interview.

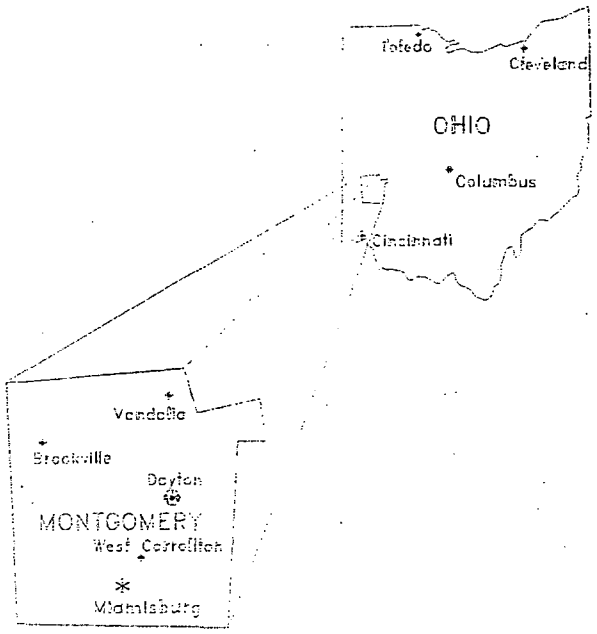
Appendix A

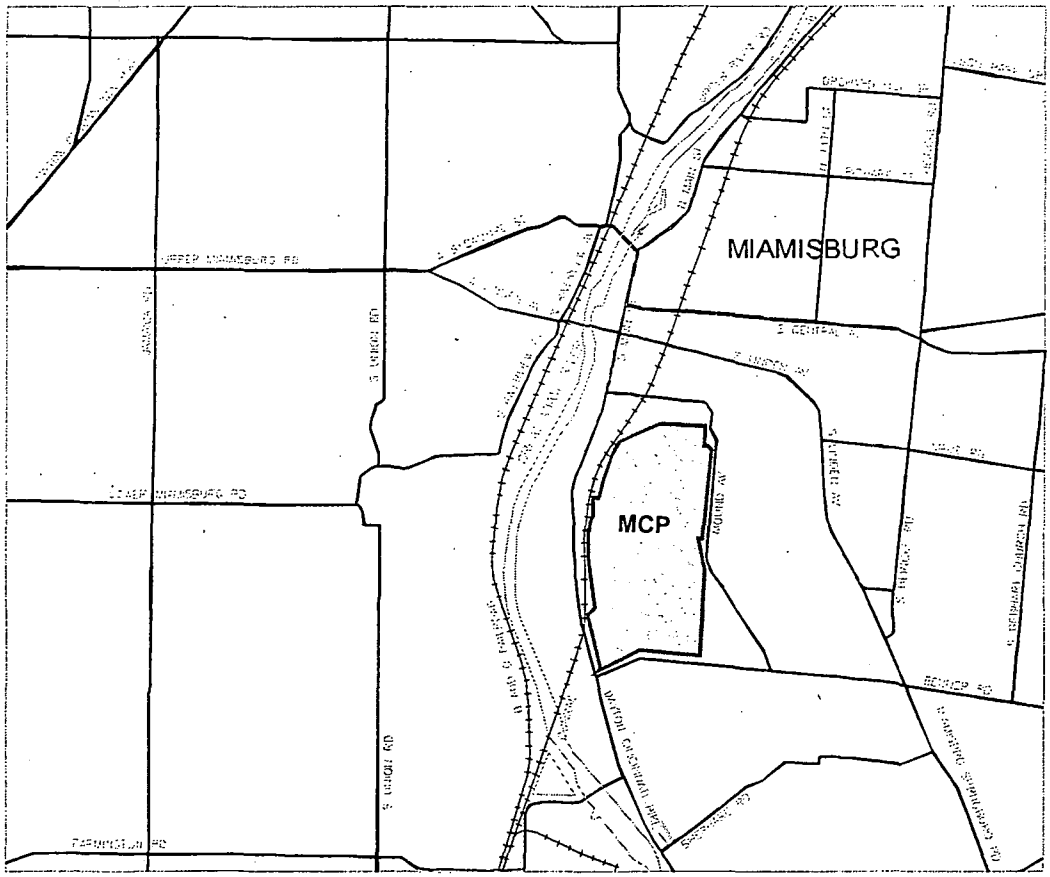
General Listing of Acronyms

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


Toledo
Cleveland
OHIO
Columbus
Cincinnati
Vandalia
Brookville
Dayton
MONTGOMERY
West Carrollton
Miamisburg


MIAMISBURG
MCP

Appendix C

Figures

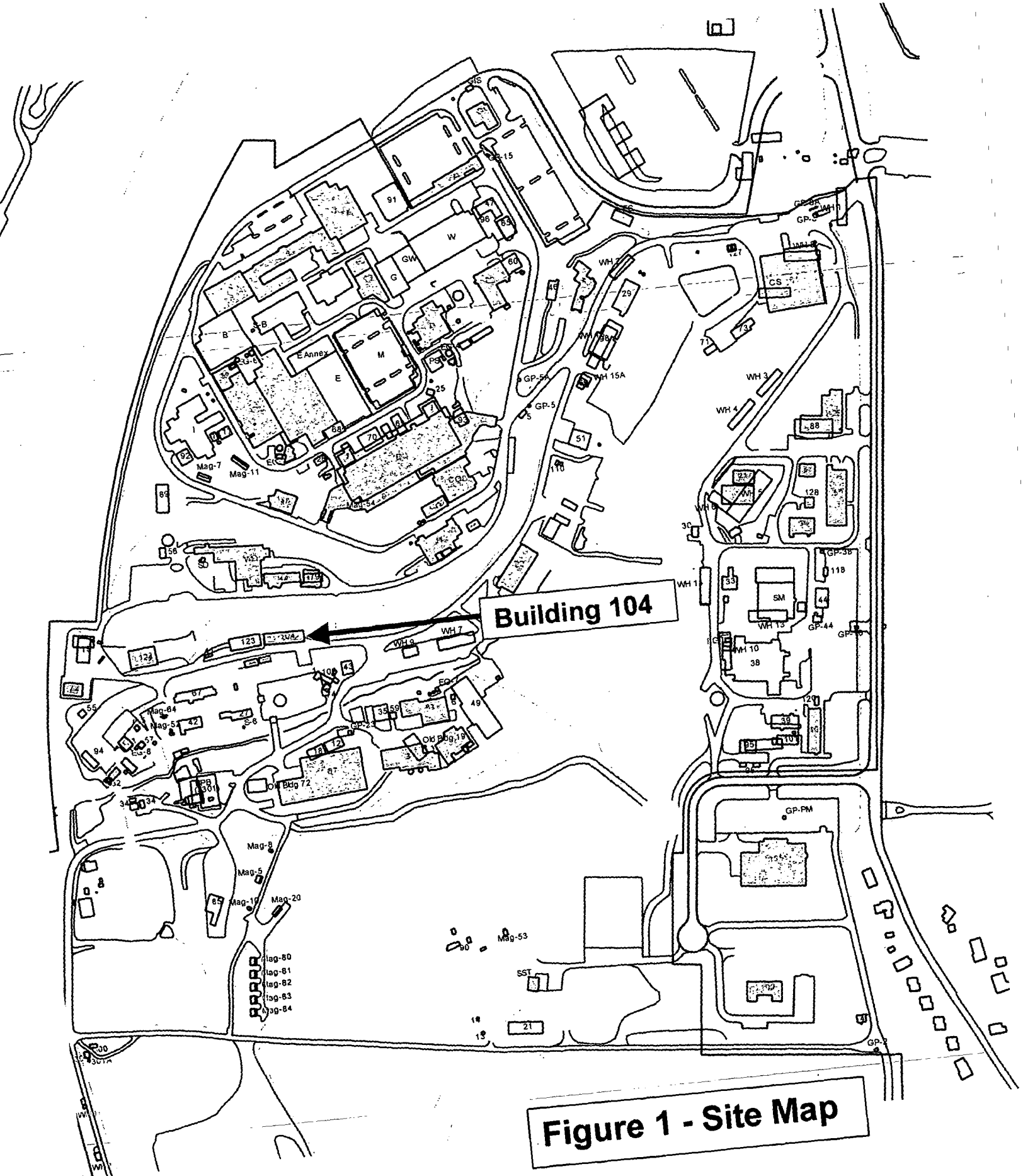
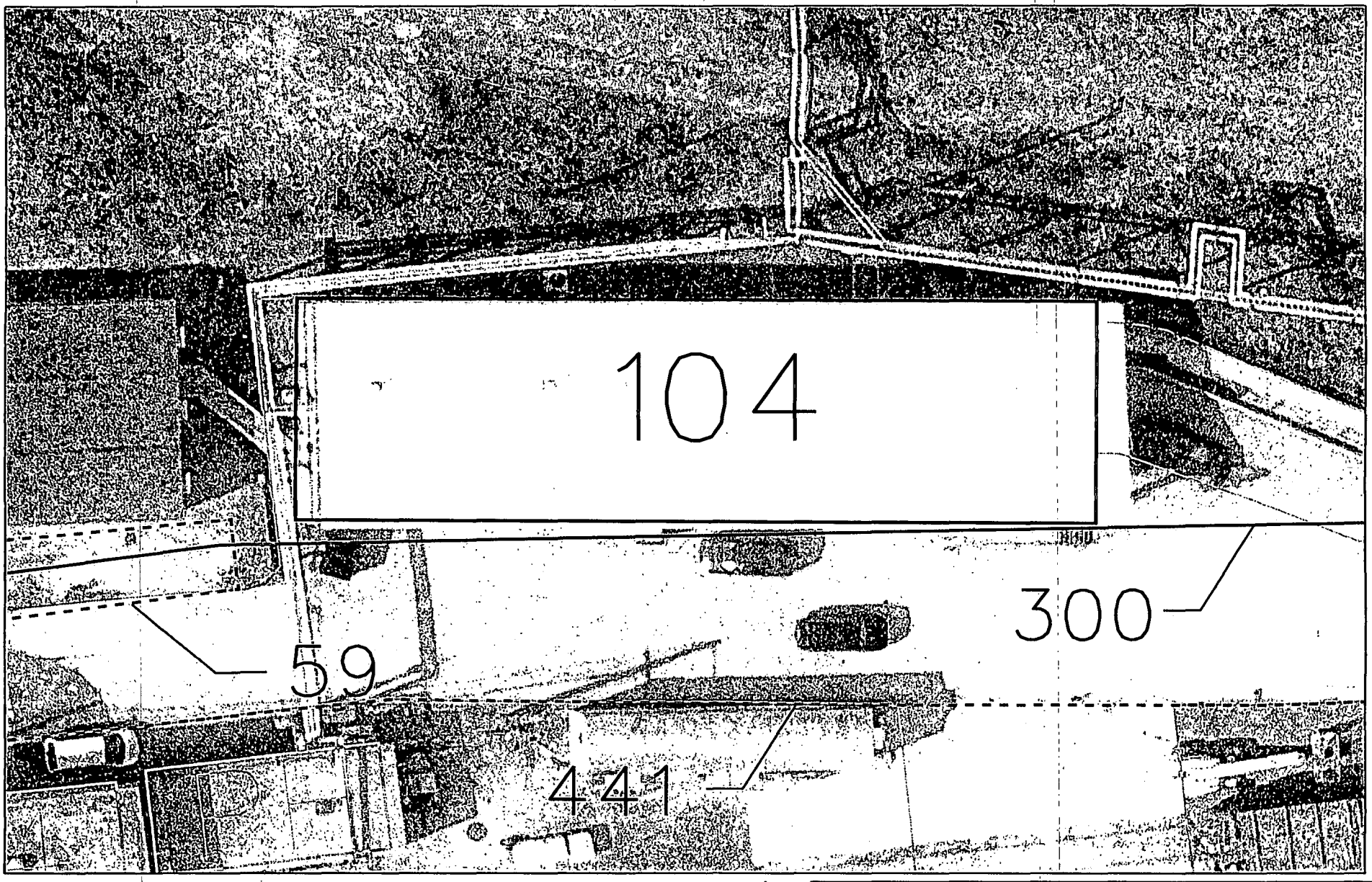


Figure 1 - Site Map



PRS Point
PRS Area
PRS Line

20 10 0 20 40FT
GRAPHIC SCALE

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

Figure 2: Building 104 and Vicinity

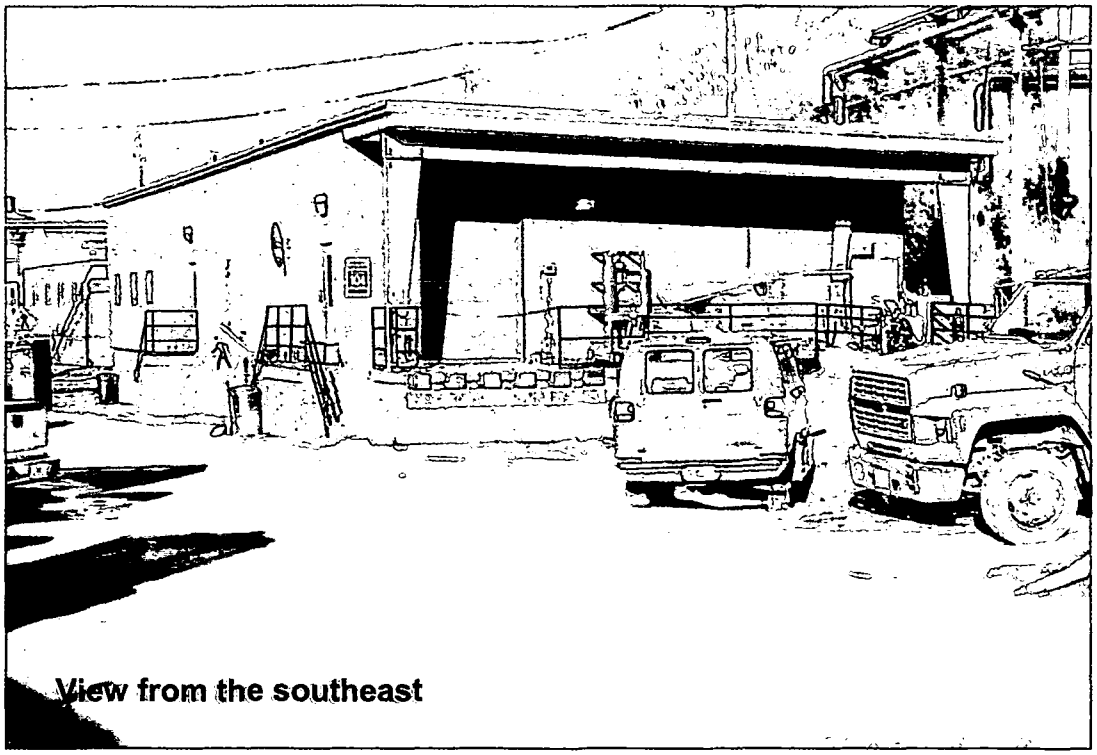
DRAWING CLASSIFICATION: UNCLASSIFIED | SIZE | DRAWING NUMBER: vicinity.dgn | JOB NUMBER

DWG TYPE STE | PRNG ER-GIS | CADD | SCALE # | SHEET 1 OF 1

STATUS MO-REL-05/12/03 | ORIGIN MSTATION / J

ISS	DATE	REVISION	BY	CHKR	ENG	LPMEC	APVD	B
	03/02/05		SSF					

C2 of 3



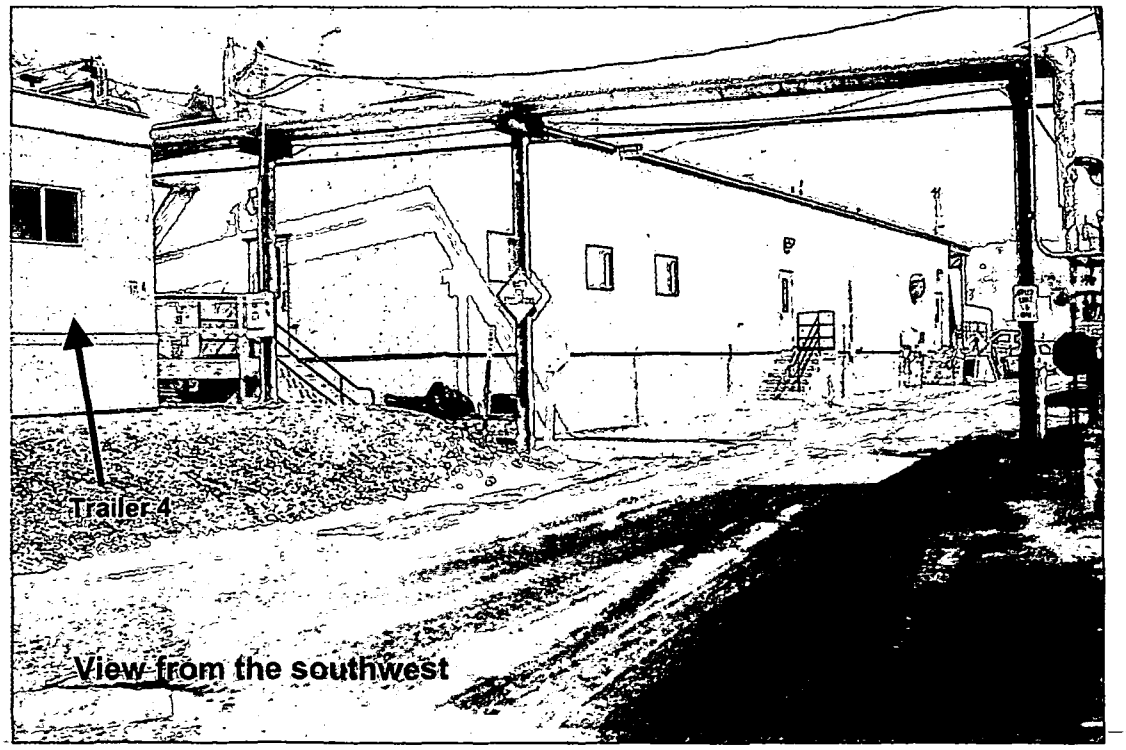
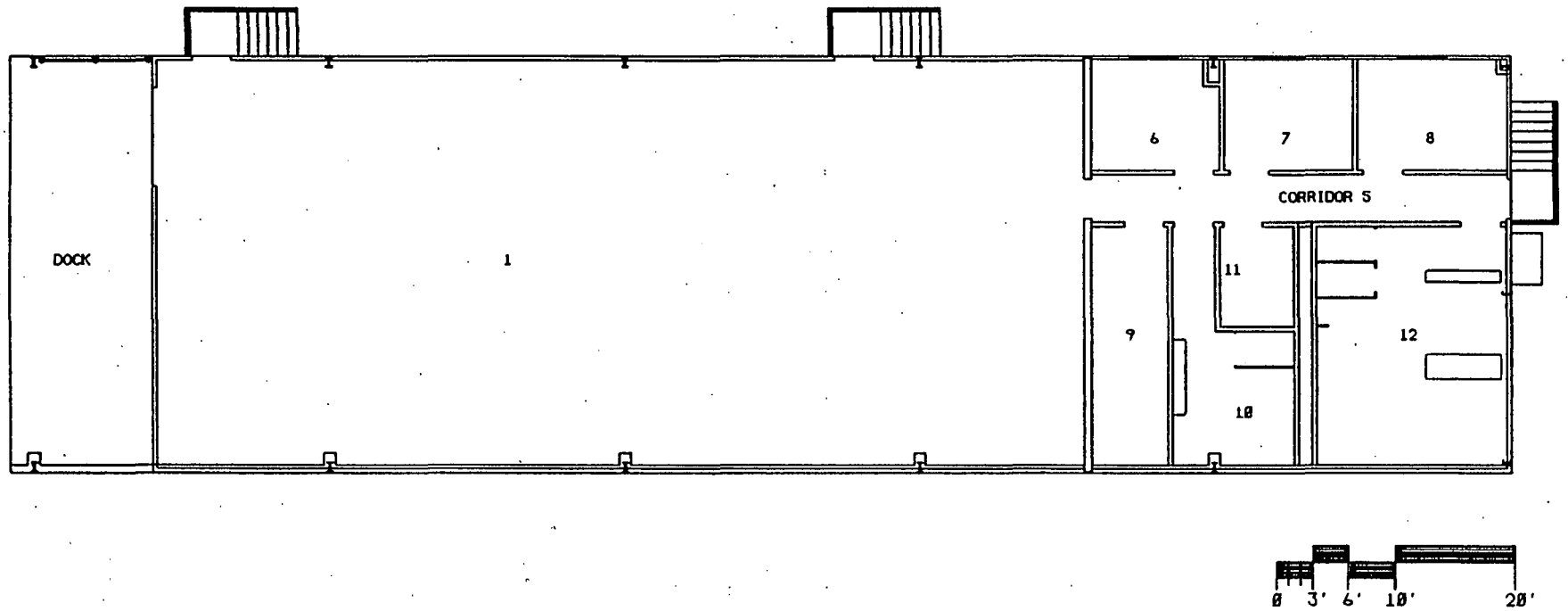


Figure 3 – Building 104

Appendix D

Floor Plans

ISS	DATE	REVISION	BY	CHKR	ENG	LPREL	APVD	M
0	12/12/91	ASBUILT ISSUE	DCW				DVD	



BLDG #104
FIRST FLOOR
BLDG CODE:3104

APPROVALS:	DATE:
SAFETY COMMITTEE REQUIRED:	
___NONE ___TRUEBOC ___TEBOC ___EHBOC	
TECH. REP.	
GR. MGR.	
TRUEBOC	
TEBOC	
EHBOC	

DESIGN ENG	PROJ MGR
SPONS	ENG SUPV
LP & EC	PEER REV
ENG MGR	
APVD	DATE

SHEET	1	2	3	4	5	6
ISSUE	0					

PART CLASSIFICATION

DRAWING CLASSIFICATION: UNCLASSIFIED

TITLE: BLDG #104 FLOOR PLANS

(U) TITLE CLASSIFICATION

SIZE: C | DRAWING NUMBER: FSC911294 | JOB NUMBER: 12335

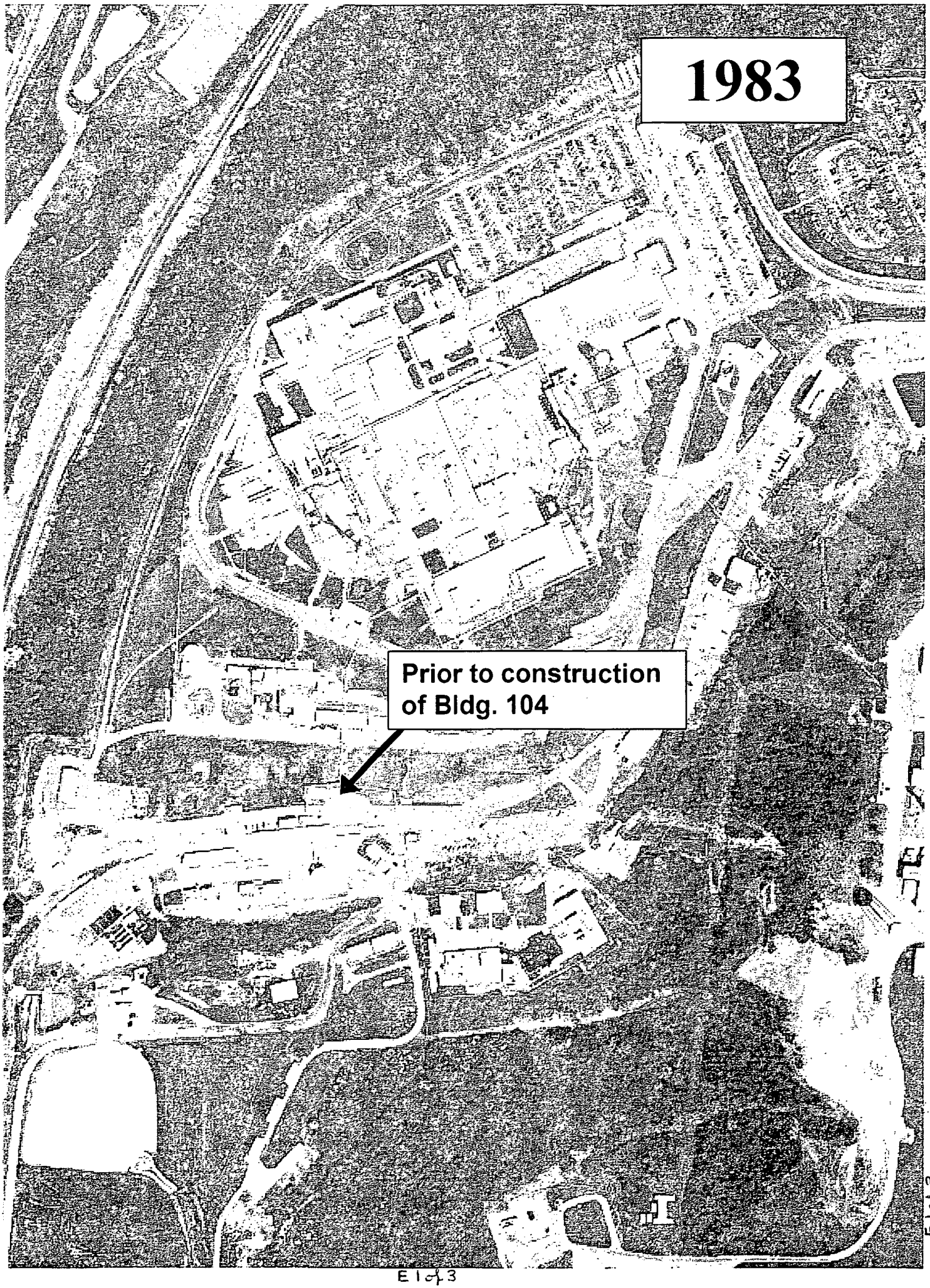
DWG TYPE: SFP | FROM: BLDG #104 | CADD: 14065 | SCALE: AS NOTED | SHEET 1 OF 1

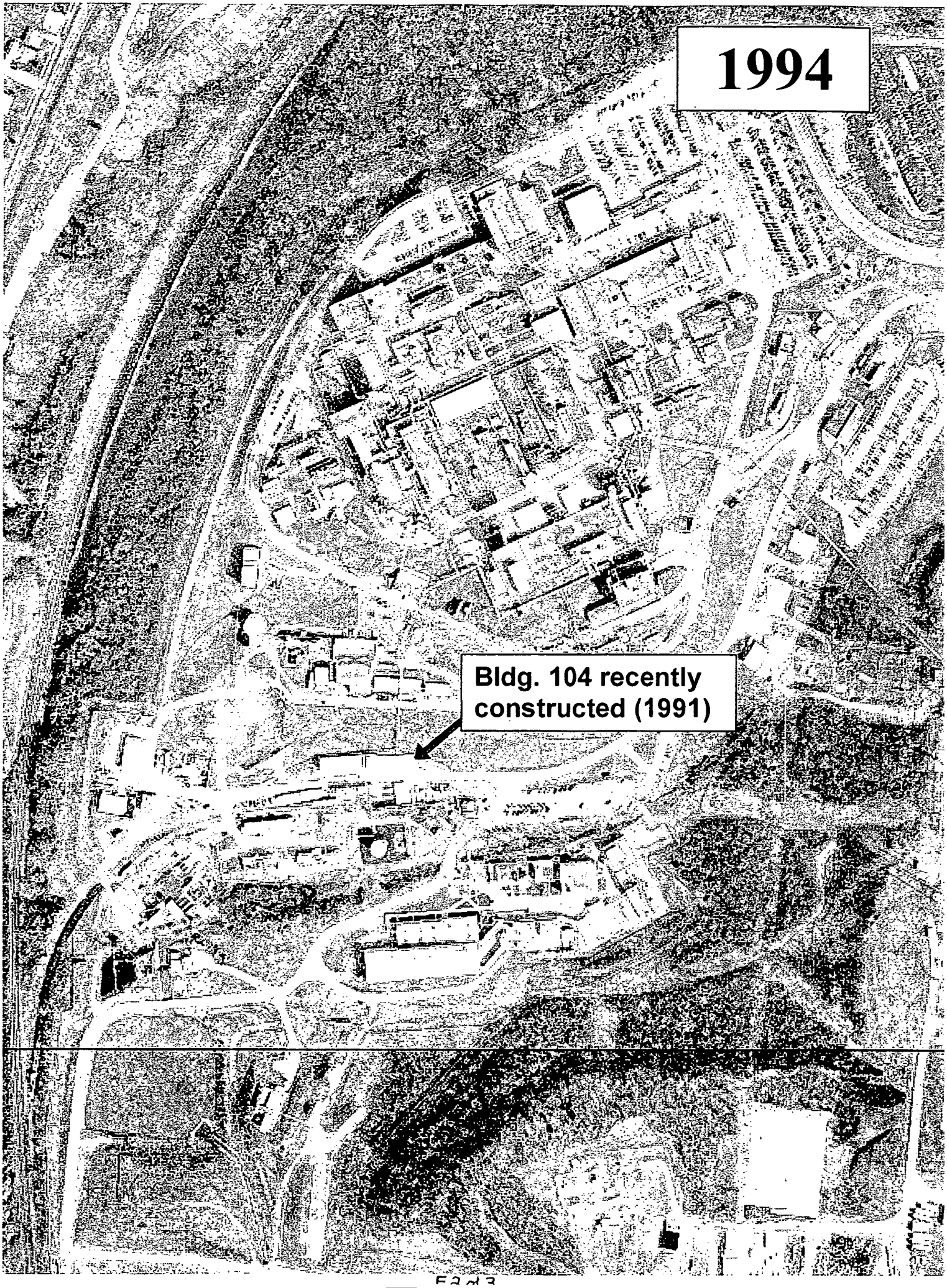
STATUS: MD-REL-12/12/91 | ORIGIN: MD-BR3-V3.0

D1of1

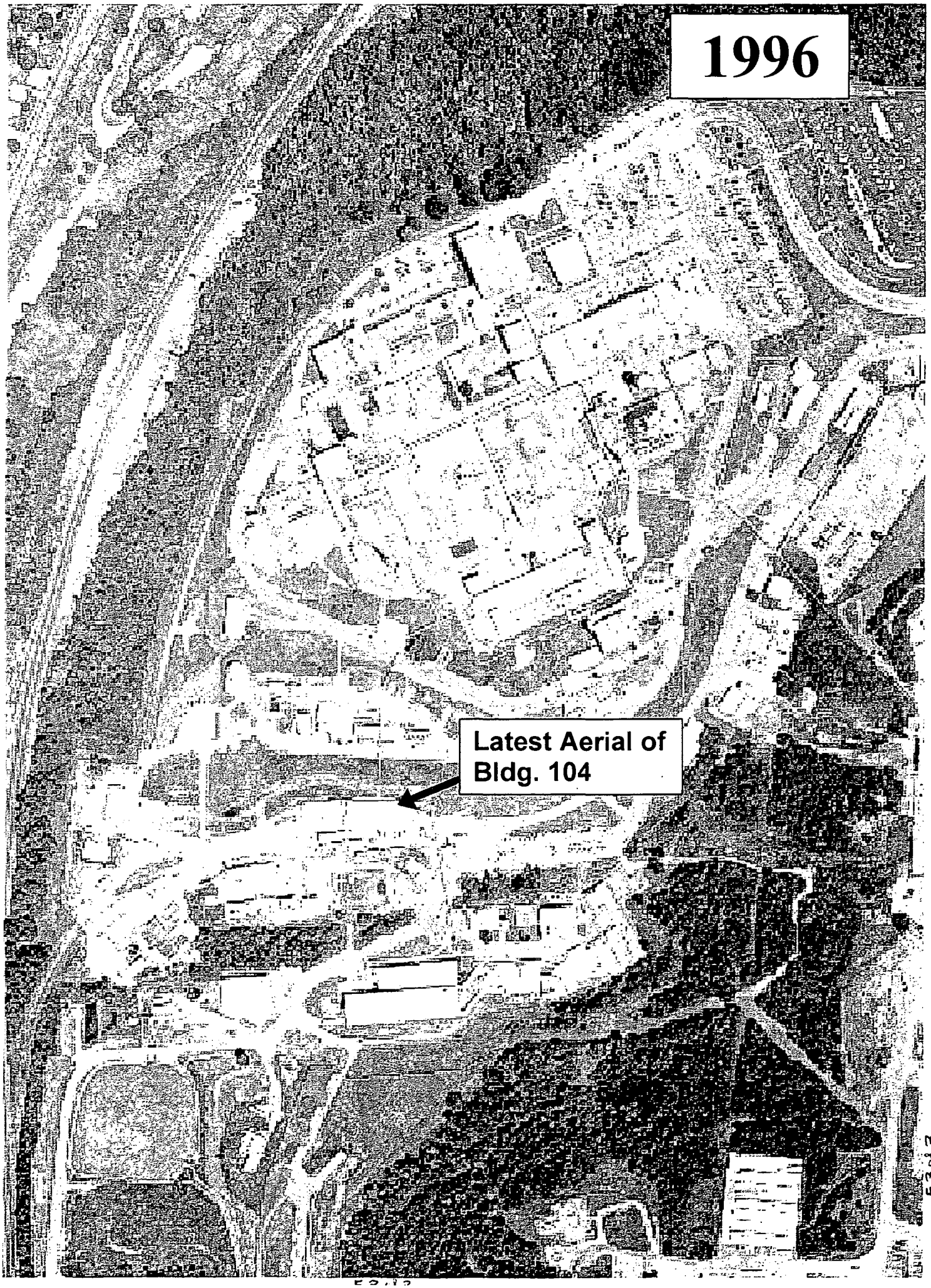
Appendix E

Aerial Photographs


1983
Prior to construction of Bldg. 104



F2 of 3



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Appendix F

Environmental Appraisal Report of the Mound Plant (excerpt)

The Environmental Appraisal Report was prepared in 1996 and documents the observed conditions at the time of the inspection. Information provided in the Building Data Package text supercedes information provided in this appendix.

An Environmental Appraisal of Building 104 was not conducted because the Department of Energy had leased the building to the City of Miamisburg at the time the appraisal was being conducted. A one-page report containing a description of Building 104 and a summary of findings is provided in this appendix.

Based on a review by subject mater experts, hand-written corrections have been made to the one-page report provided in this appendix. Only the text portion of the report is provided herein.

9.109 BUILDING 104

9.109.1 Scope of Building 104 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.

A team of environmental professionals prepared to perform a walk-through of Building 104 on the morning of January 29, 1996, however, it was determined through the building manager that the building had just been leased to the City of Miamisburg. Therefore, an environmental appraisal was not conducted.

9.109.2 Description of Building 104

Building 104, the maintenance shop for the test firing area, is a one-story, ~~1,800~~ 4,025 D.C. Kramer 3-3-05 -square-foot, steel frame structure with steel siding and roof. It is constructed slab-on-grade with a loading dock and ramp. The location is shown in Attachment 1 (Section 9.109.4.1). The building is bounded by a road, paved loading area, and grassy areas. Across the street to the east are Buildings PH and 24. The structure contains offices, a lavatory, an electronics and small parts assembly room, parts storage, and a fabrication/maintenance shop. Utility services are hung on the walls and ceiling. The building is serviced by central steam heat and chilled water,* and electric service of 240V (*Mound Facility Physical Characterization*, 12-1-93).

*Currently the building uses a heat pump for heating and cooling. D.C. Kramer 3-3-05

Building 104 was constructed in 1991 (*Capital Assets Management Process, CAMP Report, FY96*). The building has been used for the same purpose since construction. No research, development, or production activities using radioactive or energetic materials have occurred in the building (*Mound Facility Physical Characterization*, 12-1-93).

9.109.3 Summary of Findings

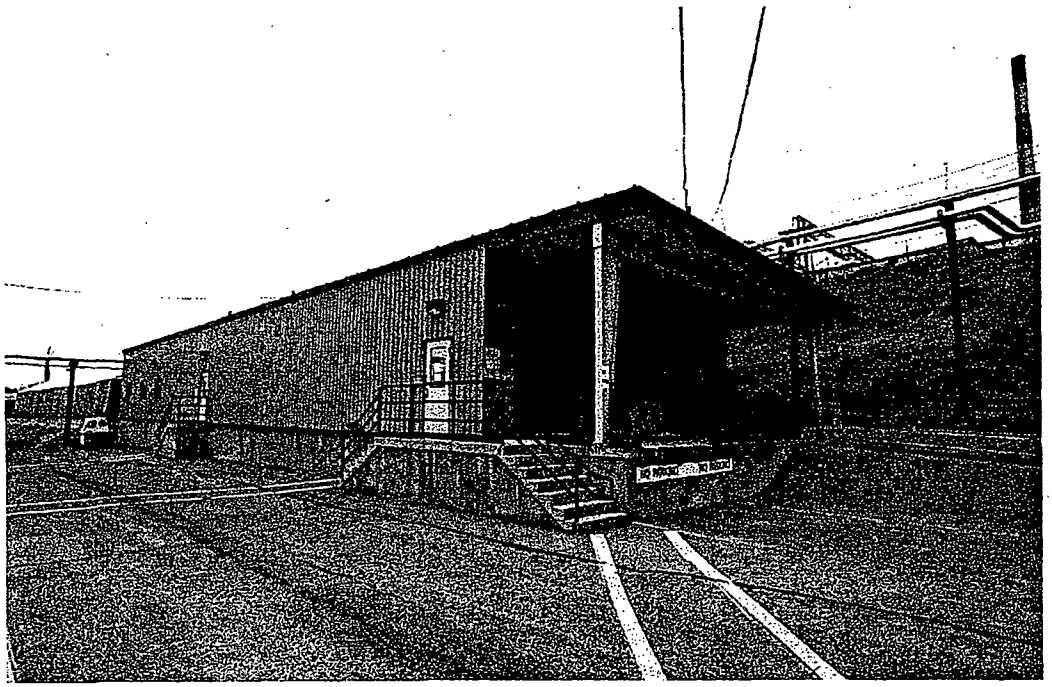
A photo was taken to document the building. It is found in Attachment 2 (Section 9.109.4.2). Building 104 has undergone Safe Shutdown which includes removal of wastes and other materials plus equipment which cannot be released. A Health Physics safety determination and a liabilities assessment were made. ESA's (ASTM E 1527-94 or ASTM E 1528-93) were not conducted. The building has been leased by DOE to the City of Miamisburg, which accepted the liabilities assessment. The General Purpose Lease between the DOE and the City of Miamisburg requires the sub-lessee to obtain and comply with regulatory agency permits.

Since the building has been leased, an EAC was not prepared and no further action was taken concerning this building.

Appendix G

Radiological Information

Final Status Report
For
Building 104



Prepared by:	**Robert Coblentz /**	**Date:**	**April 6, 2005**
Reviewed by:	**Stephen Lehrer /**	**Date:**	4/7/05
Approved by:	**A. Stephen Collas /**	**Date:**	4/7/05

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1.0 Historical Review

At the time of construction, Building 104 contained offices, a lavatory, an electronics and small parts assembly room, a storage area, and a fabrication/maintenance shop. Building 104 continued to function as a maintenance area until the mid-1990s when the building was made available to the Miamisburg Mound Community Improvement Corporation (MMCIC) as a "user facility" and leased to a commercial entity. In 2002, the building was returned to site use as an office area and was still used in that capacity until March 2005, when personnel were moved out of the building in preparation for Safe Shutdown activities. No research, development, or production activities using radioactive or energetic materials have occurred in the building. There have been no room additions to Building 104 altering the original footprint. A complete history of Building 104 can be found in Reference 1.

2.0 Survey Objectives

The objective of this Final Status Report (FSR) is to demonstrate the classification of Building 104 as non-impacted. This was accomplished by measuring the fixed and removable contamination on building surfaces and performing isotopic analysis, where appropriate. The survey data was compared to the release criteria of DOE Order 5400.5 using methods defined in Reference 2. The specific survey objectives are outlined in the associated Survey Plan Form #104-01 (see Enclosure 2).

Table 1 lists the permissible surface contamination guideline values as stated in DOE Order 5400.5. These limits are the Derived Concentration Guidelines (DCGL's) for building and structure release.

Table 1

Allowable Total Residual Surface Contamination

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.

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The average activity levels shown in Table 1 assumes that the residual contamination is uniformly distributed across the survey unit and is the $DCGL_w$ for this survey. The maximum activity shown in Table 1 represents the Elevated Measurement Comparison ($DCGL_{emc}$) for small (<100cm^2) areas of activity that may be observed in the survey unit while scanning. Since no process activities were ever associated with Building 104, it is assumed that Pu-238 is the potential contaminant of concern and the Group 1 limits are appropriate for alpha measurements. Group 4 limits are used for beta measurements.

2.1 Survey Design

The characterization survey was designed to evaluate the building internal and external surfaces. The building was divided into survey units as follows:

Survey Unit 1 – Room 1 Floor and Loading Dock

Survey Unit 2 – Room 1 Walls and Ceiling

Survey Unit 3 – Rooms 5 through 12 floor, walls, and ceilings

Survey Unit 4 – Exterior Walls

Judgmental – Roof

Since the variability is expected to be small within the survey unit, the Type I error chosen is $\alpha = 0.05$ and the Type II error is $\beta = 0.01$. The number of data points is determined by calculating the relative shift (Δ/σ) from the DCGL value, the lower bound of the gray region (LBGR), and the standard deviation (σ) of the contaminant in the survey unit (Δ/σ = DCGL-LBGR/σ). For this survey plan, the LBGR is set at 50% of the $DCGL_w$. The standard deviation was estimated to be 17dpm/100cm^2 based on survey data from similar building surfaces and the relative shift was calculated as 2.95. The required number of data points (n = 20) was obtained from Table 5.5, Reference 2.

Twenty (20) judgmental data points were placed throughout each survey unit and are broadly representative of the survey unit. Hallways and major walkways throughout the building were scanned for alpha contamination. Four (4) additional data points were surveyed in Survey Unit 3 at the discretion of the technician. Overhead crawl spaces and horizontal surfaces were judgmentally surveyed at the discretion of the technician.

Ten (10) judgmental data points were surveyed on the roof. One roof coupon was taken for isotopic analysis. Twenty (20) judgmental data points were located on exterior walls.

Water and sediment samples were collected from floor drains and sink traps, if sufficient material was available in these areas. Smears were obtained, and direct alpha and beta readings were taken at each sediment sample location.

Loose surface contamination was measured by smearing an area of 100cm^2 at each data point. Smears were counted for gross alpha/beta activity. Removable tritium contamination was measured on interior surfaces by liquid scintillation counting of coin smears.

Replicate surveys were performed in accordance with Reference 3.

The instruments selected for this survey were the Ludlum 2350-1 data logger with a 43-20 hand-held gas flow proportional (GFP) detector and a 43-37 GFP large area floor probe for alpha measurements. A Ludlum 2360 with an L 43-93 scintillation probe was used for beta measurements in accordance with Reference 4. Laboratory instruments

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used were appropriate for the analysis requested. Instrument calibration and source check data is documented in accordance with Mound procedures.

2.2 Survey Data

2.2.1 Survey Unit Data

The gross alpha and beta fixed point measurements from each survey unit were collected and compared directly to the $DCGL_w$.

Four (4) of the eleven (11) judgmental data points on the roof were at or above the $DCGL_w$, with the maximum reading being 748 dpm/100cm^2, alpha (RSDS 05-TF-0153). A coupon cutout sample was obtained and submitted for isotopic analysis. The predominant radionuclide was Polonium-210, with small amounts of other radionuclides. A "sum-of-the-ratios" evaluation was performed, with a result of 0.2384 (see attachment 2).

All of the remaining data points were found to be below the $DCGL_w$. A graphical representation of the average and maximum total activity for each survey unit is shown in Attachment 1.

The following tables show the results of the maximum and average total (fixed and removable) alpha and beta activity for each area.

Total (Direct) Activity Results

Area	Alpha (dpm/100cm^2)			Beta (dpm/100cm^2)		
	Max	Average	±	Max	Average	±
Survey Unit 1	32	11.65	3.61	581	325	74.5
Survey Unit 2	21	2.35	2.14	485	180	67.8
Survey Unit 3	19	5.1	2.47	1307	541	161.5
Survey Unit 4	48	24.8	7.09	300	44.6	36.9
Roof	748	170.5	121.5	400	169	56

Removable Alpha & Beta Activity Results

Area	Alpha (dpm/100cm^2)			Beta (dpm/100cm^2)		
	Max	Average	±	Max	Average	±
Survey Unit 1	3.46	.226	.349	3.49	.589	.450
Survey Unit 2	1.83	.167	.226	1.79	.474	.283
Survey Unit 3	.95	.04	.078	5.55	1.31	.668
Survey Unit 4	2.48	.336	.322	3.2	1.1	.52
Roof	1.74	0.3	0.4	6.73	2.46	1.31

The highest removable tritium activity was 21.15 dpm/100cm^2 (RSDS# 05-TF-0106). The average removable tritium was 2.2 dpm/100cm2 (± 0.85).

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2.2.2 Judgmental Survey Data

The floors and major walkways were scanned for alpha activity. No alarms or increased audible response was observed (RSDS# 05-TF-0140).

Two dusty ceiling air return vents indicated alpha direct measurements of 500 dpm/100cm^2 and 333 dpm/100cm^2 (The building ventilation system was in operation at the time) . The surface dust was removed via large area wipe (LAW). The LAW's were then counted twice with a two-hour delay between counts. The initial counts on the two LAW's were 144 dpm/LAW and 72 dpm/LAW. The counts after two hours were 72 dpm/LAW and 24 dpm/LAW, respectively, indicating short-lived radionuclide decay. Follow-up direct measurements on the two vents were 80 dpm/100cm^2, and 88 dpm/100cm^2, alpha. Coin smears of the vents showed 0.0 dpm/100cm^2, alpha, and 1.56 dpm/100cm^2, beta. (See RSDS 05-TF-0144)

2.3 Sediment Sample Data

Smear samples were obtained from accessible floor drains and sink traps. Smear samples were analyzed for gross alpha, beta and tritium activity in accordance with the survey plan. The maximum smear results were: 3.3 dpm/100cm^2 , alpha, 5.43 dpm/100cm^2 , beta, and 6.96 dpm/100cm^2 , tritium. No sediment samples were obtained, due to insufficient material availability for sampling. A water sample was collected from each of two drains. Gross alpha and tritium analyses were performed. Both gross alpha results were <0.6 dpm/mg, and the highest tritium result was 1.47 nanocuries per liter. Direct alpha and beta measurements were taken at each sample location. The highest fixed activity observed was 25 dpm/100cm^2 alpha and 2350 dpm/100cm^2 beta (See RSDS # 05-TF-0143).

2.4 Quality Control

Quality control measurements were taken to ensure the quality of the data. Sixteen data points were selected from the sample group of 84 data points. Replicate measurements were taken at these locations using different instruments and performed in the same manner as the original survey. The acceptance criterion for fixed-point measurements is that the variance in the measurements of the original sample population is within a factor of two of the variance in the replicate samples (at 95% confidence level). The variance test does not pass, therefore, the data was evaluated per MD 80046, Operation 402. No discrepancies were found in the data collection or documentation. The data was determined to be usable, in that all of the readings were at, or near, background levels. The results of the replicate surveys are shown in the following table:

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Replicate Fixed Point QC Measurements

		alpha (gross counts)			beta (gross counts)		
Location #	RSDS	initial	2σ	replicate	initial	2σ	replicate
SU1-04	05-TF-0149	3	3.46	4	144	24.00	274
SU1-05	05-TF-0149	10	6.32	7	148	24.33	265
SU1-07	05-TF-0149	10	6.32	2	145	24.08	277
SU1-10	05-TF-0149	0	0.00	5	81	18.00	185
SU2-04	05-TF-0149	6	4.90	2	117	21.63	136
SU2-06	05-TF-0149	10	6.32	5	157	25.06	174
SU2-09	05-TF-0149	1	2.00	4	98	19.80	127
SU2-13	05-TF-0149	1	2.00	4	130	22.80	176
SU3-01	05-TF-0149	3	3.46	6	131	22.89	204
SU3-07	05-TF-0149	4	4.00	5	98	19.80	139
SU3-16	05-TF-0149	9	6.00	5	198	28.14	390
SU3-19	05-TF-0149	8	5.66	4	129	22.72	193
SU4-01	05-TF-0154	7	5.29	5	125	22.36	110
SU4-06	05-TF-0154	6	4.90	3	180	26.83	161
SU4-12	05-TF-0154	2	2.83	4	215	29.33	220
SU4-20	05-TF-0154	2	2.83	6	148	24.33	114
Variance (S2) =		12.65		1.8625	1274.1		5576.4
Ratio				6.79195			0.22847
Agreement				NO			NO

Replicate analyses were not performed on smears or sediment samples. Quality control procedures, blanks, and spikes are a part of the laboratory quality control program at Mound. Participation in the DOE/EML inter-laboratory quality assurance program provides acceptable assurance of nuclide identification reliability and ensures a high quality of sample results. Since a relatively small number of samples were taken for this survey, additional replicate analysis was not required for this survey.

Field instrumentation is source checked each day prior to use and again at the completion of survey activities for that day. A known source is placed in a source holder to ensure a reproducible geometry is achieved. Acceptance criteria is ± 20% of the initial source response following calibration. Results are documented in accordance with Mound Radiological Control procedures. Laboratory instrumentation is source checked and documented in accordance with Mound Laboratory procedures.

2.5 Conclusion

The objective of this FSR is to determine whether or not the residual radioactivity of the surfaces of building materials associated with Building 104 satisfy the site release criteria established by DOE Order 5400.5. This is accomplished by comparing the survey data to the release criteria in accordance with the MARSSIM (Reference 2). The scanning survey found no elevated measurement areas above the $DCGL_W$.

All of the DQO's for this survey plan have been met and no further surveys are required. Building 104 meets the surface release criteria established by DOE Order 5400.5.

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The following table shows the maximum fixed and removable activity on the inside and outside building surfaces.

Building 104 Max Survey Results

TYPE	RSDS	LOCATION	SURVEY RESULTS (dpm/100 cm^2)	SURFACE CONTAMINATION GUIDELINES (dpm/100 cm^2) (Note 1)
Highest Alpha Smearable Activity	05-TF-0133	Floor	3.46	20
Highest Group 1 Alpha Fixed Activity	05-TF-0106	Exterior Wall	48	100
Highest Group 3 Alpha Fixed Activity	05-TF-0153	Roof	748	5000
Highest Beta Smearable Activity	05-TF-0135	Floor	5.55	1000
Highest Beta Fixed Activity	05-TF-0143	Floor Drain	2350*	5000
Highest Tritium Smearable Activity	05-TF-0106	Exterior Wall	21.15	10,000
Note 1: DOE Order 5400.5 (DCGLw)				

*Note: This value was obtained from a biased floor drain survey, which is the maximum beta reading found in the building. The maximum Survey Unit beta measurement was 1307 dpm/100cm2, taken on the floor in Survey Unit 3 (RSDS 05-TF-0135).

3.0 Attachments and Enclosures

Attachment 1 – Average Total Alpha and Beta Graph

Attachment 2 – Roof Acid Etch Data Evaluation

Attachment 3 – Summary of Attached Radiological Survey Data Sheets (RSDS)

Enclosure 1 – Sample Data Analysis Worksheets

Enclosure 2 – SPF 104-01

4.0 References

1. CH2MHILL Mound, Inc., EC&AS Department, White Paper: *Building 104 Structural History and Process History Summary Background Document*, August 2003
2. NUREG 1575, Rev 1, Aug 2000, *Multi-Agency Radiation Survey and Site Investigation Manual,* (MARSSIM)
3. MARSSIM Implementing Procedures, *Field Quality Control for Building Contamination Surveys*, MD-80046, Op. 402
4. MD80036, Issue 29, Op. No. 30031,*Operation of the Ludlum 2360 Scaler/Ratemeter with Ludlum 43-93 Alpha/Beta Scintillator,* Section 6.3

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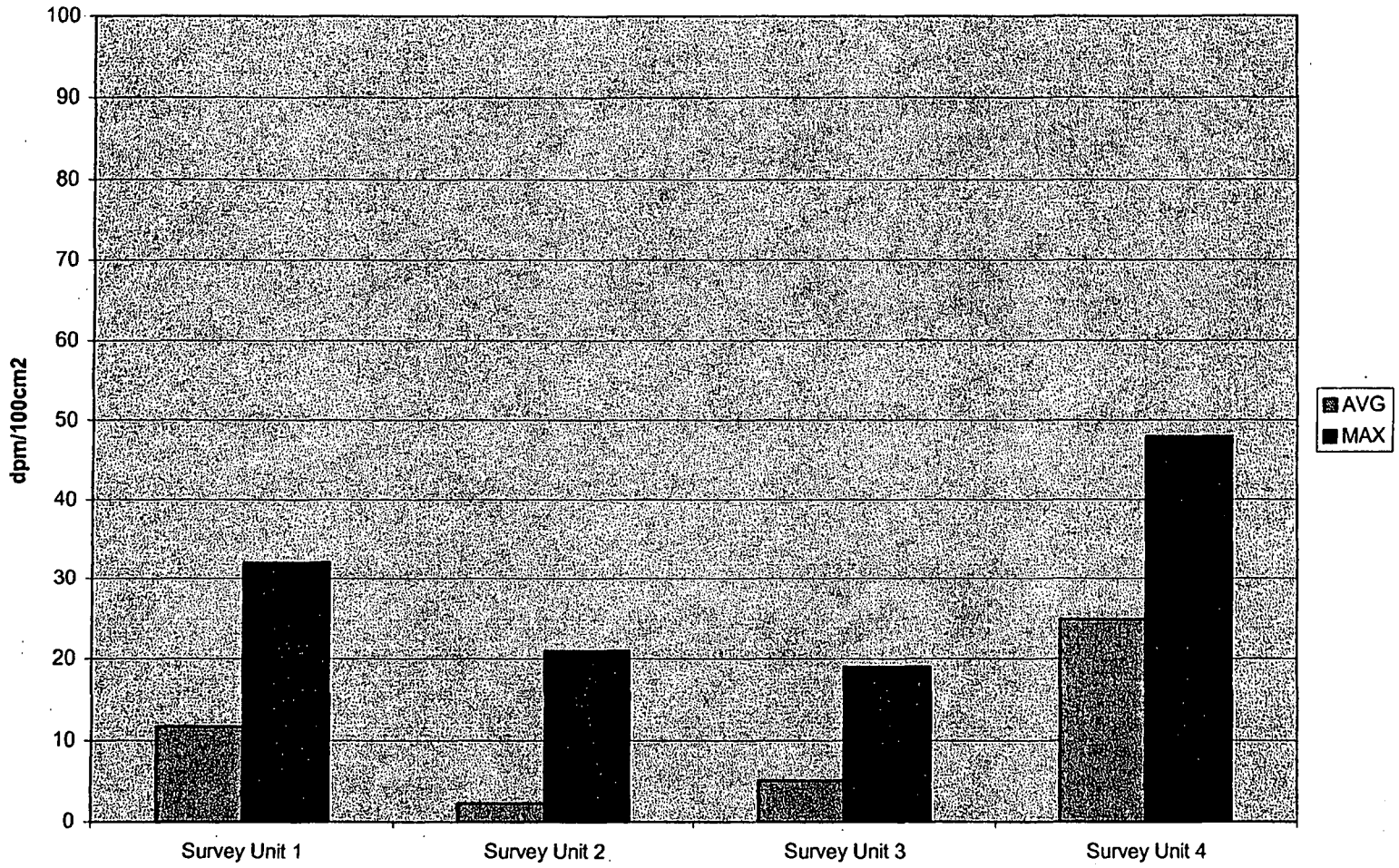
Building 104 Average & Maximum Total Alpha



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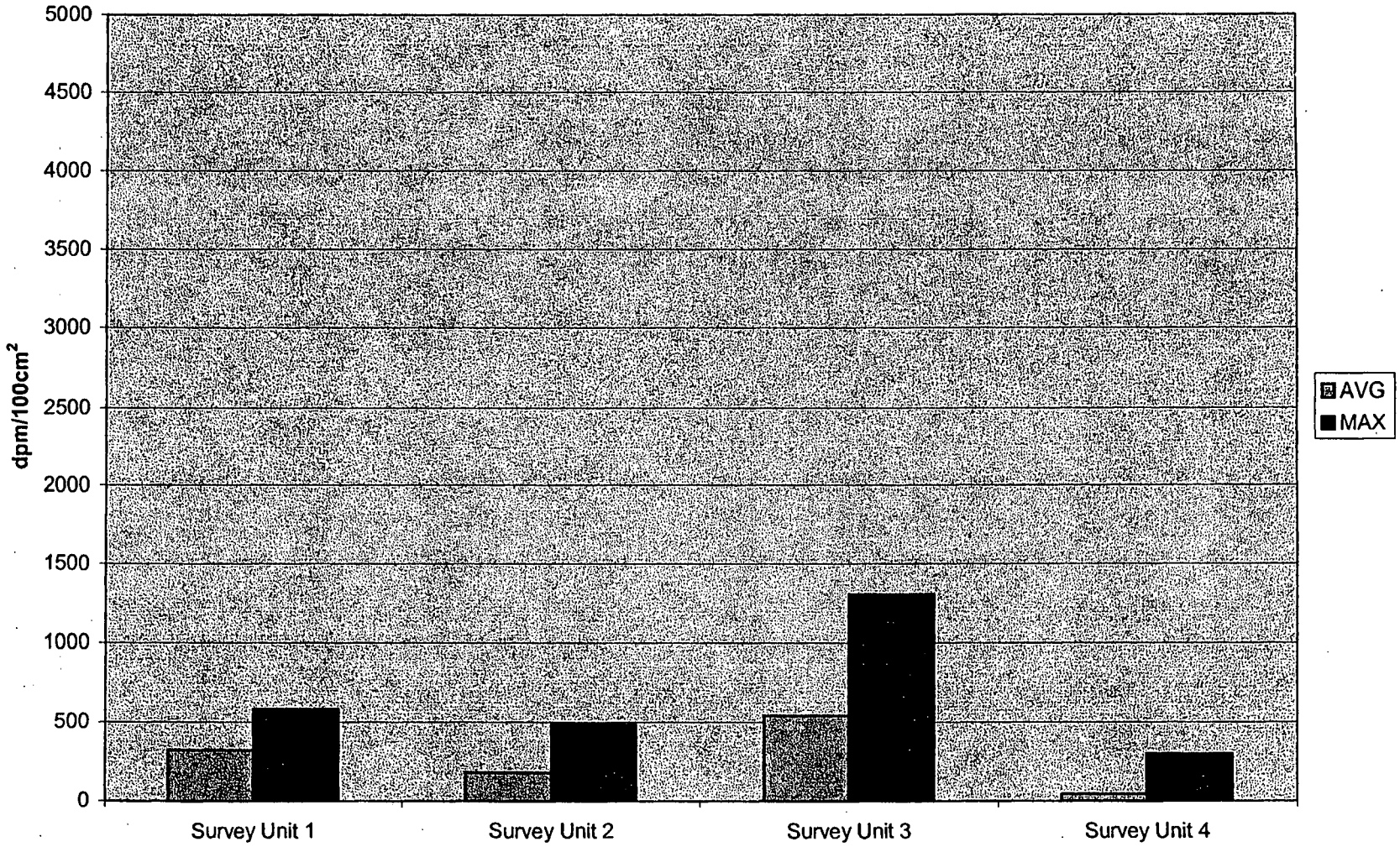
Building 104 Average and Maximum Total Beta Activity



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Building 104 Data Analysis Worksheet
Attachment 1

All measurements dpm/100cm2

		Smearable			Fixed	
Location	**RSDS#**	α	β	H^3	α	β
SU1-01	05-TF-0133	0	3.49	0	17	271
SU1-02	05-TF-0133	0	1.79	0	9	319
SU1-03	05-TF-0133	0	0	4.57	13	319
SU1-04	05-TF-0133	0	0	0	5	436
SU1-05	05-TF-0133	0	0	4.18	32	474
SU1-06	05-TF-0133	0	0	5.32	5	552
SU1-07	05-TF-0133	0	0	0	32	445
SU1-08	05-TF-0133	0	0	0	13	223
SU1-09	05-TF-0133	0	0.5	0.76	9	339
SU1-10	05-TF-0133	0	0	2.51	0	0
SU1-11	05-TF-0133	0	0.22	0	13	0
SU1-12	05-TF-0133	0	0	0	9	213
SU1-13	05-TF-0133	1.05	0	0.8	5	581
SU1-14	05-TF-0133	0	0	0	17	194
SU1-15	05-TF-0133	**3.46**	0	0.75	9	397
SU1-16	05-TF-0133	0	0.63	0	9	261
SU1-17	05-TF-0133	0	2.23	0	13	87
SU1-18	05-TF-0133	0	0.54	6.2	13	494
SU1-19	05-TF-0133	0	0	0.29	5	484
SU1-20	05-TF-0133	0	2.38	2.51	5	416
SU2-01	05-TF-0134	0	0	2.27	2	0
SU2-02	05-TF-0134	0	1.79	9.05	0	0
SU2-03	05-TF-0134	0	0.48	3.14	2	57
SU2-04	05-TF-0134	0	0	0.21	6	105
SU2-05	05-TF-0134	0	0.97	0	2	57
SU2-06	05-TF-0134	0	1.11	3.04	21	485
SU2-07	05-TF-0134	1.51	0	2.09	0	285
SU2-08	05-TF-0134	0	1.56	5.86	6	209
SU2-09	05-TF-0134	1.83	1.65	7.73	0	0
SU2-10	05-TF-0134	0	0	3.47	0	0
SU2-11	05-TF-0134	0	0.22	2.22	0	0
SU2-12	05-TF-0134	0	0	2.17	0	190
SU2-13	05-TF-0134	0	0	0	0	228
SU2-14	05-TF-0134	0	0.01	1.26	2	238
SU2-15	05-TF-0134	0	0	3.1	6	86
SU2-16	05-TF-0134	0	0	0	0	266
SU2-17	05-TF-0134	0	0	0	0	361
SU2-18	05-TF-0134	0	0.54	1.23	0	247
SU2-19	05-TF-0134	0	0	0	0	409
SU2-20	05-TF-0134	0	1.15	4.96	0	380
SU3-01	05-TF-0135	0	2.23	3.45	0	397
SU3-02	05-TF-0135	0	**5.55**	0	4	29
SU3-03	05-TF-0135	0	0	0	0	755
SU3-04	05-TF-0135	0	4.83	0	4	242
SU3-05	05-TF-0135	0	0	0	8	0
SU3-06	05-TF-0135	0	1.11	0	8	678
Location	**RSDS#**	α	β	H^3	α	β
SU3-07	05-TF-0135	0	0	0	0	77
SU3-08	05-TF-0135	0	3.82	0	11	0
SU3-09	05-TF-0135	0	0	0	8	707
SU3-10	05-TF-0135	0.95	0	0	0	987
SU3-11	05-TF-0135	0	0	0	15	1123
SU3-12	05-TF-0135	0	1.24	0	0	600
SU3-13	05-TF-0135	0	0	3.07	8	155
SU3-14	05-TF-0135	0	0	0	8	**1307**
SU3-15	05-TF-0135	0	0	0	0	542
SU3-16	05-TF-0135	0	3.33	0	19	1045
SU3-17	05-TF-0135	0	0.96	0	15	842
SU3-18	05-TF-0135	0	3.04	0	0	687
SU3-19	05-TF-0135	0	0.48	0	15	377
SU3-20	05-TF-0135	0	0	0	0	890
SU3-21	05-TF-0135	0	2.09	0	0	803
SU3-22	05-TF-0135	0	1.11	0	0	0
SU3-23	05-TF-0135	0	1.32	0	0	0
SU3-24	05-TF-0135	0	0.43	0	0	736
SU4-01	05-TF-0106	0	0	0	**48**	0

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SU4-02	05-TF-0106	0	3.04	0	40	92
SU4-03	05-TF-0106	0	0.48	0	40	0
SU4-04	05-TF-0106	0	1.15	1.89	**48**	208
SU4-05	05-TF-0106	0	3.2	3.8	**48**	0
SU4-06	05-TF-0106	0	0	0	40	160
SU4-07	05-TF-0106	0	2.55	1.01	24	0
SU4-08	05-TF-0106	0	1.56	4.04	16	0
SU4-09	05-TF-0106	1.84	0	5.6	24	24
SU4-10	05-TF-0106	0.94	0.78	2.8	0	0
SU4-11	05-TF-0106	0	2.82	9.2	32	0
SU4-12	05-TF-0106	0	1.24	10.47	8	300
SU4-13	05-TF-0106	0	0.3	0	24	76
SU4-14	05-TF-0106	0	0	0.05	16	0
SU4-15	05-TF-0106	1.45	0	0	8	0
SU4-16	05-TF-0106	2.48	0.41	17.16	0	0
SU4-17	05-TF-0106	0	0.96	16.75	40	0
SU4-18	05-TF-0106	0	3.04	0	16	0
SU4-19	05-TF-0106	0	0.48	4.45	16	0
SU4-20	05-TF-0106	0	0	**21.15**	8	32

		α	β	H^3	α	β
	Avg	0.184643	0.890595	2.197381	10.70238	285.4643
Survey Units	SD	0.593782	1.246713	3.972679	12.8633	307.8287
Stats	Max	3.46	5.55	21.15	48	1307
	#	84	84	84	84	84
	+/-	0.126982	0.266614	0.849571	2.750863	65.83026

Roof Surveys

All measurements dpm/100cm2

	Smearable			Fixed	
RSDS#	α	β	H^3	α	β
05-TF-0153	0	2.23	7.05	92	132
05-TF-0153	1.74	0	12.92	72	180
05-TF-0153	0	0.48	7.34	68	122
05-TF-0153	0	4.83	0	56	196
05-TF-0153	0	3.2	13.51	72	144
05-TF-0153	0	3.45	4.44	304	400
05-TF-0153	1.51	2.37	5.3	200	222
05-TF-0153	0	3.82	0	100	142
05-TF-0153	0	0	10.26	68	150
05-TF-0153	0	0	0	96	174
05-TF-0153	0	6.73	9.3	**748**	0

Roof Acid Etch Results

Isotope	dpm/sample	Uncert. +/-	LDL
Pu238	2.51	0.65	0.42
Pu-239/240	<LDL	<LDL	1.11
Th-227	<LDL	<LDL	0.82
Th-228	<LDL	<LDL	1.02
Th-230	<LDL	<LDL	0.82
Th-232	<LDL	<LDL	0.31
U-233/234	<LDL	<LDL	0.53
U-235	<LDL	<LDL	2.00
U-238	0.59	0.34	0.53
Po-210	204.14	31.95	14.27

	Roof				
	Smearable			Fixed	
	α	β	H^3	α	β
Number	11	11	11	11	11
Avg	0.2954545	2.464545	6.374545	170.5455	169.2727
SD	0.6593537	2.22178	4.955832	205.5258	95.34054
Max	1.74	6.73	13.51	748	400
+/-	0.3896531	1.312988	2.928709	121.458	56.34266

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	Survey Unit 1 Smearable			Fixed	
	α	β	H^3	α	β
Number	20	20	20	20	20
Avg	0.2255	0.589	1.3945	11.65	325.25
SD	0.79660778	1.027771734	2.06055045	8.228800514	169.919
Max	3.46	3.49	6.2	32	581
+/-	0.34912875	0.450440823	0.903076052	3.606430835	74.4702
Survey Unit 2					
Number	20	20	20	20	20
Avg	0.167	0.474	2.59	2.35	180.15
SD	0.51662977	0.64614973	2.610601866	4.891184336	154.658
Max	1.83	1.79	9.05	21	485
+/-	0.22642298	0.283187605	1.144146714	2.143656051	67.782
Survey Unit 3					
Number	24	24	24	24	24
Avg	0.03958333	1.314166667	0.271666667	5.125	540.792
SD	0.19391794	1.668474744	0.922099055	6.180702788	403.711
Max	0.95	5.55	3.45	19	1307
+/-	0.07758333	0.667528923	0.368916455	2.47279612	161.518
Survey Unit 4					
Number	20	20	20	20	20
Avg	0.3355	1.1005	4.9185	24.8	44.6
SD	0.73523698	1.180960693	6.597995928	16.18836489	84.268
Max	2.48	3.2	21.15	48	300
+/-	0.32223182	0.517578844	2.891699212	7.094863731	36.9321

Graph Data Alpha

	Survey Unit 1	Survey Unit 2	Survey Unit 3	Survey Unit 4
AVG	11.65	2.35	5.13	24.80
MAX	32	21	19	48

Graph Data Beta

	Survey Unit 1	Survey Unit 2	Survey Unit 3	Survey Unit 4
AVG	325.25	180.15	540.79	44.60
MAX	581	485	1307	300

Instrument Data

	Inst	SN	CDD	RSDS	α Bkg (cpm)	β Bkg (cpm)
1	2350/43-68	5673/5862	7/29/2005	0133	0.8	99
2	2350/43-68	5854/5861	7/20/2005	0134	2.2	106
3	2350/43-68	5673/5862	7/29/2005	0135	2	90
4	L2360/43-89	5691/5811	8/4/2005	0106	1	140
QC	2350/43-68	5855/5864	6/9/2005	0149	0.6	199
QC	L2360/43-89	5774/5809	10/28/2005	0154	2	128

Replicate Fixed Point QC

			alpha (gross counts)			beta (gross counts)		
	Location #	RSDS	initial	2σ	replicate	initial	2σ	replicate
1	SU1-04	05-TF-0149	3	3.46	4	144	24.00	274
2	SU1-05	05-TF-0149	10	6.32	7	148	24.33	265
3	SU1-07	05-TF-0149	10	6.32	2	145	24.08	277
4	SU1-10	05-TF-0149	0	0.00	5	81	18.00	185
5	SU2-04	05-TF-0149	6	4.90	2	117	21.63	136
6	SU2-06	05-TF-0149	10	6.32	5	157	25.06	174
7	SU2-09	05-TF-0149	1	2.00	4	98	19.80	127
8	SU2-13	05-TF-0149	1	2.00	4	130	22.80	176
9	SU3-01	05-TF-0149	3	3.46	6	131	22.89	204
10	SU3-07	05-TF-0149	4	4.00	5	98	19.80	139

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11	SU3-16	05-TF-0149	9	6.00	5	198	28.14	390
12	SU3-19	05-TF-0149	8	5.66	4	129	22.72	193
13	SU4-01	05-TF-0154	7	5.29	5	125	22.36	110
14	SU4-06	05-TF-0154	6	4.90	3	180	26.83	161
15	SU4-12	05-TF-0154	2	2.83	4	215	29.33	220
16	SU4-20	05-TF-0154	2	2.83	6	148	24.33	114
	Variance (S2) =		12.65		1.8625	1274.1		5576.4
	Ratio				6.79195			0.22847
	Agreement				NO			NO

QC Measurements

	Location	RSDS#	α	β
1	QC-U1-04	05-TF-0149	11	773
2	QC-U1-05	05-TF-0149	22	680
3	QC-U1-07	05-TF-0149	3	804
4	QC-U1-10	05-TF-0149	15	0
5	QC-U2-04	05-TF-0149	3	0
6	QC-U2-06	05-TF-0149	15	0
7	QC-U2-09	05-TF-0149	11	0
8	QC-U2-13	05-TF-0149	11	0
9	QC-U3-01	05-TF-0149	18	52
10	QC-U3-07	05-TF-0149	15	0
11	QC-U3-16	05-TF-0149	15	1969
12	QC-U3-19	05-TF-0149	11	0
13	QC-U4-01	05-TF-0158	24	0
14	QC-U4-06	05-TF-0158	8	132
15	QC-U4-12	05-TF-0158	16	368
16	QC-U4-20	05-TF-0158	32	0

Overhead Crawlspaces and Horizontal Surfaces
All measurements dpm/100cm2

	Smearable			Fixed	
RSDS#	α	β	H^3	α	β
05-TF-0145	0	0.96	3.52	8	1546
05-TF-0145	0	0	3.48	24	1165
05-TF-0145	0	0.48	2.28	28	1309
05-TF-0145	0	1.15	0	32	1453
05-TF-0145	0	0.97	0	16	1567
05-TF-0145	0	0	0	20	1257
05-TF-0145	0	1.32	3.67	39	1453
05-TF-0145	0	0	11.79	39	1268
05-TF-0145	0	0.5	6.25	24	1536
05-TF-0145	0	0.97	0	5	1402
05-TF-0145	0	0.22	5.96	12	1670
05-TF-0145	1.51	3.59	0	16	1556
05-TF-0150	0	0.99	0	3	0
05-TF-0150	0	0	0	15	134
05-TF-0150	0	1.98	0	3	0
05-TF-0150	0	0	0	0	0
05-TF-0150	0	1.73	3.37	7	0
05-TF-0150	0	2.13	0	11	0

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Attachment 2

Building 104 Roof Acid Etch Data Analysis

Group 3 (5000 dpm)		Group 2 (1000 dpm)		Group 1 (100 dpm)	
Po-210	204.14			Pu-238	2.51
U-238	0.59				
Total:	204.73	Total:	0	Total:	2.51
Fraction of Total Sample:	0.9878884	Fraction of Total Sample:	0	Fraction of Total Sample:	0.012112

Maximum Gross Alpha Measurement:	748	dpm/100cm2
Group 1 Contribution:	9	dpm/100cm2
Group 2 Contribution:	0	dpm/100cm2
Group 3 Contribution:	739	dpm/100cm2

$$\frac{9}{100} + \frac{0}{1000} + \frac{739}{5000} = 0.2384$$

The sum of the ratios of 0.2384 is < 1.0, therefore acceptable for release

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Attachment 3

Building 104 Final Status Report
Summary of Attached Radiological Survey Data Sheets

RSDS #	Survey Unit	Description
05-TF-0106	4	Ext walls
05-TF-0133	1	Floors
05-TF-0134	2	Walls/ceilings
05-TF-0135	3	Floors, walls, ceilings
05-TF-0140	Judgmental	Ducts, vents
05-TF-0143	Judgmental	Drains
05-TF-0144	Judgmental	Floor scan
05-TF-0145	Judgmental	Crawl space
05-TF-0149	1, 2, 3 QC	QC
05-TF-0150	Judgmental	Horizontal surfaces
05-TF-0153	Judgmental	Roof
05-TF-0154	4 QC	QC

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SURVEY PLAN FORM

SP NUMBER	104-01	DATE OF REQUEST	January 26, 2005
TYPE OF SP	☐ FSS ☒ CHARACTERIZATION ☐ REFERENCE ☐ OTHER:		
AREA/LOCATION	Building 104		
PURPOSE	The purpose of this SP is to characterize Building 104 to support decisions on final disposition.		
SURVEY UNIT # 1	Room 1 Floor and Loading Dock	SURVEY UNIT # 4	Exterior Walls
SURVEY UNIT # 2	Room 1 Walls and Ceiling	Judgmental	Roof
SURVEY UNIT # 3	Rooms 5 through 12 floor, walls, ceilings	N/A	

SAMPLE TYPE

☐ SURFACE SOIL SAMPLE:

☐ SUB-SURFACE SOIL SAMPLE:

☒ SEDIMENT SAMPLE: See specific sediment sampling instructions on page 2.

☐ OTHER:

SURVEY TYPE

SURFACE SCAN	☐ BETA ☐ GAMMA ☒ ALPHA	INST. TYPE	L-2350	SCAN RATE & DETECTOR DISTANCE FROM SURFACE	Scan surface at a rate of 1" per second at a distance of not more than ¼" from surface
		PROBE TYPE	43-37 Floor Probe or 43-20 Hand Probe		
STATIC MEASURE-MENT	☒ BETA ☐ GAMMA ☒ ALPHA	INST. TYPE	L-2350	SCAN RATE & DETECTOR DISTANCE FROM SURFACE	Perform a 2 minute alpha count and a 1 minute beta count at specified locations not more than ¼" from surface
		PROBE TYPE	43-20 Hand Probe		
STATIC MEASURE-MENT	☒ BETA ☐ GAMMA ☐ ALPHA	INST. TYPE	L 2360	COUNT TIME & DETECTOR DISTANCE FROM SURFACE	Refer to MD-80036, Issue 29, Op. No. 30030, *Operation of the Ludlum 2360 Scaler/Ratemeter with Ludlum 43-89 Alpha/Beta Scintillator*, Section 6.3
		PROBE TYPE	L 43-89 (or equivalent)		
DOSE RATE MEASURE-MENT	☐ BETA ☐ GAMMA ☐ ALPHA	INST. TYPE		DETECTOR DISTANCE FROM SURFACE	
		PROBE TYPE			

OTHER SURVEY TYPES OR COMMENTS

All surveys shall be performed and documented in accordance with Mound Radiological Control procedures.

Static measurements on exterior surfaces may be performed using a L 2360 with 43-93 alpha/beta probe in accordance with MD 80036, Op 30031

Rad Con shall document all discrepancies from the above sampling and surveying instructions on the Radiological Survey Data Sheet (RSDS).

Ensure the surfaces of interest in the survey unit are dry and free of loose debris or other material that may obscure alpha measurement.

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SP NUMBER	104-01	DATE OF REQUEST	January 26, 2005

SPECIFIC SAMPLING / SURVEY INSTRUCTIONS

Safety Considerations

1. Obtain assistance from the responsible building custodian for access to upper walls, ceilings, roof, etc. Exercise extreme caution when performing surveys from ladders or scaffolds. Follow appropriate site safety procedures when accessing areas requiring fall protection measures.
2. Ensure ventilation units are de-energized prior to attempting to collect a sample. Obtain approval and assistance from the responsible building custodian to dismantle any equipment for sample collection.

Floor Scan Measurements using a Ludlum 2350 with 43-37 alpha probe

1. Set the Ludlum 2350-1 datalogger to alarm at 75dpm/100cm^2 in the ratemeter mode.
2. Perform a floor scan of hallways and major walkways throughout the building.
3. Perform a 30 second integrated count at every location where an alarm is obtained. In addition, obtain a 30 second integrated count at any point where an audible or visual indication of elevated activity is observed at twice the background rate.
4. Record the location of the area scanned on the RSDS map and document the results of any integrated counts.

Static Measurements Using L 2350 with 43-20 (alpha) probe and L 2360 with 43-89 (beta) probe (or equivalent)

1. Perform an alpha and beta count on at least twenty (20) data points in each survey unit. Data points are selected by the surveyor and should be broadly representative of the entire survey unit.
2. Perform an alpha and beta measurement on at least ten (10) data points on the roof areas. Data points are randomly selected by the surveyor and should be broadly representative of the entire survey unit.
3. Perform an alpha and beta measurement on at least ten (20) data points on the building exterior walls and exposed foundations. Data points are randomly selected by the surveyor and should be broadly representative of the entire survey unit
4. Record location, material type, and results on RSDS map in accordance with Mound Rad Con procedures.
5. Document gross activity for each location (No "<" values). Record instrument background at survey location.

Loose Surface Contamination

1. Obtain a smear of 100cm^2 at each survey point identified above.
2. Count each smear for alpha, beta, and H^3.
3. Record location and results on RSDS map in accordance with Mound Rad Con procedures.

Sediment Samples

1. Collect approximately 250ml of debris from each accessible ventilation unit opening, floor drain, roof gutter and any other area where debris has accumulated.
2. If insufficient material is present at these sample locations, obtain a representative smear of the location.
3. Document sample information and description of material on Attachment 1.
4. Label sample container with sample number, date and time of collection, and location in accordance with Mound procedures.
5. Show sample location on the RSDS map.
6. Submit sediment samples to laboratory for gamma spectroscopy analysis. Submit smears for alpha, beta, and H^3 analysis.
7. Additional intrusive samples may be collected in areas of elevated activity as determined by the MARSSIM Engineer.

Continued Next Page

G 17/84

Specific Survey and Sampling Instructions (continued)

Quality Control

1. QC measurements will be performed by re-surveying 4 data points in each survey unit. Data points selected for resurvey should include the highest and lowest readings in the survey unit. QC measurements are to be performed by a different technician than the one who took the initial measurements, and using a different instrument of the same type used for the initial measurements.
2. Sediment samples or smears with measured activity above the MDA may be resubmitted for replicate analysis. Ensure alpha and beta smear results are obtained before performing H^3 analysis.
3. Record location, material, and results on RSDS in accordance with Mound Rad Con procedures.

APPROVAL SIGNATURES			
MARISSM Engineer	Robert M. Coblentz	DATE	January 26, 2005
Technical Reviewer	Stephen E. Lehrer	DATE	1/27/05
Rad Con Manager	A. Stephen Collas	DATE	1/27/05
SP CLOSE-OUT SIGNATURES			
MARISSM Engineer	RM Coblentz	DATE	4-6-05
Technical Reviewer	RM Coblentz for Stephen E. Lehrer per telecon	DATE	4-7-05
Rad Con Manager		DATE	4-7-05

COMMENTS

G18/84

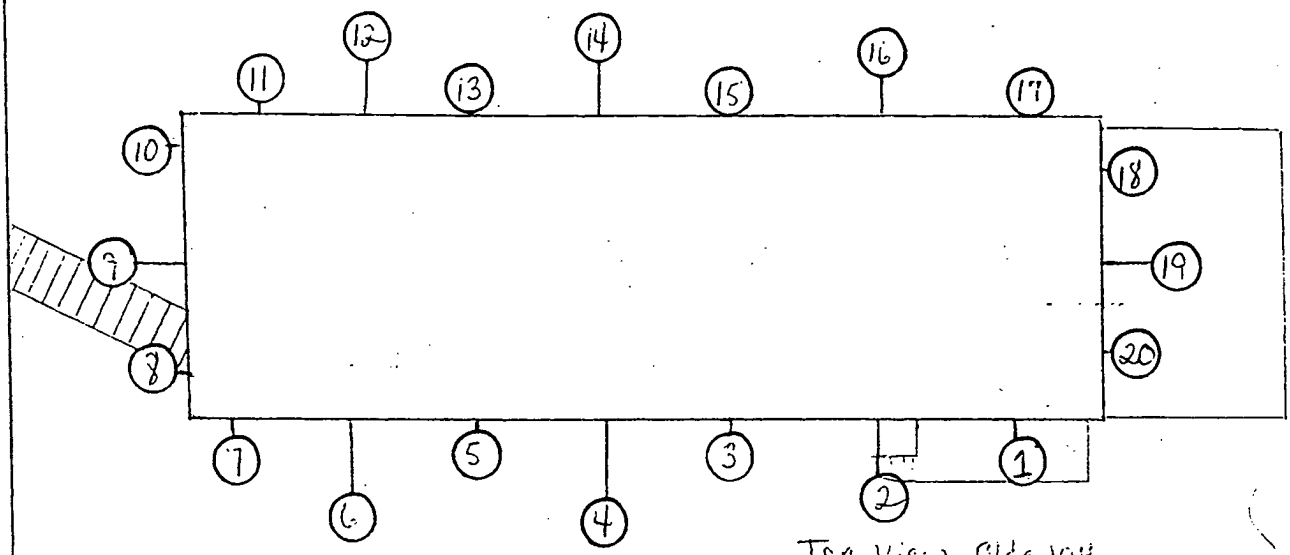
Sample Number	Sample Date	Sample Time	Sample Volume /Weight	Sample Description	Sampled By	Chain of Custody Relinquished to Lab			
						Date	Time	Initials	Rec'd By
GW-01-									
GW-01-									
GW-01-									
GW-01-									
GW-01-									
GW-01-									
GW-01-									
GW-01-									
GW-01-									
GW-01-									
GW-01-									
GW-01-									
GW-01-									

G 19/84

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM) Bldg. 104	SURVEY NO. 05-TF-0106
PURPOSE: Pre-demo survey (exterior walls) Survey unit 4	RWP NO N/A
	DATE: 3-14-05
	TIME: 1630

MAP / DRAWING



Top View Bldg 104

N ↑

See attached for smear results and integrated counts.

Bkgd. 1 cpm α
140 cpm β⁻

D.L. 1.4 dpm α
30 dpm β⁻

LEGEND:

- # = mrem/hr (γ) whole body
- #E = mrem/hr (β+η+γ) extremity on contact
- K = factor of 1000
- — · — · — · · = radiological boundary
- # - mrem/hr neutron
- # - air sample number
- # - swipe number
- #α or /β - direct contamination measurement in dpm/100cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2360-89	5691/5811	8-4-05
2360-89	5755/5723	1-31-06
	A	
	N	

[redacted]

HP# 7244/7836	Date: 3/16/05
HP#	Date:
hed	
HP# 7707	Date: 3-28-05

ML-9620 (2-98)

G 20/84

Survey No. 05-TF-0106

RADIOLOGICAL SURVEY DATA SHEET

Removable Contamination				
Swipes (dpm/100cm²)				
Sample #	β/γ	Alpha	Tritium	Comments
1	See Attached			exterior walls
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
		NFE		

Removable Contamination				
Swipes (dpm/100cm²)				
Sample #	β/γ	Alpha	Tritium	Comments
		NFE		

COMMENTS: NFE = No Further Entries

All smears field checked with 2360 prior to submitting to count. [illegible]

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

ML-9620A (4-98)

G 21/84

Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Aqua
Data file name: SMEAR077
Batch Ended: 3/15/05 9:19

Crosstalk correction performed.

Recalibration Date: 11/03/05
Serial Number: 26966-1

Batch ID: 05-TF-0106 COLLINS (20) 03/15/05 TAS

Detector ID	Sample ID	Alpha Activity DPM	Alpha Activity σ	Alpha Activity flags	Beta Activity DPM	Beta Activity σ	Beta Activity flags
A1	1	0.00	2.17		0.00	1.83	
A2	2	0.00	2.24		3.04	2.54	
A3	3	0.00	2.18		0.48	1.76	
A4	4	0.00	2.05		1.15	2.16	
B1	5	0.00	2.01		3.20	2.77	
B2	6	0.00	2.02		0.00	1.27	
B3	7	0.00	1.98		2.55	2.78	
B4	8	0.00	1.92		1.56	2.30	
C1	9	1.84	2.34		0.00	1.97	
C2	10	0.94	2.20		0.78	2.72	
C3	11	0.00	2.14		2.82	2.95	
C4	12	0.00	2.09		1.24	2.57	
D1	13	0.00	2.21		0.30	2.52	
D2	14	0.00	2.17		0.00	1.30	
D3	15	1.45	1.95		0.00	2.04	
D4	16	2.48	3.02		0.41	2.40	
A1	17	0.00	2.19		0.96	2.23	
A2	18	0.00	2.24		3.04	2.54	
A3	19	0.00	2.18		0.48	1.76	
A4	20	0.00	2.04		0.00	1.78	

JC JC

G 22/84

JC 3/15/05 ~~Page 1 of 1~~ Page 3 of 6

Mar 2005 11:25 ALPHA/BETA - 1.09 ~~Page #1~~
tocol #: 2 PW H3 # 410462 User : 2138

SC 3/15/05

e: 2.00
a Mode: DPM Nuclide: SMGLS02 Quench Set: SMGLS02
kground Subtract: 1st Vial

	LL	UL	LCR	2S%	BKG
gion A:	0.5	- 18.6	0	0.0	8.47
gion B:	2.0	- 18.6	0	0.0	8.07
gion C:	40.0	- 2000	0	0.0	12.20

nch Indicator: tSIE/AEC
~~Ext Std~~ Terminator: Count
-TF-0106 J. COLLINS (20) AG
~~Incidence~~ Time(ns): 18
lay Before Burst(ns): Normal
otocol Data Filename: C:\DATA\PROT2.DAT
unt Data Filename: C:\DATA\SDATA2.DAT
ectrum Data Drive & Path: C:\DATA

S#	TIME	CPMA	CPMB	LUM	FLAG	tSIE	DPM1	2Sigma	CPMC
-1	10.00	8.47	8.07	1	B	620.85		0.00	12.20
0	2.00	572.59	526.15	0		625.43	1047.46	84.26	0.00
1	2.00	0.00	0.00	0		599.72	0.00	0.00	0.00
2	2.00	0.00	0.00	0		632.96	0.00	0.00	0.00
3	2.00	0.00	0.00	0		591.05	0.00	0.00	0.00
4	2.00	1.03	0.00	0		617.87	1.89	8.71	0.00
5	2.00	2.03	0.14	0		595.74	3.80	9.26	0.00
6	2.00	0.00	0.00	0		630.40	0.00	0.00	0.00
7	2.00	0.54	0.00	5		598.93	1.01	8.65	0.00
8	2.00	2.21	0.11	0		625.06	4.04	9.11	0.00
9	2.00	3.03	1.34	0		611.48	5.60	9.51	0.00
10	2.00	1.53	0.00	0		622.96	2.80	8.87	0.00
11	2.00	5.03	0.00	0		624.94	9.20	10.10	0.00
12	2.00	5.03	2.70	7		484.97	10.47	11.50	0.44
13	2.00	0.00	0.00	0		609.77	0.00	0.00	0.00
14	2.00	0.03	0.00	0		611.17	0.05	8.36	0.00
15	2.00	0.00	0.00	0		624.09	0.00	0.00	0.00
16	2.00	9.21	3.71	0		602.37	17.16	11.64	0.00
17	2.00	9.03	3.77	0		607.68	16.75	11.54	0.00
18	2.00	0.00	0.00	0		596.89	0.00	0.00	0.00
19	2.00	2.38	0.00	0		600.43	4.45	9.36	0.00
20	2.00	11.53	3.11	0		621.68	21.15	12.14	0.00

JC

G 23/84
AJ

Bldg. 104 Pre-Demo Survey-Unit 4 (exterior walls)

RSDS#: 05-TF-0106 RCT: MC RCT: MC

43-89 ALPHA BKG:	1	Factor	8	PROBE AREA:	100	cm2	Surface Eff:	1	ALPHA
43-89 BETA BKG:	140	Factor	4	PROBE AREA:	100	cm2	Surface Eff:	1	BETA

LOCATION	2360#	RCT ID	PROBE	RAD TYPE	ITEM #	10:00	TIME	CNTS	CT TIME (sec)	dpm/100cm2
7 ft.	5755	7244	5723	ALPHA	1	3/14/05	10:00	7	60	48
3 ft.	5755	7244	5723	ALPHA	2	3/14/05	10:00	6	60	40
6 ft.	5755	7244	5723	ALPHA	3	3/14/05	10:00	6	60	40
2 ft.	5755	7244	5723	ALPHA	4	3/14/05	10:00	7	60	48
5 ft.	5755	7244	5723	ALPHA	5	3/14/05	10:00	7	60	48
4 ft.	5755	7244	5723	ALPHA	6	3/14/05	10:00	6	60	40
7 ft.	5755	7244	5723	ALPHA	7	3/14/05	10:00	4	60	24
6 ft.	5755	7244	5723	ALPHA	8	3/14/05	10:00	3	60	16
3 ft.	5755	7244	5723	ALPHA	9	3/14/05	10:00	4	60	24
7 ft.	5755	7244	5723	ALPHA	10	3/14/05	10:00	1	60	0
6 ft.	5755	7244	5723	ALPHA	11	3/14/05	10:00	5	60	32
1 ft.	5755	7244	5723	ALPHA	12	3/14/05	10:00	2	60	8
6 ft.	5755	7244	5723	ALPHA	13	3/14/05	10:00	4	60	24
3 ft.	5755	7244	5723	ALPHA	14	3/14/05	10:00	3	60	16
5 ft.	5755	7244	5723	ALPHA	15	3/14/05	10:00	2	60	8
2 ft.	5755	7244	5723	ALPHA	16	3/14/05	10:00	1	60	0
6 ft.	5755	7244	5723	ALPHA	17	3/14/05	10:00	6	60	40
4 ft.	5755	7244	5723	ALPHA	18	3/14/05	10:00	3	60	16
6 ft.	5755	7244	5723	ALPHA	19	3/14/05	10:00	3	60	16
1 ft.	5755	7244	5723	ALPHA	20	3/14/05	10:00	2	60	8
7 ft.	5755	7244	5723	BETA	1	3/14/05	10:00	125	60	0
3 ft.	5755	7244	5723	BETA	2	3/14/05	10:00	163	60	92
6 ft.	5755	7244	5723	BETA	3	3/14/05	10:00	110	60	0
2 ft.	5755	7244	5723	BETA	4	3/14/05	10:00	192	60	208
5 ft.	5755	7244	5723	BETA	5	3/14/05	10:00	125	60	0
4 ft.	5755	7244	5723	BETA	6	3/14/05	10:00	180	60	160
7 ft.	5755	7244	5723	BETA	7	3/14/05	10:00	124	60	0
6 ft.	5755	7244	5723	BETA	8	3/14/05	10:00	128	60	0
3 ft.	5755	7244	5723	BETA	9	3/14/05	10:00	146	60	24

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05-TF-0106

LOCATION	2360#	RCT ID	PROBE	RAD TYPE	ITEM #	10:00	TIME	CNTS	CT TIME (sec)	dpm/100cm2
7 ft.	5755	7244	5723	BETA	10	3/14/05	10:00	132	60	0
6 ft.	5755	7244	5723	BETA	11	3/14/05	10:00	133	60	0
1 ft.	5755	7244	5723	BETA	12	3/14/05	10:00	215	60	300
6 ft.	5755	7244	5723	BETA	13	3/14/05	10:00	159	60	76
3 ft.	5755	7244	5723	BETA	14	3/14/05	10:00	132	60	0
5 ft.	5755	7244	5723	BETA	15	3/14/05	10:00	128	60	0
2 ft.	5755	7244	5723	BETA	16	3/14/05	10:00	128	60	0
6 ft.	5755	7244	5723	BETA	17	3/14/05	10:00	138	60	0
4 ft.	5755	7244	5723	BETA	18	3/14/05	10:00	129	60	0
6 ft.	5755	7244	5723	BETA	19	3/14/05	10:00	124	60	0
1 ft.	5755	7244	5723	BETA	20	3/14/05	10:00	148	60	32

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM) Bldg. 104 / Rm. 1 & loading dock	SURVEY NO. 05-TF-0133
PURPOSE: Pre-demo survey unit-1 (floors)	RWP NO. N/A
	DATE: 3-24-05
	TIME: 1630

MAP / DRAWING

See Attached

LEGEND:

- # = mrem/hr (γ) whole body
- #E = mrem/hr (β+η+γ) extremity on contact
- K = factor of 1000
- — · — · — · · = radiological boundary
- △ # - mrem/hr neutron
- ▭ # - air sample number
- ○ # - swipe number
- ○ #/α or /β - direct contamination measurement in dpm/100cm²

INSTRUMENTS USED

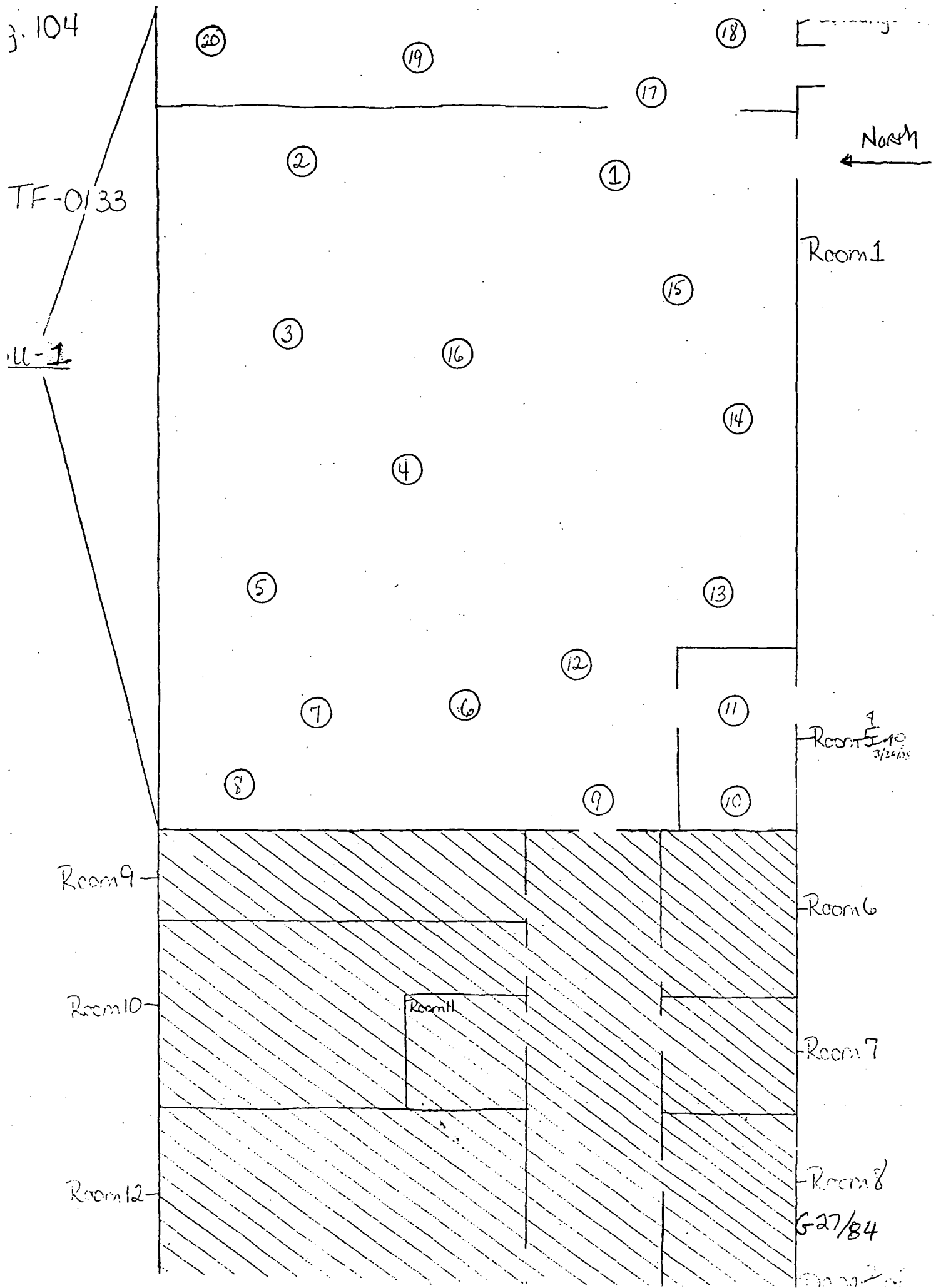
Instrument	Serial Number	Cal. Due Date
2360-29	5691/5711	8-4-05
2350-1	5613/5802	7-29-05
	A	
	N	

[redacted]

HP#	Date
7836/7176/7244	3-25-05 ~~3-28-05~~
HP#	Date
HP#	Date
7767	3-25-05

ML-9620 (2-98)

G-26/84


j. 104
TF-0133
U-1
North
Room 1
Room 9
Room 10
Room 11
Room 12
Room 6
Room 7
Room 8
G27/84

Survey No. 05-TF-0133

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm²)				
Sample #	β/γ	Alpha	Tritium	Comments
1	See Attached			floors
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				loading dock
18				
19				
20				
		NFE		

Removable Contamination				
Swipes (dpm/100cm²)				
Sample #	β/γ	Alpha	Tritium	Comments
		NFE		

COMMENTS: NFE = No Further Entries

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

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

G-28/84

Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Aqua
Data file name: SMEAR043
Batch Ended: 3/23/05 14:23

Crosstalk correction performed.

Recalibration Date: 11/03/05
Serial Number: 26966-1

Batch ID: 05-TF-0133 (2) COLLINS 03/23/05 TAS

Detector ID	Sample ID	Alpha Activity DPM	Alpha Activity σ	Alpha Activity flags	Beta Activity DPM	Beta Activity σ	Beta Activity flags
A1	1	0.00	2.22		3.49	2.86	
A2	2	0.00	2.23		1.79	2.20	
A3	3	0.00	2.16		0.00	1.27	
A4	4	0.00	2.03		0.00	1.29	
B1	5	0.00	1.90		0.00	1.20	
B2	6	0.00	2.02		0.00	1.26	
B3	7	0.00	1.92		0.00	1.32	
B4	8	0.00	1.89		0.00	1.65	
C1	9	0.00	2.37		0.50	2.73	
C2	10	0.00	2.16		0.00	1.96	
C3	11	0.00	2.11		0.22	2.31	
C4	12	0.00	2.07		0.00	2.23	
D1	13	1.05	2.20		0.00	2.08	
D2	14	0.00	2.17		0.00	1.30	
D3	15	3.46	2.74		0.00	1.48	
D4	16	0.00	2.16		0.63	2.39	
A1	17	0.00	2.21		2.23	2.56	
A2	18	0.00	2.21		0.54	1.81	
A3	19	0.00	2.16		0.00	1.27	
A4	20	0.00	2.07		2.38	2.49	

JC JC

G 29/84

JC 3/24/05 ~~Page 1 of 1~~ page 4 of 6

TAS

23 Mar 2005 17:32 ALPHA/BETA - 1.09 ~~Page #:~~
Protocol #: 2 PW H3 #403728 User : 5379

Time: 2.00
Data Mode: DPM Nuclide: SMGLO2 Quench Set: SMGLO2
Background Subtract: 1st Vial

	LL	UL	LCR	2S%	BKG
Region A:	0.5	- 18.6	0	0.0	8.58
Region B:	2.0	- 18.6	0	0.0	8.16
Region C:	40.0	- 2000	0	0.0	10.91

Quench Indicator: tSIE/AEC
~~Ext Std~~ Terminator: Count
05-TF-0133 COLLINS (20) 03/23/05 TAS
~~Luminescence~~ Correction On
Coincidence Time(ns): 18
Delay Before Burst(ns): Normal
Protocol Data Filename: c:\data\prot1.dat
Count Data Filename: c:\data\SDATA2.DAT
Spectrum Data Drive & Path: c:\data

S#	TIME	CPMA	CPMB	LUM	FLAG	tSIE	DPM1	2Sigma	CPMC
-1	10.00	8.58	8.16	11	B	626.98		0.00	10.91
0	2.00	603.16	578.86	0		620.43	1099.61	91.93	0.00
1	2.00	0.00	0.00	6		627.74	0.00	0.00	0.00
2	2.00	0.00	0.00	7		627.33	0.00	0.00	0.00
3	2.00	2.56	1.91	4		647.02	4.57	9.12	0.00
4	2.00	0.00	0.00	10		638.95	0.00	0.00	0.00
5	2.00	2.31	2.40	0		632.38	4.18	9.14	0.00
6	2.00	2.92	1.91	32		619.02	5.32	11.94	0.00
7	2.00	0.00	0.00	7		585.20	0.00	0.00	0.00
8	2.00	0.00	0.00	12		628.40	0.00	0.00	3.09
9	2.00	0.42	0.04	6		617.07	0.76	8.53	1.59
10	2.00	1.42	1.09	0		655.60	2.51	8.64	0.09
11	2.00	0.00	0.00	11		629.57	0.00	0.00	0.00
12	2.00	0.00	0.00	14		619.02	0.00	0.00	0.00
13	2.00	0.42	0.63	6		563.73	0.80	8.93	0.42
14	2.00	0.00	0.00	9		606.62	0.00	0.00	0.00
15	2.00	0.42	0.84	6		640.26	0.75	8.37	0.09
16	2.00	0.00	0.00	6		620.38	0.00	0.00	0.00
17	2.00	0.00	0.00	6		632.64	0.00	0.00	0.00
18	2.00	3.36	3.50	8		605.46	6.20	9.72	0.00
19	2.00	0.16	0.00	5		612.94	0.29	8.46	0.00
20	2.00	1.42	0.71	5		656.59	2.51	8.64	0.00

G 30/84
TAS

Building 104 Pre-demo Survey Unit 1

RSDS# 05-TF-0133 *RCT:* ND *RCT:* JMC

ha	43-68 BKG:	0.8	EFF:	0.21	PROBE AREA:	126	cm^2	Surface Eff:		0.5	Detector # :	1
ta	43-68 BKG:	99	EFF:	0.164	PROBE AREA:	126	cm^2	Surface Eff:		0.5	Detector # :	2
ha in	43-37 BKG:	n/a	EFF:	n/a	PROBE AREA:	584	cm^2	Surface Eff:		n/a	Detector # :	3
ta in	43-37 BKG:	n/a	EFF:	n/a	PROBE AREA:	584	cm^2	Surface Eff:		n/a	Detector # :	4
PE	LOCATION	2350#	RCT ID	PROBE	DET #		DATE	TIME	CNTS	CT TIME	dpm/100cm2	
HA	SU 1-1	5673	7244	5862	1	1	3/24/05	13:06	6	120	17	
HA	SU-1-2	5673	7244	5862	1	2	3/24/05	13:10	4	120	9	
HA	SU-1-3	5673	7244	5862	1	3	3/24/05	13:13	5	120	13	
HA	SU-1-4	5673	7244	5862	1	4	3/24/05	13:17	3	120	5	
HA	SU-1-5	5673	7244	5862	1	5	3/24/05	13:21	10	120	32	
HA	SU-1-6	5673	7244	5862	1	6	3/24/05	13:26	3	120	5	
HA	SU-1-7	5673	7244	5862	1	7	3/24/05	13:30	10	120	32	
HA	SU-1-8	5673	7244	5862	1	8	3/24/05	13:34	5	120	13	
HA	SU-1-9	5673	7244	5862	1	9	3/24/05	13:38	4	120	9	
HA	SU-1-10	5673	7244	5862	1	10	3/24/05	13:41	0	120	0	
HA	SU-1-11	5673	7244	5862	1	11	3/24/05	13:46	5	120	13	
HA	SU-1-12	5673	7244	5862	1	12	3/24/05	13:50	4	120	9	
HA	SU-1-13	5673	7244	5862	1	13	3/24/05	13:54	3	120	5	
HA	SU-1-14	5673	7244	5862	1	14	3/24/05	13:57	6	120	17	
HA	SU-1-15	5673	7244	5862	1	15	3/24/05	14:01	4	120	9	
HA	SU-1-16	5673	7244	5862	1	16	3/24/05	14:05	4	120	9	
HA	SU-1-17	5673	7244	5862	1	17	3/24/05	14:09	5	120	13	
HA	SU-1-18	5673	7244	5862	1	18	3/24/05	14:12	5	120	13	
HA	SU-1-19	5673	7244	5862	1	19	3/24/05	14:16	3	120	5	
HA	SU-1-20	5673	7244	5862	1	20	3/24/05	14:19	3	120	5	
TA	SU-1-1	5673	7244	5862	2	1	3/24/05	13:07	127	60	271	
TA	SU-1-2	5673	7244	5862	2	2	3/24/05	13:11	132	60	319	
TA	SU-1-3	5673	7244	5862	2	3	3/24/05	13:14	132	60	319	
TA	SU-1-4	5673	7244	5862	2	4	3/24/05	13:18	144	60	436	
TA	SU-1-5	5673	7244	5862	2	5	3/24/05	13:22	148	60	474	
TA	SU-1-6	5673	7244	5862	2	6	3/24/05	13:27	156	60	552	
TA	SU-1-7	5673	7244	5862	2	7	3/24/05	13:31	145	60	445	
TA	SU-1-8	5673	7244	5862	2	8	3/24/05	13:35	122	60	223	
TA	SU-1-9	5673	7244	5862	2	9	3/24/05	13:39	134	60	339	
TA	SU-1-10	5673	7244	5862	2	10	3/24/05	13:42	81	60	0	
TA	SU-1-11	5673	7244	5862	2	11	3/24/05	13:48	90	60	0	
TA	SU-1-12	5673	7244	5862	2	12	3/24/05	13:51	121	60	213	
TA	SU-1-13	5673	7244	5862	2	13	3/24/05	13:55	159	60	581	
TA	SU-1-14	5673	7244	5862	2	14	3/24/05	13:58	119	60	194	
TA	SU-1-15	5673	7244	5862	2	15	3/24/05	14:02	140	60	397	
TA	SU-1-16	5673	7244	5862	2	16	3/24/05	14:06	126	60	261	
TA	SU-1-17	5673	7244	5862	2	17	3/24/05	14:10	108	60	87	
TA	SU-1-18	5673	7244	5862	2	18	3/24/05	14:13	150	60	494	
TA	SU-1-19	5673	7244	5862	2	19	3/24/05	14:17	149	60	484	
TA	SU-1-20	5673	7244	5862	2	20	3/24/05	14:20	142	60	416	

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RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM) Bldg. 104	SURVEY NO. 05 - TF - 0134
PURPOSE: Pre-Demo Survey Unit 2 (walls / ceilings)	RWP NO. N/A
	DATE: 3-30-05
	TIME: 1630

MAP / DRAWING

See Attached

LEGEND:

- # = mrem/hr (γ) whole body
- #E = mrem/hr (β+η+γ) extremity on contact
- K = factor of 1000
- —·—·—·· = radiological boundary
- # - mrem/hr neutron
- # - air sample number
- # - swipe number
- #/α or /β - direct contamination measurement in dpm/100cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350-1	5854/5861	7-20-05
2360-89	5691/5811	8-4-05
	A	
	N	

[redacted]

HP#	Date:
7244/7836	4-6-05
[redacted]	
[redacted]	[redacted]
[redacted]	
HP# 7707	Date: 4-6-05

ML-9620 (2-98)

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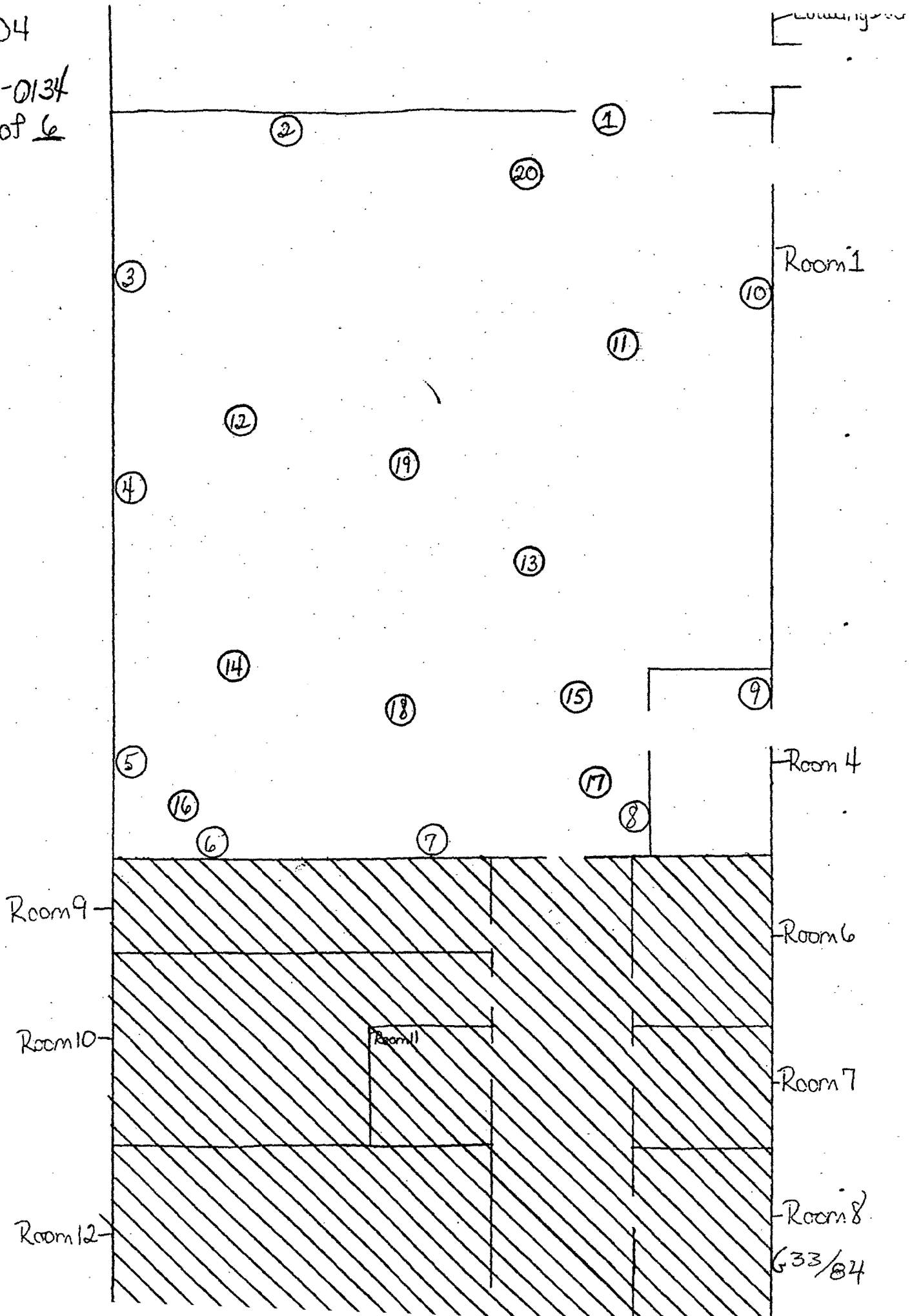
.104

TF-0134
2 of 6



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Survey No. 05-TF-0134

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm²)				
Sample #	β/γ	Alpha	Tritium	Comments
1	See Attached			E. door - 6 ft.
2				E. wall - 2 ft.
3				N. wall - 6 ft.
4				5 ft.
5				7 ft.
6				W. wall - 2 ft.
7				7 ft.
8				S. wall - 4 ft.
9				2 ft.
10				5 ft.
11				ceiling
12				
13				
14				
15				
16				
17				
18				
19				
20				
		NFE		

Removable Contamination				
Swipes (dpm/100cm²)				
Sample #	β/γ	Alpha	Tritium	Comments
		NFE		

COMMENTS: E = East ; N = North ; W = West ; S = South ; ft. = feet ; NFE = No Further Entries
All smears field checked prior to submitting to count lab
pc with 2360

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

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Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Aqua
Data file name: SMEAR092
Batch Ended: 3/31/05 9:04

Crosstalk correction performed.

Recalibration Date: 11/03/05
Serial Number: 26966-1

Batch ID: 05-TF-0134 J.C. (20) AG

Detector ID	Sample ID	Alpha Activity DPM	Alpha Activity σ	Alpha Activity flags	Beta Activity DPM	Beta Activity σ	Beta Activity flags
A1	1	0.00	2.17		0.00	1.83	
A2	2	0.00	2.23		1.79	2.20	
A3	3	0.00	2.18		0.48	1.76	
A4	4	0.00	2.04		0.00	1.78	
B1	5	0.00	1.97		0.97	2.28	
B2	6	0.00	2.09		1.11	2.39	
B3	7	1.51	1.95		0.00	2.17	
B4	8	0.00	1.92		1.56	2.30	
C1	9	1.83	2.39		1.65	3.04	
C2	10	0.00	2.18		0.00	2.37	
C3	11	0.00	2.11		0.22	2.31	
C4	12	0.00	2.07		0.00	2.23	
D1	13	0.00	2.19		0.00	1.53	
D2	14	0.00	2.20		0.01	1.80	
D3	15	0.00	1.95		0.00	2.04	
D4	16	0.00	2.16		0.00	1.98	
A1	17	0.00	2.17		0.00	1.83	
A2	18	0.00	2.21		0.54	1.81	
A3	19	0.00	2.16		0.00	1.27	
A4	20	0.00	2.05		1.15	2.16	

J.C. J.C.

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J.C. 4/6/05 ~~Page 1 of 1~~

AG

31 Mar 2005 10:50 ALPHA/BETA - 1.09 ~~Page #1~~
Protocol #: 3 PW H3 405828 User : 2131

Time: 2.00
Data Mode: DPM Nuclide: SMGLS02 Quench Set: SMGLS02
Background Subtract: 1st Vial

	LL	UL	LCR	2S%	BKG
Region A:	0.5	- 18.6	0	0.0	7.34
Region B:	2.0	- 18.6	0	0.0	6.93
Region C:	40.0	- 2000	0	0.0	12.37

Quench Indicator: tSIE/AEC
~~Ext Std~~ Terminator: Count
05-TF-0134 JC (20) AG
Luminescence Correction On
Coincidence Time(ns): 18
Delay Before Burst(ns): Normal
Protocol Data Filename: c:\data\PROT3.DAT
Count Data Filename: c:\data\SDATA3.DAT
Spectrum Data Drive & Path: c:\data

S#	TIME	CPMA	CPMB	CPMC	LUM	tSIE	DPM1	2Sigma	FLAG
-1	10.00	7.34	6.93	12.37	1	605.30		0.00	B
0	2.00	535.59	499.73	0.00	0	571.38	1053.27	103.05	
1	2.00	1.20	0.60	2.13	0	610.83	2.27	8.51	
2	2.00	4.83	4.74	0.00	0	629.24	9.05	9.81	
3	2.00	1.66	2.07	0.00	0	622.19	3.14	8.62	
4	2.00	0.16	0.00	0.00	0	627.33	0.31	7.95	
5	2.00	0.00	0.00	0.00	0	609.71	0.00	0.00	
6	2.00	1.66	1.68	0.00	0	662.21	3.04	8.35	
7	2.00	1.12	1.19	0.00	0	635.85	2.09	8.30	
8	2.00	3.16	3.22	0.00	0	643.04	5.86	9.07	
9	2.00	4.15	4.22	0.00	0	637.82	7.73	9.49	
10	2.00	1.84	2.24	0.00	0	619.29	3.47	8.72	
11	2.00	1.16	1.07	0.00	0	609.21	2.22	8.51	
12	2.00	1.16	1.07	0.00	0	633.22	2.17	8.34	
13	2.00	0.00	0.00	0.00	0	628.16	0.00	0.00	
14	2.00	0.68	0.24	0.13	0	639.34	1.26	8.09	
15	2.00	1.66	0.90	0.00	0	634.68	3.10	8.54	
16	2.00	0.00	0.00	0.00	0	624.38	0.00	0.00	
17	2.00	0.00	0.07	0.00	0	627.67	0.00	0.00	
18	2.00	0.66	0.72	0.00	0	642.16	1.23	8.07	
19	2.00	0.00	0.00	0.00	0	640.08	0.00	0.00	
20	2.00	2.66	2.73	0.00	0	637.99	4.96	8.92	

JC

G 36/84 AP

Bldg. 104 Pre-Demo Survey Unit 2 (walls and ceiling)

RSDS# 05-TF-0134 RCT: YMC RCT: MO

Alpha	43-68 BKG:	2.2	EFF:	0.21	PROBE AREA:	126	cm²	Surface Eff:	0.5	Detector #:	1
Beta	43-68 BKG:	106	EFF:	0.167	PROBE AREA:	126	cm²	Surface Eff:	0.5	Detector #:	2
Alpha Scan	43-37 BKG:	0	EFF:	0.226	PROBE AREA:	584	cm²	Surface Eff:	0.5	Detector #:	3
Beta Scan	43-37 BKG:	0	EFF:	0.17	PROBE AREA:	584	cm²	Surface Eff:	0.5	Detector #:	4

TYPE	LOCATION	2350#	RCT ID	PROBE	DET #		DATE	TIME	CNTS	CT TIME	dpm/100cm2
ALPHA	SU-2 1	5854	7244	5861	1	1	3/30/05	8:18	5	120	2
ALPHA	SU-2 2	5854	7244	5861	1	2	3/30/05	8:23	4	120	0
ALPHA	SU-2 3	5854	7244	5861	1	3	3/30/05	8:26	5	120	2
ALPHA	SU-2 4	5854	7244	5861	1	4	3/30/05	8:31	6	120	6
ALPHA	SU-2 5	5854	7244	5861	1	5	3/30/05	8:35	5	120	2
ALPHA	SU-2 6	5854	7244	5861	1	6	3/30/05	8:39	10	120	21
ALPHA	SU-2 7	5854	7244	5861	1	7	3/30/05	8:43	4	120	0
ALPHA	SU-2 8	5854	7244	5861	1	8	3/30/05	8:47	6	120	6
ALPHA	SU-2 9	5854	7244	5861	1	9	3/30/05	8:51	1	120	0
ALPHA	SU-2 10	5854	7244	5861	1	10	3/30/05	8:55	3	120	0
ALPHA	SU-2 11	5854	7244	5861	1	11	3/30/05	13:09	3	120	0
ALPHA	SU-2 12	5854	7244	5861	1	12	3/30/05	13:17	3	120	0
ALPHA	SU-2 13	5854	7244	5861	1	13	3/30/05	13:22	1	120	0
ALPHA	SU-2 14	5854	7244	5861	1	14	3/30/05	13:30	5	120	2
ALPHA	SU-2 15	5854	7244	5861	1	15	3/30/05	13:35	6	120	6
ALPHA	SU-2 16	5854	7244	5861	1	16	3/30/05	13:40	3	120	0
ALPHA	SU-2 17	5854	7244	5861	1	17	3/30/05	13:45	2	120	0
ALPHA	SU-2 18	5854	7244	5861	1	18	3/30/05	13:50	1	120	0
ALPHA	SU-2 19	5854	7244	5861	1	19	3/30/05	13:55	2	120	0
ALPHA	SU-2 20	5854	7244	5861	1	20	3/30/05	14:01	4	120	0
BETA	SU-2 1	5854	7244	5861	2	1	3/30/05	8:19	103	60	0
BETA	SU-2 2	5854	7244	5861	2	2	3/30/05	8:24	93	60	0
BETA	SU-2 3	5854	7244	5861	2	3	3/30/05	8:28	112	60	57
BETA	SU-2 4	5854	7244	5861	2	4	3/30/05	8:32	117	60	105
BETA	SU-2 5	5854	7244	5861	2	5	3/30/05	8:37	112	60	57
BETA	SU-2 6	5854	7244	5861	2	6	3/30/05	8:40	157	60	485
BETA	SU-2 7	5854	7244	5861	2	7	3/30/05	8:44	136	60	285
BETA	SU-2 8	5854	7244	5861	2	8	3/30/05	8:48	128	60	209
BETA	SU-2 9	5854	7244	5861	2	9	3/30/05	8:52	98	60	0
BETA	SU-2 10	5854	7244	5861	2	10	3/30/05	8:57	101	60	0
BETA	SU-2 11	5854	7244	5861	2	11	3/30/05	13:10	106	60	0
BETA	SU-2 12	5854	7244	5861	2	12	3/30/05	13:18	126	60	190
BETA	SU-2 13	5854	7244	5861	2	13	3/30/05	13:24	130	60	228
BETA	SU-2 14	5854	7244	5861	2	14	3/30/05	13:31	131	60	238
BETA	SU-2 15	5854	7244	5861	2	15	3/30/05	13:36	115	60	86
BETA	SU-2 16	5854	7244	5861	2	16	3/30/05	13:41	134	60	266
BETA	SU-2 17	5854	7244	5861	2	17	3/30/05	13:46	144	60	361
BETA	SU-2 18	5854	7244	5861	2	18	3/30/05	13:51	132	60	247
BETA	SU-2 19	5854	7244	5861	2	19	3/30/05	13:57	149	60	409
BETA	SU-2 20	5854	7244	5861	2	20	3/30/05	14:02	146	60	380

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RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM) Bldg. 104 / Rms. 6 - 12	SURVEY NO. 05-TF-0135
PURPOSE: Pre-demo survey unit-3 (floors, walls, & ceilings)	RWP NO. N/A
	DATE: 3-23-05
	TIME: 1630

MAP / DRAWING

See Attached

LEGEND:

- # = mrem/hr (γ) whole body
- #E = mrem/hr (β+η+γ) extremity on contact
- K = factor of 1000
- — · — · — · · = radiological boundary
- # - mrem/hr neutron
- # - air sample number
- # - swipe number
- #/α or /β - direct contamination measurement in dpm/100cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2360-89	5691/5811	8-4-05
2350-1	5673/5862	7-29-05
	A	
	N	

[redacted]

HP# 7244 / 5836 / 7176	Date: 3-24-05
	Date:
α	
HP# 7707	Date: 3-29-05

ML-9620 (2-98)

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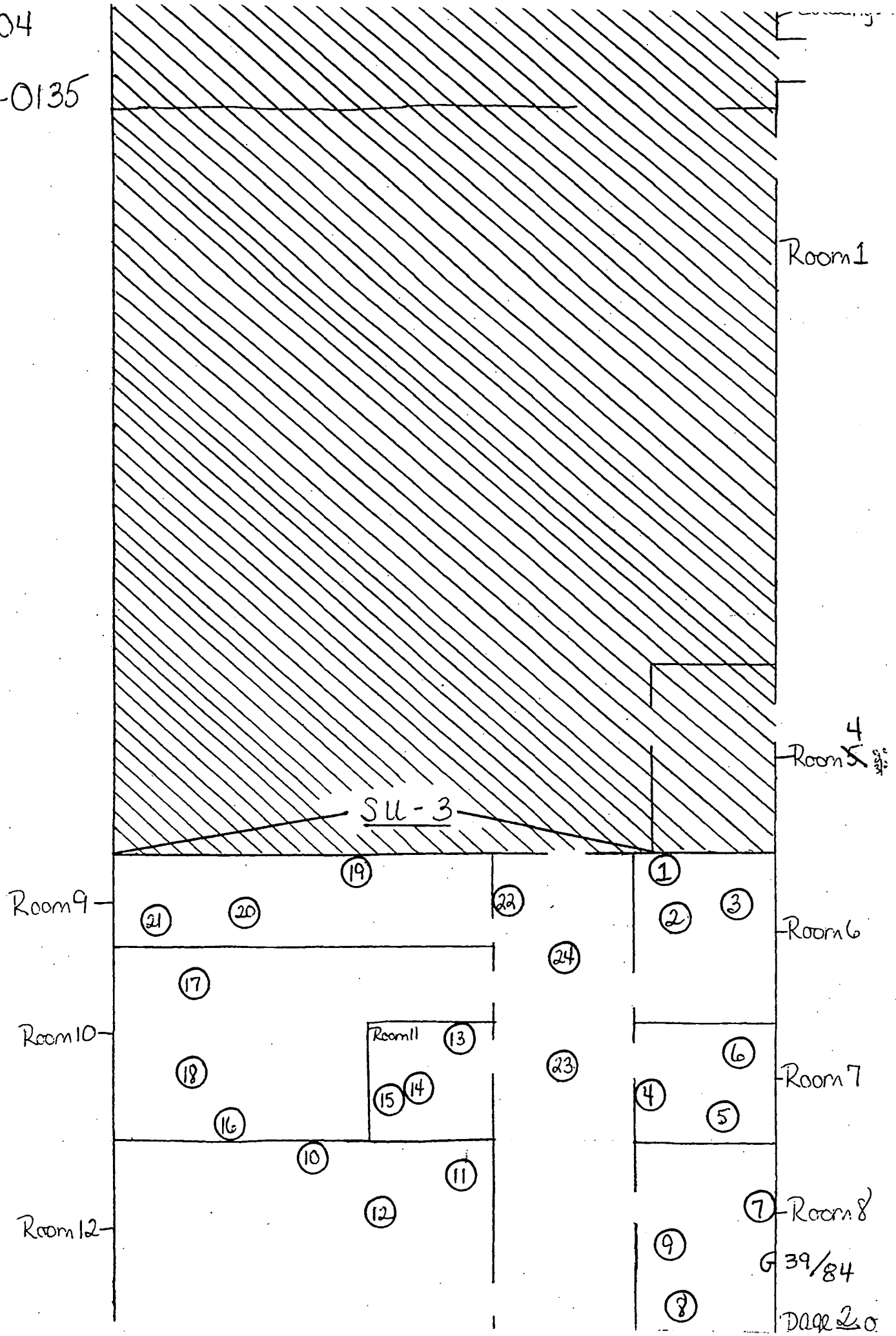
dg. 104

TF-0135



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Survey No. 05-TF-0135

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm²)				
Sample #	β/γ	Alpha	Tritium	Comments
1	See Attached			Rm.6-wall/5 ft.
2				floor
3				ceiling
4				Rm.7-wall/5 ft.
5				floor
6				ceiling
7				Rm.8-wall/1 ft.
8				floor
9				ceiling
10				Rm.12-wall/3 ft.
11				floor
12				ceiling
13				Rm.11-wall/4 ft.
14				floor
15				ceiling
16				Rm.10-wall/3 ft.
17				floor
18				ceiling
19				Rm.9-wall/2 ft.
20				floor
21				ceiling
22				corridor-wall/4 ft.
23				floor
24				ceiling
		NFE		

Removable Contamination				
Swipes (dpm/100cm²)				
Sample #	β/γ	Alpha	Tritium	Comments
		NFE		

COMMENTS: Rm. ⇒ Room; ft. ⇒ feet; NFE ⇒ No Further Entries
All smears field checked with 2360 prior to submitting to count lab.

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

ML-9620A (4-98)

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Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Aqua
Data file name: SMEAR044
Batch Ended: 3/23/05 14:30

Crosstalk correction performed.

Recalibration Date: 11/03/05
Serial Number: 26966-1

Batch ID: 05-TF-0135 COLLINS (24) 03/23/05 TAS

Detector ID	Sample ID	Alpha Activity DPM	Alpha Activity σ	Alpha Activity flags	Beta Activity DPM	Beta Activity σ	Beta Activity flags
A1	1	0.00	2.21		2.23	2.56	
A2	2	0.00	2.27		5.55	3.10	
A3	3	0.00	2.16		0.00	1.27	
A4	4	0.00	2.10		4.83	3.03	
B1	5	0.00	1.90		0.00	1.20	
B2	6	0.00	2.09		1.11	2.39	
B3	7	0.00	1.93		0.00	1.80	
B4	8	0.00	1.94		3.82	2.80	
C1	9	0.00	2.36		0.00	2.38	
C2	10	0.95	2.15		0.00	1.44	
C3	11	0.00	2.08		0.00	1.40	
C4	12	0.00	2.09		1.24	2.57	
D1	13	0.00	2.19		0.00	1.53	
D2	14	0.00	2.17		0.00	1.30	
D3	15	0.00	1.95		0.00	2.04	
D4	16	0.00	2.18		3.33	3.07	
A1	17	0.00	2.19		0.96	2.23	
A2	18	0.00	2.24		3.04	2.54	
A3	19	0.00	2.18		0.48	1.76	
A4	20	0.00	2.04		0.00	1.78	
B1	21	0.00	1.99		2.09	2.54	
B2	22	0.00	2.09		1.11	2.39	
B3	23	0.00	1.96		1.32	2.50	
B4	24	0.00	1.90		0.43	2.00	

JC JC

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JC 3/24/05 ~~Page 1 of 1~~

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TB

23 Mar 2005 16:02 ALPHA/BETA - 1.09 JC 3/24/05 ~~Page #1~~
Protocol #: 1 Pw H3 #403728 User : 5379

Time: 2.00
Data Mode: DPM Nuclide: SMGL02 Quench Set: SMGL02
Background Subtract: 1st Vial

	LL	UL	LCR	2S%	BKG
Region A:	0.5	- 18.6	0	0.0	9.86
Region B:	2.0	- 18.6	0	0.0	9.59
Region C:	40.0	- 2000	0	0.0	11.07

Quench Indicator: tSIE/AEC
Ext Std Terminator: Count
05-TF-0135 COLLINS (24)03/23/05 TAS
Luminescence Correction On
Coincidence Time(ns): 18
Delay Before Burst(ns): Normal
Protocol Data Filename: c:\data\prot1.dat
Count Data Filename: c:\data\SDATA1.DAT
Spectrum Data Drive & Path: c:\data

S#	TIME	CPMA	CPMB	LUM	FLAG	tSIE	DPM1	2Sigma	CPMC
-1	10.00	9.86	9.59	4	B	617.92		0.00	11.07
0	2.00	683.11	649.74	0		620.41	1245.40	101.01	2.43
1	2.00	1.95	0.96	4		656.74	3.45	9.31	1.88
2	2.00	0.00	0.00	6		621.77	0.00	0.00	0.00
3	2.00	0.00	0.00	0		642.56	0.00	0.00	0.00
4	2.00	0.00	0.00	0		658.04	0.00	0.00	0.00
5	2.00	0.00	0.00	0		663.77	0.00	0.00	0.00
6	2.00	0.00	0.00	15		557.82	0.00	0.00	1.43
7	2.00	0.00	0.00	7		612.88	0.00	0.00	0.00
8	2.00	0.00	0.00	7		629.99	0.00	0.00	0.00
9	2.00	0.00	0.00	0		655.33	0.00	0.00	0.00
10	2.00	0.00	0.00	6		638.55	0.00	0.00	0.00
11	2.00	0.00	0.00	8		646.08	0.00	0.00	0.00
12	2.00	0.00	0.00	25		498.40	0.00	0.00	0.00
13	2.00	1.71	1.48	0		640.64	3.07	9.35	0.00
14	2.00	0.00	0.00	14		604.12	0.00	0.00	0.00
15	2.00	0.00	0.00	7		651.82	0.00	0.00	0.00
16	2.00	0.00	0.00	6		629.65	0.00	0.00	0.00
17	2.00	0.00	0.00	6		615.46	0.00	0.00	0.00
18	2.00	0.00	0.00	0		639.59	0.00	0.00	0.00
19	2.00	0.00	0.00	17		629.42	0.00	0.00	3.93
20	2.00	0.00	0.00	13		606.94	0.00	0.00	0.00
21	2.00	0.00	0.00	7		657.32	0.00	0.00	0.00
22	2.00	0.00	0.00	0		619.96	0.00	0.00	0.43
23	2.00	0.00	0.00	6		652.01	0.00	0.00	1.93
24	2.00	0.00	0.00	6		665.98	0.00	0.00	0.00

J.C

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TB

Building 104 Pre-Demo Survey Unit # 3

RSDS# 05-TF-0135 **RCT:** MPD **RCT:** [illegible]

lpha	43-68 BKG:	2	EFF:	0.21	PROBE AREA:	126	cm^2	Surface Eff:		0.5	Detector #: 1
leta	43-68 BKG:	90	EFF:	0.164	PROBE AREA:	126	cm^2	Surface Eff:		0.5	Detector #: 2
lpha can	43-37 BKG:	0	EFF:	n/a	PROBE AREA:	584	cm^2	Surface Eff:		0.5	Detector #: 3
leta can	43-37 BKG:	0	EFF:	n/a	PROBE AREA:	584	cm^2	Surface Eff:		0.5	Detector #: 4
YPE	LOCATION	2350#	RCT ID	PROBE	DET #		DATE	TIME	CNTS	CT TIME	dpm/100cm2
.PHA	SU-3-1	5673	7836	5862	1	1	3/23/05	13:51	3	120	0
.PHA	SU-3-2	5673	7836	5862	1	2	3/23/05	13:54	5	120	4
.PHA	SU-3-3	5673	7836	5862	1	3	3/23/05	13:58	3	120	0
.PHA	SU-3-4	5673	7836	5862	1	4	3/23/05	14:02	5	120	4
.PHA	SU-3-5	5673	7836	5862	1	5	3/23/05	14:06	6	120	8
.PHA	SU-3-6	5673	7836	5862	1	6	3/23/05	14:08	6	120	8
.PHA	SU-3-7	5673	7836	5862	1	7	3/23/05	14:12	4	120	0
.PHA	SU-3-8	5673	7836	5862	1	8	3/23/05	14:16	7	120	11
.PHA	SU-3-9	5673	7836	5862	1	9	3/23/05	14:20	6	120	8
.PHA	SU-3-10	5673	7836	5862	1	10	3/23/05	14:24	4	120	0
.PHA	SU-3-11	5673	7836	5862	1	11	3/23/05	14:28	8	120	15
.PHA	SU-3-12	5673	7836	5862	1	12	3/23/05	14:31	4	120	0
.PHA	SU-3-13	5673	7836	5862	1	13	3/23/05	14:35	6	120	8
.PHA	SU-3-14	5673	7836	5862	1	14	3/23/05	14:39	6	120	8
.PHA	SU-3-15	5673	7836	5862	1	15	3/23/05	14:43	3	120	0
.PHA	SU-3-16	5673	7836	5862	1	16	3/23/05	14:47	9	120	19
.PHA	SU-3-17	5673	7836	5862	1	17	3/23/05	14:50	8	120	15
.PHA	SU-3-18	5673	7836	5862	1	18	3/23/05	14:54	4	120	0
.PHA	SU-3-19	5673	7836	5862	1	19	3/23/05	14:58	8	120	15
.PHA	SU-3-20	5673	7836	5862	1	20	3/23/05	15:02	4	120	0
.PHA	SU-3-21	5673	7836	5862	1	21	3/23/05	15:06	1	120	0
.PHA	SU-3-22	5673	7836	5862	1	22	3/23/05	15:10	3	120	0
.PHA	SU-3-23	5673	7836	5862	1	23	3/23/05	15:13	2	120	0
.PHA	SU-3-24	5673	7836	5862	1	24	3/23/05	15:17	2	120	0
ETA 3/24/05						MPD 3/24/05					
ETA	SU-3-1	5673	7836	5862	2	1	3/23/05	13:52	131	60	397
ETA	SU-3-2	5673	7836	5862	2	2	3/23/05	13:55	93	60	29
ETA	SU-3-3	5673	7836	5862	2	3	3/23/05	13:59	168	60	755
ETA	SU-3-4	5673	7836	5862	2	4	3/23/05	14:03	115	60	242
ETA	SU-3-5	5673	7836	5862	2	5	3/24/05	14:00	83	60	0
ETA	SU-3-6	5673	7836	5862	2	6	3/23/05	14:09	160	60	678
ETA	SU-3-7	5673	7836	5862	2	7	3/23/05	14:13	98	60	77
ETA	SU-3-8	5673	7836	5862	2	8	3/23/05	14:17	83	60	0
ETA	SU-3-9	5673	7836	5862	2	9	3/23/05	14:21	163	60	707
ETA	SU-3-10	5673	7836	5862	2	10	3/23/05	14:25	192	60	987
ETA	SU-3-11	5673	7836	5862	2	11	3/23/05	14:29	206	60	1123
ETA	SU-3-12	5673	7836	5862	2	12	3/23/05	14:32	152	60	600
ETA	SU-3-13	5673	7836	5862	2	13	3/23/05	14:37	106	60	155
ETA	SU-3-14	5673	7836	5862	2	14	3/23/05	14:40	225	60	1307
ETA	SU-3-15	5673	7836	5862	2	15	3/23/05	14:44	146	60	542
ETA	SU-3-16	5673	7836	5862	2	16	3/23/05	14:48	198	60	1045
ETA	SU-3-17	5673	7836	5862	2	17	3/23/05	14:51	177	60	842

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Building 104 Pre-Demo Survey Unit # 3

RSDS# 05-TF-0135 *RCT:* MD *RCT:* DL

Alpha	43-68 BKG:	2	EFF:	0.21	PROBE AREA:	126	cm^2	Surface Eff:		0.5	Detector # : 1
Beta	43-68 BKG:	90	EFF:	0.164	PROBE AREA:	126	cm^2	Surface Eff:		0.5	Detector # : 2
Alpha Scan	43-37 BKG:	0	EFF:	n/a	PROBE AREA:	584	cm^2	Surface Eff:		0.5	Detector # : 3
Beta Scan	43-37 BKG:	0	EFF:	n/a	PROBE AREA:	584	cm^2	Surface Eff:		0.5	Detector # : 4
TYPE	LOCATION	2350#	RCT ID	PROBE	DET #		DATE	TIME	CNTS	CT TIME	dpm/100cm2
BETA	SU-3-18	5673	7836	5862	2	18	3/23/05	14:55	161	60	687
BETA	SU-3-19	5673	7836	5862	2	19	3/23/05	15:00	129	60	377
BETA	SU-3-20	5673	7836	5862	2	20	3/23/05	15:03	182	60	890
BETA	SU-3-21	5673	7836	5862	2	21	3/23/05	15:07	173	60	803
BETA	SU-3-22	5673	7836	5862	2	22	3/23/05	15:11	75	60	0
BETA	SU-3-23	5673	7836	5862	2	23	3/23/05	15:15	84	60	0
BETA	SU-3-24	5673	7836	5862	2	24	3/23/05	15:18	166	60	736

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RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG/AREA/ROOM) Bldg 104	SURVEY NO. 05-TF-0140
PURPOSE: Floor scan. Pre-demo survey of Bldg 104	RWP NO. N2
	DATE: 3-23-05
	TIME: 1630

MAP / DRAWING

See attached sheets

Floor scan of rooms, hallways and major walkways through out building. No alarms or elevated readings detected. No intensified count required.

LEGEND: # = mrem/hr (γ) whole body
#E = mrem/hr (β+η+γ) extremity on contact
K = factor of 1000
— · — · — = radiological boundary
△# = mrem/hr neutron
= air sample number
(#) = swipe number
(#/α) or /β = direct contamination measurement in dpm/100 cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350-1	5673 / 5812	7-29-05
N		

[redacted]

HP# 7176 / 7876	Date: 3-28-05
HP#	Date:
HP# 7707	Date: 3-31-05

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Survey No.
05-JF-0140

RADIOLOGICAL SURVEY DATA SHEET

Removable Contamination				
Swipes (dpm/100cm²)				
Sample #	β/γ	Alpha	Tritium	Comments
	N	P		

Removable Contamination				
Swipes (dpm/100cm²)				
Sample #	β/γ	Alpha	Tritium	Comments
	N	P		

COMMENTS: Floor scan of Bldg 104 PRE-demo survey

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

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ML-9620A (4-98)

Idg. 104

DS 05-TF-0140
Pg 3 of 3

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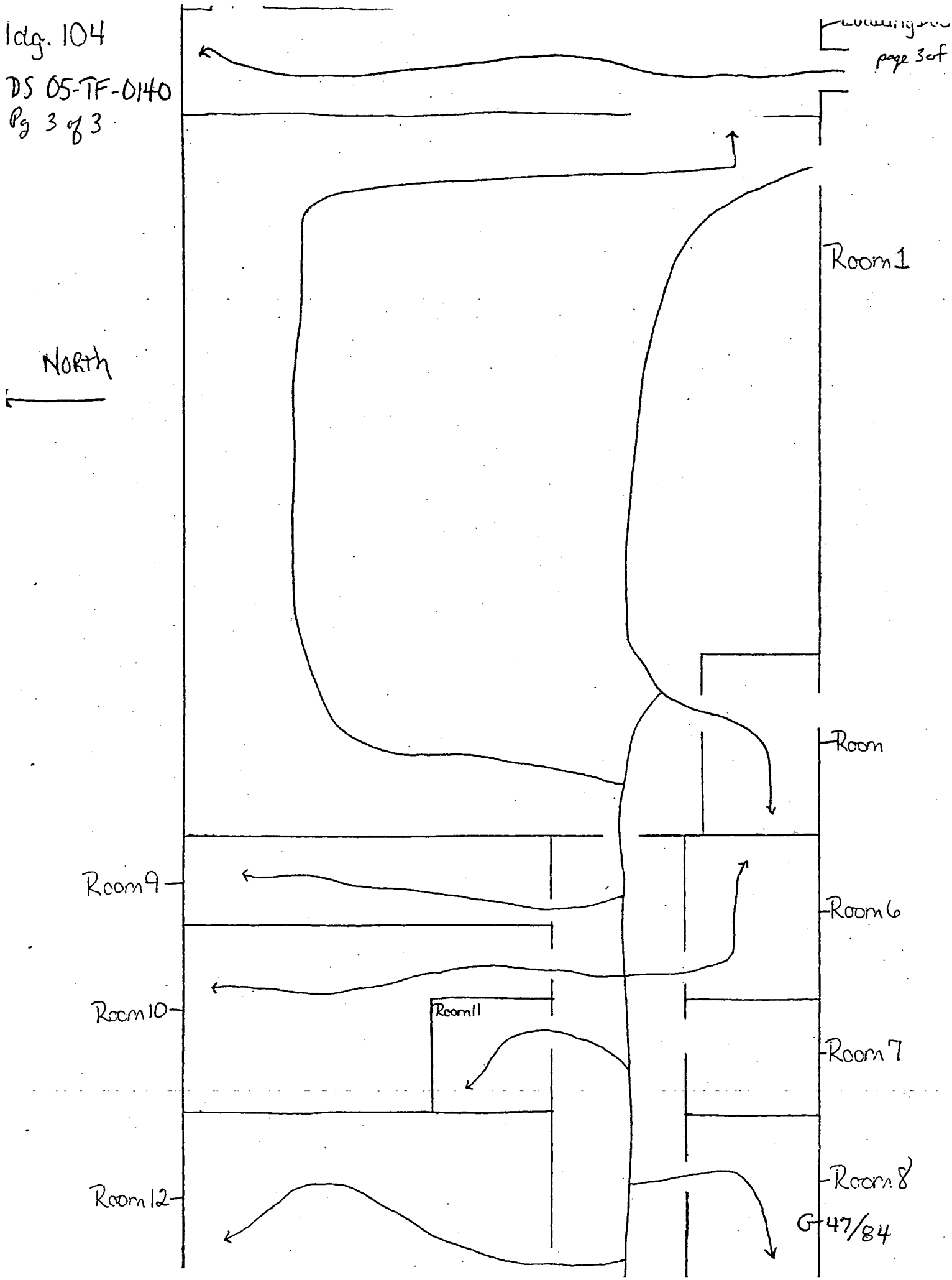

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RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG/AREA/ROOM) Bldg 104	SURVEY NO. 05-TF-0143
PURPOSE: Pre-demo survey Bldg #104 of Fluor drains and sump pipes including smear, water, and sediment samples	RWP NO. N/A
	DATE: 3-29-05
	TIME: 1500

MAP / DRAWING

* See Attached for locations and results.

LEGEND: # = mrem/hr (γ) whole body
#E = mrem/hr (β+η+γ) extremity on contact
K = factor of 1000
—·—·— = radiological boundary

△# = mrem/hr neutron

= air sample number

(#) = swipe number

(#/α) or /β = direct contamination measurement in dpm/100 cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
Lud 2360 4389	5755/5723	1-31-06
Lud 2350	5855/5864	6-9-05
	A	
	N	

[redacted]

HP# 7836 7244/7176	Date: 3-31-05
[redacted]	
HP#	Date:
HP# 7707	Date: 4-5-05
[redacted]	

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Survey No.
05-TF-0143

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm²)				
Sample #	β/γ	Alpha	Tritium	Comments
1	See	attached	sheets	Floor drain (S)
2	↓	↓	↓	↓
3				↓
4				↓
5				Sink trap
6				drains (W)
7				↓ (W)
8				Floor drain (S)
9				Sink trap
10				↓
11				Shower drain (S)
12	↓	↓	↓	↓ (S)
		N/A		
			N/A	

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

COMMENTS: (S) Sediment sample (W) water sample. S means field check with 2360 prior to sending client lab.

NOTES: (S) Sediment samples obtained had ~~inadequate~~ insufficient amounts material for analysis, smear taken at sample location.

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

ML-9620A (4-98)

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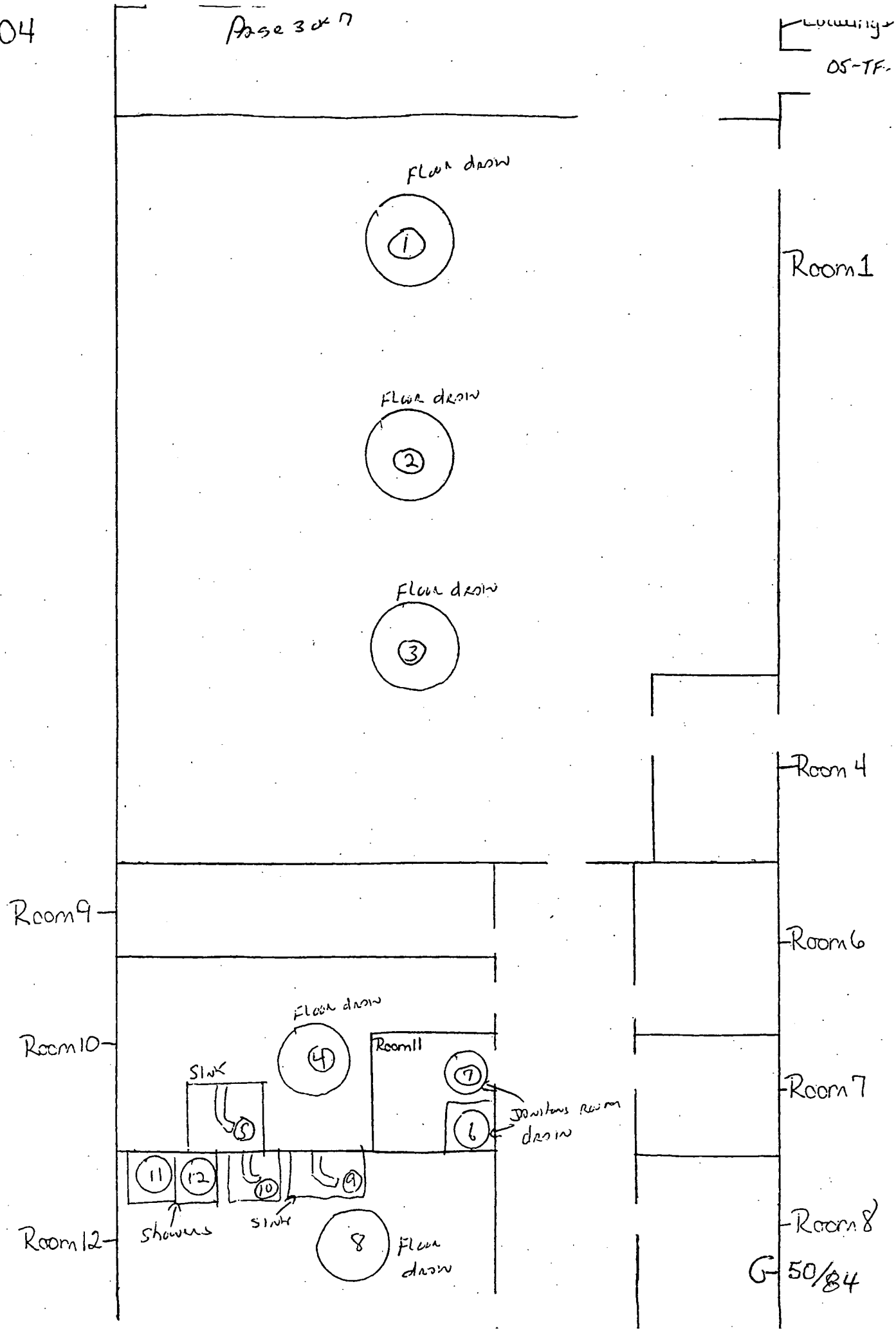
Bldg. 104

Drawings
05-TF-



Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Aqua
Data file name: SMEAR067
Batch Ended: 3/29/05 9:10

Crosstalk correction performed.

Recalibration Date: 11/03/05
Serial Number: 26966-1

Batch ID: 05-TF-0143 OEFFNER (12) AG

Detector ID	Sample ID	Alpha Activity			Beta Activity		
		DPM	σ	flags	DPM	σ	flags
B1	1	0.00	2.05		5.43	3.20	
B2	2	0.00	2.07		0.00	2.08	
B3	3	0.00	1.96		1.32	2.50	
B4	4	0.00	1.90		0.43	2.00	
C1	5	0.00	2.34		0.00	1.97	
C2	6	0.00	2.20		0.97	2.72	
C3	7	0.00	2.12		1.52	2.65	
C4	8	0.00	2.09		1.24	2.57	
D1	9	3.30	3.06		0.00	1.53	
D2	10	0.00	2.27		2.50	2.52	
D3	11	0.00	1.96		1.37	2.48	
D4	12	0.00	2.15		0.00	1.44	

NO NO

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~~Page 1 of 1~~ NO
3/29/05

29 Mar 2005 13:23 ALPHA/BETA - 1.09 Page #1
Protocol #: 6 PW H3 #403728 User : 2138

Time: 2.00
Data Mode: DPM Nuclide: SMGL02 Quench Set: SMGL02
Background Subtract: 1st Vial

	LL	UL	LCR	2S%	BKG
Region A:	0.5 -	18.6	0	0.0	7.81
Region B:	2.0 -	18.6	0	0.0	7.91
Region C:	40.0 -	2000	0	0.0	12.20

Quench Indicator: tSIE/AEC
Ext Std Terminator: Count
05-TF-0143 OEFFNER (12) AG
Luminescence Correction On
Coincidence Time(ns): 18
Delay Before Burst(ns): Normal
Protocol Data Filename: c:\data\prot1.dat
Count Data Filename: c:\data\SDATA6.DAT
Spectrum Data Drive & Path: c:\data

S#	TIME	CPMA	CPMB	LUM	FLAG	tSIE	DPM1	2Sigma	CPMC
-1	10.00	7.81	7.91	10	B	620.30		0.00	12.20
0	2.00	620.48	592.44	0		618.29	1133.16	94.01	0.00
1	2.00	0.69	0.43	6		531.96	1.35	8.89	0.00
2	2.00	1.58	1.48	0		575.90	2.99	8.92	0.00
3	2.00	0.19	0.09	0		473.60	0.40	9.27	0.00
4	2.00	2.68	2.34	0		578.58	5.06	9.33	0.00
5	2.00	1.69	1.17	0		402.52	3.93	11.03	0.00
6	2.00	0.00	0.00	0		555.65	0.00	0.00	2.42
7	2.00	0.00	0.00	0		552.61	0.00	0.00	0.00
8	2.00	0.00	0.00	7		445.95	0.00	0.00	0.00
9	2.00	0.19	0.00	0		533.49	0.37	8.66	0.00
10	2.00	3.69	3.35	0		578.39	6.96	9.72	0.00
11	2.00	0.00	0.00	0		566.56	0.00	0.00	0.00
12	2.00	0.00	0.00	0		595.14	0.00	0.00	0.00

Bldg. 104 Pre-Demo Survey (drains)

RSDS# 05-TF-0143 **RCT:** JMC **RCT:** N/A

Alpha	43.68 BKG:	1.2	EFF:	0.206	PROBE AREA:	126	cm^2	Surface Eff:		0.5	Detector #: 1
Beta	43.68 BKG:	192	EFF:	0.154	PROBE AREA:	126	cm^2	Surface Eff:		0.5	Detector #: 2
Alpha Scan	43.37 BKG:	0	EFF:	0.22	PROBE AREA:	584	cm^2	Surface Eff:		0.5	Detector #: 3
Beta Scan	43.37 BKG:	0	EFF:	0.153	PROBE AREA:	584	cm^2	Surface Eff:		0.5	Detector #: 4
TYPE	LOCATION	2350#	RCT ID	PROBE	DET #		DATE	TIME	CNTS	CT TIME	dpm/100cm2
ALPHA	DRAIN #1	5855	7244	5864	1	1	3/29/05	9:03	8	120	22
ALPHA	DRAIN #2	5855	7244	5864	1	2	3/29/05	9:07	2	120	0
ALPHA	DRAIN #3	5855	7244	5864	1	3	3/29/05	9:11	9	120	25
ALPHA	DRAIN #4	5855	7244	5864	1	4	3/29/05	9:15	9	120	25
ALPHA	DRAIN #5	5855	7244	5864	1	5	3/29/05	9:55	3	120	2
ALPHA	DRAIN #6	5855	7244	5864	1	6	3/29/05	9:21	7	120	18
ALPHA	DRAIN #7	5855	7244	5864	1	7	3/29/05	9:25	5	120	10
ALPHA	DRAIN #8	5855	7244	5864	1	8	3/29/05	9:30	5	120	10
ALPHA	DRAIN #9	5855	7244	5864	1	9	3/29/05	9:40	3	120	2
ALPHA	DRAIN #10	5855	7244	5864	1	10	3/29/05	9:44	5	120	10
ALPHA	DRAIN #11	5855	7244	5864	1	11	3/29/05	9:47	4	120	6
ALPHA	DRAIN #12	5855	7244	5864	1	12	3/29/05	9:51	6	120	14
BETA	DRAIN #1	5855	7244	5864	2	1	3/29/05	9:04	242	60	515
BETA	DRAIN #2	5855	7244	5864	2	2	3/29/05	9:08	188	60	0
BETA	DRAIN #3	5855	7244	5864	2	3	3/29/05	9:12	233	60	423
BETA	DRAIN #4	5855	7244	5864	2	4	3/29/05	9:16	224	60	330
BETA	DRAIN #5	5855	7244	5864	2	5	3/29/05	9:56	338	60	1505
BETA	DRAIN #6	5855	7244	5864	2	6	3/29/05	9:22	207	60	155
BETA	DRAIN #7	5855	7244	5864	2	7	3/29/05	9:26	420	60	2350
BETA	DRAIN #8	5855	7244	5864	2	8	3/29/05	9:31	267	60	773
BETA	DRAIN #9	5855	7244	5864	2	9	3/29/05	9:41	313	60	1247
BETA	DRAIN #10	5855	7244	5864	2	10	3/29/05	9:45	336	60	1484
BETA	DRAIN #11	5855	7244	5864	2	11	3/29/05	9:48	237	60	464
BETA	DRAIN #12	5855	7244	5864	2	12	3/29/05	9:52	202	60	103

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BWXT of Ohio, Inc.

ANALYTICAL SERVICES REQUEST FOR ANALYSIS

DATE SUBMITTED:	SAMPLE TYPE:	COLLECTED BY:	NUMBER OF SAMPLES
3-29-05	H_2O	Oeffner	2

PROJECT/FUNCTION:	PRIMARY CONTACT/PHONE NO.:	MAIL STOP:
BOSS	Bob Coblentz 608-8206	

CHARGE NUMBER:	DATE(S) COLLECTED:	RSDS# (if applicable):	ATTACHMENTS (list):
BOSS	3-28-05	05-TF-0143	

ANALYSES REQUESTED (check):

- [x] ^3H
- [ ] Characterize/Approve for Sanitary or Storm Discharge. Estimate of Total Volume for Release_____ Approved_____
- [x] Gross Alpha
- [ ] Air Filter – Isotopic Analysis
- [ ] Characterization per MD-80036, Operation #10015
- [ ] Isotopic Analysis: Pu____ U____ Th____ Am____ Other____
- [ ] Other _____

ADDITIONAL INFORMATION:

NOTE: Attach additional information (e.g. RSDS, screening results, collection data, and gamma spec. results) if applicable

LAB IDENTIFICATION	SAMPLE LOCATION	SAMPLE NUMBER	RESULTS: 3H pCi/L	RESULTS: GROSS ALPHA DPM/mL
0501912	Bldg 104 Drain	1	1.47	<0.6
0501913	Bldg 104 Drain	2	1.30	<0.6

COMMENTS:

ANALYZED BY: R. Hedek

DATE: 3-30-05

ML-5222 (1-01)

G 54/84

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM) Building 104	SURVEY NO. 05-TF-0144
PURPOSE: Predemolition Survey of Ventilation Ducts and Vents	RWP NO. N/A
	DATE: 3/29/2005
	TIME: 9:30

MAP / DRAWING

Large area wipes were taken at survey locations #8 and #9. Initial L2360 readings, and follow-up decay readings were taken two hours later.
Follow-up direct measurement were conducted on locations #8 and #9 following collection of the LAW's
Results are as follows:

	Time of count	dpm/LAW, alpha	dpm/LAW, beta
LOCATION #8:	10:30	144	263
	12:30	72	284
LOCATION #9:	10:35	72	356
	12:35	24	184

	Follow-up direct readings (dpm/100cm2)
LOCATION #8:	80, alpha 144, beta
LOCATION #9:	88, alpha 148, beta

L2360 Bkg = 4 cpm, alpha ; 140 cpm, beta
DL = 2.6 cpm, alpha; 20 cpm, beta

LEGEND:
= mrem/hr (γ) whole body
#E = mrem/hr (β+η+γ) extremity on contact
K = factor of 1000
— · — · — · · = radiological boundary

(#) - mrem/hr neutron
(#) - swipe number
[#] - air sample number
(#/α) or /β - direct contamination measurement in dpm/100cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
L2360/43-89	5755/5723	1/31/2006
L2350/43-68	5854/5861	7/20/2005
	NA	

[redacted]

HP# 7176	Date: 4-5-05
HP#	Date:
HP# 7707	Date: 4-6-05

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Survey No.
05-TF-0144

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm^2)				
Sample #	β/γ	Alpha	Tritium	Comments
1	SEE ATTACHED SHEET			vent duct
2				vent duct
3				vent duct
4				vent duct
5				vent duct
6				vent duct
7				ceiling vent
8				ceiling vent
9				ceiling vent
10				ceiling vent
11				ceiling vent
12				ceiling vent
		N	A	

Removable Contamination				
Swipes (dpm/100cm^2)				
Sample #	β/γ	Alpha	Tritium	Comments
		N	A	

COMMENTS: None

NOTES:

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

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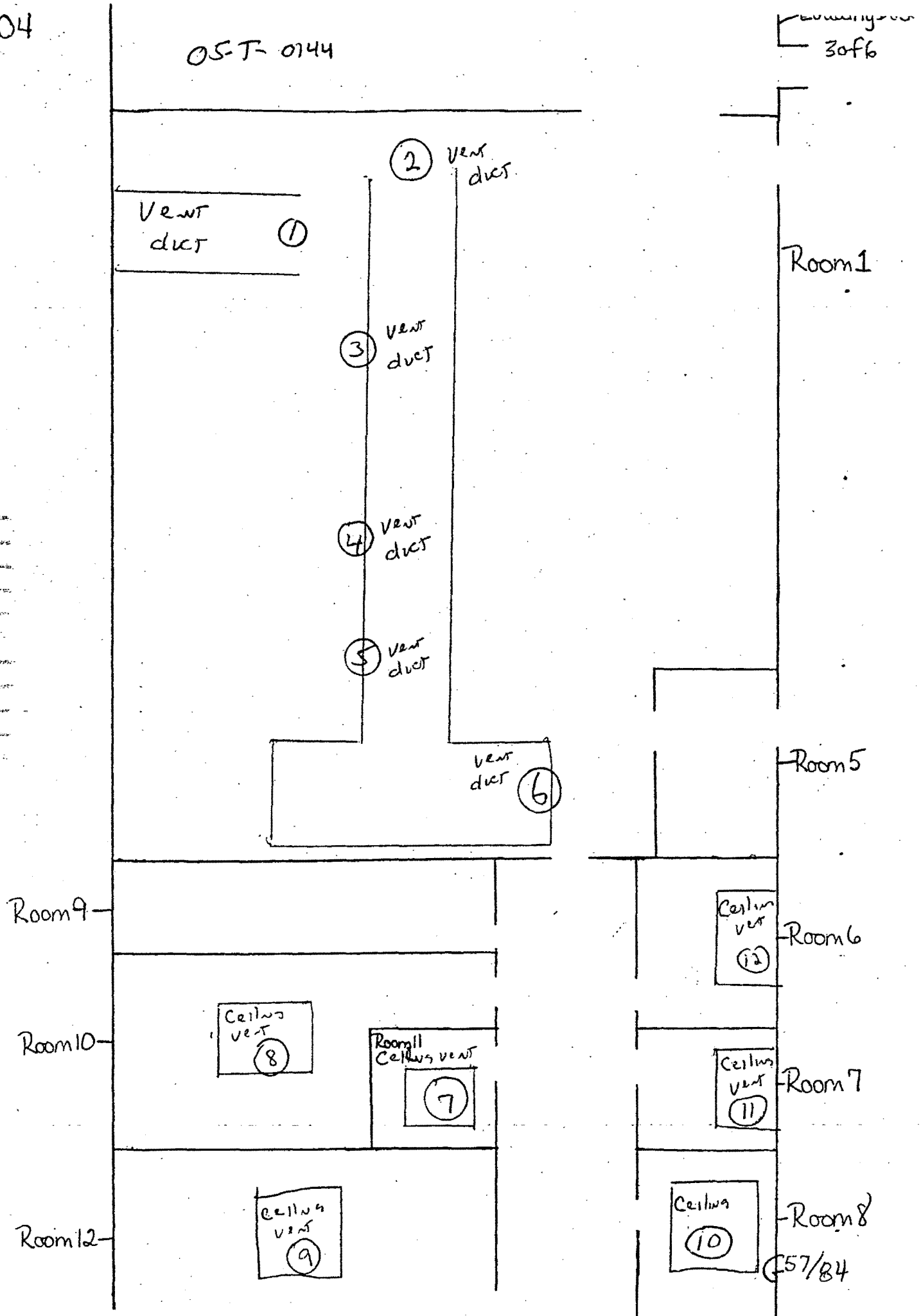
g. 104


OS-J-0144
3 of 6
Vent duct
1
2
vent duct
3
vent duct
4
vent duct
5
vent duct
vent duct
6
Room 1
Room 5
Room 9
Room 6
Ceiling vent
12
Room 10
Ceiling vent
8
Room 11
Ceiling vent
7
Room 7
Ceiling vent
11
Room 12
Ceiling vent
9
Ceiling
10
Room 8
57/84

Bldg. 104 Pre-Demo Survey (ducts)

RSDS# 05 -TF-0144 RCT: _____ RCT: MO

Alpha	43-68 BKG:	2.4	EFF:	0.21	PROBE AREA:	126	cm^2	Surface Eff:		0.5	Detector #: 1
Beta	43-68 BKG:	95.4	EFF:	0.167	PROBE AREA:	126	cm^2	Surface Eff:		0.5	Detector #: 2
Alpha Scan	43-37 BKG:	0	EFF:	0.226	PROBE AREA:	584	cm^2	Surface Eff:		0.5	Detector #: 3
Beta Scan	43-37 BKG:	0	EFF:	0.17	PROBE AREA:	584	cm^2	Surface Eff:		0.5	Detector #: 4
TYPE	LOCATION	2350#	RCT ID	PROBE	DET #		DATE	TIME	CNTS	CT TIME	dpm/100cm2
ALPHA	104 D-1	5854	7836	5861	1	1	3/29/05	9:03	8	120	12
ALPHA	104 D-2	5854	7836	5861	1	2	3/29/05	9:07	7	120	8
ALPHA	104 D-3	5854	7836	5861	1	3	3/29/05	9:13	4	120	0
ALPHA	104 D-4	5854	7836	5861	1	4	3/29/05	9:18	5	120	1
ALPHA	104 D-5	5854	7836	5861	1	5	3/29/05	9:26	8	120	12
ALPHA	104 D-6	5854	7836	5861	1	6	3/29/05	9:32	4	120	0
ALPHA	104 D-7	5854	7836	5861	1	7	3/29/05	9:41	7	120	8
ALPHA	**104 D-8**	**5854**	**7836**	**5861**	**1**	**8**	**3/29/05**	**9:47**	**137**	**120**	**500 ***
ALPHA	**104 D-9**	**5854**	**7836**	**5861**	**1**	**9**	**3/29/05**	**10:10**	**93**	**120**	**333 ***
ALPHA	104 D-10	5854	7836	5861	1	10	3/29/05	10:15	19	120	54
ALPHA	104 D-11	5854	7836	5861	1	11	3/29/05	10:20	21	120	61
ALPHA	104 D-12	5854	7836	5861	1	12	3/29/05	10:25	15	120	39
BETA	104 D-1	5854	7836	5861	2	1	3/29/05	9:04	120	60	234
BETA	104 D-2	5854	7836	5861	2	2	3/29/05	9:09	108	60	120
BETA	104 D-3	5854	7836	5861	2	3	3/29/05	9:14	116	60	196
BETA	104 D-4	5854	7836	5861	2	4	3/29/05	9:19	128	60	310
BETA	104 D-5	5854	7836	5861	2	5	3/29/05	9:27	124	60	272
BETA	104 D-6	5854	7836	5861	2	6	3/29/05	9:33	120	60	234
BETA	104 D-7	5854	7836	5861	2	7	3/29/05	9:42	130	60	329
BETA	104 D-8	5854	7836	5861	2	8	3/29/05	9:51	255	60	1517 *
BETA	104 D-9	5854	7836	5861	2	9	3/29/05	10:11	288	60	1831 *
BETA	104 D-10	5854	7836	5861	2	10	3/29/05	10:16	129	60	319
BETA	104 D-11	5854	7836	5861	2	11	3/29/05	10:21	134	60	367
BETA	104 D-12	5854	7836	5861	2	12	3/29/05	10:26	120	60	234

* See page 1 for follow-up readings

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Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Aqua
Data file name: SMEAR080
Batch Ended: 3/29/05 16:42

Crosstalk correction performed.

Recalibration Date: 11/03/05
Serial Number: 26966-1

Batch ID: 05-TF-0144 OEFFNER (12) AG

Detector ID	Sample ID	Alpha Activity			Beta Activity		
		DPM	σ	flags	DPM	σ	flags
A1	1	0.00	2.21		2.23	2.56	
A2	2	0.00	2.21		0.54	1.81	
A3	3	0.00	2.16		0.00	1.27	
A4	4	1.40	2.06		0.99	2.16	
B1	5	0.00	1.99		2.09	2.54	
B2	6	0.00	2.07		0.00	2.08	
B3	7	0.00	1.92		0.00	1.32	
B4	8	0.00	1.92		1.56	2.30	
C1	9	0.00	2.36		0.00	2.38	
C2	10	0.95	2.15		0.00	1.44	
C3	11	1.75	2.11		0.05	2.31	
C4	12	0.00	2.06		0.00	1.85	
		NAO			NAO		

~~Page 1 of 1~~ NAO
3/30/05

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Time: 2.00
Data Mode: DPM Nuclide: SMGLS02 Quench Set: SMGLS02
Background Subtract: 1st Vial

	LL	UL	LCR	2S%	BKG
Region A:	0.5	- 18.6	0	0.0	6.57
Region B:	2.0	- 18.6	0	0.0	6.46
Region C:	40.0	- 2000	0	0.0	9.60

Quench Indicator: tSIE/AEC
Ext Std Terminator: Count
~~05-TF-0138 WORLEY (15) 03/24/05 TAS~~ 05-TF-0144 OEFFNER(12) AM
Luminescence Correction On
Coincidence Time(ns): 18
Delay Before Burst(ns): Normal
Protocol Data Filename: c:\data\PROT4.DAT
Count Data Filename: c:\data\SDATA4.DAT
Spectrum Data Drive & Path: c:\data

S#	TIME	CPMA	CPMB	LUM	FLAG	tSIE	DPM1	2Sigma	CPMC
-1	10.00	6.57	6.46	2	B	604.30		0.00	9.60
0	2.00	650.15	606.75	0		598.11	1249.83	117.84	3.40
1	2.00	0.00	0.00	8		435.62	0.00	0.00	0.00
2	2.00	1.93	0.54	6		488.15	4.10	9.41	1.90
3	2.00	0.00	0.00	0		474.89	0.00	0.00	1.40
4	2.00	4.43	3.65	0		420.25	10.39	11.66	0.00
5	2.00	0.00	0.00	22		489.79	0.00	0.00	0.00
6	2.00	0.00	0.00	13		474.89	0.00	0.00	0.00
7	2.00	1.43	1.29	0		589.49	2.77	8.36	0.00
8	2.00	0.51	0.13	0		465.05	1.13	8.99	2.40
9	2.00	0.00	0.00	9		422.47	0.00	0.00	0.00
10	2.00	0.00	0.00	0		578.69	0.00	0.00	0.00
11	2.00	2.70	1.66	5		535.64	5.48	9.34	0.40
12	2.00	1.14	1.25	0		561.66	2.26	8.42	0.00

AO

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RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG/AREA/ROOM) Bldg 104	SURVEY NO. 05-TF-0145
PURPOSE: Characterization pre-demo survey of crawl spaces in Bldg 104	RWP NO. N/A
	DATE: 3-29-05
	TIME: 1330

MAP / DRAWING

See attached sheets

LEGEND:
= mrem/hr (γ) whole body
#E = mrem/hr (β+η+γ) extremity on contact
K = factor of 1000
— · — · — = radiological boundary
△# = mrem/hr neutron
= air sample number
(#) = swipe number
(#/α) or /β = direct contamination measurement in dpm/100 cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
2350	5855/5864	6-9-05
2360	5691/5811	8-4-05

[redacted]

HP# 7244 7836	Date: 3/30/0
HP#	Date:
HP# 7707	Date: 3-29-

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Survey No.
05-TF-0145

RADIOLOGICAL SURVEY DATA SHEET

Removable Contamination				
Swipes (dpm/100cm²)				
Sample #	β/γ	Alpha	Tritium	Comments
1	See Attached			Crawlspace
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				

NFE

Removable Contamination				
Swipes (dpm/100cm²)				
Sample #	β/γ	Alpha	Tritium	Comments

NFE

COMMENTS: Smear field check with 2360 prior to sealing entry hole
NFE=No Further Entries

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

ML-9620A (4-98)

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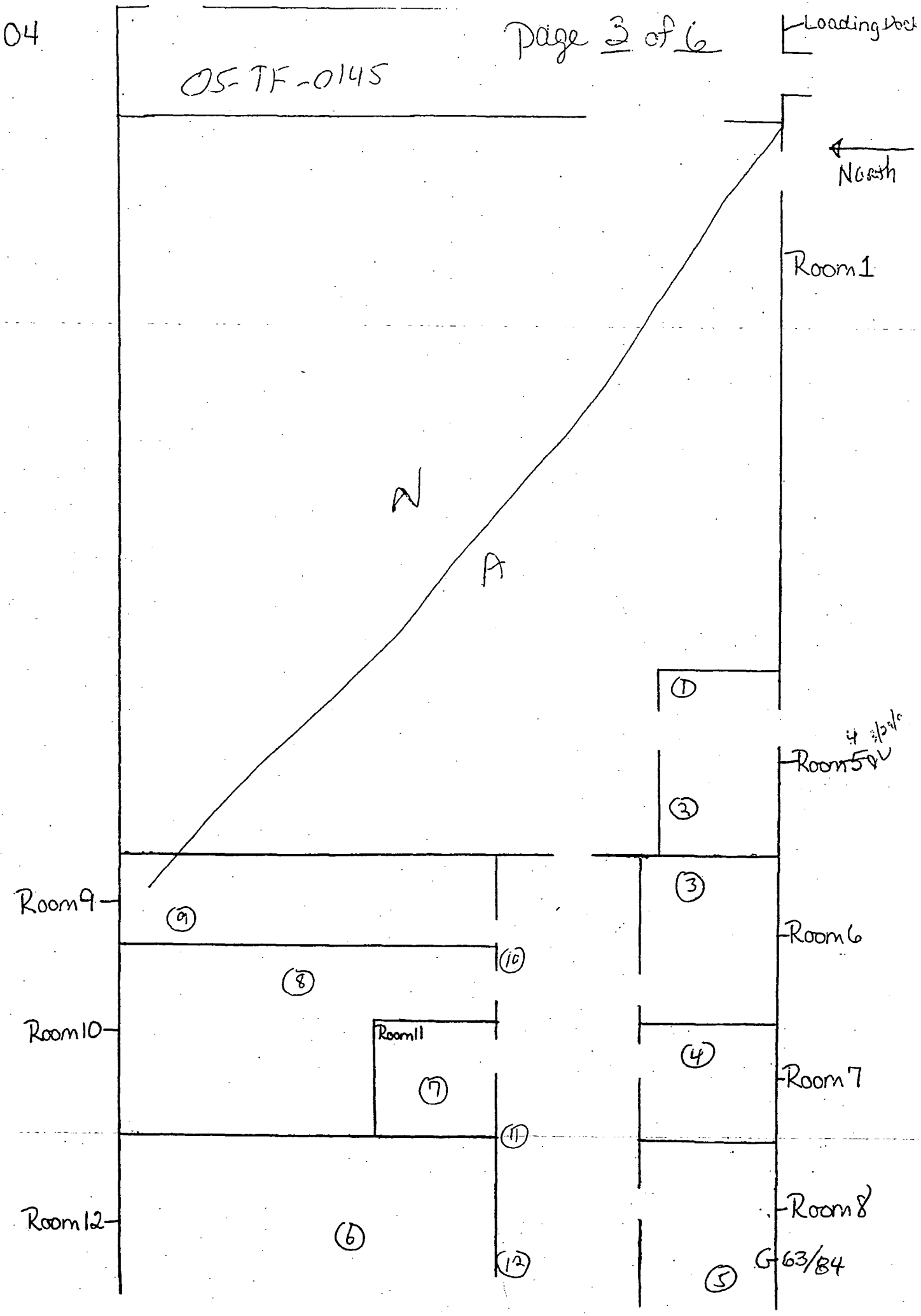
Fig. 104

05-TF-0145



Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Aqua
Data file name: SMEAR081
Batch Ended: 3/29/05 16:47

Crosstalk correction performed.

Recalibration Date: 11/03/05
Serial Number: 26966-1

Batch ID: 05-TF-0145 OFFFNER (12) AG

Detector ID	Sample ID	Alpha Activity DPM	Alpha Activity σ	Alpha Activity flags	Beta Activity DPM	Beta Activity σ	Beta Activity flags
A1	1	0.00	2.19		0.96	2.23	
A2	2	0.00	2.20		0.00	1.31	
A3	3	0.00	2.18		0.48	1.76	
A4	4	0.00	2.05		1.15	2.16	
B1	5	0.00	1.97		0.97	2.28	
B2	6	0.00	2.05		0.00	1.72	
B3	7	0.00	1.96		1.32	2.50	
B4	8	0.00	1.89		0.00	1.65	
C1	9	0.00	2.37		0.50	2.73	
C2	10	0.00	2.20		0.97	2.72	
C3	11	0.00	2.11		0.22	2.31	
C4	12	1.51	2.11		3.59	3.13	

JC JC

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RG 3/30/05

AP

Mar 2005 18:35 ALPHA/BETA - 1.09 ~~Page #1~~
tocol #: 2 PW H3 # 410462 User : 2138

ıe: 2.00
a Mode: DPM Nuclide: SMGLS02 Quench Set: SMGLS02
kground Subtract: 1st Vial

	LL	UL	LCR	2S%	BKG
;ion A:	0.5	- 18.6	0	0.0	8.73
;ion B:	2.0	- 18.6	0	0.0	8.25
;ion C:	40.0	- 2000	0	0.0	10.58

ınch Indicator: tSIE/AEC
Ext Std Terminator: Count
-TF-0145 OEFFNER (12) AG
ıinescence Correction On
ıncidence Time(ns): 18
lay Before Burst(ns): Normal
ɔtocol Data Filename: C:\DATA\PROT2.DAT
ınt Data Filename: C:\DATA\SDATA2.DAT
ɜctrum Data Drive & Path: C:\DATA

ɜ#	TIME	CPMA	CPMB	LUM	FLAG	tSIE	DPM1	2Sigma	CPMC
-1	10.00	8.73	8.25	1	B	617.34		0.00	10.58
0	2.00	560.06	511.20	0		621.05	1028.23	83.24	0.42
1	2.00	1.77	0.96	5		529.46	3.52	9.82	2.04
2	2.00	1.77	0.09	0		540.44	3.48	9.73	0.00
3	2.00	1.23	0.92	0		606.31	2.28	8.99	0.42
4	2.00	0.00	0.00	8		521.07	0.00	0.00	0.00
5	2.00	0.00	0.00	0		532.93	0.00	0.00	0.00
6	2.00	0.00	0.00	0		569.88	0.00	0.00	0.00
7	2.00	1.89	1.98	0		556.52	3.67	9.64	0.00
8	2.00	6.27	3.43	0		592.31	11.79	10.90	0.00
9	2.00	3.09	0.00	0		508.80	6.25	10.53	0.00
10	2.00	0.00	0.00	0		558.23	0.00	0.00	0.92
11	2.00	3.27	0.00	0		630.15	5.96	9.56	0.00
12	2.00	0.00	0.00	0		659.37	0.00	0.00	0.00

JC

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Bldg. 104 Pre-Demo Survey (overhead)

RSDS# 05-TF-0145 RCT: [illegible] RCT: [illegible]

Alpha	43-68 BKG:	0.4	EFF:	0.206	PROBE AREA:	126	cm^2	Surface Eff:		0.5	Detector # : 1
Beta	43-68 BKG:	194	EFF:	0.154	PROBE AREA:	126	cm^2	Surface Eff:		0.5	Detector # : 2
Alpha Scan	43-37 BKG:	0	EFF:	0.22	PROBE AREA:	584	cm^2	Surface Eff:		0.5	Detector # : 3
Beta Scan	43-37 BKG:	0	EFF:	0.153	PROBE AREA:	584	cm^2	Surface Eff:		0.5	Detector # : 4
TYPE	LOCATION	2350#	RCT ID	PROBE	DET #		DATE	TIME	CNTS	CT TIME	dpm/100cm2
ALPHA	OH 1	5855	7244	5864	1	1	3/29/05	12:49	3	120	8
ALPHA	OH 2	5855	7244	5864	1	2	3/29/05	12:53	7	120	24
ALPHA	OH 3	5855	7244	5864	1	3	3/29/05	12:58	8	120	28
ALPHA	OH 4	5855	7244	5864	1	4	3/29/05	13:02	9	120	32
ALPHA	OH 5	5855	7244	5864	1	5	3/29/05	13:07	5	120	16
ALPHA	OH 6	5855	7244	5864	1	6	3/29/05	13:12	6	120	20
ALPHA	OH 7	5855	7244	5864	1	7	3/29/05	13:16	11	120	39
ALPHA	OH 8	5855	7244	5864	1	8	3/29/05	13:20	11	120	39
ALPHA	OH 9	5855	7244	5864	1	9	3/29/05	13:25	7	120	24
ALPHA	OH 10	5855	7244	5864	1	10	3/29/05	13:29	2	120	5
ALPHA	OH 11	5855	7244	5864	1	11	3/29/05	13:33	4	120	12
ALPHA	OH 12	5855	7244	5864	1	12	3/29/05	13:38	5	120	16
BETA	OH 1	5855	7244	5864	2	1	3/29/05	12:50	344	60	1546
BETA	OH 2	5855	7244	5864	2	2	3/29/05	12:55	307	60	1165
BETA	OH 3	5855	7244	5864	2	3	3/29/05	12:59	321	60	1309
BETA	OH 4	5855	7244	5864	2	4	3/29/05	13:03	335	60	1453
BETA	OH 5	5855	7244	5864	2	5	3/29/05	13:08	346	60	1567
BETA	OH 6	5855	7244	5864	2	6	3/29/05	13:13	316	60	1257
BETA	OH 7	5855	7244	5864	2	7	3/29/05	13:17	335	60	1453
BETA	OH 8	5855	7244	5864	2	8	3/29/05	13:21	317	60	1268
BETA	OH 9	5855	7244	5864	2	9	3/29/05	13:26	343	60	1536
BETA	OH 10	5855	7244	5864	2	10	3/29/05	13:30	330	60	1402
BETA	OH 11	5855	7244	5864	2	11	3/29/05	13:34	356	60	1670
BETA	OH 12	5855	7244	5864	2	12	3/29/05	13:39	345	60	1556

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RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM) Bldg 104	SURVEY NO. 05-TF-0149
PURPOSE: Pre-Demo Survey: QC & Survey Units 1,2,3	RWP NO. N/A
	DATE: 3-30-05
	TIME: 0900

MAP / DRAWING

* See attached for Locations and results

LEGEND:

- # = mrem/hr (γ) whole body
- #E = mrem/hr (β+η+γ) extremity on contact
- K = factor of 1000
- — · — · — · · = radiological boundary
- # - mrem/hr neutron
- # - air sample number
- # - swipe number
- #/α or /β - direct contamination measurement in dpm/100cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
Ludl 2350	5855/5864	6-9-05
Ludl 2360/4289	5755/5723	1-31-06
	A	
	N	

HP# 3836 [redacted]	Date: 4-4-05
HP#	Date:
HP# 7707 [redacted]	Date: 4-4-05

ML-9620 (2-98)

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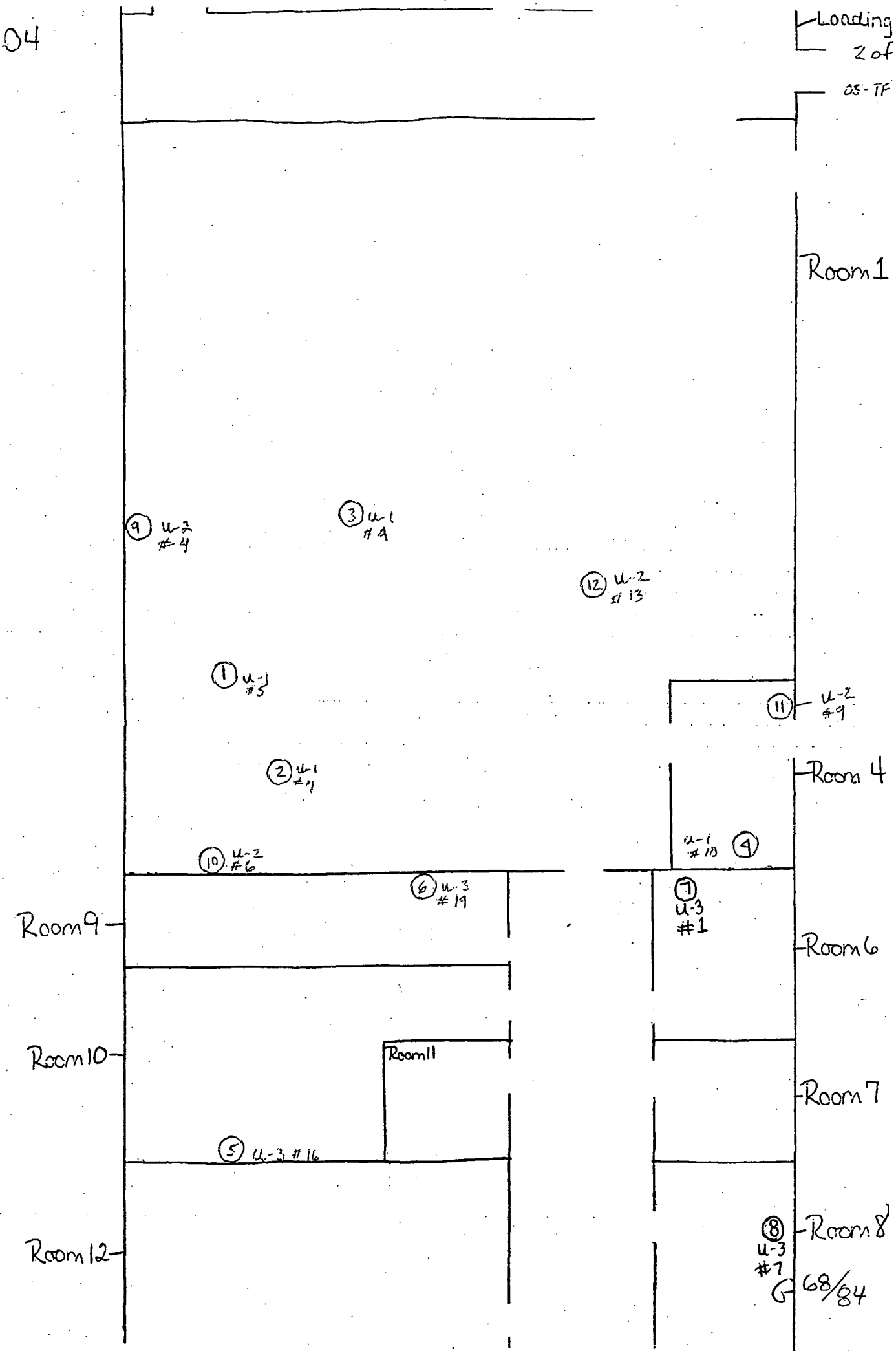
Bldg. 104


Loading
2 of
05-TF
Room 1
9 U-2 #4
3 U-1 #4
12 U-2 #13
1 U-1 #5
11 U-2 #9
2 U-1 #7
Room 4
10 U-2 #6
U-1 #10 4
6 U-3 #19
7 U-3 #1
Room 9
Room 6
Room 10
Room 11
Room 7
5 U-3 #16
Room 12
8 U-3 #7
Room 8
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Bldg. 104 Pre-Demo Q.C. Survey (units 1, 2 &3)

RSDS# 05-TF-0149 **RCT:** _____ **RCT:** MO

Alpha	43-68 BKG:	0.6	EFF:	0.206	PROBE AREA:	126	cm^2	Surface Eff:		0.5	Detector #: 1
Beta	43-68 BKG:	199	EFF:	0.154	PROBE AREA:	126	cm^2	Surface Eff:		0.5	Detector #: 2
Alpha Scan	43-37 BKG:	0	EFF:	0.22	PROBE AREA:	584	cm^2	Surface Eff:		0.5	Detector #: 3
Beta Scan	43-37 BKG:	0	EFF:	0.153	PROBE AREA:	584	cm^2	Surface Eff:		0.5	Detector #: 4
TYPE	LOCATION	2350#	RCT ID	PROBE	DET #		DATE	TIME	CNTS	CT TIME	dpm/100cm2
ALPHA	**QC-U1 5**	5855	7836	5864	1	1	3/30/05	8:26	7	120	22
ALPHA	**QC-U1 7**	5855	7836	5864	1	2	3/30/05	8:29	2	120	3
ALPHA	QC-U1 4	5855	7836	5864	1	3	3/30/05	8:33	4	120	11
ALPHA	QC-U1 10	5855	7836	5864	1	4	3/30/05	8:37	5	120	15
ALPHA	**QC-U3 16**	5855	7836	5864	1	5	3/30/05	8:48	5	120	15
ALPHA	**QC-U3 19**	5855	7836	5864	1	6	3/30/05	8:52	4	120	11
ALPHA	QC-U3 1	5855	7836	5864	1	7	3/30/05	8:56	6	120	18
ALPHA	QC-U3 7	5855	7836	5864	1	8	3/30/05	9:00	5	120	15
ALPHA	**QC-U2 4**	5855	7836	5864	1	9	3/30/05	14:28	2	120	3
ALPHA	**QC-U2 6**	5855	7836	5864	1	10	3/30/05	14:32	5	120	15
ALPHA	QC-U2 9	5855	7836	5864	1	11	3/30/05	14:36	4	120	11
ALPHA	QC-U2 13	5855	7836	5864	1	12	3/30/05	14:44	4	120	11
BETA	QC-U1 5	5855	7836	5864	2	1	3/30/05	8:27	265	60	680
BETA	QC-U1 7	5855	7836	5864	2	2	3/30/05	8:30	277	60	804
BETA	QC-U1 4	5855	7836	5864	2	3	3/30/05	8:34	274	60	773
BETA	QC-U1 10	5855	7836	5864	2	4	3/30/05	8:38	185	60	0
BETA	QC-U3 16	5855	7836	5864	2	5	3/30/05	8:49	390	60	1969
BETA	QC-U3 19	5855	7836	5864	2	6	3/30/05	8:54	193	60	0
BETA	QC-U3 1	5855	7836	5864	2	7	3/30/05	8:57	204	60	52
BETA	QC-U3 7	5855	7836	5864	2	8	3/30/05	9:01	139	60	0
BETA	QC-U2 4	5855	7836	5864	2	9	3/30/05	14:29	136	60	0
BETA	QC-U2 6	5855	7836	5864	2	10	3/30/05	14:33	174	60	0
BETA	QC-U2 9	5855	7836	5864	2	11	3/30/05	14:37	127	60	0
BETA	QC-U2 13	5855	7836	5864	2	12	3/30/05	14:45	176	60	0
	Bold print items indicate previous highest alpha										
	counts										

G 69/84

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM) Bldg 104 Room 1	SURVEY NO. 05-TF-0150
PURPOSE: Pre-Demo survey of Horizontal Surfaces	RWP NO. N/A
	DATE: 3-30-05
	TIME: 1500

MAP / DRAWING

* See attached for locations and results.

LEGEND:

- # = mrem/hr (γ) whole body
- #E = mrem/hr (β+η+γ) extremity on contact
- K = factor of 1000
- — · — · — · · = radiological boundary
- # - mrem/hr neutron
- # - air sample number
- # - swipe number
- #/α or /β - direct contamination measurement in dpm/100cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
Lud 2350	5855/5864	6-9-05
Lud 2360/4359	5755/5723	1-31-06
	4	
	N	

[redacted]

HP# 9826 9544	Date: 4-4-05
HP#	Date:
HP# 7707	Date: 4-5-05

ML-9620 (2-98)

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Survey No. 05-TF-0150

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm²)				
Sample #	β/γ	Alpha	Tritium	Comments
1	See	Attached		beam
2				top of office
3				duct
4				duct
5				light
6				light
		N		A

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

COMMENTS: All smears field counted prior to count room submittal; all < 1K dpm/100cm² α, β⁻

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

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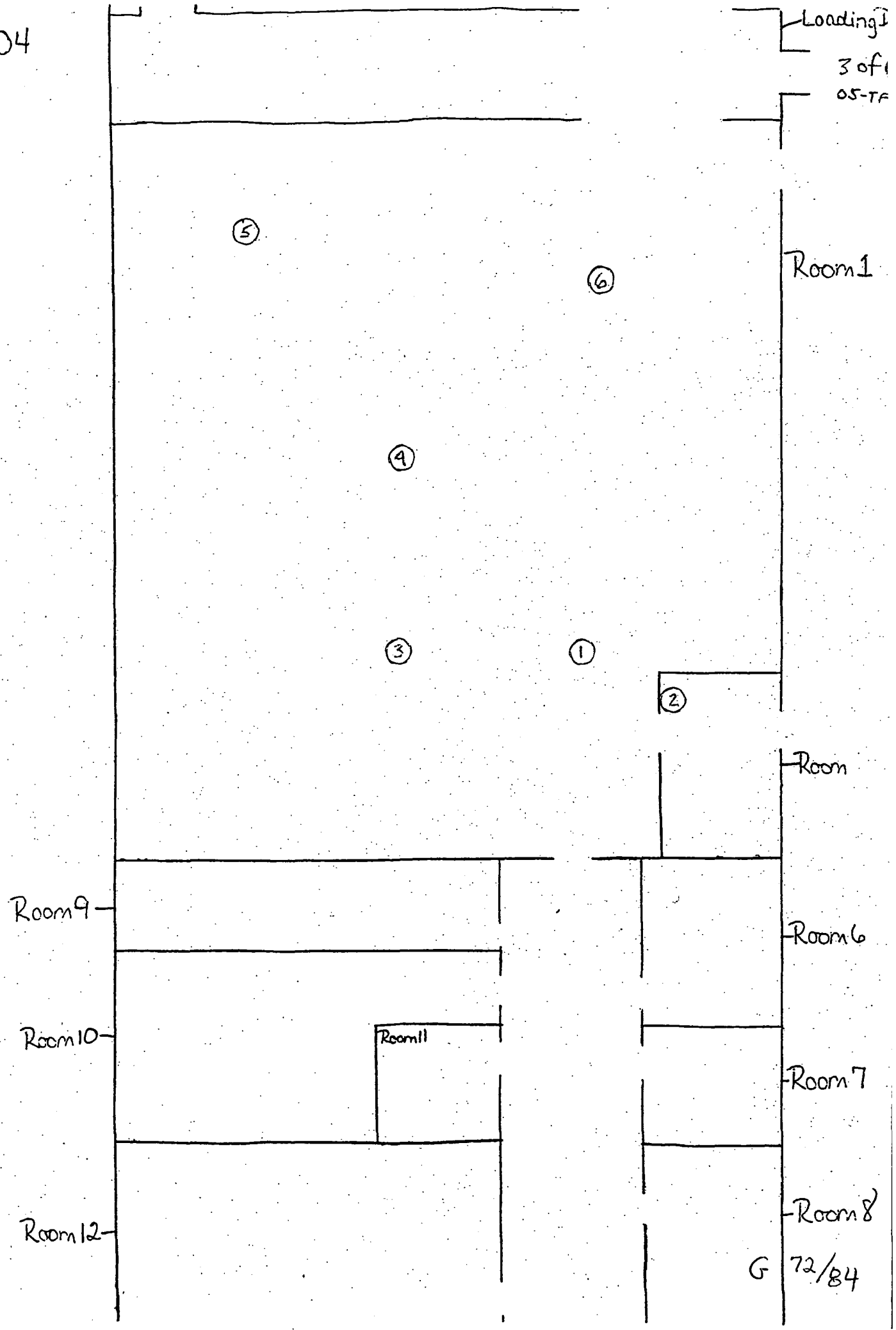
Bldg. 104


Loading
3 of
05-TF
5
6
Room 1
4
3
1
2
Room
Room 9
Room 6
Room 10
Room 11
Room 7
Room 8
Room 12
G 72/84

Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Green
Data file name: SMEAR036
Batch Ended: 3/31/05 9:09
Cal. Due Date: 11/17/05
Serial Number: 26966-3

Batch ID: 05-TF-0150 WORLEY [6] GWD

Detector ID	Sample ID	Alpha Activity			Beta Activity		
		DPM	σ	flags	DPM	σ	flags
A1	1	0.00	2.22		0.99	2.27	
A2	2	0.00	2.00		0.00	1.18	
A3	3	0.00	2.30		1.98	2.18	
A4	4	0.00	2.10		0.00	1.22	
B1	5	0.00	1.92		1.73	2.07	
B2	6	0.00	1.92		2.13	2.24	

~~Page 1 of 1~~ 4/4/05

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4 of 6

Time: 2.00
Data Mode: DPM Nuclide: SMGL02 Quench Set: SMGL02
Background Subtract: 1st Vial

	LL	UL	LCR	2S%	BKG
Region A:	0.5 -	18.6	0	0.0	9.77
Region B:	2.0 -	18.6	0	0.0	9.09
Region C:	40.0 -	2000	0	0.0	9.73

Quench Indicator: tSIE/AEC
Ext Std Terminator: Count
05-TF-0150 WORLEY [6] GWD
Luminescence Correction On
Coincidence Time(ns): 18
Delay Before Burst(ns): Normal
Spectrum Data Drive & Path: C:\DATA

S#	TIME	CPMA	CPMB	LUM	FLAG	tSIE	DPM1	2Sigma	CPMC
-1	10.00	9.77	9.09	12	B	599.40		0.00	9.73
0	2.00	596.26	561.73	1		601.22	1099.37	104.09	2.27
1	2.00	0.00	0.00	24		534.76	0.00	0.00	3.77
2	2.00	0.00	0.00	29		433.16	0.00	0.00	0.00
3	2.00	0.00	0.00	37		460.99	0.00	0.00	0.00
4	2.00	0.00	0.00	24		478.38	0.00	0.00	0.00
5	2.00	1.57	0.74	16		450.30	3.37	11.99	3.70
6	2.00	0.00	0.00	13		551.72	0.00	0.00	1.77

MO

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Bldg. 104 Pre-Demo Survey of Horizontal Surfaces

RSDS# 05-TF-0150 **RCT:** MO **RCT:** JMC

Alpha	43-68 BKG:	0.6	EFF:	0.206	PROBE AREA:	126	cm^2	Surface Eff:	0.5	Detector #:	1
Beta	43-68 BKG:	199	EFF:	0.154	PROBE AREA:	126	cm^2	Surface Eff:	0.5	Detector #:	2
Alpha Scan	43-37 BKG:	0	EFF:	0.22	PROBE AREA:	584	cm^2	Surface Eff:	0.5	Detector #:	3
Beta Scan	43-37 BKG:	0	EFF:	0.153	PROBE AREA:	584	cm^2	Surface Eff:	0.5	Detector #:	4

TYPE	LOCATION	2350#	RCT ID	PROBE	DET #		DATE	TIME	CNTS	CT TIME	dpm/100cm2
ALPHA	H-S 1	5855	7836	5864	1	1	3/30/05	14:48	2	120	3
ALPHA	H-S 2	5855	7836	5864	1	2	3/30/05	14:53	5	120	15
ALPHA	H-S 3	5855	7836	5864	1	3	3/30/05	14:57	2	120	3
ALPHA	H-S 4	5855	7836	5864	1	4	3/30/05	15:01	1	120	0
ALPHA	H-S 5	5855	7836	5864	1	5	3/30/05	15:07	3	120	7
ALPHA	H-S 6	5855	7836	5864	1	6	3/30/05	15:14	4	120	11
BETA	H-S 1	5855	7836	5864	2	1	3/30/05	14:49	181	60	0
BETA	H-S 2	5855	7836	5864	2	2	3/30/05	14:54	212	60	134
BETA	H-S 3	5855	7836	5864	2	3	3/30/05	14:58	192	60	0
BETA	H-S 4	5855	7836	5864	2	4	3/30/05	15:02	174	60	0
BETA	H-S 5	5855	7836	5864	2	5	3/30/05	15:08	181	60	0
BETA	H-S 6	5855	7836	5864	2	6	3/30/05	15:15	189	60	0

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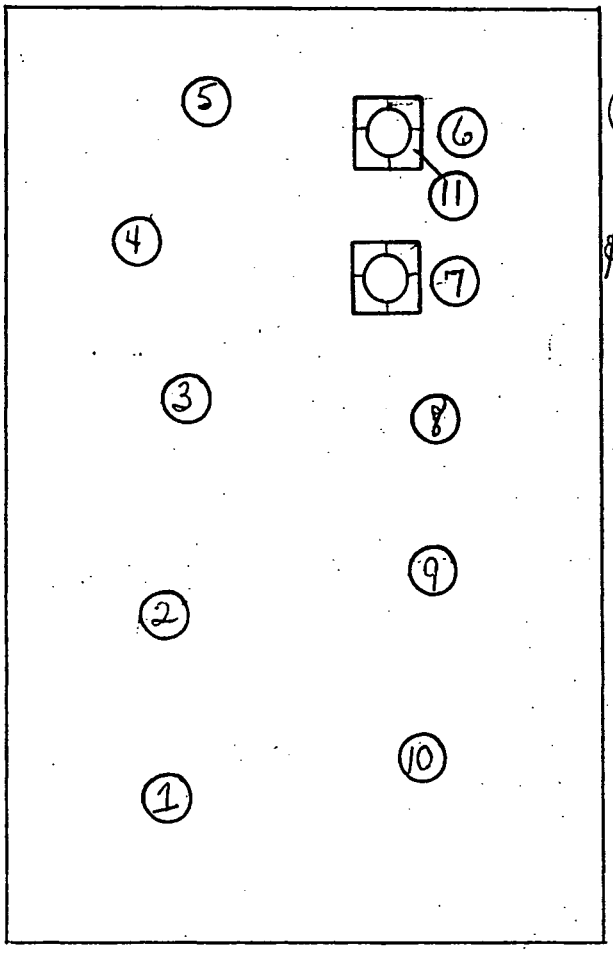
RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG./AREA/ROOM) Bldg 104 / Roof	SURVEY NO. 05-TF-0153
PURPOSE: Pre-demo Survey	RWP NO. N/A
	DATE: 3/31/05
	TIME: 1400

MAP / DRAWING



Scan & pause survey taken at each smear location (including 1 sq. meter surrounding location) See attached for smear & integrated results

Bkgd 4 cpm α
112 cpm β⁻
D.L. 2.6 dpm α
20 dpm β⁻

LEGEND:

- # = mrem/hr (γ) whole body
- #E = mrem/hr (β+η+γ) extremity on contact
- K = factor of 1000
- —·—·—·· = radiological boundary
- # - mrem/hr neutron
- # - air sample number
- # - swipe number
- #/α or /β - direct contamination measurement in dpm/100cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date	HP#	Date:
2360-89	5691/5811	8-4-05	7244	4/6/05
			HP#	Date:
	N A		ed	
			HP# 7707	Date: 4-6-05

[redacted]

ML-9620 (2-98)

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Survey No. 05-TF-0153

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Removable Contamination				
Swipes (dpm/100cm²)				
Sample #	β/γ	Alpha	Tritium	Comments
1	See Attached			roof
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				

Removable Contamination				
Swipes (dpm/100cm²)				
Sample #	β/γ	Alpha	Tritium	Comments

COMMENTS:

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

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Smear Analysis

Unit Type: LB4100/W
Counting Unit ID: Aqua
Data file name: SMEAR100
Batch Ended: 4/1/05 8:45

Crosstalk correction performed.

Recalibration Date: 11/03/05
Serial Number: 26966-1

Batch ID: 05-TF-0153 J.C. AG

Detector ID	Sample ID	Alpha Activity DPM	Alpha Activity σ	Alpha Activity flags	Beta Activity DPM	Beta Activity σ	Beta Activity flags
A1	1	0.00	2.21		2.23	2.56	
A2	2	1.74	2.20		0.00	1.30	
A3	3	0.00	2.18		0.48	1.76	
A4	4	0.00	2.10		4.83	3.03	
B1	5	0.00	2.01		3.20	2.77	
B2	6	0.00	2.13		3.45	2.91	
B3	7	1.51	1.98		2.37	2.78	
B4	8	0.00	1.94		3.82	2.80	
C1	9	0.00	2.34		0.00	1.97	
C2	10	0.00	2.16		0.00	1.96	
C3	11	0.00	2.18		6.73	3.72	

JC. JC

RSDS 05-TF-0153
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JC 4/4/05 ~~Page 1 of 1~~
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park Page 4 of 7

02 Apr 2005 09:10 ALPHA/BETA - 1.08 ~~Page #1~~
Protocol #: 4 PW H3 403727 User : 2138

JC 4/4/05

Time: 2.00
Data Mode: DPM Nuclide: SMGLS02 Quench Set: SMGLS02
Background Subtract: 1st Vial

	LL	UL	LCR	2S%	BKG
Region A:	0.5	- 18.6	0	0.0	7.50
Region B:	2.0	- 18.6	0	0.0	7.37
Region C:	40.0	- 2000	0	0.0	13.10

Quench Indicator: tSIE/AEC
~~Ext Std Terminator~~: Count
05-TF-0153 J.C. (11) AG
~~Luminescence~~ Correction On
Coincidence Time(ns): 18
Delay Before Burst(ns): Normal
Protocol Data Filename: C:\DATA\PROT4.dat
Count Data Filename: C:\DATA\SDATA4.DAT

S#	TIME	CPMA	CPMB	CPMC	tSIE	LUM	FLAG	DPM1	2SIGMA
-1	10.00	7.50	7.37	13.10	629.89	6	B		0.00
0	2.00	583.44	562.97	0.00	622.91	0		1203.97	113.27
1	2.00	3.35	3.16	0.00	600.33	23		7.05	12.07
2	2.00	6.04	4.95	0.00	581.85	4		12.92	11.79
3	2.00	3.41	2.81	0.00	574.12	5		7.34	10.77
4	2.00	0.00	0.00	0.00	608.22	8		0.00	0.00
5	2.00	6.46	6.80	0.90	606.72	13		13.51	12.43
6	2.00	2.07	2.20	3.90	581.52	5		4.44	10.10
7	2.00	2.50	2.37	0.00	590.11	5		5.30	10.22
8	2.00	0.00	0.00	0.00	582.08	0		0.00	0.00
9	2.00	4.89	4.18	0.00	602.48	15		10.26	11.89
10	2.00	0.00	0.00	0.00	576.87	13		0.00	0.00
11	2.00	4.00	4.04	6.40	494.65	0		9.30	11.92

JC

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Bldg. 104 Pre-Demo Survey (roof)

RSDS#: 05-TF-0153 RCT: JMC RCT: N/A

43-89 ALPHA BKG:	4	Factor	8	PROBE AREA:	100	cm2	Surface Eff:	1	ALPHA
43-89 BETA BKG:	112	Factor	4	PROBE AREA	100	cm2	Surface Eff:	1	BETA

LOCATION	2360#	RCT ID	PROBE	RAD TYPE	ITEM #	10:00	TIME	CNTS	CT TIME (sec)	dpm/100cm2
Roof	5691	7244	5811	ALPHA	1	3/31/05	10:00	31	120	92
Roof	5691	7244	5811	ALPHA	2	3/31/05	10:00	26	120	72
Roof	5691	7244	5811	ALPHA	3	3/31/05	10:00	25	120	68
Roof	5691	7244	5811	ALPHA	4	3/31/05	10:00	22	120	56
Roof	5691	7244	5811	ALPHA	5	3/31/05	10:00	26	120	72
Roof	**5691**	**7244**	**5811**	**ALPHA**	**6**	**3/31/05**	**10:00**	**84**	**120**	**304**
Roof	**5691**	**7244**	**5811**	**ALPHA**	**7**	**3/31/05**	**10:00**	**58**	**120**	**200**
Roof	**5691**	**7244**	**5811**	**ALPHA**	**8**	**3/31/05**	**10:00**	**33**	**120**	**100**
Roof	5691	7244	5811	ALPHA	9	3/31/05	10:00	25	120	68
Roof	5691	7244	5811	ALPHA	10	3/31/05	10:00	32	120	96
Roof	**5691**	**7244**	**5811**	**ALPHA**	**11**	**3/31/05**	**10:00**	**195**	**120**	**748**
Roof	5691	7244	5811	BETA	1	3/31/05	10:00	290	120	132
Roof	5691	7244	5811	BETA	2	3/31/05	10:00	314	120	180
Roof	5691	7244	5811	BETA	3	3/31/05	10:00	285	120	122
Roof	5691	7244	5811	BETA	4	3/31/05	10:00	322	120	196
Roof	5691	7244	5811	BETA	5	3/31/05	10:00	296	120	144
Roof	5691	7244	5811	BETA	6	3/31/05	10:00	424	120	400
Roof	5691	7244	5811	BETA	7	3/31/05	10:00	335	120	222
Roof	5691	7244	5811	BETA	8	3/31/05	10:00	295	120	142
Roof	5691	7244	5811	BETA	9	3/31/05	10:00	299	120	150
Roof	5691	7244	5811	BETA	10	3/31/05	10:00	311	120	174
Roof	5691	7244	5811	BETA	11	3/31/05	10:00	521	120	0

NOTE: Coupon Removed at location #11 and Submitted GeL isotopic analysis. See Page 6 and 7.

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Laboratory ID#: 0502100
Project/function: BOSS
Submitted: Apr 4, 2005
Submitted by: B. Coblentz
Point of Contact: B. Coblentz 608-8206
RSDS#: N/A
Date: Apr 6, 2005

Lab ID	0502100		
Sample Location	104 Acid Etch		
Isotope	dpm/Sample	Uncertainty +/-	LDL
Pu-238	2.51	0.65	0.42
Pu-239/240	<LDL	<LDL	1.11
Th-227	<LDL	<LDL	0.82
Th-228	<LDL	<LDL	1.02
Th-230	<LDL	<LDL	0.82
Th-232	<LDL	<LDL	0.31
U-233/234	<LDL	<LDL	0.53
U-235	<LDL	<LDL	2.00
U-238	0.59	0.34	0.53
Po-210	204.14	31.95	14.27

[redacted] 1585 4-6-05
Analyst HP # Date

[redacted] 7783 4.6.5
Da HP # Date

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Building 104 Roof Acid Etch Data Analysis

Group 3 (5000 dpm)		Group 2 (1000 dpm)		Group 1 (100 dpm)	
Po-210	204.14			Pu-238	2.51
U-238	0.59				
Total:	204.73	Total:	0	Total:	2.51
Fraction of Total Sample:	0.9878884	Fraction of Total Sample:	0	Fraction of Total Sample:	0.012112

Maximum Gross Alpha Measurement:	748 dpm/100cm2
Group 1 Contribution:	9 dpm/100cm2
Group 2 Contribution:	0 dpm/100cm2
Group 3 Contribution:	739 dpm/100cm2

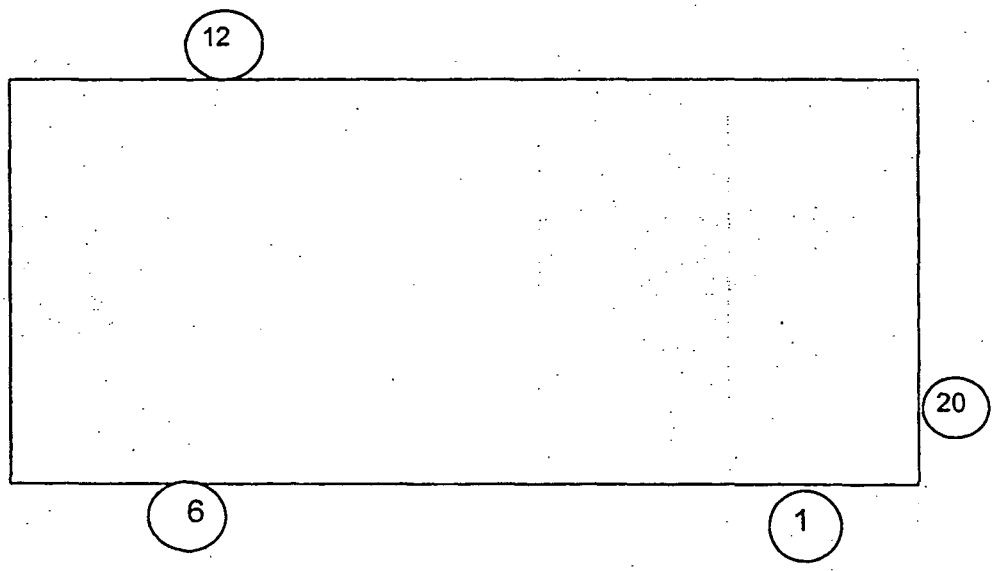
$$\frac{9}{100} + \frac{0}{1000} + \frac{739}{5000} = 0.2384$$

The sum of the ratios of 0.2384 is < 1.0, therefore acceptable for release

RADIOLOGICAL SURVEY DATA SHEET

LOCATION: (BLDG/AREA/ROOM)	SURVEY NO.
Bldg. 104	05-TF-0154
PURPOSE:	RWP NO.
	N/A
Pre- Demo survey: QC checks of exterior walls	DATE:
	4/4/05
	TIME:
	16:00

MAP / DRAWING



* above numbers indicate locations from previous survey # 05-TF-0106

LEGEND:

- # = mrem/hr (γ) whole body
- #E = mrem/hr (β+η+γ) extremity on contact
- K = factor of 1000
- —·—·—·· = radiological boundary

- # - mrem/hr neutron
- # - swipe number
- # - air sample number
- #/α or /β - direct contamination measurement in dpm/100cm²

INSTRUMENTS USED

Instrument	Serial Number	Cal. Due Date
Lud 2360/4389	5774/5809	10/28/05
	NA	

[redacted] 7836 4/4/05

[redacted]

HP# Date:

HP# 7707 Date: 4-6-05

[redacted]

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G- 83/84

Survey No.
05-TF-154

RADIOLOGICAL SURVEY DATA SHEET (cont.)

Ludlum 2360 Integrated Measurement Results							
		Alpha			Beta		
		BKGD	2	cpm	BKGD	128	cpm
		DL	1.8	Net cpm	DL	20	Net cpm
No.	Item/Location Description	Gross (cpm)	CF	Results (dpm/100cm2 or Sample)	Gross (cpm)	CF	Results (dpm/100cm2 or Sample)
1	Exterior wall	5	8	24	110	4	<DL
6	Exterior wall	3	8	8	161	4	132
12	Exterior wall	4	8	16	220	4	368
20	Exterior wall	6	8	32	114	4	<DL

A

N

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ML-9620C

Appendix H

Radon Information

Radon level is not applicable for open air demolitions.

Appendix I

Asbestos Information

From: Christopher Ahlquist
To: Kramer, Donald
Date: 3/3/05 2:13PM
Subject: Building 104

Don -

For Building 104 asbestos and lead paint concerns, the following is provided for your use:

Asbestos

No previous asbestos survey reports for Building 104 were available for review. Mr. Chris Ahlquist, an Industrial Hygienist with CH2M Hill Mound, performed a walk-through survey of the accessible areas of the building during November of 2004 in order to identify any existing asbestos-containing materials and collect additional samples of suspect materials for verification of asbestos content in accordance with the EPA's NESHAP regulation for buildings prior to demolition. Mr. Ahlquist is an Ohio Department of Health Certified Asbestos Hazard Evaluation Specialist as required by State regulations for individuals assessing asbestos-containing materials. Concerning Building 104, no materials were found to be asbestos-containing.

Lead

No previous lead surveys or sampling data were found for Building 104. Mr. Chris Ahlquist, an Industrial Hygienist with CH2M Hill Mound, performed a walk-through survey of the accessible areas of the referenced buildings during November of 2004 in order to identify any existing or potential lead paint hazards. No existing lead-based paint hazards areas were seen during the survey. Untested paint should be assumed to contain lead until such time that testing proves otherwise.

Since the building is scheduled for imminent demolition, painted surfaces will be tested for lead content as planned work indicates the need for such testing in order to avoid worker exposure to lead. This restriction will be incorporated into work plans for which disturbance of paint is a possibility.

These determinations were made by Mr. Christopher Ahlquist who is an Ohio Department of Health Licensed Lead Risk Assessor.

Let me know if I can be of further assistance,

Chris Ahlquist

Date: March 3, 2005

From: Christopher Ahlquist
BOSS Safety & Health

To: Don Kramer
BOSS Project Engineering

Re: Building 104: Asbestos-Containing Materials

During November of 2004, Mr. Christopher Ahlquist, an Industrial Hygienist with CH2M Hill Mound, Inc. (CH2M), completed a survey of Building 104 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. No previous survey reports and sampling data for Building 104 were available. Consequently, Mr. Ahlquist performed a room-by-room inspection of all accessible spaces and collected samples of suspect materials for analysis in order to identify any asbestos-containing materials that might be present. Following sampling and analysis of suspect materials, no materials were found to contain any asbestos content.

Sample Method

During CH2M'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 collected samples were submitted to Data Chem 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 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.

Data Chem Laboratories is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP). 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

No asbestos-containing materials were found to be within or on Building 104.

Please call with any questions or concerns.

Respectfully,

Christopher Ahlquist
Industrial Hygienist

Appendix J

Lead Information

From: Christopher Ahlquist
To: Kramer, Donald
Date: 3/3/05 2:13PM
Subject: Building 104

Don -

For Building 104 asbestos and lead paint concerns, the following is provided for your use:

Asbestos

No previous asbestos survey reports for Building 104 were available for review. Mr. Chris Ahlquist, an Industrial Hygienist with CH2M Hill Mound, performed a walk-through survey of the accessible areas of the building during November of 2004 in order to identify any existing asbestos-containing materials and collect additional samples of suspect materials for verification of asbestos content in accordance with the EPA's NESHAP regulation for buildings prior to demolition. Mr. Ahlquist is an Ohio Department of Health Certified Asbestos Hazard Evaluation Specialist as required by State regulations for individuals assessing asbestos-containing materials. Concerning Building 104, no materials were found to be asbestos-containing.

Lead

No previous lead surveys or sampling data were found for Building 104. Mr. Chris Ahlquist, an Industrial Hygienist with CH2M Hill Mound, performed a walk-through survey of the accessible areas of the referenced buildings during November of 2004 in order to identify any existing or potential lead paint hazards. No existing lead-based paint hazards areas were seen during the survey. Untested paint should be assumed to contain lead until such time that testing proves otherwise.

Since the building is scheduled for imminent demolition, painted surfaces will be tested for lead content as planned work indicates the need for such testing in order to avoid worker exposure to lead. This restriction will be incorporated into work plans for which disturbance of paint is a possibility.

These determinations were made by Mr. Christopher Ahlquist who is an Ohio Department of Health Licensed Lead Risk Assessor.

Let me know if I can be of further assistance,

Chris Ahlquist

Appendix K

Chemical Information

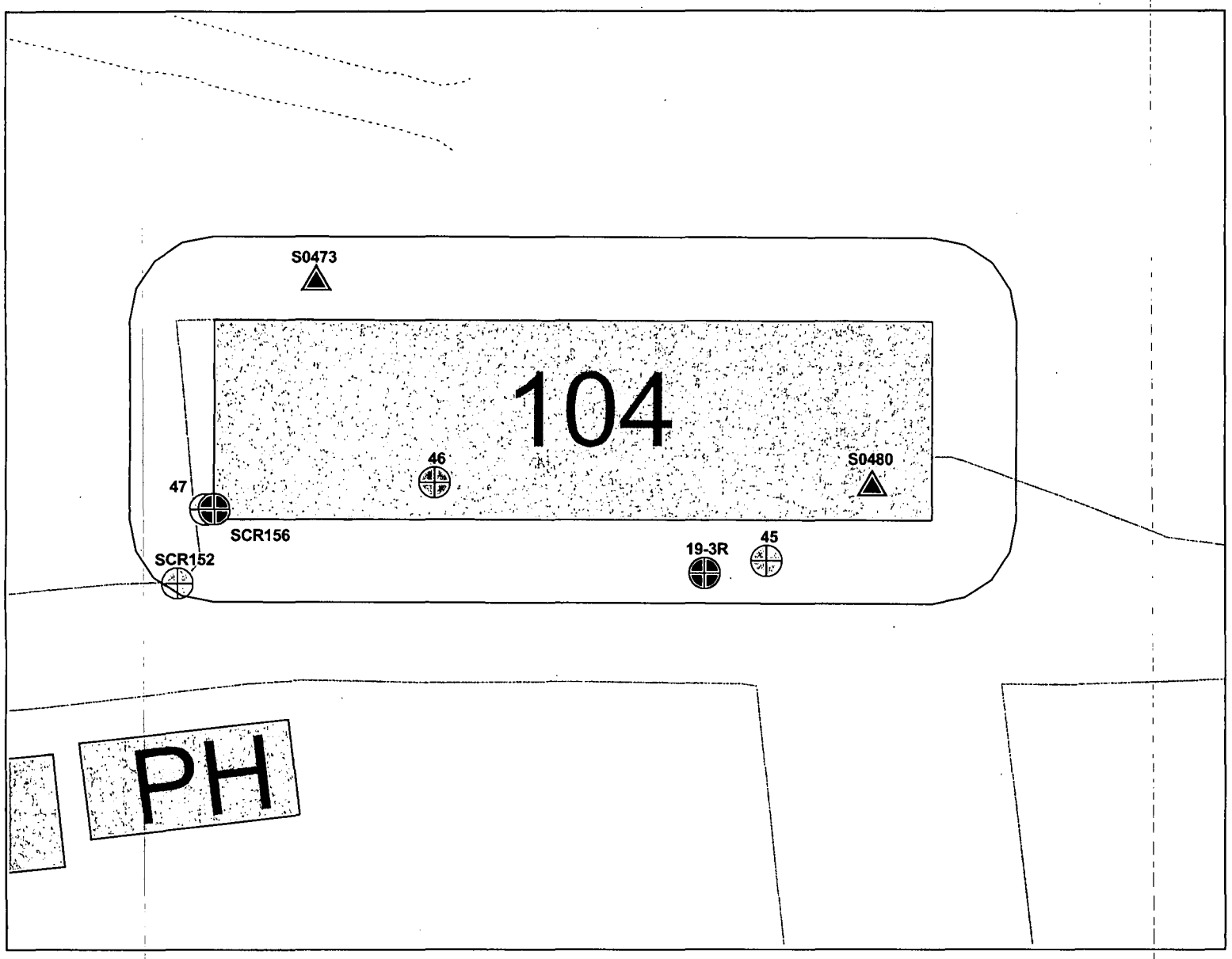
Chemicals and Products Previously Used or Stored in Building 104

2-cycle Engine Oil
acetylene
Aluminum Tap Magic Cutting Fluid
Bar & Chain Lubricant
Battery Protector 7011
Bio Hy-Gard Hydraulic/Transmission Oil
Bio Hy-Gard Transmission Oil
Coolant Conditioner Liquid # TY16004
dichlorodifluoromethane
Diesel Fuel Supplement
ethylene glycol Antifreeze Cool-Gard Heavy Duty
ethylene glycol Heavy Duty Antifreeze
Foam Insulating Sealant
Gasoline Unleaded
Grease-B-Gone
Gumout Small Engine Gas Treatment
Gunk Liquid Fire Quick Starting Fluid
HD Motor Oil 10W-30
High Strength Adhesive 90
Industrial Equipment Yellow Spray Paint
Industrial PCL Penetrant
Int/Ext Spray Paint
Lube SAE 80W-90 Gear
Lubricant Whitmore's Wire Rope
Masterflow 648 CP Grout Aggregate
Masterflow 648 CP Grout Liquid
Masterflow 648 CP Plus Hardener
Molytex RL-W Grease
oxygen
propane
Supreme Motor Oil SAE 15W-40
WD-40
Windshield Spray De-Icer 5216
Windshield Washer Solvent

Appendix L

Soil Sampling, Vicinity

Historic Sample Locations within 15 feet of Building 104



25 0 25 50 75 100 Feet

Sample Detect
Boring
Surface Sample
Sample Nondetect
Boring
Surface Sample

N
W E
S

MOUND
Environmental Restoration Geographic Information System

12/01/04

e:\cad_proj\bldg_104\esri\bd104_15ft_120104.apr

Lot 23

Building 104 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
19-3R	180012	19931001	Alpha-BHC	2.2000	UG/KG		ORPPB	10.00	12.00		J	AREA14/19	Soil	0
19-3R	180020	19931001	Alpha-BHC	2.0000	UG/KG		ORPPB	20.00	22.00		J	AREA14/19	Soil	0
19-3R	180020	19931001	Aluminum	6460.0000	MG/KG		INORG	20.00	22.00			AREA14/19	Soil	0
19-3R	180012	19931001	Aluminum	5240.0000	MG/KG		INORG	10.00	12.00			AREA14/19	Soil	0
19-3R	180020	19931001	Arsenic	4.1000	MG/KG		INORG	20.00	22.00		J	AREA14/19	Soil	1
19-3R	180012	19931001	Arsenic	3.8000	MG/KG		INORG	10.00	12.00		J	AREA14/19	Soil	1
19-3R	180020	19931001	Barium	47.9000	MG/KG		INORG	20.00	22.00		J	AREA14/19	Soil	0
19-3R	180012	19931001	Barium	40.5000	MG/KG		INORG	10.00	12.00		J	AREA14/19	Soil	0
19-3R	180012	19931001	Benzene	1.0000	UG/KG		ORVOA	10.00	12.00		J	AREA14/19	Soil	0
19-3R	180020	19931001	Beryllium	0.4800	MG/KG		INORG	20.00	22.00		J	AREA14/19	Soil	0
19-3R	180012	19931001	Beryllium	0.3400	MG/KG		INORG	10.00	12.00		J	AREA14/19	Soil	0
19-3R	180012	19931001	Calcium	123000.0000	MG/KG		INORG	10.00	12.00			AREA14/19	Soil	0
19-3R	180020	19931001	Calcium	100000.0000	MG/KG		INORG	20.00	22.00			AREA14/19	Soil	0
19-3R	180020	19931001	Carbon Disulfide	3.0000	UG/KG		ORVOA	20.00	22.00		J	AREA14/19	Soil	0
S0473	5877	19840701	Cesium-137	1.2000	PCI/G	0.5000	RAD	0.00	0.00			RSS	Soil	1122233
19-3R	180012	19931001	Chloride	0.0330	MG/KG		ANION	10.00	12.00			AREA14/19	Soil	See note
19-3R	180020	19931001	Chloride	0.0110	MG/KG		ANION	20.00	22.00			AREA14/19	Soil	See note
19-3R	180020	19931001	Chromium	10.9000	MG/KG		INORG	20.00	22.00		J	AREA14/19	Soil	0
19-3R	180012	19931001	Chromium	9.0000	MG/KG		INORG	10.00	12.00		J	AREA14/19	Soil	0
19-3R	180020	19931001	Cobalt	5.2000	MG/KG		INORG	20.00	22.00		J	AREA14/19	Soil	0
19-3R	180012	19931001	Cobalt	4.1000	MG/KG		INORG	10.00	12.00		J	AREA14/19	Soil	0
19-3R	180020	19931001	Copper	14.1000	MG/KG		INORG	20.00	22.00			AREA14/19	Soil	0
19-3R	180012	19931001	Copper	13.7000	MG/KG		INORG	10.00	12.00			AREA14/19	Soil	0
19-3R	180020	19931001	Cyanide	0.5200	MG/KG		INORG	20.00	22.00		J	AREA14/19	Soil	0
19-3R	180012	19931001	Cyanide	0.5000	MG/KG		INORG	10.00	12.00		J	AREA14/19	Soil	0
19-3R	180012	19931001	Dichloromethane (Methylene Chloride)	21.0000	UG/KG		ORVOA	10.00	12.00		J	AREA14/19	Soil	0
19-3R	180020	19931001	Dichloromethane (Methylene Chloride)	13.0000	UG/KG		ORVOA	20.00	22.00		J	AREA14/19	Soil	0
19-3R	180020	19931001	Di-n-butyl Phthalate	510.0000	UG/KG		ORSVO	20.00	22.00		J	AREA14/19	Soil	0
19-3R	180012	19931001	Di-n-butyl Phthalate	210.0000	UG/KG		ORSVO	10.00	12.00		J	AREA14/19	Soil	0
19-3R	180012	19931001	Ethylbenzene	3.0000	UG/KG		ORVOA	10.00	12.00		J	AREA14/19	Soil	0

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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
19-3R	180020	19931001	Iron	11700.0000	MG/KG		INORG	20.00	22.00			AREA14/19	Soil	0
19-3R	180012	19931001	Iron	9050.0000	MG/KG		INORG	10.00	12.00			AREA14/19	Soil	0
19-3R	180020	19931001	Lead	5.1000	MG/KG		INORG	20.00	22.00			AREA14/19	Soil	0
19-3R	180012	19931001	Lead	4.2000	MG/KG		INORG	10.00	12.00			AREA14/19	Soil	0
19-3R	180020	19931001	Lithium	13.9000	MG/KG		INORG	20.00	22.00		J	AREA14/19	Soil	0
19-3R	180012	19931001	Lithium	9.1000	MG/KG		INORG	10.00	12.00		J	AREA14/19	Soil	0
19-3R	180012	19931001	Magnesium	46000.0000	MG/KG		INORG	10.00	12.00			AREA14/19	Soil	2
19-3R	180020	19931001	Magnesium	42400.0000	MG/KG		INORG	20.00	22.00			AREA14/19	Soil	2
19-3R	180012	19931001	Manganese	304.0000	MG/KG		INORG	10.00	12.00		J	AREA14/19	Soil	0
19-3R	180020	19931001	Manganese	260.0000	MG/KG		INORG	20.00	22.00		J	AREA14/19	Soil	0
19-3R	180020	19931001	Nickel	12.7000	MG/KG		INORG	20.00	22.00			AREA14/19	Soil	0
19-3R	180012	19931001	Nickel	10.2000	MG/KG		INORG	10.00	12.00			AREA14/19	Soil	0
47	470	19860804	Plutonium-238	36.0000	PCI/G	20.0000	RAD	0.00	0.00			WTSVS	Soil	12
S0473	5877	19840701	Plutonium-238	1.8300	PCI/G	0.0100	RAD	0.00	0.00			RSS	Soil	2
S0480	6697	19840801	Plutonium-238	0.0500	PCI/G	0.0100	RAD	0.00	0.00			RSS	Soil	0
19-3R	180020	19931001	Potassium	1990.0000	MG/KG		INORG	20.00	22.00		J	AREA14/19	Soil	2
19-3R	180012	19931001	Potassium	1410.0000	MG/KG		INORG	10.00	12.00		J	AREA14/19	Soil	0
S0473	5877	19840701	Radium-226	0.9000	PCI/G		RAD	0.00	0.00			RSS	Soil	11
19-3R	180012	19931001	Sodium	672.0000	MG/KG		INORG	10.00	12.00		J	AREA14/19	Soil	2
19-3R	180020	19931001	Sodium	202.0000	MG/KG		INORG	20.00	22.00		J	AREA14/19	Soil	0
19-3R	180012	19931001	Styrene	0.7000	UG/KG		ORVOA	10.00	12.00		J	AREA14/19	Soil	0
19-3R	180012	19931001	Sulfate	0.0350	MG/KG		ANION	10.00	12.00			AREA14/19	Soil	See note
19-3R	180020	19931001	Sulfate	0.0030	MG/KG		ANION	20.00	22.00			AREA14/19	Soil	See note
19-3R	180012	19931001	Tetrachloroethene	2.0000	UG/KG		ORVOA	10.00	12.00		J	AREA14/19	Soil	0
19-3R	180020	19931001	Thorium-228	1.0500	PCI/G		RAD	20.00	22.00			AREA14/19	Soil	11
S0473	5877	19840701	Thorium-228	1.0000	PCI/G		RAD	0.00	0.00			RSS	Soil	11
19-3R	180012	19931001	Thorium-228	0.3900	PCI/G		RAD	10.00	12.00			AREA14/19	Soil	11
19-3R	180020	19931001	Thorium-230	1.0000	PCI/G		RAD	20.00	22.00			AREA14/19	Soil	1
19-3R	180012	19931001	Thorium-230	0.6900	PCI/G		RAD	10.00	12.00			AREA14/19	Soil	1
47	473	19860804	Thorium-232	3.3000	PCI/G	2.0000	RAD	3.00	4.00			WTSVS	Soil	1222344
47	472	19860804	Thorium-232	2.9000	PCI/G	2.0000	RAD	2.00	3.00			WTSVS	Soil	1222344
19-3R	180020	19931001	Thorium-232	0.5100	PCI/G		RAD	20.00	22.00			AREA14/19	Soil	1
19-3R	180012	19931001	Thorium-232	0.3700	PCI/G		RAD	10.00	12.00			AREA14/19	Soil	1
19-3R	180012	19931001	Toluene	3.0000	UG/KG		ORVOA	10.00	12.00		J	AREA14/19	Soil	0

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
19-3R	180020	19931001	Toluene	2.0000	UG/KG		ORVOA	20.00	22.00		J	AREA14/19	Soil	0
19-3R	180020	19931001	Trichloromethane	1.0000	UG/KG		ORVOA	20.00	22.00		J	AREA14/19	Soil	0
19-3R	180020	19931001	Uranium-234	0.7200	PCI/G		RAD	20.00	22.00		J	AREA14/19	Soil	0
19-3R	180012	19931001	Uranium-234	0.4900	PCI/G		RAD	10.00	12.00			AREA14/19	Soil	0
19-3R	180012	19931001	Uranium-238	0.8200	PCI/G		RAD	10.00	12.00			AREA14/19	Soil	1
19-3R	180020	19931001	Uranium-238	0.6900	PCi/G		RAD	20.00	22.00			AREA14/19	Soil	1
19-3R	180020	19931001	Vanadium	12.8000	MG/KG		INORG	20.00	22.00		J	AREA14/19	Soil	0
19-3R	180012	19931001	Vanadium	10.5000	MG/KG		INORG	10.00	12.00		J	AREA14/19	Soil	0
19-3R	180020	19931001	Xylenes, Total	1.0000	UG/KG		ORVOA	20.00	22.00		J	AREA14/19	Soil	0
19-3R	180012	19931001	Xylenes, Total	1.0000	UG/KG		ORVOA	10.00	12.00		J	AREA14/19	Soil	0
19-3R	180020	19931001	Zinc	29.6000	MG/KG		INORG	20.00	22.00		J	AREA14/19	Soil	0
19-3R	180012	19931001	Zinc	20.5000	MG/KG		INORG	10.00	12.00		J	AREA14/19	Soil	0

(Blank) No criteria checked
0 Value is less than criteria checked in file "Final RBGVs Constr Worker-Site Employee_Rev8.xls"
1 Value is greater than 10-6 Risk-Based Guideline Value
2 Value is greater than the OU9 Soil Background Value
3 Value is greater than the Screening Value (10-6 RBGV + background or as agreed)
4 Value is greater than the Cleanup Objective (10-5 RBGV + background or as agreed)
5 Value is greater than the MCL
6 Value is greater than the Guide Value based on the Hazard Index = 1
7 Value is greater than the Hot Spot Criteria (3x10-5 + background or as agreed)
8 Value is greater than the Guide Value based on the Hazard Index = 1 + background
9 Value is greater than the Guide Value based on the Hazard Index = .1 + background

Lab and data qualifiers are defined on pages 17 and 18 of this appendix.
Duplicate entries in the Comment column indicate values for RAD daughters and long lived decay.
Comparison values for results with comments are provided on the "Comparison for Soil Analytical Results" table at the end of this appendix.
Common nutrients (such as calcium, iron, magnesium, potassium, and sodium) are not considered in MCP risk assessments and therefore are not evaluated further herein.
Note: Common anions such as nitrate, nitrite, sulfate, sulfide, phosphate, chloride, flouride, iodide, nitrogen, and bromide are not considered in MCP risk assessments and therefore not evaluated further herein.

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Building 104 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
19-3R	180020	19931001	1,1,1-Trichloroethane	11.0000	UG/KG	11.0000	ORVOA	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	1,1,1-Trichloroethane	10.0000	UG/KG	10.0000	ORVOA	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	1,1,2,2-Tetrachloroethane	11.0000	UG/KG	11.0000	ORVOA	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	1,1,2,2-Tetrachloroethane	10.0000	UG/KG	10.0000	ORVOA	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	1,1,2-Trichloroethane	11.0000	UG/KG	11.0000	ORVOA	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	1,1,2-Trichloroethane	10.0000	UG/KG	10.0000	ORVOA	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	1,1-Dichloroethane	11.0000	UG/KG	11.0000	ORVOA	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	1,1-Dichloroethane	10.0000	UG/KG	10.0000	ORVOA	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	1,1-Dichloroethene	11.0000	UG/KG	11.0000	ORVOA	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	1,1-Dichloroethene	10.0000	UG/KG	10.0000	ORVOA	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	1,2,4-Trichlorobenzene	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	1,2,4-Trichlorobenzene	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	1,2-Dichlorobenzene	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	1,2-Dichlorobenzene	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	1,2-Dichloroethane	11.0000	UG/KG	11.0000	ORVOA	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	1,2-Dichloroethane	10.0000	UG/KG	10.0000	ORVOA	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	1,2-Dichloroethene	11.0000	UG/KG	11.0000	ORVOA	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	1,2-Dichloroethene	10.0000	UG/KG	10.0000	ORVOA	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	1,2-Dichloropropane	11.0000	UG/KG	11.0000	ORVOA	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	1,2-Dichloropropane	10.0000	UG/KG	10.0000	ORVOA	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	1,3-cis-Dichloropropene	11.0000	UG/KG	11.0000	ORVOA	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	1,3-cis-Dichloropropene	10.0000	UG/KG	10.0000	ORVOA	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	1,3-Dichlorobenzene	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	1,3-Dichlorobenzene	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	1,3-trans-Dichloropropene	11.0000	UG/KG	11.0000	ORVOA	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	1,3-trans-Dichloropropene	10.0000	UG/KG	10.0000	ORVOA	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	1,4-Dichlorobenzene	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	1,4-Dichlorobenzene	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	1-chloro-4-phenoxybenzene	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	1-chloro-4-phenoxybenzene	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	2,2'-oxybis(1-chloropropane)	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil

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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
19-3R	180012	19931001	2,2'-oxybis(1-chloropropane)	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	2,4,5-Trichlorophenol	920.0000	UG/KG	920.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	2,4,5-Trichlorophenol	910.0000	UG/KG	910.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	2,4,6-Trichlorophenol	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	2,4,6-Trichlorophenol	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	2,4-Dichlorophenol	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	2,4-Dichlorophenol	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	2,4-Dimethylphenol	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	2,4-Dimethylphenol	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	2,4-Dinitrophenol	920.0000	UG/KG	920.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	2,4-Dinitrophenol	910.0000	UG/KG	910.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	2,4-Dinitrotoluene	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	2,4-Dinitrotoluene	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	2,6-Dinitrotoluene	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	2,6-Dinitrotoluene	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	2-Butanone	34.0000	UG/KG	34.0000	ORVOA	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	2-Butanone	10.0000	UG/KG	10.0000	ORVOA	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	2-Chloronaphthalene	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	2-Chloronaphthalene	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	2-Chlorophenol	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	2-Chlorophenol	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	2-Hexanone	11.0000	UG/KG	11.0000	ORVOA	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	2-Hexanone	10.0000	UG/KG	10.0000	ORVOA	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	2-Methylnaphthalene	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	2-Methylnaphthalene	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	2-Methylphenol	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	2-Methylphenol	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	2-Nitroaniline	920.0000	UG/KG	920.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	2-Nitroaniline	910.0000	UG/KG	910.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	2-Nitrophenol	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	2-Nitrophenol	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	3,3'-Dichlorobenzidine	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	3,3'-Dichlorobenzidine	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil

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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
19-3R	180020	19931001	3-Nitroaniline	920.0000	UG/KG	920.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	3-Nitroaniline	910.0000	UG/KG	910.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	4,4'-DDD	3.7000	UG/KG	3.7000	ORPPB	20.00	22.00		UJ	AREA14/19	Soil
19-3R	180012	19931001	4,4'-DDD	3.7000	UG/KG	3.7000	ORPPB	10.00	12.00		UJ	AREA14/19	Soil
19-3R	180020	19931001	4,4'-DDE	3.7000	UG/KG	3.7000	ORPPB	20.00	22.00		UJ	AREA14/19	Soil
19-3R	180012	19931001	4,4'-DDE	3.7000	UG/KG	3.7000	ORPPB	10.00	12.00		UJ	AREA14/19	Soil
19-3R	180020	19931001	4,4'-DDT	3.7000	UG/KG	3.7000	ORPPB	20.00	22.00		UJ	AREA14/19	Soil
19-3R	180012	19931001	4,4'-DDT	3.7000	UG/KG	3.7000	ORPPB	10.00	12.00		UJ	AREA14/19	Soil
19-3R	180020	19931001	4,6-Dinitro-o-Cresol	920.0000	UG/KG	920.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	4,6-Dinitro-o-Cresol	910.0000	UG/KG	910.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	4-Bromophenyl-phenyl Ether	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	4-Bromophenyl-phenyl Ether	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	4-Chloro-3-methylphenol	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	4-Chloro-3-methylphenol	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	4-Chloroaniline	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	4-Chloroaniline	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	4-Methyl-2-pentanone	11.0000	UG/KG	11.0000	ORVOA	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	4-Methyl-2-pentanone	10.0000	UG/KG	10.0000	ORVOA	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	4-Methylphenol	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	4-Methylphenol	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	4-Nitroaniline	920.0000	UG/KG	920.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	4-Nitroaniline	910.0000	UG/KG	910.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	4-Nitrophenol	920.0000	UG/KG	920.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	4-Nitrophenol	910.0000	UG/KG	910.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Acenaphthene	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Acenaphthene	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Acenaphthylene	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Acenaphthylene	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Acetone	11.0000	UG/KG	11.0000	ORVOA	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Acetone	10.0000	UG/KG	10.0000	ORVOA	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Aldrin	1.8000	UG/KG	1.8000	ORPPB	20.00	22.00		UJ	AREA14/19	Soil
19-3R	180012	19931001	Aldrin	1.8000	UG/KG	1.8000	ORPPB	10.00	12.00		UJ	AREA14/19	Soil
19-3R	180020	19931001	Alpha Chlordane	1.8000	UG/KG	1.8000	ORPPB	20.00	22.00		UJ	AREA14/19	Soil

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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
19-3R	180012	19931001	Alpha Chlordane	1.8000	UG/KG	1.8000	ORPPB	10.00	12.00		UJ	AREA14/19	Soil
S0473	5877	19840701	Americium-241	0.5000	PCI/G	0.5000	RAD	0.00	0.00	U		RSS	Soil
19-3R	180020	19931001	Americium-241	0.3000	PCI/G	0.3000	RAD	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Americium-241	0.2200	PCI/G	0.2200	RAD	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Ammonia	0.0020	MG/KG	2.0000	GENERA	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Ammonia	0.0020	MG/KG	2.0000	GENERA	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Anthracene	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Anthracene	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Antimony	6.8000	MG/KG	6.8000	INORG	20.00	22.00		UJ	AREA14/19	Soil
19-3R	180012	19931001	Antimony	5.7000	MG/KG	5.7000	INORG	10.00	12.00		UJ	AREA14/19	Soil
19-3R	180020	19931001	Aroclor-1016	37.0000	UG/KG	37.0000	ORPPB	20.00	22.00		UJ	AREA14/19	Soil
19-3R	180012	19931001	Aroclor-1016	37.0000	UG/KG	37.0000	ORPPB	10.00	12.00		UJ	AREA14/19	Soil
19-3R	180020	19931001	Aroclor-1221	73.0000	UG/KG	73.0000	ORPPB	20.00	22.00		UJ	AREA14/19	Soil
19-3R	180012	19931001	Aroclor-1221	73.0000	UG/KG	73.0000	ORPPB	10.00	12.00		UJ	AREA14/19	Soil
19-3R	180020	19931001	Aroclor-1232	37.0000	UG/KG	37.0000	ORPPB	20.00	22.00		UJ	AREA14/19	Soil
19-3R	180012	19931001	Aroclor-1232	37.0000	UG/KG	37.0000	ORPPB	10.00	12.00		UJ	AREA14/19	Soil
19-3R	180020	19931001	Aroclor-1242	37.0000	UG/KG	37.0000	ORPPB	20.00	22.00		UJ	AREA14/19	Soil
19-3R	180012	19931001	Aroclor-1242	37.0000	UG/KG	37.0000	ORPPB	10.00	12.00		UJ	AREA14/19	Soil
19-3R	180020	19931001	Aroclor-1248	37.0000	UG/KG	37.0000	ORPPB	20.00	22.00		UJ	AREA14/19	Soil
19-3R	180012	19931001	Aroclor-1248	37.0000	UG/KG	37.0000	ORPPB	10.00	12.00		UJ	AREA14/19	Soil
19-3R	180020	19931001	Aroclor-1254	37.0000	UG/KG	37.0000	ORPPB	20.00	22.00		UJ	AREA14/19	Soil
19-3R	180012	19931001	Aroclor-1254	37.0000	UG/KG	37.0000	ORPPB	10.00	12.00		UJ	AREA14/19	Soil
19-3R	180020	19931001	Aroclor-1260	37.0000	UG/KG	37.0000	ORPPB	20.00	22.00		UJ	AREA14/19	Soil
19-3R	180012	19931001	Aroclor-1260	37.0000	UG/KG	37.0000	ORPPB	10.00	12.00		UJ	AREA14/19	Soil
19-3R	180020	19931001	Benzene	11.0000	UG/KG	11.0000	ORVOA	20.00	22.00		U	AREA14/19	Soil
19-3R	180020	19931001	Benzo(a)anthracene	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Benzo(a)anthracene	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Benzo(a)pyrene	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Benzo(a)pyrene	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Benzo(b)fluoranthene	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Benzo(b)fluoranthene	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Benzo(g,h,i)perylene	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Benzo(g,h,i)perylene	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil

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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
19-3R	180020	19931001	Benzo(k)fluoranthene	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Benzo(k)fluoranthene	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Beta-BHC	1.8000	UG/KG	1.8000	ORPPB	20.00	22.00		UJ	AREA14/19	Soil
19-3R	180012	19931001	Beta-BHC	1.8000	UG/KG	1.8000	ORPPB	10.00	12.00		UJ	AREA14/19	Soil
19-3R	180020	19931001	Bis(2-chloroethoxy)methane	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Bis(2-chloroethoxy)methane	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Bis(2-chloroethyl)ether	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Bis(2-chloroethyl)ether	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Bis(2-ethylhexyl)phthalate	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Bis(2-ethylhexyl)phthalate	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180012	19931001	Bismuth	0.4300	MG/KG	0.4300	INORG	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Bismuth	0.4100	MG/KG	0.4100	INORG	20.00	22.00		U	AREA14/19	Soil
19-3R	180020	19931001	Bromodichloromethane	11.0000	UG/KG	11.0000	ORVOA	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Bromodichloromethane	10.0000	UG/KG	10.0000	ORVOA	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Bromoform	11.0000	UG/KG	11.0000	ORVOA	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Bromoform	10.0000	UG/KG	10.0000	ORVOA	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Bromomethane	11.0000	UG/KG	11.0000	ORVOA	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Bromomethane	10.0000	UG/KG	10.0000	ORVOA	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Butyl Benzyl Phthalate	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Butyl Benzyl Phthalate	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Cadmium	0.5900	MG/KG	0.5900	INORG	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Cadmium	0.4900	MG/KG	0.4900	INORG	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Carbazole	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Carbazole	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180012	19931001	Carbon Disulfide	10.0000	UG/KG	10.0000	ORVOA	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Carbon Tetrachloride	11.0000	UG/KG	11.0000	ORVOA	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Carbon Tetrachloride	10.0000	UG/KG	10.0000	ORVOA	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Chlorobenzene	11.0000	UG/KG	11.0000	ORVOA	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Chlorobenzene	10.0000	UG/KG	10.0000	ORVOA	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Chloroethane	11.0000	UG/KG	11.0000	ORVOA	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Chloroethane	10.0000	UG/KG	10.0000	ORVOA	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Chloromethane	11.0000	UG/KG	11.0000	ORVOA	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Chloromethane	10.0000	UG/KG	10.0000	ORVOA	10.00	12.00		U	AREA14/19	Soil

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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
19-3R	180020	19931001	Chrysene	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Chrysene	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
S0473	5877	19840701	Cobalt-60	0.5000	PCI/G	0.5000	RAD	0.00	0.00	U		RSS	Soil
19-3R	180020	19931001	Delta-BHC	1.8000	UG/KG	1.8000	ORPPB	20.00	22.00		UJ	AREA14/19	Soil
19-3R	180012	19931001	Delta-BHC	1.8000	UG/KG	1.8000	ORPPB	10.00	12.00		UJ	AREA14/19	Soil
19-3R	180020	19931001	Dibenz(a,h)anthracene	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Dibenz(a,h)anthracene	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Dibenzofuran	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Dibenzofuran	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Dibromochloromethane	11.0000	UG/KG	11.0000	ORVOA	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Dibromochloromethane	10.0000	UG/KG	10.0000	ORVOA	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Dieldrin	3.7000	UG/KG	3.7000	ORPPB	20.00	22.00		UJ	AREA14/19	Soil
19-3R	180012	19931001	Dieldrin	3.7000	UG/KG	3.7000	ORPPB	10.00	12.00		UJ	AREA14/19	Soil
19-3R	180020	19931001	Diethyl Phthalate	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Diethyl Phthalate	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Dimethyl Phthalate	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Dimethyl Phthalate	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Di-n-octyl Phthalate	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Di-n-octyl Phthalate	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Endosulfan I	1.8000	UG/KG	1.8000	ORPPB	20.00	22.00		UJ	AREA14/19	Soil
19-3R	180012	19931001	Endosulfan I	1.8000	UG/KG	1.8000	ORPPB	10.00	12.00		UJ	AREA14/19	Soil
19-3R	180020	19931001	Endosulfan II	3.7000	UG/KG	3.7000	ORPPB	20.00	22.00		UJ	AREA14/19	Soil
19-3R	180012	19931001	Endosulfan II	3.7000	UG/KG	3.7000	ORPPB	10.00	12.00		UJ	AREA14/19	Soil
19-3R	180020	19931001	Endosulfan Sulfate	3.7000	UG/KG	3.7000	ORPPB	20.00	22.00		UJ	AREA14/19	Soil
19-3R	180012	19931001	Endosulfan Sulfate	3.7000	UG/KG	3.7000	ORPPB	10.00	12.00		UJ	AREA14/19	Soil
19-3R	180020	19931001	Endrin	3.7000	UG/KG	3.7000	ORPPB	20.00	22.00		UJ	AREA14/19	Soil
19-3R	180012	19931001	Endrin	3.7000	UG/KG	3.7000	ORPPB	10.00	12.00		UJ	AREA14/19	Soil
19-3R	180020	19931001	Endrin Aldehyde	3.7000	UG/KG	3.7000	ORPPB	20.00	22.00		UJ	AREA14/19	Soil
19-3R	180012	19931001	Endrin Aldehyde	3.7000	UG/KG	3.7000	ORPPB	10.00	12.00		UJ	AREA14/19	Soil
19-3R	180020	19931001	Endrin Ketone	3.7000	UG/KG	3.7000	ORPPB	20.00	22.00		UJ	AREA14/19	Soil
19-3R	180012	19931001	Endrin Ketone	3.7000	UG/KG	3.7000	ORPPB	10.00	12.00		UJ	AREA14/19	Soil
19-3R	180020	19931001	Ethylbenzene	11.0000	UG/KG	11.0000	ORVOA	20.00	22.00		U	AREA14/19	Soil
19-3R	180020	19931001	Fluoranthene	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil

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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
19-3R	180012	19931001	Fluoranthene	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Fluorene	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Fluorene	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Fluoride	0.0004	MG/KG	0.4000	ANION	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Fluoride	0.0004	MG/KG	0.4000	ANION	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Gamma Chlordane	1.8000	UG/KG	1.8000	ORPPB	20.00	22.00		UJ	AREA14/19	Soil
19-3R	180012	19931001	Gamma Chlordane	1.8000	UG/KG	1.8000	ORPPB	10.00	12.00		UJ	AREA14/19	Soil
19-3R	180020	19931001	Gamma-BHC (Lindane)	1.8000	UG/KG	1.8000	ORPPB	20.00	22.00		UJ	AREA14/19	Soil
19-3R	180012	19931001	Gamma-BHC (Lindane)	1.8000	UG/KG	1.8000	ORPPB	10.00	12.00		UJ	AREA14/19	Soil
19-3R	180020	19931001	Heptachlor	1.8000	UG/KG	1.8000	ORPPB	20.00	22.00		UJ	AREA14/19	Soil
19-3R	180012	19931001	Heptachlor	1.8000	UG/KG	1.8000	ORPPB	10.00	12.00		UJ	AREA14/19	Soil
19-3R	180020	19931001	Heptachlor Epoxide	1.8000	UG/KG	1.8000	ORPPB	20.00	22.00		UJ	AREA14/19	Soil
19-3R	180012	19931001	Heptachlor Epoxide	1.8000	UG/KG	1.8000	ORPPB	10.00	12.00		UJ	AREA14/19	Soil
19-3R	180020	19931001	Hexachlorobenzene	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Hexachlorobenzene	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Hexachlorobutadiene	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Hexachlorobutadiene	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Hexachlorocyclopentadiene	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Hexachlorocyclopentadiene	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Hexachloroethane	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Hexachloroethane	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Indeno(1,2,3-cd)pyrene	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Indeno(1,2,3-cd)pyrene	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Isophorone	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Isophorone	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Mercury	0.1200	MG/KG	0.1200	INORG	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Mercury	0.1200	MG/KG	0.1200	INORG	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Methoxychlor	18.0000	UG/KG	18.0000	ORPPB	20.00	22.00		UJ	AREA14/19	Soil
19-3R	180012	19931001	Methoxychlor	18.0000	UG/KG	18.0000	ORPPB	10.00	12.00		UJ	AREA14/19	Soil
19-3R	180020	19931001	Molybdenum	1.8000	MG/KG	1.8000	INORG	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Molybdenum	1.5000	MG/KG	1.5000	INORG	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Naphthalene	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Naphthalene	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil

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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
19-3R	180020	19931001	Nitrate/Nitrite	0.0001	MG/KG	0.1000	ANION	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Nitrate/Nitrite	0.0001	MG/KG	0.1000	ANION	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Nitrobenzene	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Nitrobenzene	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	N-Nitroso-di-n-propylamine	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	N-Nitroso-di-n-propylamine	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	N-Nitrosodiphenylamine	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	N-Nitrosodiphenylamine	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Pentachlorophenol	920.0000	UG/KG	920.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Pentachlorophenol	910.0000	UG/KG	910.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Phenanthrene	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Phenanthrene	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Phenol	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Phenol	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
SCR156	89052297	19890522	Plutonium-238	24.0000	PCI/G		RAD	6.00	6.00	U		SCRDATA	Soil
SCR156	89052296	19890522	Plutonium-238	23.0000	PCI/G		RAD	5.00	5.00	U		SCRDATA	Soil
SCR152	8903091	19890308	Plutonium-238	21.0000	PCI/G		RAD	0.00	0.00	U		SCRDATA	Soil
47	475	19860804	Plutonium-238	20.0000	PCI/G	20.0000	RAD	5.00	6.00	U		WTSVS	Soil
47	473	19860804	Plutonium-238	20.0000	PCI/G	20.0000	RAD	3.00	4.00	U		WTSVS	Soil
47	472	19860804	Plutonium-238	20.0000	PCI/G	20.0000	RAD	2.00	3.00	U		WTSVS	Soil
46	466	19860805	Plutonium-238	20.0000	PCI/G	20.0000	RAD	6.00	7.00	U		WTSVS	Soil
46	467	19860805	Plutonium-238	20.0000	PCI/G	20.0000	RAD	7.00	8.00	U		WTSVS	Soil
46	464	19860805	Plutonium-238	20.0000	PCI/G	20.0000	RAD	4.00	5.00	U		WTSVS	Soil
46	460	19860805	Plutonium-238	20.0000	PCI/G	20.0000	RAD	0.00	0.00	U		WTSVS	Soil
45	450	19860730	Plutonium-238	20.0000	PCI/G	20.0000	RAD	0.00	0.00	U		WTSVS	Soil
45	456	19860730	Plutonium-238	20.0000	PCI/G	20.0000	RAD	6.00	7.00	U		WTSVS	Soil
45	453	19860730	Plutonium-238	20.0000	PCI/G	20.0000	RAD	3.00	4.00	U		WTSVS	Soil
45	454	19860730	Plutonium-238	20.0000	PCI/G	20.0000	RAD	4.00	5.00	U		WTSVS	Soil
19-3R	180012	19931001	Plutonium-238	0.3700	PCI/G	0.3700	RAD	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Plutonium-238	0.2300	PCI/G	0.2300	RAD	20.00	22.00		U	AREA14/19	Soil
46	464	19860805	Plutonium-238		PCI/G	0.4000	RAD	4.00	5.00	U		WTSVS	Soil
19-3R	180012	19931001	Plutonium-239/240	0.1800	PCI/G	0.1800	RAD	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Plutonium-239/240	0.1100	PCI/G	0.1100	RAD	20.00	22.00		U	AREA14/19	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
19-3R	180020	19931001	Pyrene	370.0000	UG/KG	370.0000	ORSVO	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Pyrene	360.0000	UG/KG	360.0000	ORSVO	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Selenium	0.3900	MG/KG	0.3900	INORG	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Selenium	0.3200	MG/KG	0.3200	INORG	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Silver	0.5900	MG/KG	0.5900	INORG	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Silver	0.4900	MG/KG	0.4900	INORG	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Styrene	11.0000	UG/KG	11.0000	ORVOA	20.00	22.00		U	AREA14/19	Soil
19-3R	180020	19931001	Tantalum	161.0000	MG/KG	161.0000	INORG	20.00	22.00		UJ	AREA14/19	Soil
19-3R	180012	19931001	Tantalum	134.0000	MG/KG	134.0000	INORG	10.00	12.00		UJ	AREA14/19	Soil
19-3R	180020	19931001	Tetrachloroethene	11.0000	UG/KG	11.0000	ORVOA	20.00	22.00		U	AREA14/19	Soil
19-3R	180020	19931001	Thallium	0.3900	MG/KG	0.3900	INORG	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Thallium	0.3200	MG/KG	0.3200	INORG	10.00	12.00		U	AREA14/19	Soil
S0473	5877	19840701	Thorium-232	2.0000	PCI/G	2.0000	RAD	0.00	0.00	U		RSS	Soil
S0480	6697	19840801	Thorium-232	2.0000	PCI/G	2.0000	RAD	0.00	0.00	U		RSS	Soil
46	466	19860805	Thorium-232	1.4000	PCI/G	2.0000	RAD	6.00	7.00	U		WTSVS	Soil
46	464	19860805	Thorium-232	1.4000	PCI/G	2.0000	RAD	4.00	5.00	U		WTSVS	Soil
46	467	19860805	Thorium-232	1.3000	PCI/G	2.0000	RAD	7.00	8.00	U		WTSVS	Soil
SCR156	89052297	19890522	Thorium-232	1.3000	PCI/G		RAD	6.00	6.00	U		SCRDATA	Soil
SCR156	89052296	19890522	Thorium-232	1.2000	PCI/G		RAD	5.00	5.00	U		SCRDATA	Soil
47	475	19860804	Thorium-232	1.0000	PCI/G	2.0000	RAD	5.00	6.00	U		WTSVS	Soil
SCR152	8903091	19890308	Thorium-232	0.7000	PCI/G		RAD	0.00	0.00	U		SCRDATA	Soil
45	456	19860730	Thorium-232	0.6000	PCI/G	2.0000	RAD	6.00	7.00	U		WTSVS	Soil
45	454	19860730	Thorium-232	0.6000	PCI/G	2.0000	RAD	4.00	5.00	U		WTSVS	Soil
46	460	19860805	Thorium-232	0.5000	PCI/G	2.0000	RAD	0.00	0.00	U		WTSVS	Soil
45	453	19860730	Thorium-232	0.5000	PCI/G	2.0000	RAD	3.00	4.00	U		WTSVS	Soil
47	470	19860804	Thorium-232	0.4000	PCI/G	2.0000	RAD	0.00	0.00	U		WTSVS	Soil
45	450	19860730	Thorium-232	0.2000	PCI/G	2.0000	RAD	0.00	0.00	U		WTSVS	Soil
19-3R	180020	19931001	Tin	2.0000	MG/KG	2.0000	INORG	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Tin	1.6000	MG/KG	1.6000	INORG	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Toxaphene	180.0000	UG/KG	180.0000	ORPPB	20.00	22.00		UJ	AREA14/19	Soil
19-3R	180012	19931001	Toxaphene	180.0000	UG/KG	180.0000	ORPPB	10.00	12.00		UJ	AREA14/19	Soil
19-3R	180020	19931001	Trichloroethylene (TCE)	11.0000	UG/KG	11.0000	ORVOA	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Trichloroethylene (TCE)	10.0000	UG/KG	10.0000	ORVOA	10.00	12.00		U	AREA14/19	Soil

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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
19-3R	180012	19931001	Trichloromethane	10.0000	UG/KG	10.0000	ORVOA	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Tritium	14.0000	PCI/G	14.0000	RAD	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Tritium	14.0000	PCI/G	14.0000	RAD	10.00	12.00		U	AREA14/19	Soil
19-3R	180020	19931001	Uranium-235	0.0700	PCI/G	0.0700	RAD	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Uranium-235	0.0700	PCI/G	0.0700	RAD	10.00	12.00		UJ	AREA14/19	Soil
S0473	5877	19840701	Uranium-238	2.0000	PCI/G		RAD	0.00	0.00	U		RSS	Soil
19-3R	180020	19931001	Vinyl Chloride	11.0000	UG/KG	11.0000	ORVOA	20.00	22.00		U	AREA14/19	Soil
19-3R	180012	19931001	Vinyl Chloride	10.0000	UG/KG	10.0000	ORVOA	10.00	12.00		U	AREA14/19	Soil

Lab and data qualifiers are definee on pages 17 and 18 of this appendix.

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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.

Comparison for Soil Analytical Results

		Screening Level (RBGV 10-6 + background, or as agreed)	
7440-38-2	Arsenic	1.06E+01	MG/KG
7440-41-7	Beryllium	2.25E+03	MG/KG
7440-43-9	Cadmium	3.00E+03	MG/KG
18540-29-9	Chromium VI	4.50E+02	MG/KG
7440-02-0	Nickel	1.13E+04	MG/KG
55684-94-1	1,2,3,6,7,8-HxCDF	1.99E-04	MG/KG
19408-74-3	1,2,3,7,8,9-HxCDD	4.81E-04	MG/KG
57117-41-6	1,2,3,7,8-PeCDF	3.97E-05	MG/KG
57117-31-4	2,3,4,7,8-PeCDF	3.97E-04	MG/KG
1746-01-6	2,3,7,8-TCDD	1.99E-05	MG/KG
51207-31-9	2,3,7,8-TCDF	1.99E-04	MG/KG
37871-00-4	HpCDD	1.99E-03	MG/KG
38998-75-3	HpCDF	1.99E-03	MG/KG
34465-46-8	HxCDD	1.99E-04	MG/KG
3268-87-9	OCDD	1.99E-02	MG/KG
39001-02-0	OCDF	1.99E-02	MG/KG
36088-22-9	PeCDD	3.97E-05	MG/KG
118-96-7	2,4,6-Trinitrotoluene	9.94E+01	MG/KG
121-82-4	RDX	2.71E+01	MG/KG
72-54-8	4,4'-DDD	1.66E+01	MG/KG
72-55-9	4,4'-DDE	1.31E+01	MG/KG
50-29-3	4,4'-DDT	2.18E+01	MG/KG
309-00-2	Aldrin	1.75E-01	MG/KG
319-84-6	Alpha-BHC	4.73E-01	MG/KG
12674-11-2	Aroclor-1016	1.49E+00	MG/KG
11104-28-2	Aroclor-1221	1.49E+00	MG/KG
11141-16-5	Aroclor-1232	1.49E+00	MG/KG
53469-21-9	Aroclor-1242	1.49E+00	MG/KG
12672-29-6	Aroclor-1248	1.49E+00	MG/KG
11097-69-1	Aroclor-1254	5.95E+01	MG/KG
11096-82-5	Aroclor-1260	1.49E+00	MG/KG
319-85-7	Beta-BHC	1.66E+00	MG/KG
60-57-1	Dieldrin	1.86E-01	MG/KG
58-89-9	Gamma-BHC (Lindane)	2.29E+00	MG/KG
76-44-8	Heptachlor	6.62E-01	MG/KG
1024-57-3	Heptachlor Epoxide	3.28E-01	MG/KG
1336-36-3	Polychlorinated Biphenyls (PCBs)	1.49E+00	MG/KG
8001-35-2	Toxaphene	2.71E+00	MG/KG
122-66-7	1,2-Diphenylhydrazine	3.73E+00	MG/KG
106-46-7	1,4-Dichlorobenzene	1.24E+02	MG/KG
108-60-1	2,2'-oxybis(1-chloropropane)	4.26E+01	MG/KG
88-06-2	2,4,6-Trichlorophenol	2.71E+02	MG/KG
121-14-2	2,4-Dinitrotoluene	4.38E+00	MG/KG
606-20-2	2,6-Dinitrotoluene	4.38E+00	MG/KG

91-94-1	3,3'-Dichlorobenzidine	6.62E+00	MG/KG
99-09-2	3-Nitroaniline	7.84E+01	MG/KG
100-01-6	4-Nitroaniline	7.84E+01	MG/KG
92-87-5	Benzidine	1.30E-02	MG/KG
56-55-3	Benzo(a)anthracene	4.08E+00	MG/KG
50-32-8	Benzo(a)pyrene	4.08E-01	MG/KG
205-99-2	Benzo(b)fluoranthene	4.08E+00	MG/KG
207-08-9	Benzo(k)fluoranthene	4.08E+01	MG/KG
111-44-4	Bis(2-chloroethyl)ether	2.71E+00	MG/KG
117-81-7	Bis(2-ethylhexyl)phthalate	2.13E+02	MG/KG
86-74-8	Carbazole	1.49E+02	MG/KG
218-01-9	Chrysene	4.08E+02	MG/KG
53-70-3	Dibenz(a,h)anthracene	4.08E-01	MG/KG
118-74-1	Hexachlorobenzene	1.86E+00	MG/KG
87-68-3	Hexachlorobutadiene	3.82E+01	MG/KG
67-72-1	Hexachloroethane	2.13E+02	MG/KG
193-39-5	Indeno(1,2,3-cd)pyrene	4.08E+00	MG/KG
78-59-1	Isophorone	3.14E+03	MG/KG
621-64-7	N-Nitroso-di-n-propylamine	4.26E-01	MG/KG
62-75-9	N-Nitrosodimethylamine	5.84E-02	MG/KG
86-30-6	N-Nitrosodiphenylamine	6.08E+02	MG/KG
87-86-5	Pentachlorophenol	2.48E+01	MG/KG
630-20-6	1,1,1,2-Tetrachloroethane	6.95E+00	MG/KG
79-34-5	1,1,2,2-Tetrachloroethane	8.88E-01	MG/KG
79-00-5	1,1,2-Trichloroethane	1.90E+00	MG/KG
96-18-4	1,2,3-Trichloropropane	4.26E-01	MG/KG
96-12-8	1,2-Dibromo-3-Chloropropane	2.12E+00	MG/KG
107-06-2	1,2-Dichloroethane	7.61E-01	MG/KG
78-87-5	1,2-Dichloropropane	4.38E+01	MG/KG
107-13-1	Acrylonitrile	5.15E-01	MG/KG
71-43-2	Benzene	5.42E+01	MG/KG
100-44-7	Benzyl Chloride	1.75E+01	MG/KG
75-27-4	Bromodichloromethane	4.81E+01	MG/KG
75-25-2	Bromoform	3.77E+02	MG/KG
56-23-5	Carbon Tetrachloride	5.38E-01	MG/KG
67-66-3	Chloroform (Trichloromethane)	5.15E-01	MG/KG
74-87-3	Chloromethane	2.71E+00	MG/KG
124-48-1	Dibromochloromethane	3.55E+01	MG/KG
75-09-2	Dichloromethane (Methylene Chloride)	2.03E+01	MG/KG
106-93-4	Ethylene Dibromide (1,2-Dibromoethane)	3.37E-02	MG/KG
127-18-4	Tetrachloroethene	1.87E+01	MG/KG
79-01-6	Trichloroethene	5.25E+00	MG/KG
75-01-4	Vinyl Chloride	4.14E-01	MG/KG
14952-40-0	Actinium-227	4.48E+00	PCI/G
14952-40-0	Actinium-227+D	5.63E-01	PCI/G
14952-40-0	Actinium-227 long lived decay	5.63E-01	PCI/G
14331-83-0	Actinium-228	1.93E-01	PCI/G
14596-10-2	Americium-241	6.31E+00	PCI/G
14683-10-4	Antimony-124	9.84E-02	PCI/G

14234-35-6	Antimony-125	4.83E-01	PCI/G
14234-35-6	Antimony-125+D	4.83E-01	PCI/G
13981-41-4	Barium-133	6.07E-01	PCI/G
13981-41-4	Barium-133m	4.41E+00	PCI/G
14798-08-4	Barium-140	1.13E+00	PCI/G
13966-02-4	Beryllium-7	4.11E+00	PCI/G
13982-38-2	Bismuth-207	1.75E-01	PCI/G
14331-79-4	Bismuth-210	5.51E+01	PCI/G
14331-79-4	Bismuth-210m	1.00E+00	PCI/G
15229-37-5	Bismuth-211	4.66E+00	PCI/G
14913-49-6	Bismuth-212	9.87E-01	PCI/G
14733-03-0	Bismuth-214	1.17E-01	PCI/G
13967-74-3	Cerium-141	3.80E+00	PCI/G
14762-78-8	Cerium-144	8.87E+00	PCI/G
14762-78-8	Cerium-144+D	3.21E+00	PCI/G
13967-70-9	Cesium-134	1.23E-01	PCI/G
13967-70-9	Cesium-134m	1.74E+01	PCI/G
10045-97-3	Cesium-137	3.81E+01	PCI/G
10045-97-3	Cesium-137 +D	7.62E-01	PCI/G
10045-97-3	Cesium-137 long lived decay	7.62E-01	PCI/G
14392-02-0	Chromium-51	6.89E+00	PCI/G
13981-50-5	Cobalt-57	2.46E+00	PCI/G
13981-38-9	Cobalt-58	1.95E-01	PCI/G
13981-38-9	Cobalt-58m	4.78E+03	PCI/G
10198-40-0	Cobalt-60	7.06E-02	PCI/G
10198-40-0	Cobalt-60m	4.71E+01	PCI/G
13981-15-2	Curium-244	9.20E+00	PCI/G
14683-23-9	Europium-152	1.65E-01	PCI/G
14683-23-9	Europium-152m	6.57E-01	PCI/G
15585-10-1	Europium-154	1.50E-01	PCI/G
14391-16-3	Europium-155	6.98E+00	PCI/G
14596-12-4	Iron-59	1.50E-01	PCI/G
13981-28-7	Lanthanum-140	7.61E-02	PCI/G
14255-04-0	Lead-210	2.10E+00	PCI/G
14255-04-0	Lead-210+D	1.80E+00	PCI/G
14255-04-0	Lead-210 long lived decay	1.82E+00	PCI/G
15092-94-1	Lead-212	1.66E+00	PCI/G
15067-28-4	Lead-214	8.92E-01	PCI/G
13966-31-9	Manganese-54	2.25E-01	PCI/G
13982-78-0	Mercury-203	9.47E-01	PCI/G
13994-20-2	Neptunium-237	7.01E+00	PCI/G
13994-20-2	Neptunium-237+D	1.04E+00	PCI/G
13967-76-5	Niobium-95	2.48E-01	PCI/G
13967-76-5	Niobium-95m	3.73E+00	PCI/G
13981-16-3	Plutonium-238	5.50E+01	PCI/G
PU-238/239	Plutonium-238/239	6.21E+00	PCI/G
15117-48-3	Plutonium-239	6.21E+00	PCI/G
PU-239/240	Plutonium-239/240	6.21E+00	PCI/G
14119-32-5	Plutonium-241	5.06E+02	PCI/G

13982-10-0	Plutonium-242	6.33E+00	PCI/G
13981-52-7	Polonium-210	2.09E+00	PCI/G
13966-00-2	Potassium-40	3.81E+01	PCI/G
14331-85-2	Protactinium-231	2.83E+00	PCI/G
14331-85-2	Protactinium-231+D	4.00E+00	PCI/G
14331-85-2	Protactinium-231 long lived decay	1.28E+00	PCI/G
13981-14-1	Protactinium-233	1.01E-01	PCI/G
15100-28-4	Protactinium-234	1.27E+01	PCI/G
15100-28-4	Protactinium-234m	1.20E+00	PCI/G
15623-45-7	Radium-223	3.24E+00	PCI/G
13233-32-4	Radium-224	5.91E+00	PCI/G
13981-53-8	Radium-225	2.17E+00	PCI/G
13982-63-3	Radium-226	2.10E+00	PCI/G
13982-63-3	Radium-226+D	2.09E+00	PCI/G
13982-63-3	Radium-226 long lived decay	2.73E+00	PCI/G
15262-20-1	Radium-228	1.47E+00	PCI/G
15262-20-1	Radium-228+D	1.47E+00	PCI/G
15262-20-1	Radium-228 long lived decay	1.83E+00	PCI/G
13968-53-1	Ruthenium-103	1.40E+01	PCI/G
13967-48-1	Ruthenium-106	8.77E-01	PCI/G
13967-48-1	Ruthenium-106+D	9.09E-02	PCI/G
13967-63-0	Scandium-46	1.22E-01	PCI/G
14391-65-2	Silver-108m	1.14E+02	PCI/G
14378-38-2	Silver-109m	8.50E-02	PCI/G
13966-32-0	Sodium-22	3.98E-01	PCI/G
13967-73-2	Strontium-85	1.07E+00	PCI/G
13967-73-2	Strontium-85m	3.55E+01	PCI/G
14158-27-1	Strontium-89	1.80E+01	PCI/G
10098-97-2	Strontium-90	1.01E+01	PCI/G
10098-97-2	Strontium-90+D	7.70E-01	PCI/G
14133-76-7	Technetium-99	2.14E+02	PCI/G
14913-50-9	Thallium-208	4.98E-02	PCI/G
15623-47-9	Thorium-227	2.09E+00	PCI/G
14274-82-9	Thorium-228	7.08E+00	PCI/G
14274-82-9	Thorium-228+D	1.61E+00	PCI/G
14274-82-9	Thorium-228 long lived decay	1.61E+00	PCI/G
15594-54-4	Thorium-229	1.89E+00	PCI/G
15594-54-4	Thorium-229+D	5.06E-01	PCI/G
15594-54-4	Thorium-229 long lived decay	5.06E-01	PCI/G
14269-63-7	Thorium-230	1.01E+01	PCI/G
14269-63-7	Thorium-230+D	2.00E+00	PCI/G
14269-63-7	Thorium-230 long lived decay	1.99E+00	PCI/G
7440-29-1	Thorium-232	8.60E+00	PCI/G
7440-29-1	Thorium-232+D	1.47E+00	PCI/G
15065-10-8	Thorium-234	1.76E+01	PCI/G
13966-06-8	Tin-113	3.56E+01	PCI/G
15832-50-5	Tin-126	6.91E+00	PCI/G
10028-17-8	Tritium	7.58E+03	PCI/G
14158-29-3	Uranium-232	2.90E+00	PCI/G

13968-55-3	Uranium-233	1.03E+01	PCI/G
13968-55-3	Uranium-233+D	4.80E-01	PCI/G
13968-55-3	Uranium-233 long lived decay	4.82E-01	PCI/G
U-233/234	Uranium-233/234	4.82E-01	PCI/G
13966-29-5	Uranium-234	1.16E+01	PCI/G
13966-29-5	Uranium-234+D	1.20E+00	PCI/G
15117-96-1	Uranium-235	1.67E+00	PCI/G
15117-96-1	Uranium-235+D	1.60E+00	PCI/G
15117-96-1	Uranium-235 long lived decay	4.20E-01	PCI/G
U-235/236	Uranium-235/236	3.10E-01	PCI/G
7440-61-1	Uranium-238	1.28E+01	PCI/G
7440-61-1	Uranium-238+D	5.31E+00	PCI/G
7440-61-1	Uranium-238 long lived decay	1.29E+00	PCI/G
13982-39-3	Zinc-65	3.11E-01	PCI/G
13967-71-0	Zirconium-95	2.57E-01	PCI/G

Appendix M

Occurrence Reports

A search of the occurrence reporting system revealed one report that mentions the Building 104 parking lot (but did not involve Building 104). The occurrence was minor and without impact to Building 104 or the environment:

- *Unauthorized Discharge of Ethylene Glycol at Outfall 002 Under NPDES Permit (October 2000):* On October 13, 2000, an ethylene glycol leak from the heating, ventilation, and air conditioning (HVAC) unit in the Hydrolysis House (HH) Building penthouse (located east northeast and up gradient of Building 104) caused a strong odor in the storm drain by the Building 104 parking lot and the drainage ditch east of the building. Foam was observed on the water in the drainage ditch. The sluice gate was closed and all storm sewer drainage was sent to the holding pond. The total quantity that could have been potentially released to Outfall 002 was estimated to be eight gallons over a thirty-two day period. A sample from Outfall 002 showed non-detectable for glycol. Based on the effluent volume for Outfall 002, it is unlikely that the quantity of ethylene glycol released would have been detected at the outfall (Minimum Detectable Level (MDL) is 1.0 milligram/liter). The OEPA was contacted and a glycol spill report was made because Mound's permit was interpreted as being any glycol going to the Outfall is a potential for a release at the Outfall and is therefore reportable. While there were no actual measurable amounts of ethylene glycol in the discharge from the plant site, the OEPA considers any ethylene glycol going into the sewer system at any point to be a violation of the NPDES permit. Leaks in the HVAC unit were repaired. Rain and the resulting run off eliminated the foam in the drainage ditch. On October 30, 2000, after confirming that glycol was no longer present in the storm sewer drains from HH Building, the sluice gate was opened back up to its normal configuration.

OH-MB-BWO-BWO01-2000-0016 FINAL

Occurrence Report
Before 2003 Redesign

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: TRITIUM FACILITY MANAGER **Telephone No.:** (937) 865-4533

(Facility Manager/Designee)

Name: ALLISON, JERRY L
Title: **Telephone No.:** (937) 865-4533

(Originator/Transmitter)

Name: ALLISON, JERRY L. **Date:** 12/14/2000

(Authorized Classifier (AC))

1. Occurrence Report Number: OH-MB-BWO-BWO01-2000-0016

Unauthorized Discharge of Ethylene Glycol at Outfall 002 Under NPDES Permit

2. Report Type and Date: FINAL

	Date	Time
Notification:	10/26/2000	06:09 (MTZ)
Initial Update:	12/14/2000	09:39 (MTZ)
Latest Update:	12/14/2000	09:39 (MTZ)
Final:	12/21/2000	06:51 (MTZ)

3. Occurrence Category: Off-Normal

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

5. Division or Project: BWXT of Ohio, Inc

6. Secretarial Office: EM - Environmental Management

7. System, Bldg., or Equipment: HH Building, Heating, Ventilation, and Air Conditioning

8. UCNI?: No

9. Plant Area: Main Hill Area

10. Date and Time Discovered: 10/24/2000 13:00 (ETZ)

11. Date and Time Categorized: 10/25/2000 16:15 (ETZ)

12. DOE HQ OC Notification:

Date	Time	Person Notified	Organization
NA	NA	NA	NA

13. Other Notifications:

Date	Time	Person Notified	Organization
10/24/2000	13:00 (ETZ)	John Spitler	Ohio EPA
10/24/2000	14:00 (ETZ)	Patricia Brechlin	DOE/MEMP
10/25/2000	16:35 (ETZ)	Fred Holbrook	DOE/MEMP

14. Subject or Title of Occurrence:

Unauthorized Discharge of Ethylene Glycol at Outfall 002 Under NPDES Permit

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15. Nature of Occurrence:

02) Environmental
E. Environmental Agreement/Compliance Activities

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16. Description of Occurrence:

On October 24, 2000 at at approximately 1800 hours after a request from the Ohio Environmental Protection Agency (OEPA), the OEPA hotline was notified of an unauthorized discharge under National Pollutant Discharge Elimination System (NPDES) permit for ethylene glycol at Mound's Outfall 002. Ethylene glycol is listed as a priority pollutant under the water quality standards (3745-1-34) in the Ohio Administrative Code (OAC). Although ethylene glycol was listed in the NPDES permit application as a potential pollutant, it was not a permitted parameter. The OPEA considers an unauthorized discharge to be a release of an unpermitted priority pollutant to the outfall. The total quantity that could have been potentially released to the outfall was estimated to be eight gallons over a thirty-two day period.

Based on the effluent volume for Outfall 002, it is unlikely that the quantity of ethylene glycol released would have been detected at the outfall (Minimum Detectable Level (MDL) is 1.0 mg/L).

The primary cause for the release was a two leaks at the Hydrolysis House (HH) Building. One from a hairline crack in a flange in Equipment Room 130 and the other from a leak in a coil on Air Handler Unit #4 in the HH Building Penthouse.

In the older buildings on plant site, the penthouse and equipment room drains were designed and piped to drain to the plant storm sewer system. It should be noted that the floor drains in many penthouses and equipment rooms are located right at the air handling units(as is the case of the unit in HH Building, Room 130). During hot humid weather it is difficult to detect glycol leaks from the cooling coils because they collect in the same drain pans as the condensate water and then go to the floor drains. The large air handing units can produce as much as 5 gallons of condensate a minute, making it nearly impossible to see a glycol leak.

Chronology of Events:

In Mid-September 2000 the leaking cooling coil in the air handler in HH Building, Room 130 was disconnected from the glycol system until a new coil could be obtained and a replacement made. The glycol valve was closed but did not hold, so a flange was put on the line.

On October 13, 2000 an Environmental Safeguards and Compliance Engineer was notified about a strong odor in the storm drain by Building 104 parking lot and the drainage ditch. Foam was observed on the water in the drainage ditch. An investigation into the origin of the odor was initiated. The sluice gate was closed and all storm sewer drainage was sent to the holding pond.

On October 14, 2000 samples were taken from one of the Test Fire Vally storm sewers with the strongest odor. That sample was positive for glycol at 180 parts per million.

On October 16, 2000 the Environmental Safeguards and Compliance personnel started looking for the source of the glycol by following the odor. The personnel noticed an orange pinkish color in manholes and followed that back to the HH Building storm drain system. The personnel contacted the HH Building Manager and Maintenance personnel and discovered the leaking flange with a hairline crack in equipment room 130 in the late afternoon. Maintenance bagged the leaking pipe until repairs could be made.

On the morning of October 17, 2000 the leaking flange was replaced. Approximately one pint of glycol was accumulated in the bag over night. It rained and the resulting run off eliminated the foam in the drainage ditch.

On October 18, 2000 the foaming in the drainage ditch was back with even a greater extent than before. Environmental Safeguards and Compliance personnel talked to OEPA personnel about the degrading glycol problem. OEPA said they could come out and look at the problem.

On October 19, 2000 the water from manhole T-8 was sampled again, still had touch of pink color, T-8 manhole had the strongest odor of the storm drain system. A sample from Outfall 002 showed non-detectable for glycol.

On October 23, 2000 maintenance personnel discovered a small leak from Air Handler Unit (AHU) 4 in the HH penthouse.

On October 24, 2000 the glycol supply to AHU-4 in the HH Building Penthouse was valved off and the valve on the main glycol line was also turned off. A representative from the OEPA arrived at approximately 1230 hours. He was experienced with glycol spills and their effects. He confirmed that glycol was the cause of the odor problem. At about 1400 hours, the OEPA representative requested that Mound call the OEPA Hotline and report the spill because he interpreted Mound's permit as being any glycol going to the Outfall is a potential for a release at the Outfall and therefore reportable. At 1600 hours, the Assistant Site Manager was informed of the situation. At 1800 hours, an Environmental and Safegurards Compliance Engineer called the OEPA Hotline and made the glycol spill report.

On October 25, 2000 at approximately 1500 hours the HH Building Manager was notified of the events of the HH Building penthouse glycol leak. At 1520 hours, the HH Building Facility Manager was informed. At 1615hours, the Facility Manager categorized the event. At 1635 hours, the DOE Mound Environmental Management Project Facility Representative for HH Building was informed of the event.

On October 30, 2000 after confirming that glycol was no longer present in the storm sewer drains from HH Building, the sluice gate was opened back up to its normal configuration.

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17. Operating Conditions of Facility at Time of Occurrence:

Not Applicable

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18. Activity Category:

11 - Facility Decontamination/Decommissioning

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19. Immediate Actions Taken and Results:

The leak was identified and the flange was replaced. All the air handling units in HH Building were inspected. One other unit was discovered to be dripping at a very small rate and it was valved off.

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20. Direct Cause:

1) Equipment/Material Problem
A. Defective or Failed Part

21. Contributing Cause(s):

2) Procedure Problem
B. Lack of Procedure

3) Personnel Error
B. Procedure Not Used or Used Incorrectly

22. Root Cause:

4) Design Problem
B. Inadequate or Defective Design

23. Description of Cause:

The direct cause of the event was Equipment/Material Problem, Defective or Failed Parts because the new blank flange that was installed on the glycol piping system in HH Building Room 130 developed a hairline crack in it that allowed glycol to leak out. The glycol then entered the floor drain. The other source of the glycol was the cooling coil in HH Building penthouse that had degenerated to the point it started leaking and allowed glycol to enter the penthouse floor drain.

There were two contributing causes of the event, the first was a Procedure Problem, Lack of Procedure when working on the glycol system; drain plugs should have been installed in the floor drains to prevent the glycol from entering the storm sewer system. The second was Personnel Error, Procedure Not Used or Used incorrectly when the cast blank flange may have been installed without using the proper tightening technique, putting the flange under uneven pressure and causing it to develop a crack.

The root cause of the event was a Design Problem, Inadequate of Defective Design because floor drains in the utility rooms and penthouses of the older buildings at Mound were designed with drainage to the storm sewer system.

24. Evaluation (by Facility Manager/Designee):

The actual root cause of this event was a design problem with the floor drains of the older Mound buildings being plumbed into the plant storm sewer system. However, due the enormous expense of the plumbing changes to pipe the floor drains to another system and the fact that the Mound is a closure site actual plumbing changes will not be made. Steps are being taken to prevent or at least reduce the amount of glycol which may be sent to the storm sewer system. The floor drains can be plugged when the glycol system is being worked on and inspections can be made of the utility rooms and penthouses to look for leaks on a regular routine basis.

In the future, the NPDES permit application could be modified to allow small amounts of ethylene glycol in the discharge of Mounds Outfalls. This would be dependent upon the OEPA granting the change in the permit.

25. Is Further Evaluation Required?: No

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

1.	Issue a Timely Order to all Mound Project Superintendents making it a requirement to put drain plugs into floor drains before working on the glycol system in utility rooms and penthouses.	
	Target Completion Date: 11/30/2000	**Completion Date:** 11/30/2000
2.	Establish a requirement in Mound Policy and Procedure Manual for Building and Facility Managers to have the Building Managers or designee to check and record inspections of penthouses and equipment rooms for leaks and other noticeable problems on a weekly basis.	
	Target Completion Date: 01/30/2001	**Completion Date:** 01/22/2001
3.	Submit and Lessons Learned on this event to inform site personnel of the potential of this occurring in other areas.	
	Target Completion Date: 12/21/2000	**Completion Date:** 12/18/2000

27. Impact on Environment, Safety and Health:

None

28. Programmatic Impact:

None

29. Impact on Codes and Standards:

None

30. Lessons Learned:

While there were no actual measurable amounts of ethylene glycol in the discharge from the plant site, the OEPA considers any ethylene glycol going into the sewer system at any point to be a violation of the NPDES permit. Therefore, any potential sources of glycol must be prevented from entering the system. This can be accomplished by putting in drain plugs when working on the glycol system and inspecting the utility rooms and penthouses on a regular routine basis to look for potential leaks.

31. Similar Occurrence Report Numbers:

OH-MB-EGGM-EEGMAT03-1996-0003

32. User-defined Field #1:

33. User-defined Field #2:

34. HQ Keyword(s):

01J--Conduct of Operations - Operations Procedure
01M--Conduct of Operations - Inadequate Procedure (Start May 96)
02I--Environmental Issues - Release
05I--Mechanical/Structural Systems - Mechanical Equipment
11I--Other - Inadequate Design (Start June 96)

35. HQ Summary:

36. DOE Facility Representative Input:

37. DOE Program Manager Input:

38. Approvals:

Approved by: ALLISON, JERRY L, Facility Manager/Designee
Date: 12/14/2000
Telephone No.: (937) 865-4533

Approved by: HOLBROOK, FRED B, Facility Representative/Designee
Date: 12/21/2000
Telephone No.: (513) 865-4677

Approved by: Approval delegated to FR, Program Manager/Designee
Date: 12/21/2000
Telephone No.:

Appendix N

PRS Information

Recommendation pages are not generated for PRSs that require Further Assessment (FA) or that are unbinned.

The Core Team binned PRS 441 as a Removal Action on 1 March 2005; the recommendation sheet is not currently available.

MOUND PLANT
PRS 59
WASTE STORAGE SITE-SOIL BOXES STAGED SOUTH OF WD BUILDING

RECOMMENDATION:

PRS 59 was identified as a storage area for boxes containing plutonium contaminated soil during a US EPA 1988 Preliminary Review/Visual Site Inspection. Procedures were in place to prevent the transfer of contamination from the immediate work site to storage areas. In 1984 plutonium was detected at 133.9 pCi/g at one location in Area 14 near PRS 59. In 1994 four locations were sampled in the area of PRS 59 as part of the cleanup verification at Area 14. No plutonium was detected above the guideline criteria of 25 pCi/g. In addition, all thorium results were below the regulatory limits of 5/15 pCi/g.

Therefore, NO FURTHER ASSESSMENT is recommended for PRS 59.

CONCURRENCE:

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

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

OEPA: Brian K. Nickel 5/13/97
Brian K. Nickel, Project Manager (date)

SUMMARY OF COMMENTS AND RESPONSES:

Comment period from 7/15/97 to 8/17/97

☐ No comments were received during the comment period.

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

*This package refers to the PRS 59 PRS Package
R.C. Kramer 3-16-05

N 1 of 2

MOUND PLANT
PRS 176/177/178/300
WASTE TRANSFER SYSTEM LINE, TANKS AND SOIL

RECOMMENDATION:

These Potential Release Sites (PRSs) deal with the transfer of plutonium-238 contaminated waste solutions via the Waste Transfer System (PRS 300) to the Waste Disposal Building (WD) and to two underground storage tanks in Building 41 (PRSs 177 and 178). The PRSs were created as a result of historical knowledge of leaks in the underground Waste Transfer System (WTS).

The WTS was built in 1967 and remained in operation until 1974 when repeated leaks in the WTS lines forced the WTS to be abandoned. In 1974, the soils associated with the WTS leaks (PRS 176) were remediated. In the mid 1980s, the WTS line, the two holding tanks, and Building 43 were removed. Post removal sampling results obtained from the November 1993 *OU6, Area 19 and Area 14 Verification Report* indicated all concentrations of VOCs, SVOCs, pesticides/PCBs and inorganics, in the soil, were below their 10^{-6} Risk Based guideline values. Additionally, the *OU6, Area 19 and Area 14 Verification* sampling showed, within the 95% upper confidence level (UCL), plutonium-238 and thorium soil concentrations were below their respective guideline criteria of 25 pCi/g (Mound ALARA goal for plutonium) and 15 pCi/g (regulatory guideline criteria for subsurface thorium). No other contaminants were detected above guideline criteria.

Therefore, NO FURTHER ASSESSMENT is recommended for PRSs 176, 177, 178, and 300.

CONCURRENCE:

DOE/MB: Arthur W Kleinrath — 11/26/96
Arthur W. Kleinrath, Remedial Project Manager (date)

USEPA: Timothy J. Fischer — 12/3/96
Timothy J. Fischer, Remedial Project Manager (date)

OEPA: Brian K. Nickel — 12/12/96
Brian K. Nickel, Project Manager (date)

SUMMARY OF COMMENTS AND RESPONSES:

Comment period from 1/9/97 to 2/13/97

☒ No comments were received during the comment period.

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

N 2 of 2

Appendix O

Work Plan

Some drawings listed on the flysheet for Appendix C of the Work Package are structural drawings and therefore are not included in the Work Package in this appendix (Appendix O). However, the structural drawings are included in field and record copies of the Work Package and are available upon request.

Standard

WORK PLAN

In accordance with Mound 2000

Demolition of Building 104

Final

March 2005

Includes

PRSs:	None
Buildings:	104
Parcels:	8
Other:	na

Revisions to the Final (if any) are inserted behind this cover

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Table of Contents

Work Plan

Appendix A
PHA & JSHA

Appendix B
Pre-Job Briefing and Job Status Log

Appendix C
Drawings/Sketches

Appendix D
Miscellaneous (USQ, RWP, etc.)

Appendix E
Post-Job Conference/Lessons Learned

Work Plan Policy - Attachment 1

The following table captures all of the work planning/execution requirements of Mound 2000[1] and identifies where in the work plan each is addressed.

Mound 2000 excerpt	Pg	Where addressed
Develop implementation procedures for resolving the site problem	4-11	PP-1059A[2], Appendix A, Work Pkg/PHA
...procedures to implement the response action *described in the action memo...*	4-11	PP-1059A, Appendix A, Work Pkg/PHA. An introduction/ background paragraph shall be included in the work plan (somewhere) to bridge the Action Memo to the tasks being specified in the work plan.
QA/QC	4-11	Work to be performed per QAPP, PP-1060A[3]
Verification procedures	4-11	Per VSAP (attached to or referenced in Work Plan)
Schedule	4-11	Include appropriate excerpt from ER/Integration Schedule
H&S	4-11	PHA & JSHA
...final work plan presents rationale and [technical] approach for implementing the response action and provides detailed guidance for [implementation]...	4-11	PP-1059A, Appendix A, Work Pkg/PHA
...work plan implementation until the response objectives have been reached.	4-11	PP-1059A, Appendix A, Work Pkg/PHA
...field activities typically described:	5-4	PP-1059A, Appendix A, Work Pkg/PHA, Section 7
Excavation/demolition	5-4	PP-1059A, Appendix A, Work Pkg/PHA, Section 7
Transportation of waste Waste characterization Waste reduction Waste treatment	5-4	standard text on waste management
Media sampling Field screening/analysis	5-5	Verification sampling will be via the VSAP. All other sampling (including sampling to guide the dig, characterize the soil for waste mgmt purposes, base confirmation prior to verification, post-remedial action, etc.) required to support the project will be conducted via the Work Plan. RadCon sampling will include (per the RWP) air, soil (walkovers and soil samples), collected runoff and discharge, and removable contamination (swipes) monitoring per MD-80036[4] and MD-80043[5].
Fugitive Dust Control		Standard text on fugitive dust control
Geology/hydro investigations	5-5	If needed for characterization
Site survey/topo map	5-5	PP-1059A, page 19 of 43, "Use of Graphics"
Site restoration	5-5	In accordance with the Stormwater Pollution Prevention Plan (SWP3)[6], to include a graphic (with runoff directional arrows) and a backfill/seeding plan
Task mgmt & QC	5-5	PP-1059A, Appendix A, Work Pkg/PHA
Verification sampling	5-5	Per VSAP (attached to or referenced in Work Plan)
HASP considerations	5-5	PHA & JSHA
...work plans for...response actions...*approved* by the Core Team	5-5	Written concurrence (either email or letter) will be obtained prior to commencement of work and will be available in the field as documentation.

REFERENCES

1: Work Plan for Environmental Restoration of the DOE Mound Site, The Mound 2000 Approach, February 1999, Final, Revision 0
2: PP-1059A, Issue 11, Integrated Work Control Program
3: PP-1060A, Issue 5, Quality Assurance Program Plan
4: MD-80036, Issue 36, Radiological Operations Procedures
5: MD-80043, Issue 14, Radiological Work Requirements
6: Miamisburg Environmental Management Project, Storm Water Pollution Prevention Plan, OPA980099, Issue 0, December 1, 1998

Standard text for Waste Management:

Based on a review of the work to be performed, the Waste Generator and Waste Coordinator determine types (sanitary, hazardous, LLW, LLMW, TRU) and estimated amounts of waste prior to generation. An evaluation of the physical, radiological and chemical properties is made to determine a disposal path for each type of waste. The proposed disposal facility, waste profile, and knowledge of the waste generating process will determine the characterization methodology required for each waste type.

Process knowledge will generally be sufficient to characterize sanitary and hazardous waste for disposal. Sampling and analysis for radiological characterization of radioactive waste will be determined based on process knowledge of the source of the waste. Analytical methods employed include surface contamination measurements, air concentration measurements, alpha spectroscopy and gamma spectroscopy. All characterization determinations are documented and peer reviewed prior to waste shipment. Material Safety Data Sheets (MSDS) are used to supplement process knowledge of chemical properties of the waste. Where process knowledge is not sufficient to provide a RCRA determination, analysis of waste will be accomplished through the Toxicity Characteristic Leaching Procedure (TCLP) performed by an offsite laboratory.

Procedures controlling waste characterization are contained in Mound Technical Manuals, MD-10167, Radioactive Waste Procedures, Operations 420: Waste Stream Characterization and 428: Waste Radionuclide Identification and Quantification, and MD-70523, Management of Hazardous Waste, Trash, and Recyclable Materials, Operation 001: Waste Verification Sampling and Analysis. Additional direction is contained in these manuals in operations specific to the waste type and container being used.

Standard text for Fugitive Dust Control:

The goal of fugitive emission controls is no visible dust. Best available technology (BAT) determination for the demolition of Building 124 is reasonably available control measures (RACM). The subcontractor will employ reasonably available control measures (RACM) to maintain fugitive particulate emissions as low as reasonably achievable. Possible mitigating controls are listed in Table 1. Methods planned to be employed include, but are not limited to:

- Controlled water misting of the building demolition area and common waste zone by misters installed on equipment, portable towers or operated by trained personnel.

The intent will be to add enough water to control fugitive emissions without over-saturating the area and creating undesirable run-off. Periodic inspections will be made by the Job Superintendant or designee to assure fugitive emissions controls are achieving the desired effect and meeting acceptable standards.

Should it be determined that best available technology (BAT) requires alternate dust suppression methods, other dust control methods will be utilized.

See Table 1 below for possible fugitive dust control methods.

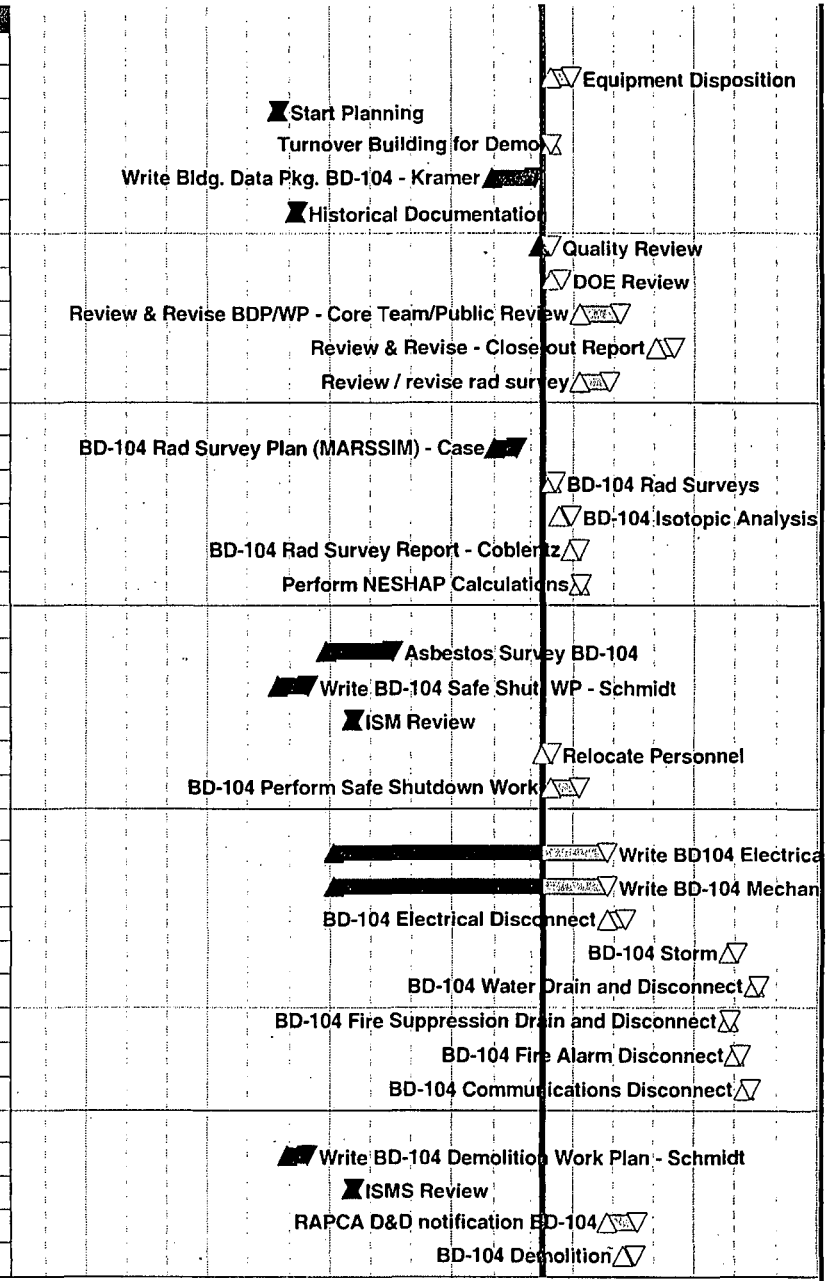
Table 1 Airborne Contaminant Protection Methods

Dust Generating Activities	Possible Administrative and Engineering Dust Control Measures
Building Demolition	• Applying dust control materials such as water and surfactants
Hauling Material and Equipment	• Reducing vehicle speeds (<20 mph) • Keeping soil levels in vehicles below the vehicle sides • Wetting roads used for transport • Wet sweeping or otherwise removing soil and mud deposits from paved roadways and parking areas
Vehicle and Equipment Traffic	• Reducing vehicle speeds (<20 mph) • Wetting roads used for transport • Minimizing unnecessary traffic on roadways, parking areas, and areas around field activities • Wash down lower portion of haulers/trucks to minimize the spread of dust
Excavation	• Applying dust control materials water and surfactants • Covering storage piles with a tarpaulin, plastic, etc. • Keeping soil levels in vehicles below the vehicle sides • Minimizing the material drop height during excavation and loading operations • Compacting soils in work areas and in stockpiles at the end of each workday • Changing excavation and transportation method(s) when feasible • Applying vegetative cover or asphalt to project work area at completion of project • Sealing off work areas, stockpiles, etc., before the workday and during lunch breaks
Trenching	• Applying dust control materials water and surfactants • Covering storage piles with a tarpaulin, plastic, etc. • Keeping soil levels in vehicles below the vehicle sides • Minimizing the material drop height during excavation and loading operations • Compacting soils in work areas and in stockpiles at the end of each workday • Changing excavation and transportation method(s) when feasible

Dust Generating Activities	Possible Administrative and Engineering Dust Control Measures
	• Applying vegetative cover or asphalt to project work area at completion of project • Sealing off work areas, stockpiles, etc., before the workday and during lunch breaks
Material Loading and Unloading	• Reducing vehicle speeds (<20 mph) • Keeping soil levels in vehicles below the vehicle sides • Wetting roads used for transport • Wet sweeping or otherwise removing soil and mud deposits from paved roadways and parking areas
Storage Piles	• Compacting soils in work areas and in stockpiles at the end of each workday • Sealing off work areas, stockpiles, etc., before the workday and during lunch breaks • Covering storage piles with a tarpaulin, plastic, etc. • Applying vegetative cover to storage pile areas at completion of project
Wind Erosion from Work Sites	• Compacting soils in work areas and in stockpiles at the end of each workday • Sealing off work areas, stockpiles, etc., before the workday and during lunch breaks • Covering storage piles with a tarpaulin, plastic, etc. • Applying vegetative cover or asphalt to project work area at completion of project

Building 104

Regulatory								
BD104100	Equipment Disposition	8	8	1	0	16MAR05	29MAR05	4.1.7.10.07
BD104110	Start Planning	1	0	1	100	23AUG04A	23AUG04A	4.1.7.10.07
BD104120	Turnover Building for Demo	1	1	1	0	15MAR05	15MAR05	4.1.7.10.07
BD104125	Write Bldg. Data Pkg. BD-104 - Kramer	14	0	1	100	31JAN05A	03MAR05A	4.1.7.10.07
BD104150	Historical Documentation	8	0	1	100	06SEP04A	06SEP04A	4.1.7.10.07
BD104175	Quality Review	4	4	1	0	07MAR05A	15MAR05	4.1.7.10.07
BD104225	DOE Review	5	5	3	0	16MAR05	22MAR05	4.1.7.10.07
BD104250	Review & Revise BDP/WP - Core	30	30	2	0	06APR05	05MAY05	4.1.7.10.07
BD104335	Review & Revise - Close-out Report	14	14	2	0	02JUN05	15JUN05	4.1.7.10.07
BD104410	Review / revise rad survey	14	14	1	0	06APR05	28APR05	4.1.7.10.07
Radiological								
BD104350	BD-104 Rad Survey Plan (MARSSIM) - Case	4	0	1	100	01FEB05A	17FEB05A	4.1.7.10.07
BD104375	BD-104 Rad Surveys	4	4	3	0	15MAR05	18MAR05	4.1.7.10.07
BD104385	BD-104 Isotopic Analysis	6	6	1	0	21MAR05	29MAR05	4.1.7.10.07
BD104400	BD-104 Rad Survey Report - Coblentz	4	4	1	0	30MAR05	05APR05	4.1.7.10.07
BD104450	Perform NESHAP Calculations	1	1	1	0	06APR05	06APR05	4.1.7.10.07
Safe Shutdown								
BD104475	Asbestos Survey BD-104	11	0	1	100	28SEP04A	17NOV04A	4.1.7.10.07
BD104575	Write BD-104 Safe Shut. WP - Schmidt	12	0	1	100	23AUG04A	13SEP04A	4.1.7.10.07
BD104585	ISM Review	1	0	1	100	18OCT04A	18OCT04A	4.1.7.10.07
BD104590	Relocate Personnel	3	3	3	0	10MAR05*	14MAR05	4.1.7.10.07
BD104600	BD-104 Perform Safe Shutdown Work	12	12	1	0	16MAR05	05APR05	4.1.7.10.07
Utilities								
BD104625	Write BD104 Electrical Disconnect Package	12	28	1	80	04OCT04A	26APR05	4.1.7.10.07
BD104635	Write BD-104 Mechanical Disconnect	12	28	1	50	04OCT04A	26APR05	4.1.7.10.07
BD104650	BD-104 Electrical Disconnect	8	8	1	0	27APR05	10MAY05	4.1.7.10.07
BD104725	BD-104 Storm	3	3	1	0	27JUL05	01AUG05	4.1.7.10.07
BD104775	BD-104 Water Drain and Disconnect	2	4	1	0	15AUG05	18AUG05	4.1.7.10.07
BD104800	BD-104 Fire Suppression Drain and	2	2	1	0	27JUL05	28JUL05	4.1.7.10.07
BD104825	BD-104 Fire Alarm Disconnect	4	4	1	0	01AUG05	04AUG05	4.1.7.10.07
BD104875	BD-104 Communications Disconnect	4	4	1	0	08AUG05	11AUG05	4.1.7.10.07
Demolition								
BD104900	Write BD-104 Demolition Work Plan -	12	0	1	100	30AUG04A	14SEP04A	4.1.7.10.07
BD104920	ISMS Review	4	0	1	100	18OCT04A	18OCT04A	4.1.7.10.07
BD104925	RAPCA D&D notification BD-104	14	14	1	0	27APR05	19MAY05	4.1.7.10.07
BD104950	BD-104 Demolition	6	6	1	0	09MAY05	17MAY05	4.1.7.10.07



Start Date	01JAN05
Finish Date	25MAR06
Data Date	09MAR05
Run Date	16MAR05 14:54

Early Bar
Progress Bar
Critical Activity

ERST

Sheet 49 of 60

CH2MHILL

Integrated Status Field Schedule

BOSS Only

Date	Revision	Checked	Approved

09 of 76

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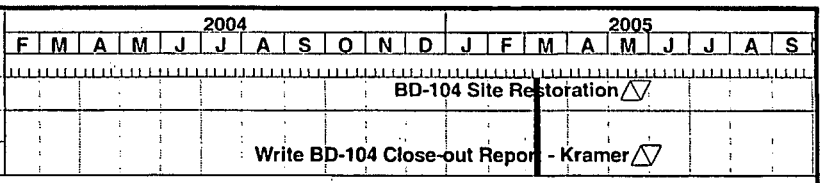
Activity ID	Activity Description	Orig Dur	Rem Dur	Cal ID	%	Early Start	Early Finish	WBS
BD104975	BD-104 Site Restoration	4	4	1	0	18MAY05	24MAY05	4.1.7.10.07
Closeout								
BD104325	Write BD-104 Close-out Report - Kramer	4	4	1	0	25MAY05	01JUN05	4.1.7.10.07



Start Date	01JAN05	Early Bar
Finish Date	25MAR06	Progress Bar
Data Date	09MAR05	Critical Activity
Run Date	16MAR05 14:54	

ERST

Sheet 50 of 60

CH2MHILL

Integrated Status Field Schedule

BOSS Only

Date	Revision	Checked	Approved

010d76

010d76

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**

Note: The Project Engineer is responsible for completing Sections 1 through 10.

1. WORK PACKAGE TITLE: **Demolition of Building 104**

2. WORK PACKAGE NUMBER: **BOSS-40464 – 00** **Requestor: Mark J. Schmidt**

3. WORK PACKAGE SCOPE:

The purpose of this project is to use heavy equipment to demolish and dispose of Building 104 (Test Fire Maintenance Building) superstructure, loading dock, floor slab, foundation, loading dock ramp and asphalt, obsolete utility poles, and pipe stanchions surrounding Building 104

Per the predemolition radiological scoping surveys, no areas within building are presently contaminated; thus this is a non-radiological demolition project and no RWP is required.

All Safe Shutdown, Utility Isolation, and Asbestos Abatement activities will have been completed before initiation of this project.

4. WORK LOCATION: **Building 104**

5. WORK PACKAGE PHASES:

1. Site Information
2. Site Preparation & Mobilization
3. Building, Demolition and Sequence of Work
4. Site Remediation & Demobilization

LIST OF APPENDIXES:

A – PHA/JSHA

B – Pre-Job Briefing/Job Status Log

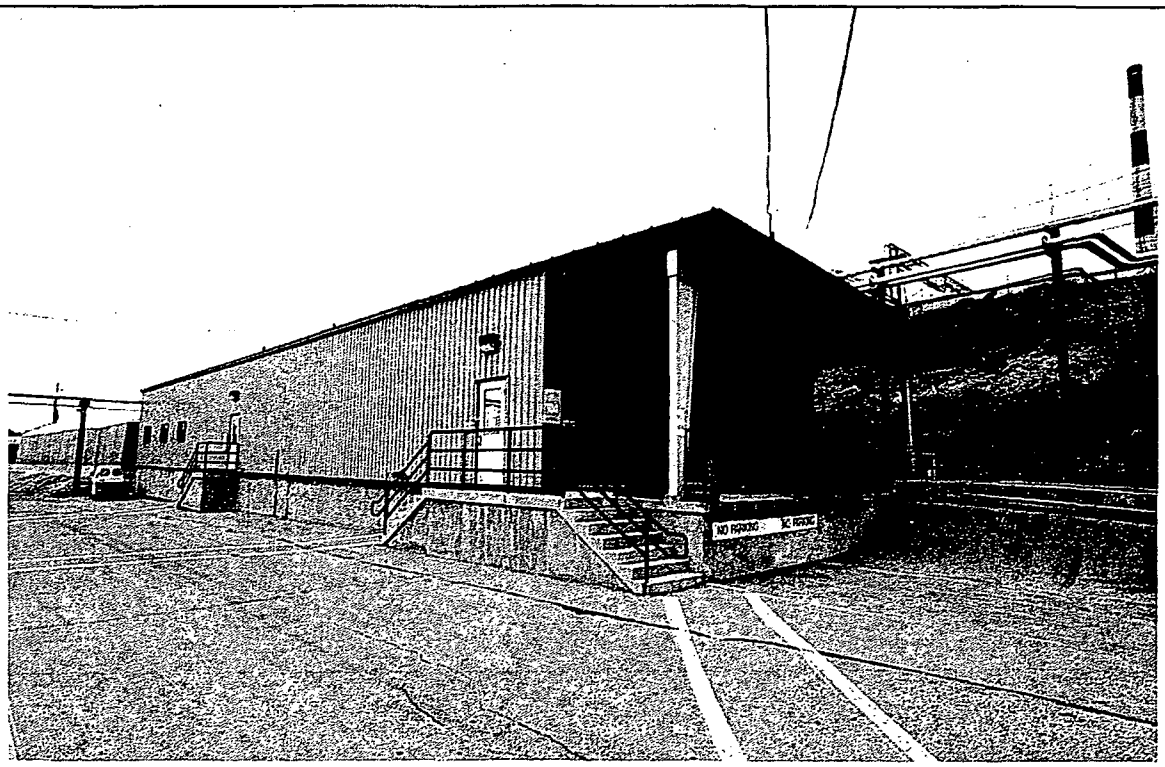
C – Drawings/Sketches/Photographs

D – Miscellaneous (RWP, USQ, etc.)

E – Post-Job Conference/Lessons Learned

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. Fog Cannon
5. Torch Equipment
6. Volvo Dump Truck



Building 104

7.0 DETAILED WORK STEPS:

7.1 SITE INFORMATION:

Structure can succinctly be stated as, "Building 104 is a Butler Brand building." Building 104 was constructed in 1989 as the Test Fire Maintenance building. The overall dimensions of the 4,025 square foot building are 115 foot long x 35 foot wide 14 foot high. Because the building is constructed on a flat area that was excavated into hillside, the building sits on footers that reflect the slant of the hillside (deeper on the roadside than on the side of the building adjacent to the hill. The footers on the roadside of the building give rise to the need for a stairway. Footer walls also give rise to the lower interior walls along the hillside having concrete facing on their lower parts. These areas are below the backfill level. 4" drain pipe runs along the back of the building about 1 to 1 ½ " above the base of the footers. [1]

The footers are constructed of reinforced concrete, using #6 rebar on the vertical, and #3 rebar set at 12 o/c. Another length of rebar is set through the footer, into the footer foundation/mud sill (#5 @ 16 o/c). The footer foundation varies from 2'-0" to 4'-0". The footer foundation uses the #6 rebar imbedded for the footer post above, with a matrix of #5 and #4 rebar. [2] The referenced drawing includes keys to the location of the various construction techniques for the footers. The referenced drawing indicates that the office area floor was left un-poured for a time. A loading dock is located on the east side of Building 104.

The foundation for the building consists of concrete footers, having a 6" thick slab, set on 6 mil visqueen, on a 4" of gravel."[3] The interior wall, separating the shop from the office area is constructed of grout filled concrete block with #5 rebar @24 o/c. [4]

In 1991, a 6 foot wide reinforced concrete ramp was constructed, on the east side of Building 104, from the existing roadway to the loading dock. (Ref: drawings 310401-00001 thru 310401-01003).

Around the northern and western sides of Building 104 are existing pipe stanchions.

7.2 NATIONAL HISTORIC PRESERVATION ACT (NHPA)

Building 104 is not listed as a historic structure with the Ohio Historic Preservation Office (OHPO). No mitigative documentation package is required.

IMPORTANT: However, if any items or artifacts are discovered as this project progresses, the Cultural Resource Representative will be notified at extension 4080. Work will be temporarily suspended until which time the items or artifacts have been recovered.

IMPORTANT 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.

7.3 SITE PREPARATION & MOBILIZATION

7.3.1 Site Access Control

---

[1] Engineering Design Drawing 410400-02004, "Test Fire Maintenance Building, Building 104, Section, Framing Plan and Elevations", Construction Record Plan, November 14, 1989.
[2] Engineering Design Drawing 410400-02004, "Test Fire Maintenance Building, Building 104, Section, Framing Plan and Elevations", Construction Record Plan, November 14, 1989.
[3] Engineering Design Drawing 410400-02004, "Test Fire Maintenance Building, Building 104, Section, Foundation Details", Construction Record Plan, November 14, 1989.
[4] Engineering Design Drawing 410400-02004, "Test Fire Maintenance Building, Building 104, Sections and Details", Construction Record Plan, November 14, 1989.

Coordinate the set up of the work zone boundary with personnel working at the rail spur. Access to the work zone boundary will be controlled using fencing and/or with barricade tape as directed by the Project Foreman. Proper signage will be placed at all access points to the work zone.

The work zone is not to be entered by anyone not directly involved with the demolition unless they have contacted the Project Construction Manager or Project Foreman in advance.

7.3.2 Sediment/Storm Water Control

7.3.2.1 Cover field grates with covers/sheeting for silt protection sewer gratings (See maps Appendix C) and install sediment/storm water control silt fences around designated construction area, as needed. Protect Sanitary Sewer and utility access manholes with steel plates, as needed. Reference OPA980099, Storm Water Pollution Prevention Plan (latest issue). Coordinate and evaluate effectiveness of controls periodically throughout demolition activities with Environmental Compliance PoC.

7.3.2.2 Ensure spill kit is in area and available and adequate to prevent any liquid contaminants from entering storm drains or drainage ditch. (**Note:** None are expected). Employees shall report any observed spills or releases to a Site Supervisor by dialing 608-8293 or 608-8294 or via NEXTEL phone at Site Sup1 or Site Sup2 or AASecurity.

7.3.3 Clear Area and Mark/Protect Utility Equipment and Monitoring Wells

7.3.3.1 The area around the building will be cleared of obstacles as appropriate. Coordinate with site Safety and Health and Environmental Compliance.

7.3.3.2 Mark (with visible stakes), construct barriers to protect structures/utility equipment, or remove as needed the following items located inside the demolition zone (see Vista Maps in Appendix C):

- Fire line Post Indicating Valves (PIV).
- Domestic Water Post Indicating Valve (PIV).
- Monitoring wells
- Telephone cabinet
- Light and power poles .
- Manhole and Storm sewers
- Trailer #4 (only required if Trailer #4 to remain after Building 104 demo)

7.3.4 Temporary Utilities

The only temporary utility that may be required is water. If domestic water is utilized, ensure backflow prevention is present. Coordinate with site Safety and Health and Environmental Compliance PoCs. Water will be used to control dust emissions. Coordinate with Utilities Group/Utilities Package for services needed.

7.3.5 Temporary Facilities

This project will use the existing BOSS project trailer complex located in the existing Mound "C" parking lot.

7.3.6 Temporary Communications

Temporary communications are required (cell phone, radios) as equipment for hearing plant announcements and emergency notifications have been removed prior to demolition.

7.3.7 Staging Areas

The project site is of sufficient size to be used as a staging area for materials needed / generated.

7.3.8 Erosion/Dust Control Measures

Control measures will be instituted to mitigate effects of excess storm water run-on/ run-off and the effects of

erosion. The site Storm Water Pollution Prevention Plan, OPA980099 (latest issue) is written to comply with the site National Pollutant Discharge System (NPDES) Permit {OAC 3435-33}. The requirements of OPA 980014 Section 2.11, Fugitive Dust Control will be followed in this work package.

7.3.8.1 Installation of Silt Fence

In order to prevent excess debris, soils, silt or other harmful materials from entering surface streams or the storm sewer system a retention barrier will be erected where appropriate. This barrier will consist of industry standard "silt fence." Where silt fence installation is impractical, straw bales will be used. Periodic inspections will be made by the project Superintendent or designee to ensure the fence is functioning properly. If, in the opinion of the Job Superintentent, the fence is not functioning properly, steps will be taken to re-enforce or alter the configuration until satisfactory results are achieved.

7.3.8.2 Installation of Fugitive Emissions Controls

The goal of fugitive emission controls is no visible dust/emissions. Best available technology (BAT) determination for the demolition of Building 104 is reasonably available control measures (RACM). Measures will be employed to maintain fugitive particulate emissions as low as reasonably achievable. The goal is no visible fugitive dust. Mitigating controls to be employed include, but are not limited to:

- Use of fixatives on internal and external surfaces, removal of loose paint and decontamination prior to demolition.
- Use of fixatives in-situ during work or prior to pauses in work (i.e. weekends and holidays)
- Controlled water misting of the building demolition area and common waste zone by misters installed on equipment, portable towers or operated by trained personnel.

The intent will be to add enough water to control fugitive emissions without over-saturating the area and creating undesirable run-off. Periodic inspections will be made by the Job Superintendant or designee to assure fugitive emissions controls are achieving the desired effect and meeting acceptable standards. Reference Table 1, Airborne Contamination Protection Methods, below.

Table 1 Airborne Contaminant Protection Methods

Dust Generating Activities	Administrative and Engineering Dust Control Measures
Building Demolition	• Applying dust control materials such as water and surfactants
Hauling Material and Equipment	• Reducing vehicle speeds (<20 mph) • Keeping soil levels in vehicles below the vehicle sides • Wetting roads used for transport • Wet sweeping or otherwise removing soil and mud deposits from paved roadways and parking areas
Vehicle and Equipment Traffic	• Reducing vehicle speeds (<20 mph) • Wetting roads used for transport • Minimizing unnecessary traffic on roadways, parking areas, and areas around field activities • Wash down lower portion of haulers/trucks to minimize the spread of dust
Excavation	• Applying dust control materials water and surfactants • Covering storage piles with a tarpaulin, plastic, etc. • Keeping soil levels in vehicles below the vehicle sides • Minimizing the material drop height during excavation and loading operations • Compacting soils in work areas and in stockpiles at the end of each workday • Changing excavation and transportation method(s) when feasible • Applying vegetative cover or asphalt to project work area at completion of project • Sealing off work areas, stockpiles, etc., before the workday and during lunch breaks
Trenching	• Applying dust control materials water and surfactants • Covering storage piles with a tarpaulin, plastic, etc. • Keeping soil levels in vehicles below the vehicle sides • Minimizing the material drop height during excavation and loading operations • Compacting soils in work areas and in stockpiles at the end of each workday • Changing excavation and transportation method(s) when feasible • Applying vegetative cover or asphalt to project work area at completion of project • Sealing off work areas, stockpiles, etc., before the workday and during lunch breaks

Table 1 Airborne Contaminant Protection Methods (continued)

Dust Generating Activities	Administrative and Engineering Dust Control Measures
Material Loading and Unloading	• Reducing vehicle speeds (<20 mph) • Keeping soil levels in vehicles below the vehicle sides • Wetting roads used for transport • Wet sweeping or otherwise removing soil and mud deposits from paved roadways and parking areas
Storage Piles	• Compacting soils in work areas and in stockpiles at the end of each workday • Sealing off work areas, stockpiles, etc., before the workday and during lunch breaks • Covering storage piles with a tarpaulin, plastic, etc. • Applying vegetative cover to storage pile areas at completion of project
Wind Erosion from Work Sites	• Compacting soils in work areas and in stockpiles at the end of each workday • Sealing off work areas, stockpiles, etc., before the workday and during lunch breaks • Covering storage piles with a tarpaulin, plastic, etc. • Applying vegetative cover or asphalt to project work area at completion of project

7.3.9 Permits

The following permits may be applicable to perform this work:

- Penetration Permits
- Hot Work or Burning Permit
- Excavation Permits
- Lock Out Tag Out Permits
- Radiological Work Permits (RWP)
- Certification of equipment
- Sling Inspection

7.3.10 Chemicals/Hazardous Materials

All known sources of chemicals of concern and Asbestos Containing Material will have been removed from the building prior to demolition. There is no known Asbestos Containing Material in Building 104, however if any regulated Asbestos Containing Material is found, a licensed asbestos abatement subcontractor or asbestos trained Mound personnel will have abated it prior to the start of demolition.

Material, equipment, and debris (except hazardous material) associated with this project will be evaluated for feasibility to be free-released. When surveys are below release limits, and debris can be protected from being contaminated during demolition, the debris will be free-released. The remainder of the debris will be treated as low-level radioactive waste unless radiological surveys determine waste exceeds 100 nCi/g. Any waste determined to exceed TRU levels will be segregated and packaged accordingly.

Any hazardous waste material (i.e. Asbestos Containing Material, lead and mercury) encountered during demolition will be abated (as practical) and disposed of according to CH2M Hill Waste Management requirements.

Silica/nuisance dust and lead paint may be encountered during demolition. Engineering/administrative controls (such as water misting) will be used to mitigate the potential hazard to workers and the environment. No torch cutting of painted surfaces will be permitted unless MCP Safety and Health has tested affected paints and found them free of lead. MCP Safety and Health may conduct air monitoring as necessary to maintain applicable annual exposure assessments and compliance with occupational exposure standards.

7.3.11 NESHAPS

The offsite estimated effective dose equivalent (EDE) for the demolition of the Building 104 is less than the 0.1 mrem/year threshold. Therefore USEPA approval is not required for this project. This work plan will contain methods/requirements to mitigate any potential dose that would exceed the threshold level.

7.3.12 Material Disposition

Based on a review of the work to be performed, the Waste Generator and Waste Coordinator determine types (sanitary, hazardous, LLW, LLMW, TRU) and estimated amounts of waste prior to generation. An evaluation of the physical, radiological and chemical properties is made to determine a disposal path for each type of waste. The proposed disposal facility, waste profile, and knowledge of the waste generating process will determine the characterization methodology required for each waste type.

Process knowledge will generally be sufficient to characterize sanitary and hazardous waste for disposal. Sampling and analysis for radiological characterization of radioactive waste will be determined based on process knowledge of the source of the waste. Analytical methods employed include surface contamination measurements, air concentration measurements, alpha spectroscopy and gamma spectroscopy. All characterization determinations are documented and peer reviewed prior to waste shipment. Material Safety Data Sheets (MSDS) are used to supplement process knowledge of chemical properties of the waste. Where process knowledge is not sufficient to provide a RCRA determination, analysis of waste will be accomplished through the Toxicity Characteristic Leaching Procedure (TCLP) performed by an offsite laboratory.

Procedures controlling waste characterization are contained in Mound Technical Manuals MD-10167,

Radioactive Waste Procedures, Operations 420: *Waste Stream Characterization* and 428: *Waste Radionuclide Identification and Quantification*, and MD-70523, *Management of Hazardous Waste, Trash, and Recyclable Materials*, Operation 001: *Waste Verification Sampling and Analysis*. Additional direction is contained in these manuals in operations specific to the waste type and container being used.

7.4 PRELIMINARY ACTIVITIES AND VERIFICATIONS

IMPORTANT

7.4.1 Verify all Safe Shutdown Activities Building 104 completed per work package BOSS-40462.

Verified by _____ date: _____
Bill Wahler or designee/email

NOTE: Electrical power for Trailer #4 is fed from PH building via the overhead pipe stanchions. Electrical power and fire alarm system for Building 104 is fed from PH building via underground conduits.

7.4.2 Verify all Mechanical and Electrical Utility Isolation Activities for Building 104, Trailer #4, and pipe stanchions have been completed per work packages FTS-40466 and FTS-40465, respectively.

Verified by _____ date: _____
Allen Upshaw or designee/email

7.4.3 Contact Robert Coblentz (608-8206) to ascertain if any area in Building 104 constitutes a Rad hazard. If any area constitutes a Rad hazard, coordinate with Rad Controls for RWP/PPE/work controls and revise Demolition Work Package to address Rad hazard. If there is not any Rad hazard, continue with this work package.

HOLD POINT: Radiological Final Status Survey Report complete verification:

Verified by_____ date _____
Rad PoC or email

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

Verified by _____ date: _____
Mike Stromberg or designee/email

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

Verified by _____ date: _____
Mike Stromberg or designee/email

7.4.6 Notify Gary Weidenbach, Bldg. Mgr., (608-8207) of demolition schedule, potential traffic pattern delays, and building access/egress coordination.

Verified by _____ date: _____
Mike Stromberg or designee/email

IMPORTANT NOTE: During demolition activities, when Building 104 is being collapsed, access to roadway south of building (as conditions warrant) may be restricted. Complete Road Closure Form

(See Appendix D) prior to closing road.

7.5 BUILDING DEMOLITION SEQUENCE OF WORK

WARNING HAZARD: Prior to starting demolition of the pipe stanchions and Building 104 structure, move Trailer #4 (TR-4) from it present location. If trailer is to remain, protect trailer with barriers to prevent damage to trailer, insure that there are no occupants in the building during demolition, and that no one can re-occupy the building during the demolition of pipe stanchions and Building 104. Close the TR-4 exit nearest to Building 104 during demolition and notify TR-4 occupants when the west end of Building 104 is to demolished.

WARNING HAZARD: The structural demolition (Section 7.5.1) must be completed prior to the slab and foundation demolition (Section 7.5.2). The structural 7/8" diameter tie rods in the floor slab that provides added support to the outside columns (Ref: drawing 310400-02002), must remained in tact until the Building 104 structure has been demolished. Once the building structure has been removed, these tie rods provide no purpose, so they can be safely removed during the slab and foundation removal.

CAUTION HAZARD: Vehicle traffic hazard. Control traffic flow as necessary. Project Engineering will coordinate the posting of notice on GroupWise/Mound News, several days in advance and during ongoing demolition work, that traffic routes around the demolition area may be interrupted or diverted. Notify the following organizations/personnel that traffic patterns may be disrupted: Jeff Lentz 865-4047 or 608-8293, and the Building Manager, Gary Weidenbach, 608-8207.

CAUTION CONTAMINATES SPILL HAZARD: Ensure spill kit is available to prevent any liquid contaminant from entering storm drains, drainage ditch, or deep wells. Employees shall report any observed spills or releases to a Site Supervisor by dialing 608-8293 or 608-8294 or via NEXTEL phone at Site Sup1 or Site Sup2 or AASecurity.

WARNING HAZARD: Dust Control – Utilize misting & fogging during demolition & road wetting during waste hauling. The goal is no visible dust emissions. Periodically evaluate control methods to determine their effectiveness.

CAUTION HAZARD: If any part of heavy-duty equipment has the potential to come with 10 feet of the power and light poles around Building 104, follow OHSA 29 CFR 1910.333(c)(3)(iii)(A)(2), installing insulating barriers, if feed can not be shutdown and LOTO'd. (See attached Lessons Learned)

CAUTION HAZARD: Struck by flying debris. Establish construction boundary. Wear hardhat, safety glasses, safety shoes, (Level D PPE) and reflective vest inside construction area.

CAUTION HAZARD: Struck by moving equipment.

- Maintain the following distances from operating equipment:
- Shear – 75 feet
- Hoe Ram – 50 feet
- Other heavy duty equipment – 30 feet
- Bobcat – 15 feet

WARNING NOISE HAZARD: Wear hearing protection while running heavy-duty equipment. Follow the requirements of MD-10286 D9.

CAUTION HAZARD: Heat/Cold Stress. Follow the requirements of MD-10286 D13/D16

CAUTION HAZARD: A Hot Work Permit will be required if a torch is used for cutting. Coordinate with site Safety and Health for PPE/work controls before torch cutting due to possible toxic/hazardous fumes (i.e., lead paint/galvanized/stainless steel). Obtain and follow Hot Work permit per MD-10286 O2

Notification of Demolition and Renovation form must be filed with the Regional Air Pollution Control Agency (RAPCA) at least **10 <u>business</u> days before planned demolition of Building 104.**

HOLD POINT: RAPCA Notification verification

Environmental Compliance PoC_____ Date to Proceed with Demo_____

HOLD POINT: Regulatory requirements met.

Verified by:_____ Date and Time_____
Robert Ransbottom or designee

HOLD POINT: 'COLD & DARK' Review Team Walk-down Completed &Project Manager Authorizes Work to Start:

Project Manager:_____ Date and Time:_____

IMPORTANT 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, i.e., work outside the scope of this workpackage.

NOTE: The progression of the building demolition and selection/sizing of demolition equipment will ultimately be determined in the field. However, when a decision is made in the field to deviate from the work plan, the deviation will be discussed with and approved by the Job Supervisor and the Job Status Log will be filled out to document the change. Changes will be evaluated for any increased collapse potential.

NOTE: Demolition preparation is defined in 29CFR1926.850. Workers not familiar with construction standards must meet with Project Supervision and/or Project Health and Safety personnel.

NOTE:. Based on radiological screening results, Building 104 is not radiological contaminated and will be disposed as non-Rad waste, unless MARSSIM surveys indicate otherwise.

NOTE: Waste debris created during demolition will be staged as much as possible within the footprint of building. After appropriate surveys, it will then be loaded directly into the appropriate packaging or haulers. All waste will be packaged and disposed per CH2M Hill Waste Management requirements.

NOTE: Wind direction must be taken into account when pre-placing personnel operated and/or portable water misting equipment. Place personnel and misting equipment upwind to allow easy water application.

7.5.1 Structural Demolition

NOTE: Verify that the east exit to TR-4 has been blocked and TR-4 occupants have been notified when demolition of the west end of Building 104 is to occur.

NOTE: If necessary, remove the necessary pipe stanchions around Building 104 to gain better access to the demolition of Building 104 prior to the demolition of building (see section 7.5.1.4 below).

7.5.1.1 Use the existing Building 104 slab and east loading dock area for load out surface for loading debris and placing into appropriate hauling containers or trucks.

7.5.1.2 Using heavy equipment, working from the top downwards, demolish the above ground structures, cut or dismantle and pull down the joists, roofing materials, wall sections, and support beams.

7.5.1.3 Use the existing slab for load out surface for loading debris and placing into appropriate hauling containers or trucks.

7.5.1.4 Following existing pipe stanchion removal work package SMPP/TFV- 34942, revision #4, remove the remaining pipe stanchions around Building 104 that are covered under that work scope.

7.5.1.5 Obtain "Excavation / Soil Disturbance" permit and remove any obsolete utility poles. Contact Allen Upshaw 865-4894 or Nextel 673-2874 to verify all conductors on the utility poles are disconnected / air gapped/ removed. Using heavy duty equipment, remove the designated pole

7.5.2 Slab and Foundation Demolition

CAUTION HAZARD: Strike underground utilities. Obtain Excavation permit and follow its requirements per MD-10286 O5. **Note: Vistamap indicates the existence of elevated readings at soil sample location 47, which is located at the southwest corner of the building. Readings range from 2.9 to 3.3 pCi/g of Th-232. Please specify any special measures to be taken, on the excavation permit. (See Appendix C)**

IMPORTANT: Exercise caution when demolishing and removing slab and foundation/footers to not damage underground utilities. Be alert to and reference Underground Utilities Vista Maps in Appendix C and referenced drawing for the following utility system lines running near the foundation/slabs of Building 104. Reference the Electrical and Mechanical Utilities Isolation Activities work packages for the post demolition status of these lines.

- **Existing 24" x 12" concrete electrical duct bank with 3 each 4" conduits that runs under Building 104 footer from electrical manhole to PH building can remain. Also, along side of the concrete electrical bank is a 4" telephone conduit that can remain. (Ref: drawings 310400-01003, 310400-01002). Verify that the electrical bank is isolated (air gapped) or LOTO'd prior to slab demo.**
- **Building 104 sanitary floor drains and piping (Ref: drawing 310400-04001) can be removed during the slab removal as needed.**
- **Building 104 curtain 4" PVC drain and 6" PVC drain to catch basin associated with this curtain drain on the north side of building (Ref: drawing 310400-01002) can be removed as needed.**
- **Building 104 underground 1" domestic water feed on N.W. corner of building (Ref: drawing 310400-04001) can be removed as needed.**
- **Building 104 underground 2" and 2 ½" power and signal feed on south side of building (Ref: drawing 310400-05001) can be removed as needed.**
- **Do not damage 24" storm drain that runs underneath ramp on east side of Building 104 to catch basin (Ref: drawing 310401-01002)**

CAUTION HAZARD: If any part of heavy-duty equipment has the potential to come with 10 feet of the power and light poles around Building 104, follow OHSA 29 CFR 1910.333(c)(3)(iii)(A)(2), installing insulating barriers, if feed can not be shutdown and LOTO'd. (See attached Lessons Learned)

WARNING HAZARD: Dust Control – Utilize misting & fogging during demolition & road wetting during waste hauling. The Goal is no visible dust emissions.

WARNING NOISE HAZARD: Wear hearing protection while running heavy-duty equipment. Follow the requirements of MD-10286 D9.

CAUTION HAZARD: Struck by flying debris. Establish construction boundary. Wear hardhat, safety glasses, safety shoes, and high visibility clothing (i.e.; highway reflective vests; fluorescent shirts) inside construction area.

CAUTION HAZARD: A Hot Work Permit will be required if a torch is used for cutting. Coordinate with site Safety and Health for PPE/work controls before torch cutting due to possible toxic/hazardous fumes (i.e., lead paint/galvanized/stainless steel).

CAUTION HAZARD: Struck by moving equipment.

- Maintain the following distances from operating equipment:
- Shear – 75 feet
- Hoe Ram – 50 feet
- Other heavy duty equipment – 30 feet
- Bobcat – 15 feet

CAUTION HAZARD: Burns/fire. Utilize Burn Permit, fire protection, and wear appropriate PPE

CAUTION HAZARD: Heat/Cold Stress. Follow the requirements of MD-10286 D13/D16

NOTE: The progression of the slab/footer demolition and selection/sizing of demolition equipment will ultimately be determined in the field. However, when a decision is made in the field to deviate from the work plan, the deviation will be discussed with and approved by the Job Supervisor and the Job Status Log will be filled out to document the change. Changes will be evaluated for any increased collapse potential.

NOTE: The area bordering west of Building 104 is an URMA. Coordinate demolition activities with Environmental Restoration group (James Fontaine 608-8220 and/or Monte Williams 865-4543 or 608-8005) and Environmental Compliance (Ron Paulick 865-4080 or 608-8227).

NOTE: If soil staining or unusual fumes/odors are noted during slab/foundation excavations, contact IH (Chris Ahlquist 608-8203) or Safety (Doug Hanson or 608-8008) and Environmental Compliance (Ron Paulick 865-4080 or 608-8227).

NOTE: During the concrete demolition, use heavy equipment to assist radiological control personnel to perform radiological screening of ground contact concrete surfaces. Based on radiological screening results, transport to designated disposal area as directed by Waste Management PoC.

7.5.2.1 Verify that existing 2' x 1' concrete electrical duct bank under Building 104 is isolated (air gapped) or LOTO'd prior to removing slab...

Verified by _____ date: _____
Allen Upshaw or designee/email

7.5.2.2 Identify and mark location of underground 24" storm sewer between catch basins on east side of Building 104 and walk down with heavy duty operator so that they are aware of location during demolition of ramp.

7.5.2.3 If necessary, saw cut the pavement south of the building between the asphalt that is remaining and asphalt that is being demolished so that there a clean break and no unnecessary damage to the roadway that remains.

7.5.2.4 Using heavy equipment, for Building 104, break apart the concrete slabs, Building 104 foundation walls/footers to 3 feet below grade, loading dock and ramp east of building, asphalt drive up to dock, stairs south of building, and torch cut the rebar if required (Hot Work Permit is required) to support demolition and downsizing. Debris will be removed and surveyed/scanned by Rad. Control technicians. The materials will be sized and placed into appropriate hauling containers or trucks.

7.6 Site Remediation & Demobilization

CAUTION HAZARD: Heat/Cold Stress. Follow the requirements of MD-10286 D13/D16

CAUTION FALLING HAZARD: Utilize fall protection, barricades, or man-lifts

CAUTION HAZARD: Struck by moving equipment.

- Maintain the following distances from operating equipment:

- Shear – 75 feet
- Hoe Ram – 50 feet
- Other heavy duty equipment – 30 feet
- Bobcat – 15 feet

7.6.1 Grading, Seeding, & Mulching

7.6.1.1 Erect any additional erosion control/protection fencing or other materials as needed in compliance with Environmental Compliance group PoC (Ron Paulick, 865-4080 or 608-8227) instructions. Remove debris/rubble/rock as necessary to provide smooth continuous grade and restore the area by grading and filling with appropriate amount of gravel/soil to grade to drain.

7.6.1.2 Apply appropriate amounts of grass seed and matting, in graded and soil backfilled areas, to maintain erosion control/protection in accordance with Environmental Compliance PoC instructions.

7.6.1.3 Remove any temporary protection/structures used to protect Building 104 utility equipment/stanchions, PIVs, sanitary/storm sewer grates/manholes, and utility access manholes.

7.6.1.4 Remove silt protection covers from field grates and any remaining sediment/storm water control fences, straw bales and sand bags, unless it is beneficial to keep silt/sediment control devices in-place for further demolition/remediation work.

7.6.1.5 Remove sediment and debris that has collected at the storm sewer gratings and along roadways and curbing.

7.6.2 Demobilize Construction Equipment

CAUTION FALLING HAZARD: Utilize fall protection, barricades, or man-lifts

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Remove dust control water distribution system, temporary power (if used), fencing and any traffic control. Scan equipment for radiological contamination prior to leaving area, as required, dependent upon in-process Rad surveys.

Note: Insert the activities to be performed during the job. Describe the specific methods of accomplishing these activities and appropriate level of detail based on the complexity, hazard, and skill of the craft. Activities listed must be grouped under the Work Package phases listed in item 5.

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Work Package /Preliminary Hazard Analysis (Continued)

8. COMMENTS:

EMERGENCY PREPAREDNESS

- Site Notification Procedures

Use **911** (**AA911** for Nextel phone) for all emergency services onsite. This is the first response for any emergency. If using a cell phone, dial **8-911**. This number will ring into the 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 project two-way radios. Additionally, unique sheltering and evacuation signals are available should site-wide protective actions be necessary.

- Evacuation Route/Assembly Areas

Assembly area is East of Building 104 outside the work area boundary fence along the roadway.

- Take Shelter Area

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

The take shelter area is in COS, Room 120 and common hallways on 1st floor.

Note: Comments, to identify activities/hazards that are common to multiple phases of the project (example: Wear leather gloves when handling cut pipe). Identification of these items will facilitate the addressing the items once in the pre-job briefing.

9. REVIEW SIGNATURES:

Written by: _____ Date: 9/14/04 Phone: 608-8284

Superintendent: _____ Date: 9/15/04 Phone: 608-8202

Foreman: _____ Date: 9/15/04 Phone:

Project Eng. Mgr: _____ Date: 9/15/04 Phone: 608-8201

Industrial Safety & Hygiene: _____ Date: 9/15/04 9/14/04 Phone: 608-8008 608-8203

Rad. Controls: _____ Date: 9/14/04 Phone: 6734518

ES&C: _____ Date: 9/15/04 Phone: 608-8227

Waste Mgmt: _____ Date: 09/14/04 Phone: 673-8384

Bldg. Mgmt: _____ Date: 09/16/04 Phone: 608-8007

Classification: : _____ N/A _____ Date: / / Phone:

Other: _____ Date: / / Phone:

Note: Project Manager has the authority to N/A signatures if review is not applicable.

10. USQ SCREEN / DETERMINATION REQUIRED? YES NO X

Brief Explanation: This work scope will have no effect upon a Nuclear or Radiological Facility.

USQ Trained Person: _____ Date: 09/16/04 Phone: 608-8207

11. AUTHORIZATION SIGNATURE:

Project Manager: _____ Date: 9/16/04 Phone: 608-8007

12. WORK PACKAGE CLOSURE:

Job Supervisor: _____ Date: / / Phone:

Project Manager: _____ Date: / / Phone:

RETURN PHA TO IS&H AT JOB COMPLETION.

APPROVAL CONTINUATION SHEET

Reviews:

Name	Signature	Date	Department

Reference Drawings	Rev.	Reference Procedures	Rev.

WORK PLAN REVISION SHEET

1. WORK PACKAGE TITLE: Demolition of Building 104
2. WORK PACKAGE NUMBER: BOSS-40464 - 00.

[Note: Mark this section in color]

☐ Office Master Copy (Original Approval Signatures) ☐ Field Working Copy (Original Field Sign -Offs) ☐ Review Copy ☐ Other Copy

Revision Description: (attach page revisions to form)

Reviewed by:	Name	Signature	Date
Project Engineering:			
Project Superintendent/Foreman:			
Radiological Operations:			
Industrial Safety & Hygiene:			
Waste Management:			
Environmental Safeguards & Compliance:			
Building Manager:			
Other:			

Approved by:

CH2M Hill Project Manager

Name Signature

Date

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REVISION LOG

1. WORK PACKAGE TITLE: Demolition of Building 104			
2. WORK PACKAGE NUMBER. BOSS-40464 - 00.			
Revision	**Reason**	**By**	**Date**

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Appendix A

Preliminary Hazards Analysis (PHA)

Job Safety & Health Analysis (JSHA)

 029076

APPENDIX A

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 F if additional space is needed.)

Item	Exist	Work Package Phase	Comments, Controls, Methods of Compliance
Access/Blockage:			
Blockage of exits or means of egress	No	N/A	
Blockages/obstructions (Identify)	Yes	3	Coordinate road blockages around Building 104 with points of contact listed in work package and road closure form (see Appendix D)
Confined space entry (permit)	No	N/A	
Emergency alarms or evacuation plans required	Yes	All	Cell phones will be used as the main line of communicating alarms to personnel.
Obstruction of fire protection equipment (pull boxes, hydrants, fire department connections, control panels, fire extinguishers, etc.)	Yes	All	Fire hydrant will be protected, but still available for emergency use.
Traffic control/flagman	Yes	All	Provide sufficient flagmen and signage to ensure safe traffic control
Flammable/Explosive:			
Burning, welding, hot-work (Fire Watch) (permit)	Yes	2 & 3	Obtain & follow Hot Work Permit per MD-10286 operation O2, Hot Work Permit Procedures. Paint may contain lead, do not torch cut painted surfaces without verification by IH or Safety PoC.
Chemical compatibility of corrosives/flammables	No	N/A	
Explosive/flammable atmosphere	No	N/A	
Explosives	No	N/A	
Fire protection system/equipment outage	No	N/A	
Fire Hazards Analysis/Fire Engineer Approval	No	N/A	
Flammable liquids/gases	Yes	2 & 3	Acetylene & oxygen – Utilize proper tank restraints. Follow Mound Procedure MD-10286, H1.
Powder-actuated tools (permit)	No	N/A	
Special Fire Protection Equipment Required	No	N/A	
Chemicals:			
Chemical process safety	No	N/A	
Compressed gas cylinders	Yes	2 & 3	Follow Mound Procedure MD-10286, operation H1, Use of Compressed Gas Cylinders, Manifolds, and Regulators, when handling oxygen and acetylene gas cylinders.
Emergency eyewash/shower available	No	N/A	
Elevated/Aerial Work:			
Crane operations, overhead or mobile	No	N/A	
Critical lifts (heavy or high value loads)	No	N/A	
Elevated work/fall protection	Yes	All	Follow Mound Procedure MD-10286, operation M8, Fall Protection / Elevated Work Surface.
Forklifts, aerial lifts or material handling equipment	Yes	All	Follow Mound Procedure MD-10286, operation M8, Fall Protection / Elevated Work Surface.
Hoisting and rigging	No	N/A	
Overhead utilities (Identify)	Yes	All	LOTO overhead utilities per MD-10444, Lockout / Tag Out Procedure. If LOTO not feasible, follow MD-10395 electrical safety manual to work within 10 feet any overhead energized.

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APPENDIX A

Preliminary Hazard Analysis (PHA)For Work Package Activities (Continued)

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 F if additional space is needed.)

Item	Exist	Work Package Phase	Comments, Controls, Methods of Compliance
Lockout/tagout, outages, disconnects (permit)			
• Electrical	Yes	All	Electrical isolation of the facility is accomplished during Utilities Isolation Activities. LOTO overhead utilities per MD-10444, Lockout / Tag Out Procedure as needed. If LOTO not feasible, follow MD-10395 electrical safety manual to work within 10 feet any overhead energized lines
• Mechanical (steam, hydraulic, pneumatic, gravity)	No	N/A	
• Interlocks	No	N/A	
• Chemical	No	N/A	
• Radiological	No	N/A	
Outages of the plant public announcement (PA) system or the emergency notification system	Yes	All	Plant PA system out of service. Use cell phones and air horns for emergency notifications.
Building Systems Alarms - Ensure systems are not functional by contacting: Fire Department Security Facilities Services.	No	N/A	
Alarm Disable/Disconnect	No	N/A	
Structure Related:			
Modification to Fire Wall/Door	No	N/A	
Penetrations into walls, floors, etc. (permit)	No	N/A	
Plastic sheeting or wood framing/enclosures	No	N/A	
Structural Modification	Yes	All	Building Structural Engineering Survey per OSHA 29 CFR 1926.850 (see Appendix D). Demolish building per work package.
Work impacting adjacent normally occupied areas	Yes	All	Coordinate Building 104 demolition work zone boundaries with rail spur activity personnel.
Temporary Requirements:			
Temporary heating facilities	No	N/A	
Temporary/portable buildings or structures	No	N/A	
Temporary service hook-ups (Identify)	Yes	All	Water hydrant for misting, including backflow prevention, if required or fog cannon & self contained water tanks
Public utilities (Identify)	No	N/A	
Lighting/illumination/adequacy	No	N/A	
Miscellaneous:			
Machine guards	No	N/A	
Off-shift work	Yes	All	As determined by Project Manager
Repetitive work	No	N/A	
Other (Specify)	None	N/A	
Work in attics, ceilings, chases, or crawlspaces	No	N/A	
Work Requiring Scaffolding (inspection required)	No	N/A	
Electrical:			
Electrical hazards	Yes	All	Electrical isolation of the facility is accomplished during Utilities Isolation Activities. LOTO overhead utilities per MD-10444, Lockout / Tag Out Procedure as needed. If LOTO not feasible, follow MD-10395 electrical safety manual to work within 10 feet any overhead energized lines.

APPENDIX A

Preliminary Hazard Analysis (PHA)For Work Package Activities (Continued)

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 F if additional space is needed.)

Item	Exist	Work Package Phase	Comments, Controls, Methods of Compliance
Grounding of electrical equipment	No	N/A	
Soils/Excavation:			
Underground utilities (Identify)	Yes	3 & 4	Utilize Excavation/Soil Disturbance Permit, MD-10286, O5 before slab demolition
Trenching/Shoring (permit)	No	N/A	
Hazards due to condition of facility or terrain (Identify)	No	N/A	
Any soil disturbance	Yes	3 & 4	(Note: Check for URMAs, Obtain & follow Excavation/Soil Disturbance Permit, MD_10286, O5 before slab demolition, utility pole removal. Remediation of soil contamination will be conducted by the ER Project.

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 F if additional space is needed.)

Item	Exist	Work Package Phase	Comments, Controls, Methods of Compliance
Asbestos/Fibers:			
Asbestos	No	N/A	
Removal of ceiling tiles*	No	N/A	
Insulation/man-made mineral fibers (MSDS available)*	No	N/A	
Hazardous Materials:			
Beryllium	No	N/A	
Cadmium	No	N/A	
Chlorofluorcarbon (CFC)	No	N/A	
Coal, tar or asphalt products	No	N/A	
Lead	Yes	All	Exposure to airborne lead during torch cutting. Contact Industrial Hygiene to verify absence of lead in paint or remove paint prior to torch cutting
Mercury	No	N/A	
Polychlorinated biphenyls (PCBs)	No	N/A	
Carcinogens (MSDS available)*	No	N/A	
Chemical/Corrosives:			
Chemicals/solvents (MSDS available)*	No	N/A	
Corrosives/acids/caustics (MSDS available)*	No	N/A	

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

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APPENDIX A

Preliminary Hazard Analysis (PHA)For Work Package Activities (Continued)

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 F if additional space is needed.)

Item	Exist	Work Package Phase	Comments, Controls, Methods of Compliance
Ventilation/Air:			
Abrasive blast (MSDS available)*	No	N/A	
Coating/painting (MSDS available)*	No	N/A	
Dusty operations	Yes	3 & 4	Utilize dust control measures as appropriate from Table 1 (OPA980014).
Foam in Place Operations	No	N/A	
Spraying/generation of mists*	Yes	3 & 4	Demolition dust control water misting during demolition and road wetting during waste hauling. Control misting water run-off in accordance with OPA 980099, Storm Water Pollution Prevention Plan (latest issue).
Ventilation or Air Monitoring requirements	Yes	3 & 4	Air monitoring for potential silica during demolition activities wil be performed as needed for annual site assessment.
Miscellaneous:			
High Pressure systems	No	N/A	
Lasers	No	N/A	
Noise in excess of 85 dBA	Yes	3	Hearing protection required during noise hazard activities. Follow requirements of MD-10286, D9.
Blood-borne pathogens*	No	N/A	
Temperature extremes (heat or cold stress)	Yes	All	Discuss in daily pre-job briefings & monitor per MD-10286 Operations D13/D16
Welding, brazing, or thermal cutting operations (permit)	Yes	2, 3,& 4	Hot Work Permit Required. Paint may contain lead, do not torch cut painted surfaces without verification by IH.
Hazardous Waste Operations (HAZWOPER)*	No	N/A	
Other (specify)	None	N/A	

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

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APPENDIX A

Preliminary Hazard Analysis (PHA)For Work Package Activities (Continued)

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 F if additional space is needed.)

Item		Exist	Work Package Phase	Comments, Controls, Methods of Compliance
Location:	Controlled Areas (Specify)			
•	Radiologically Fixed Contaminated Areas (FCAs)	No	N/A	
•	One Radiological Contamination Area (CA)	No	N/A	
•	One Radiological Materials Management Area (RMMA)	No	N/A	
	Other (Specify)	None	N/A	
Activities:	Digging/Soil Removal (permit)	Yes	3 & 4	Survey concrete (soil contact side) following slab removal. Excavation permit required for slab/foundation removal and site remediation activities
	• URMA	Yes	All	Demolition Site is located near URMA. Do not disturb URMAs on west side of Building 104.
	Welding, burning, grinding, hammering, chipping, or scraping of contaminated materials	No	N/A	
	Decontamination	No	N/A	
	- Site Remediation	No	N/A	
	Waste Disposal	No	N/A	
	Other (Specify) – Radiological Survey, Evaluation & Posted	No	N/A	
Sources:	X-Ray equipment, sealed, or unsealed sources	No	N/A	
Controls:	Radiological Work Permit	No	N/A	
	ALARA Plan	No	N/A	
	Other	None	N/A	

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APPENDIX A

Preliminary Hazard Analysis (PHA)For Work Package Activities (Continued)

SECTION D, ENVIRONMENTAL COMPLIANCE- TO BE COMPLETED BY ENVIRONMENTAL COMPLIANCE REPRESENTATIVE
Identify engineering/administrative controls as required, keyed to the following checklist items. Insert any required and/or other special actions to be taken because of the particular hazard. Additionally, identify any activities which are DOE or EPA prescribed protective requirements. (Use Section F if additional space is needed.)

		Exist	Work Package Phase	Comments, Controls, Methods of Compliance
Conditions:	Fugitive Dust (refer to Table 1 below)	Yes	All	OPA 980014 Section 2.11. Use water misting during demolition & road wetting during waste hauling.
	Storm Water Runoff	Yes	All	Install sediment/storm water protective "slip cover" around storm drain grating & silt fencing. Referenc OPA 980099. Install sand bags/silt fences as needed.
	Erosion Control	Yes	All	Grading, seeding, and mulching
	NESHAPS Calculation	Yes	All	Emission Levels determined to be below requirement. No US EPA approval required for this building.
	National Historic Preservation	No	N/A	Building 104 is not listed as a historic structure with the Ohio Historic Preservation Office (OHPO). No mitigative documentation package is required.
	• Artifacts found	Yes	All	If any items or artifacts are discovered as this project progresses, the Cultural Resource Representative will be notified @ extension 4080. Work will be temporarily suspended until which time the items or artifacts have been recovered.
	Safe Drinking Water Act	No	N/A	All Utilities were isolated with Utility Isolation Work Package
	• Potable water	Yes	All	The potable water system will be used for dust suppression, otherwise the building was disconnected from the potable water system during Utilities Isolation Work Package.
	• Backflow preventers for misting	Yes	All	Install backflow prevention for water misting source as directed by Environmental Compliance PoC
	Emergency Spill Response Materials (Confirm process lines are drained)	Yes	All	Ensure spill kits are available. Employees shall report any observed spills or releases to a Site Supervisor by dialing 608-8293 or 608-8294 or via NEXTEL phone at Site Sup1 or Site Sup2 or AASecurity.
	Locate Monitoring Wells	Yes	all	Monitoring wells inside the work boundary will be protected with barriers.
Notifications:	RAPCA Notification for Asbestos	No	N/A	
	RAPCA Notification for Demolition	Yes	3	Required 10 business days before beginning demolition activity
	Emergency Spill Response Notification	Yes	All	Employees shall report any observed spills or releases to a Site Supervisor by dialing 608-8293 or 608-8294 or via NEXTEL phone at Site Sup1 or Site Sup2 or AASecurity.
	Other	None		

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APPENDIX A

Preliminary Hazard Analysis (PHA)For Work Package Activities (Continued)

SECTION E, WASTE MANAGEMENT- TO BE COMPLETED BY WASTE MANAGEMENT REPRESENTATIVE *Include any required and/or other special actions to be taken because of the particular hazard. Additionally, identify any activities which are required by DOE, Nevada Test Site, Envirocare or other waste site.* (Use Section F if additional space is needed.)

	Quantity Expected Cu. Ft.	Work Package Phase	Radiological Characterization	Packaging Requirements	Mode of Disposal
Types:					
Sanitary Landfill Waste: • Concrete • Steel & Copper Piping • Metal Roofing • PVC • Electrical Wiring • Fiberglass Insulation • Wood	10,700	3	No elevated radioactivity levels	Trucks, rolloffs	Trucks to sanitary landfill.
Hazardous Waste: • RCRA Hazardous Waste • Asbestos • Other	None				
Mixed Waste	None				
Low Level Radiological Waste: • Building Debris • Below grade	None				
Transuranic (TRU) Waste	None				
NOTE: 1. Sealed pressure vessels will need to be at <1.5 atmosphere if present. 2. Any items not previously evaluated are to be set aside for evaluation by Waste Management prior to disposal.					
Other:					
Material sent off-site Fill out MD-200180 Attachment 1 (see below)	None				
Material sent to concrete crusher Fill out MD-200180 Attachments 1 & 2 (see below)	None				

SECTION F - OTHER CONDITIONS, CONCERNS, OR SUPPLEMENTAL INFORMATION FROM SECTIONS A THROUGH C INCLUDING APPLICABLE LESSONS LEARNED:

EMERGENCY PREPAREDNESS

- Site Notification Procedures
  Use **911** for all emergency services onsite. This is the first response for any emergency. If using a cell phone, dial **AAA911** (NEXTEL). 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 project two-way radios. Additionally, unique sheltering and evacuation signals are available should site-wide protective actions be necessary.
  Evacuation: Continuous air horn blasts
  Take Shelter: Two air horn blasts – pause – two air horn blasts

- Evacuation Route/Assembly Areas
  Assembly area is East of Building 104 outside the work area boundary fence along the roadway (see Site Map in Appendix C).

- Take Shelter Area
  Be aware of threatening weather and take shelter when life-threatening storms are imminent.
  The take shelter area is COS Building, Room 120 and common halls on 1st floor (see Site Map in Appendix C)

APPLICABLE LESSONS LEARNED – See Appendix E

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JOB SAFETY & HEALTH ANALYSIS

JSHA MASTER DOCUMENT CONTROL NO:
BOSS – # 40464

SIGNATURES

ORIGINATOR:	9-14-04
REVIEW/REV:	9-14-04
REVIEW/REV:	9.15.04
REVIEW/REV:	9.16.04
APPROVED:	9.16.04

DATE: 09/8/04	_X_ NEW ___ REV	**BUILDING:** 104	**JOB:** Demolish Building 104 MSR #40464
DEPARTMENT/COMPANY: BOSS Project/CH2M Hill Mound, Inc.			**SECTION:** N/A

OCCUPATIONS: : Heavy Duty Operators, Demolition Tech's, Demolition Crafts, & Electricians.
Supported by Project Personnel e.g.. Supervision, Engineering, Building/Facility Manager, 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:

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. 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: 1. Bring and set up ladder 2. Ascend ladder 3. Remove light globe & bulb 4. Replace light bulb 5. Replace light globe 6. Descend ladder 7. Remove and store ladder	Ask yourself for each job what accidents/illnesses could occur to the employee doing the job. 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. SB - Struck by CB - Contacted by SA - Struck against CW - Contact with CI - Caught in CO - Caught on 1B - Caught between F - Fall SO - Strain-overexertion* E - Exposure (occ. illness) *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. 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. Describe ergonomic solutions (job redesign, new tools, worker lift assistance, etc.)
General Safety Note	A wide variety of incidents occur on a regular basis that potentially could result in injury or illness	-Be cognizant of your own safe work practices as well as those of your co-workers -Review any related safety procedures of which you are unsure -Utilize STOP WORK Authority as necessary
Pre-job meeting with involved personnel to discuss the work plan and safety requirements. This meeting is conducted daily.	N/A	-This project engages in Enhanced Work Planning(EWP), an ISM process that evaluates and improves the approach by which work is identified, planned, approved, controlled, and executed.
1. Site Preparation & Mobilization	Standard construction hazards.	-Demolition preparation is defined by 29CFR1926.850; workers, unfamiliar with construction standards must notify the project supervision and/or project health and safety personnel.
1a. Site Access Control	Struck by equipment, debris	-Once the work area is defined, only authorized personnel are permitted in the construction perimeter. -Unescorted, Non-project and Non-emergency personnel must have acceptance of the BOSS Project Project Manager for entry. -Emergency access to the work zone will be maintained to the extent possible.
1b. Clear Area and Mark/Protect Utility Equipment	Running into fire hydrants, manhole covers, or grates over field drains.	-Mark/protect hydrant and other utility equipment with wooden boxes, visible stakes, and/or colored flags. -Cover field grates to protect

JOB SAFETY AND HEALTH ANALYSIS FORM
(CONTINUATION SHEET)

BASIC JOB STEPS	POTENTIAL ACCIDENT/ILLNESSES OR KNOWN HAZARDS	SAFE JOB PROCEDURES
2 Building Demolition & Debris Disposition	Vehicle Traffic Hazard	-Control traffic with flagmen and signage as necessary
2a. Demolish building using excavator mounted shear, hoe ram, grapple, loader, and bobcat	Struck by flying debris Struck by moving equipment Noise Hazard	-Establish construction boundary. -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. -Maintain the following distances from operating equipment: Shear – 75 feet Hoe Ram – 50 feet Other heavy duty equipment – 30 feet Bobcat – 15 feet -Make sure equipment is in safe working order. Use spotter if vision is obstructed. -Install traffic control with sufficient flagmen -Wear hearing protection while running heavy duty equipment Follow the requirements of MD-10286 D9
2b. Torch cut rebar or to weaken structural members	Burns, fire Potential lead paint fume exposure Compressed Gas Cylinders (CGCs)	-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. -Follow Mound Procedure MD-10286, H1
2c. Working in excessive heat/cold	Heat Stress/Cold Stress	-Follow the requirements of MD-10286 D13/D16 and discuss in daily pre-job briefings
2d. Debris Characterization & Disposal	Radiological Contamination	-RCTs to conduct surveys as needed. -Follow any RWP requirements if contamination is found
2e. Slab & Foundation Demolition & Removal	Underground Utility Contact – Electrical/Water Pressure Exposure Radiological Contamination	-Evaluate & Mark area per Excavation/Soil Disturbance Permit, MD_10286, O5 for Underground Utilities. -Follow any RWP requirements if contamination is found. -Have RCTs survey bottom of slab before disposal
3a. Rough grading	Equipment/ personnel mixture	-Stay clear of operating heavy equipment

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{PRIVATE }

JOB SAFETY AND HEALTH ANALYSIS FORM
(CONTINUATION SHEET)

BASIC JOB STEPS	POTENTIAL ACCIDENT/ILLNESSES OR KNOWN HAZARDS	SAFE JOB PROCEDURES
3b. Erosion control installation	Slip – Trip – Fall Lifting /twisting strain	-Uneven walking and/or working surfaces –use extra caution. -Follow accepted practices
3c. Demobilize Construction Equipment Remove dust control water distribution system Remove temporary power Remove fencing	Equipment/ personnel mixture Cuts and abrasions Lifting /twisting strain Radiological contamination of equipment if required by in-process surveys	-Be cognizant of your own safe work practices as well as those of your co-workers -Review any related safety procedures of which you are unsure -Utilize STOP WORK Authority as necessary -Coordinate in-process Rad Surveys with Rad Techs

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Appendix B

Pre-Job Briefings/Job Status Log

PRE-JOB BRIEFING RECORD

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

BRIEFING CHECK OFF LIST

JOB SUPERVISOR:	**Check When Completed***
1. Scope of work reviewed:	
a. The assignments and responsibilities of each individual were specifically identified.	Done ☐ N/A☐
b. The current facility conditions, tagouts, valve lineups, and work permits relating to this job have been discussed.	Done ☐ N/A☐
c. The precautions, limitations, initial conditions, and prerequisites were adequately reviewed.	Done ☐ N/A☐
d. Potential hazards associated with the job have been discussed (JSHA).	Done ☐ N/A☐
e. Specific work covered by RWP (any limitations).	Done ☐ N/A☐
2. All necessary safety equipment and PPE is available.	Done ☐ N/A☐
3. All required personnel have satisfied initial and continuing training requirements to perform the job including training specified on the RWP.	Done ☐ N/A☐
4. All required personnel have reviewed the applicable documentation listed in B above as it applied to their part of the job.	Done ☐ N/A☐
5. Reliable and adequate communications are available.	Done ☐ N/A☐
6. The required tools and equipment are available.	Done ☐ N/A☐
7. Appropriate lob sheets, material transfer, and data recording forms are available.	Done ☐ N/A☐
8. All required documents available at the PJB are approved and current.	Done ☐ N/A☐

*For items not applicable, write in N/A.

PRE-JOB BRIEFING RECORD (Page 2)

9. Related past problems, unusual events, and occurrences were discussed. Done ☐ N/A☐
10. All personnel understand egress procedures and egress areas. Done ☐ N/A☐
11. RWP requirements:
    a. Radiological conditions of the workplace. This should include a review of the most recent survey of the area. It is important to ensure that the survey is specific to the work area. In cases where a system of unquantified activity will be breached, discuss the "anticipated activity" to be expected after the breech. Done ☐ N/A☐
    b. Dosimetry requirements. Done ☐ N/A☐
    c. Protective clothing and respiratory protection requirements (cite location of doffing instructions). Done ☐ N/A☐
    d. Job coverage requirements (continuous vs. intermittent). Explain that continuous means "within line of sight and field of control of RCT at all times." Done ☐ N/A☐
    e. Stop Work Levels (SWLs) and other applicable limitations. Done ☐ N/A☐
    f. POC's/RCT's must discuss the type of radiological monitoring to be employed at the job site during and subsequent to the work. Personnel assigned to do the work MUST EXPRESS THEIR FULL UNDERSTANDING of the monitoring to be employed and of the alarm signals if applicable. Workers MUST CONCUR in the type and scope of monitoring planned at the job site before work can begin. Done ☐ N/A☐
    g. Dose reduction/contamination control techniques (e.g., use of; shielding, capture velocity, containment devices). Done ☐ N/A☐
    h. Personnel and equipment monitoring requirements (including control point locations). Done ☐ N/A☐
    i. Bioassay requirements. Discuss; isotopes to be encountered, proper use of the bioassay information form, use of nosewipes as appropriate (and disposition of nosewipe results), and bioassay frequency if this will be a long term task. Done ☐ N/A☐
    j. Effective date and expiration date of RWP reviewed. Done ☐ N/A☐
    k. Briefly cover WORKER RESPONSIBILITIES (Article 123 of the DOE RADCON MANUAL) Done ☐ N/A☐
12. Necessary instrumentation is adequately tested and calibrated. Done ☐ N/A☐
13. Key task steps in which radiological conditions may change and where the RCT will perform in-process surveys to assess radiological conditions. Done ☐ N/A☐
14. If an ALARA Job Review was required, then this would be an appropriate time for the review. Done ☐ N/A☐
15. Radiological hold points, if any. Done ☐ N/A☐
16. Discuss any appropriate response actions to emergencies, such as CAM, alarms, criticality alarms, or increasing radiation levels. Done ☐ N/A☐
17. When nonradiological health monitoring (e.g. asbestos) is to be employed at the job site during and subsequent to the work, the personnel assigned to do the work MUST EXPRESS THEIR FULL UNDERSTANDING of the monitoring to be employed and of the alarm signals if applicable. Workers MUST CONCUR in the type and scope of the monitoring planned at the job site before work can begin. Done ☐ N/A☐
18. Communications and coordination with other groups. Done ☐ N/A☐
19. Provisions for waste management and job cleanup. Done ☐ N/A☐
20. Open floor to questions. Done ☐ N/A☐

The above minimum requirements have been met; this PJB has been conducted in sufficient detail to ensure save conduct of the job.

_____

Job Supervisor/Foreman Date

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

CAUTION: Working on or Near Live, Active Lines/Utilities
Consider Alternative Means of Protection (Blocking, Shielding, etc.)
And Alternative Manual Methods for Removal

PRE-JOB UPDATE RECORD

MSR/PROCEDURE (if applicable):	JOB SUPERVISOR:

A	Time, Date and Location of PJU:
B	Applicable Procedure Number:
C	Job Description:
D	Personnel Attending:

HP#	SIGNATURE	HP#	SIGNATURE

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:
a. New/added assignments and responsibilities of any individual
b. Changes in facility conditions, tagouts, valve lineups
c. New or changed precautions/hazards
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:
a. Changes to radiological conditions of the workplace, particularly with respect to postings
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 floor to questions

The above minimum requirements have been met; this PJU 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.
CAUTION: Working on or Near Live, Active Lines/Utilities.
Consider Alternative Means of Protection (Blocking, Shielding, etc.)And Alternative Manual Methods for Removal

JOB STATUS LOG

1. WORK PACKAGE TITLE: Demolition of Building 104

2. WORK PACKAGE NUMBER: BOSS-40464 - 00

DATE	TIME	WORK PKG. SECTION	% Complete	BY	STATUS

044470

Appendix C

Drawings/Sketches/Photographs

Drawings

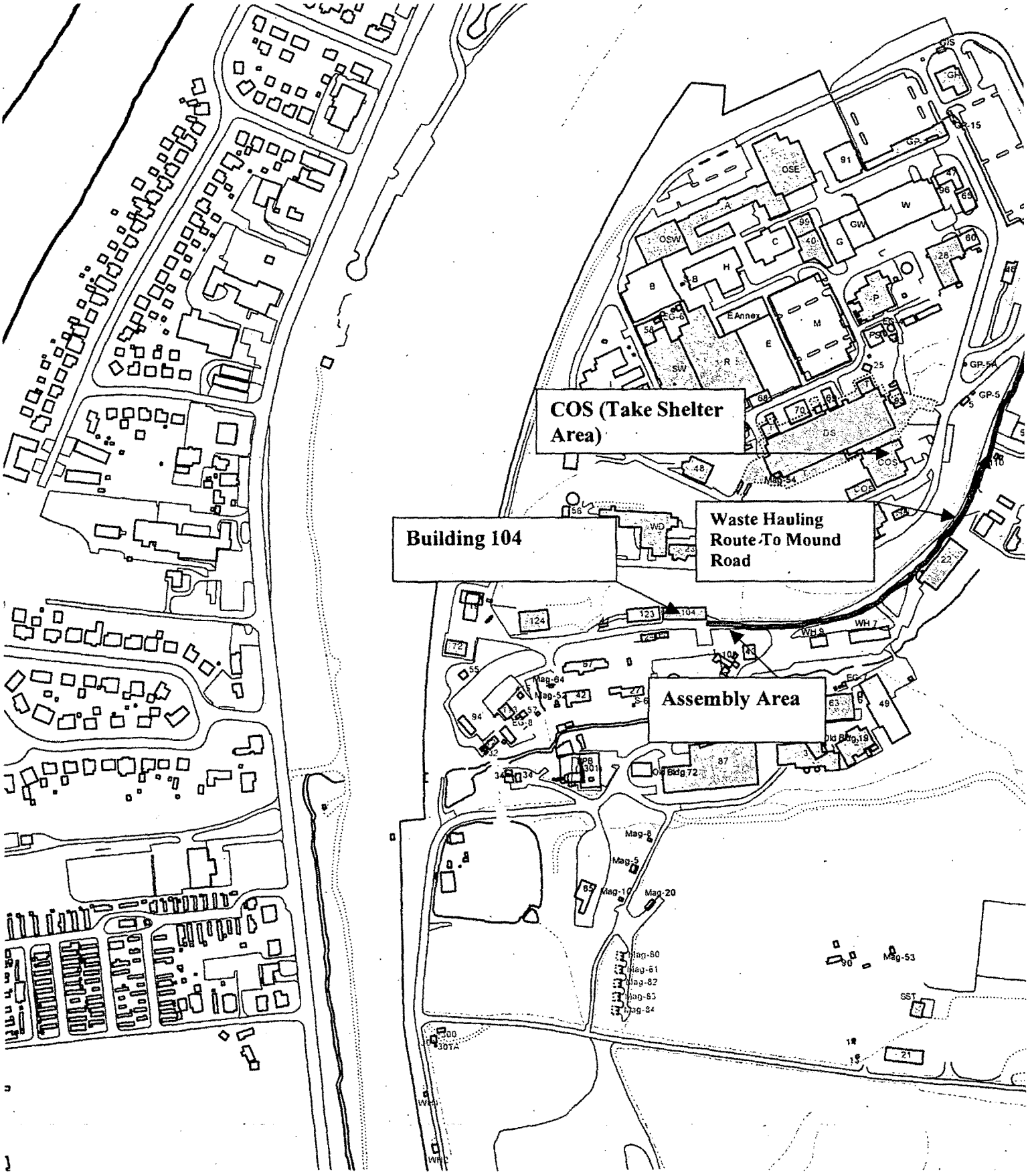
- Original Construction, Building 104 Drawings, 310400-00001 thru 310400-05001 (1989)
- Building 104 Ramp Construction Drawings, 310401-00001 thru 310401-01003 (1991)

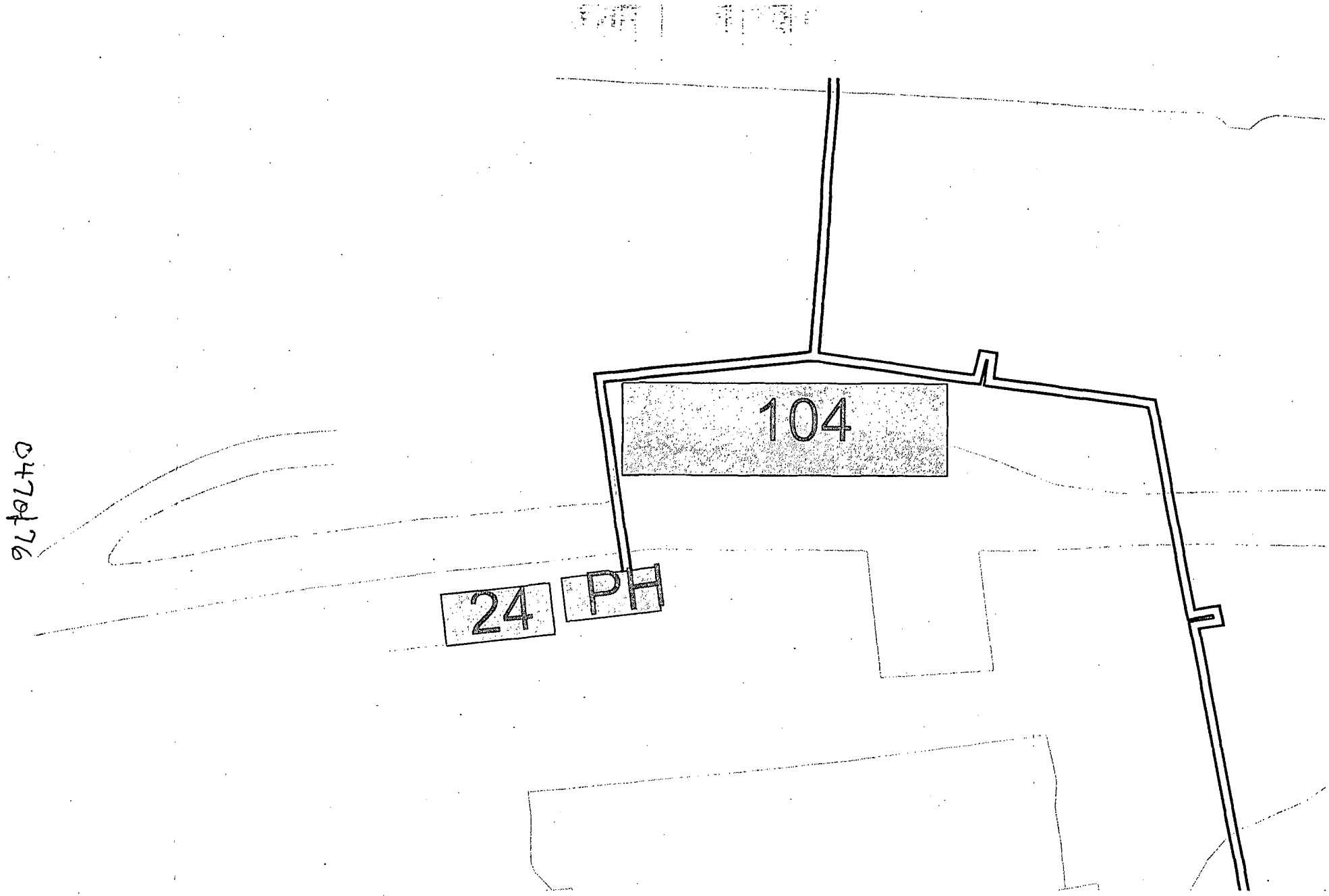
Vista Maps

Site Map, Building 104

- Above Ground Stanchions
- Monitoring Wells
- Underground Utilities (wide view)
- Underground Utilities (close view)
- Underground Supply, Domestic, and Fire Water
- Underground Sanitary and Storm Sewer
- Underground Electrical, Communications, Signal and Grounding Systems
- Gas Line and Fuel Oil Lines
- Steam and Condensate, Chilled Water, Cooling Water, and Compressed Air
- PRSs
- Proximity of Elevated Soil Sample 47 to PRS 59
- URMAs
- Contour Lines
- Power and Light Poles
- Tanks
- Aerial Photos

• Site Map


COS (Take Shelter Area)
Building 104
Waste Hauling Route To Mound Road
Assembly Area



Aboveground Lines (Stanchions)

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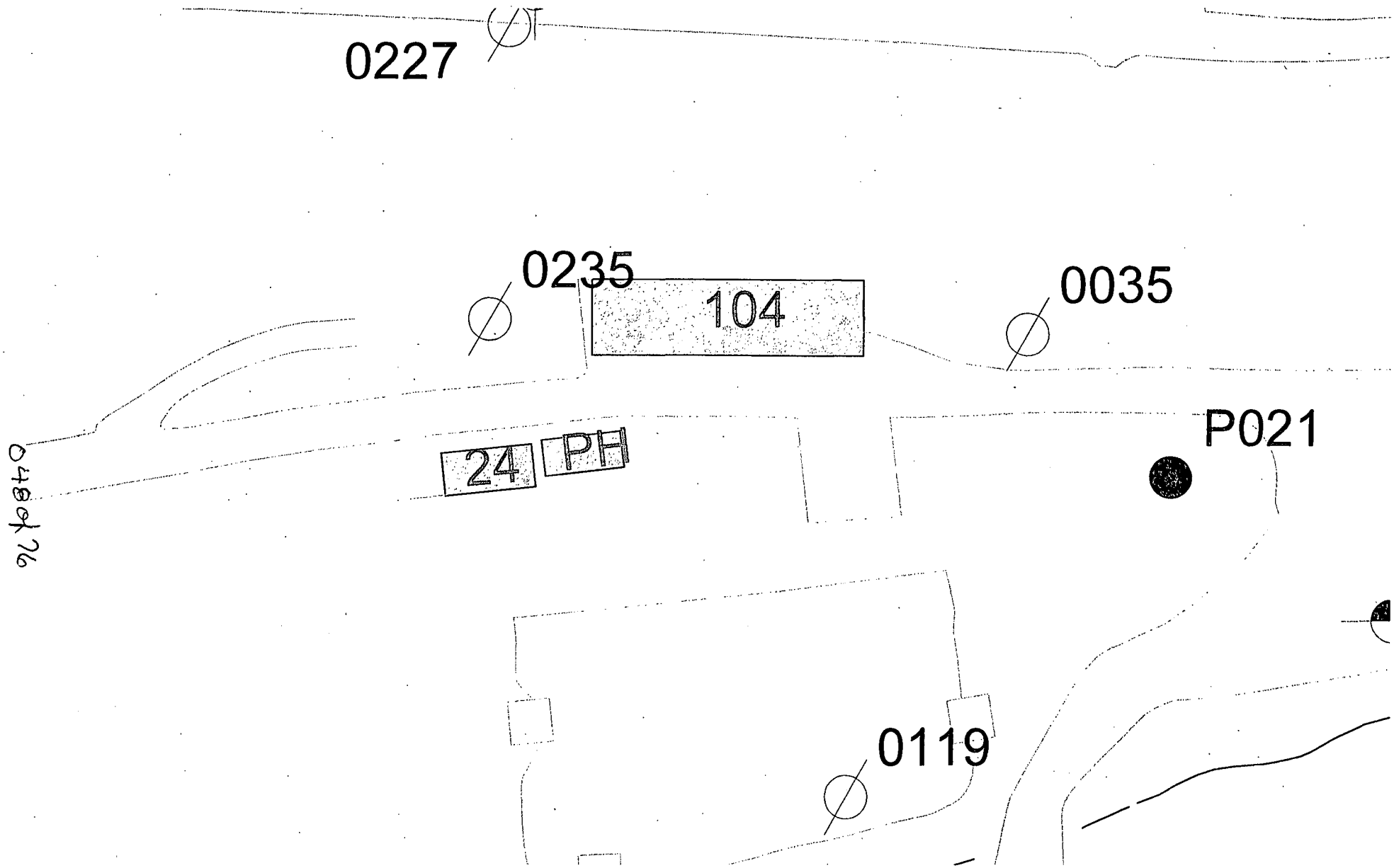
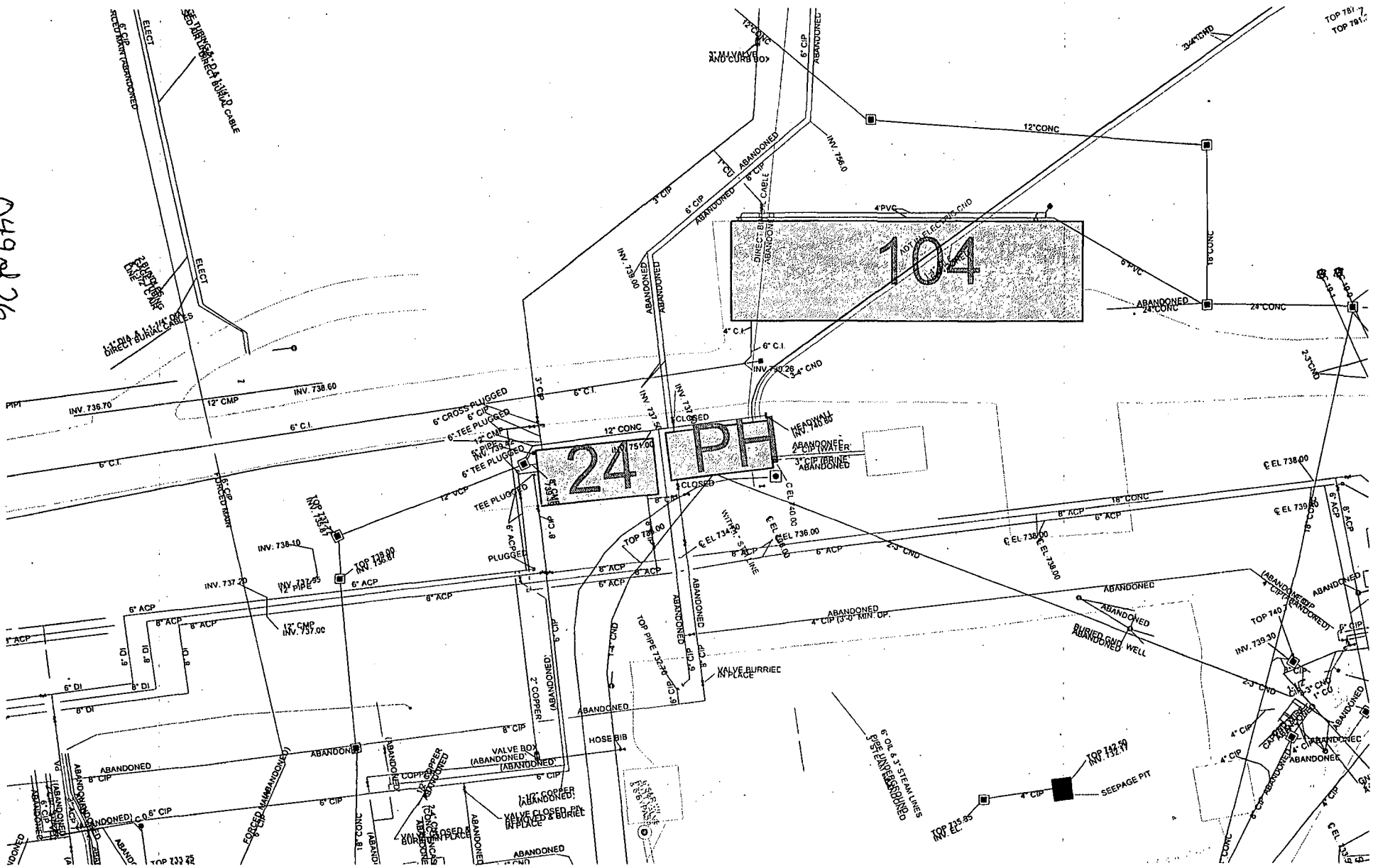
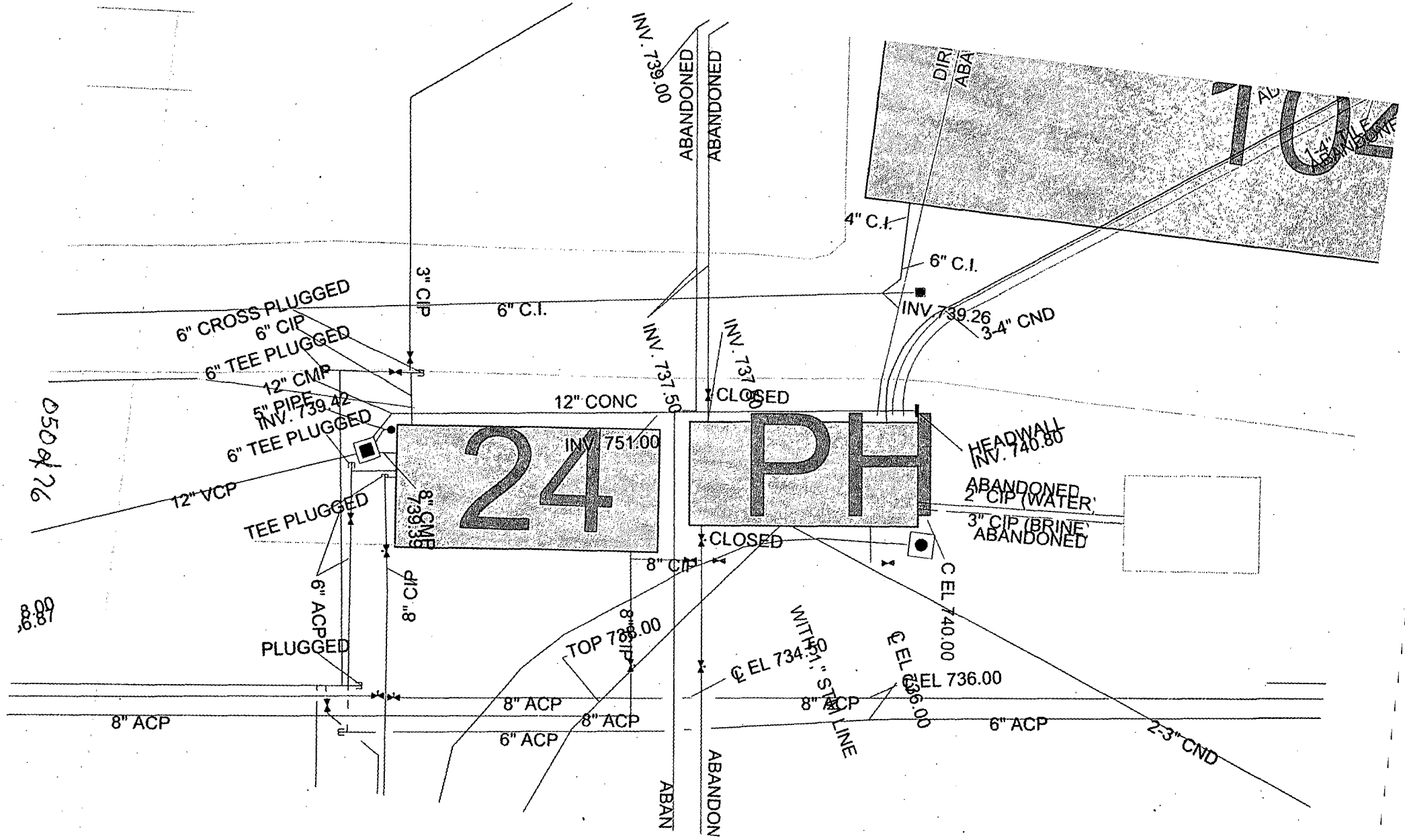


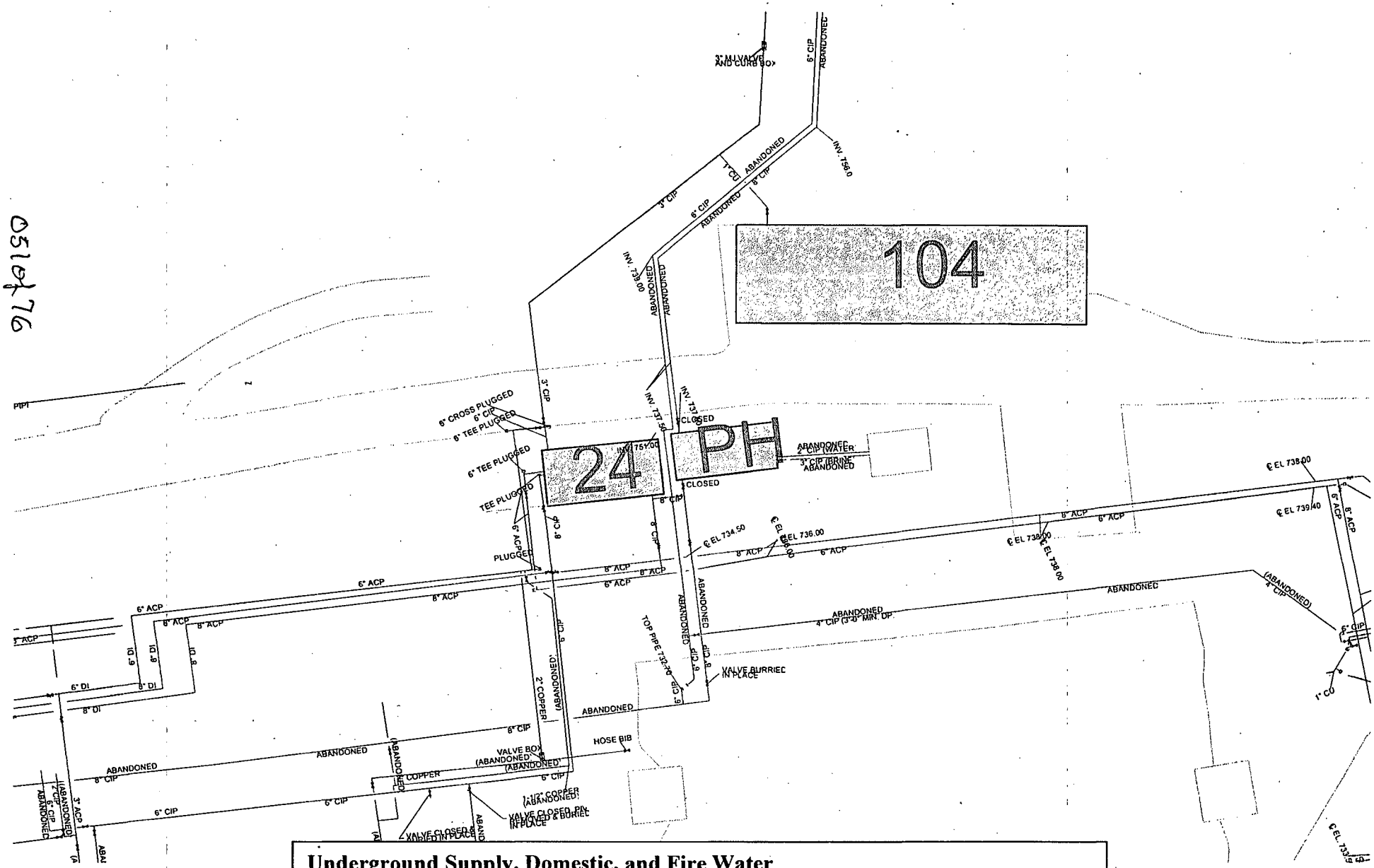
Monitoring Wells



Underground Utilities (Wide View)



Underground Utilities (Close View)



Underground Supply, Domestic, and Fire Water

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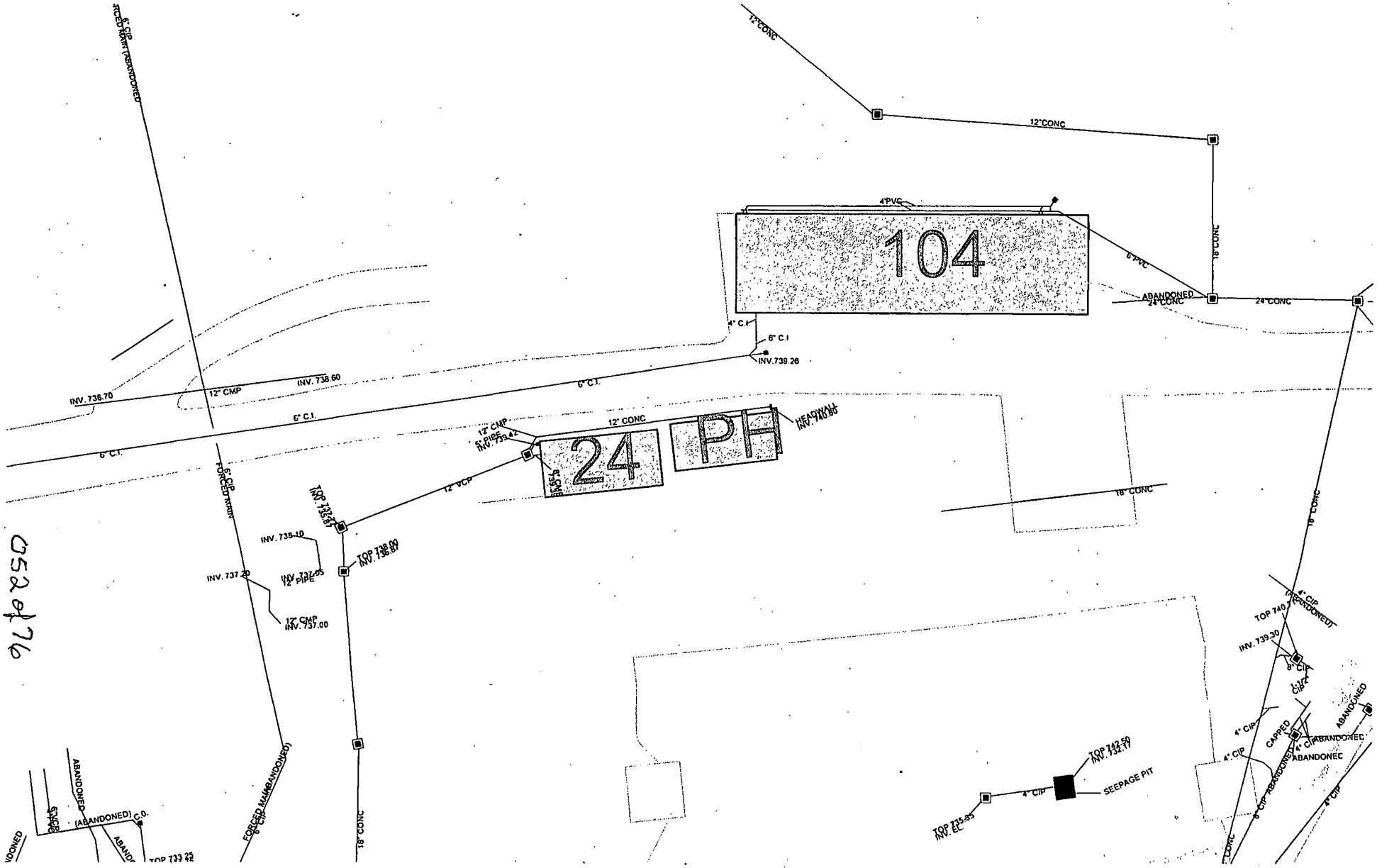
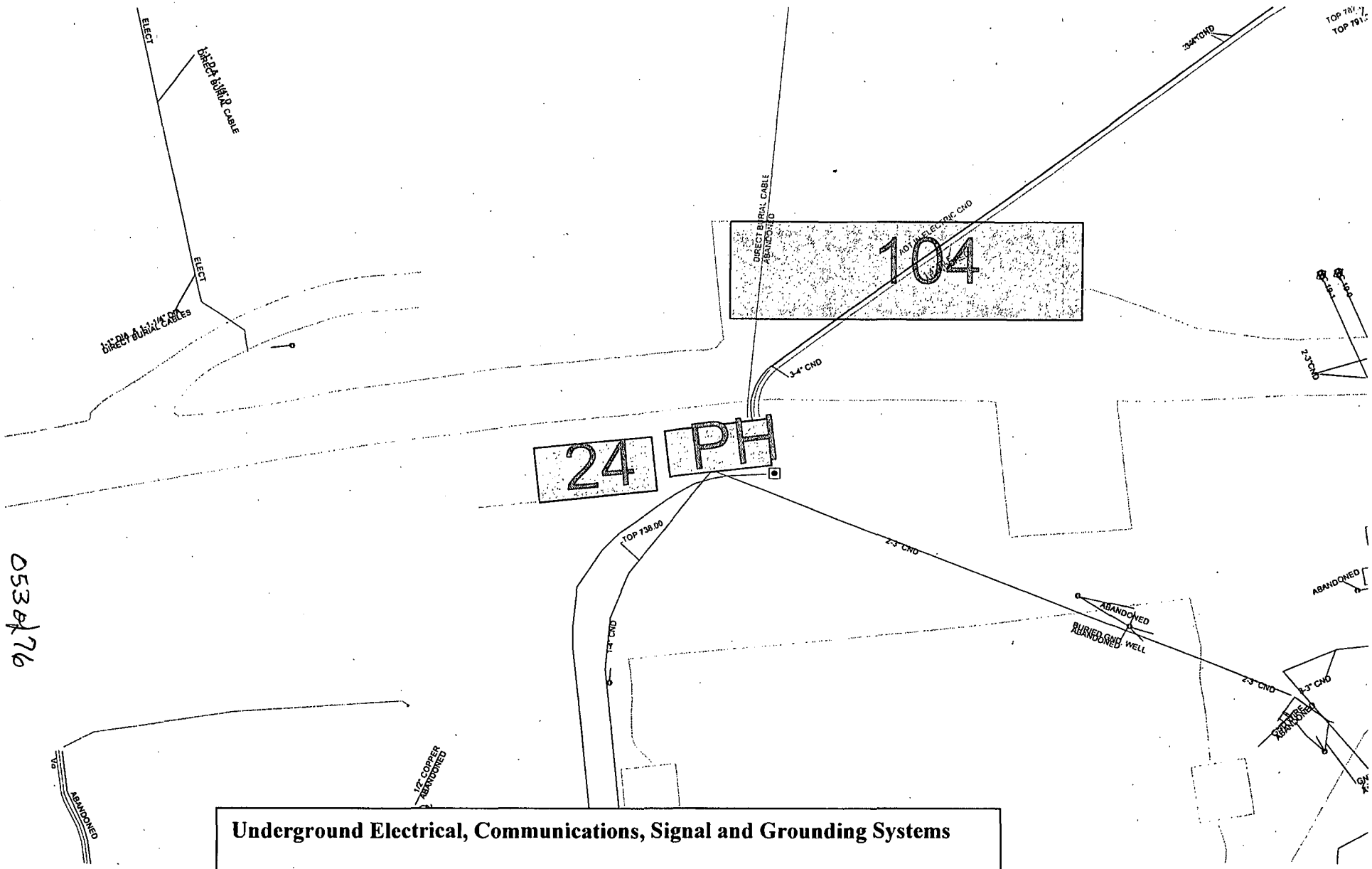
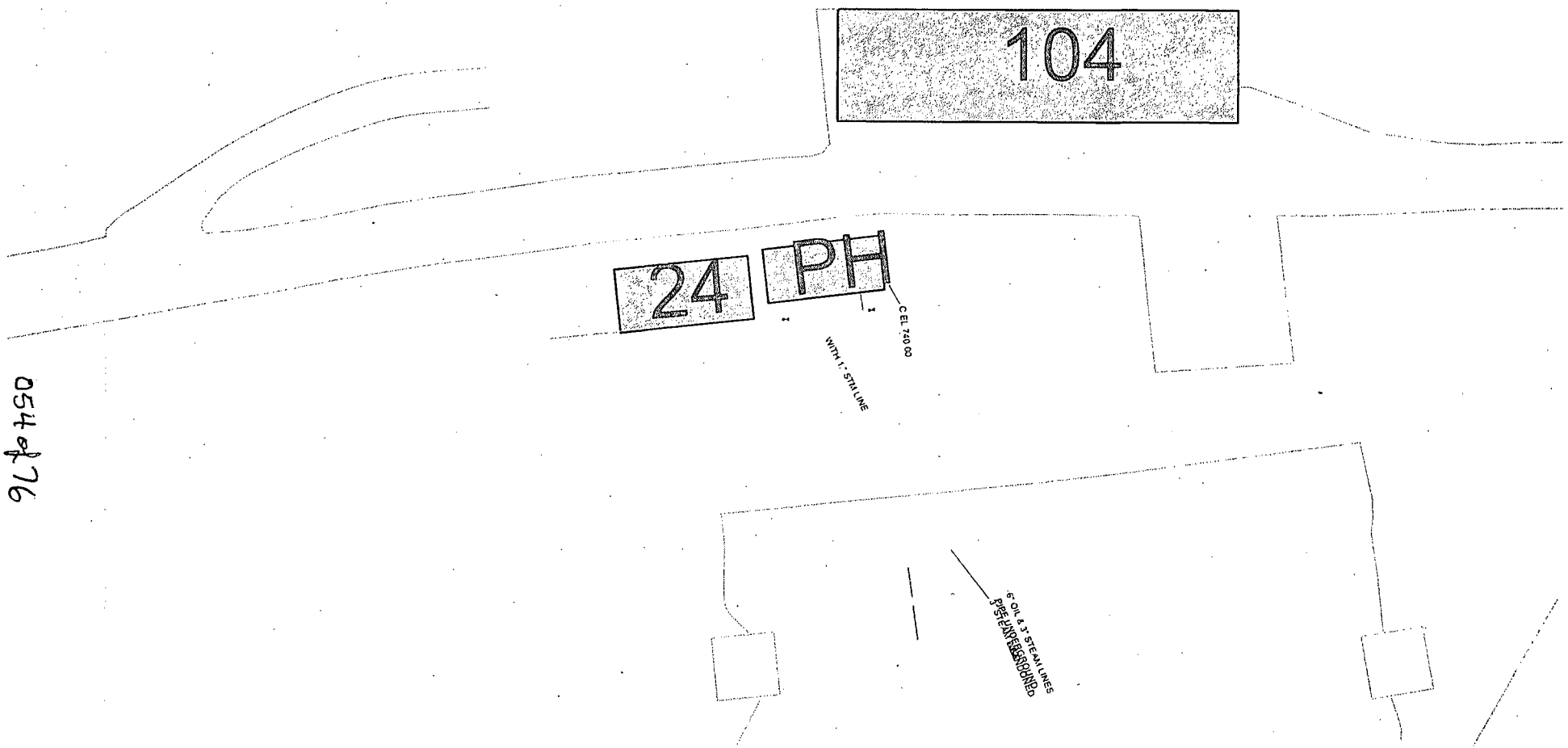


Underground Sanitary and Storm Sewer Systems

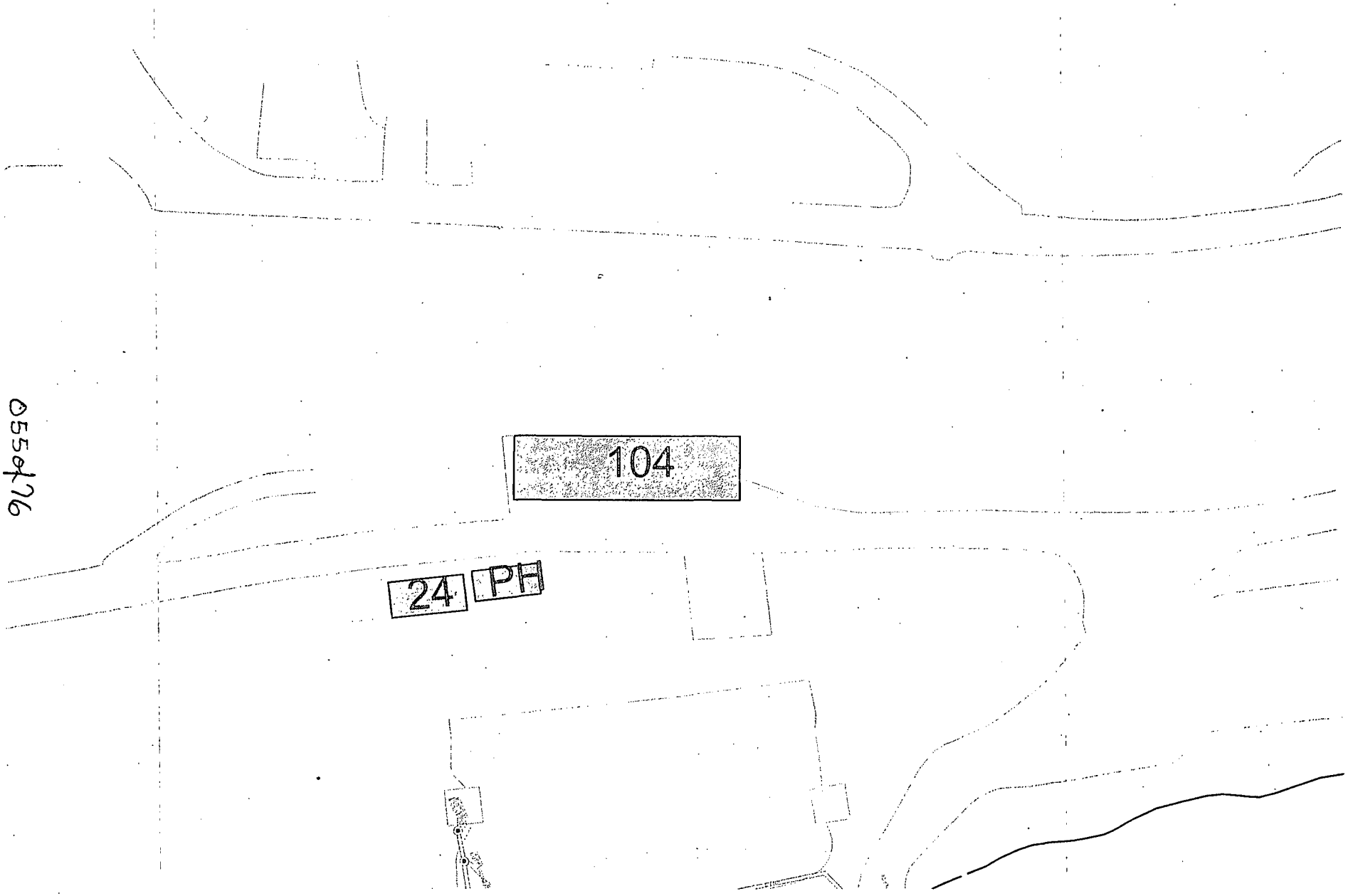


Underground Electrical, Communications, Signal and Grounding Systems

0538/76

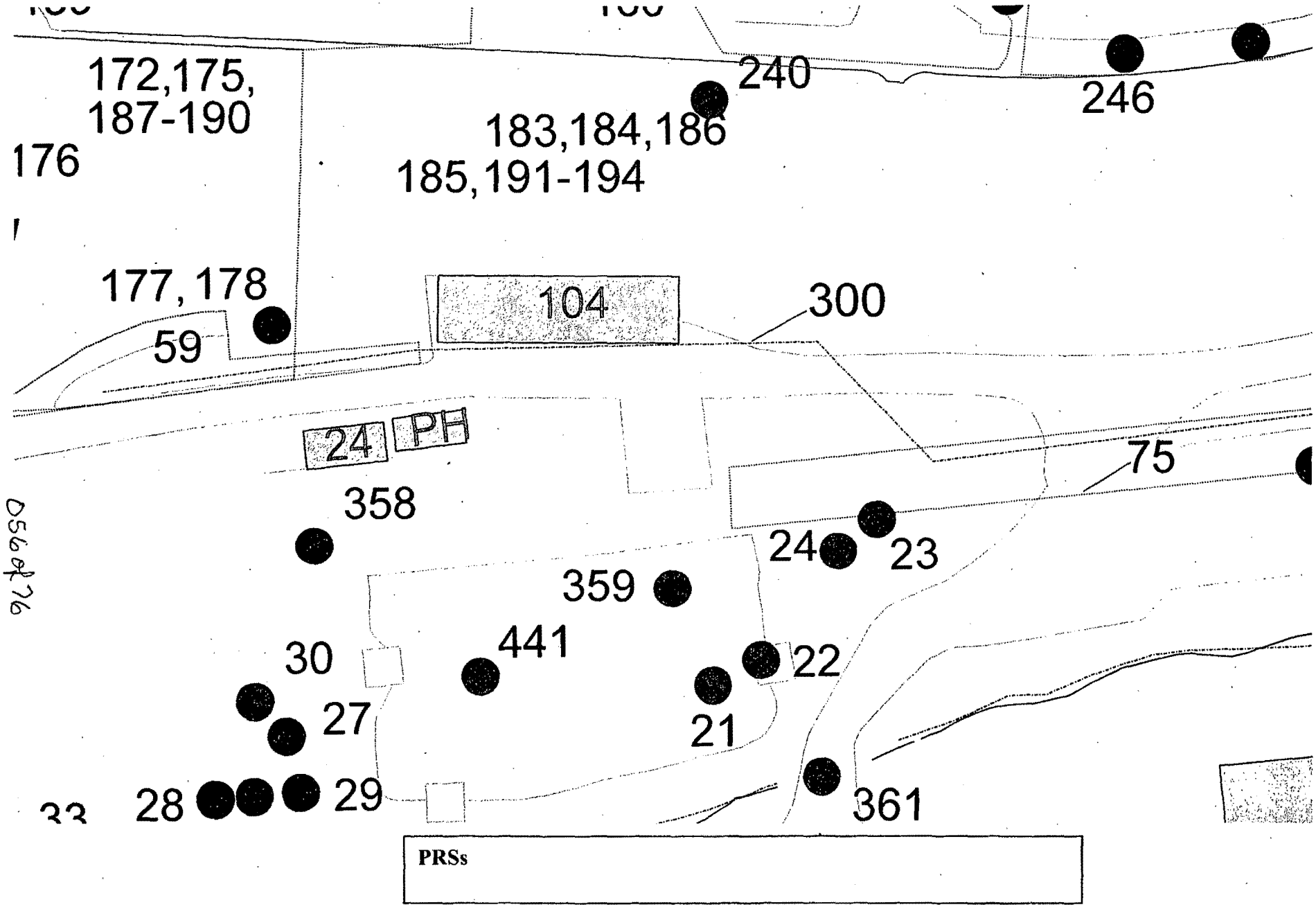


Gas Line and Fuel Oil Lines



Steam and Condensate, Chilled Water, Cooling Water, and Compressed Air (All Removed)

055of76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187-190
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183,184,186
185,191-194
246
177, 178
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441
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22
27
21
28
29
361
PRSs

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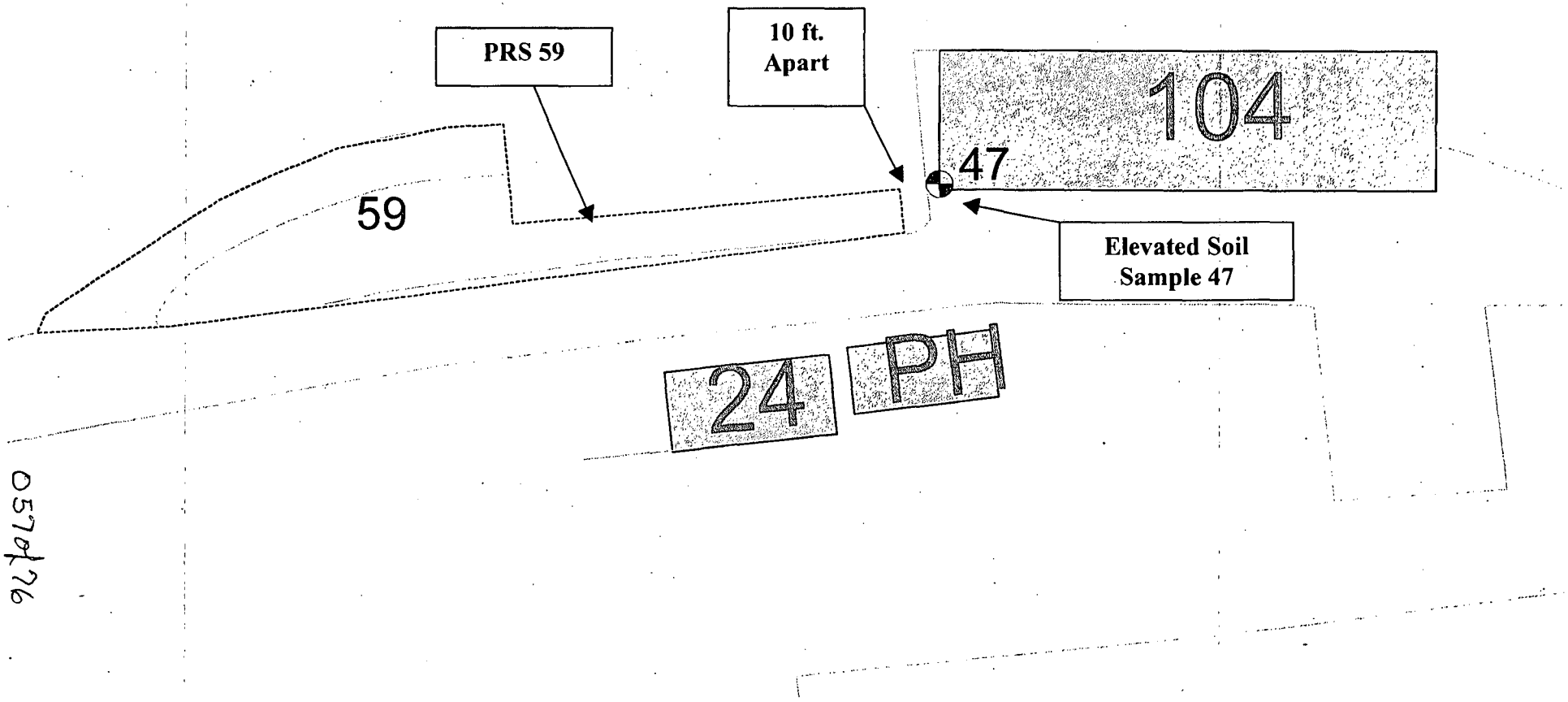
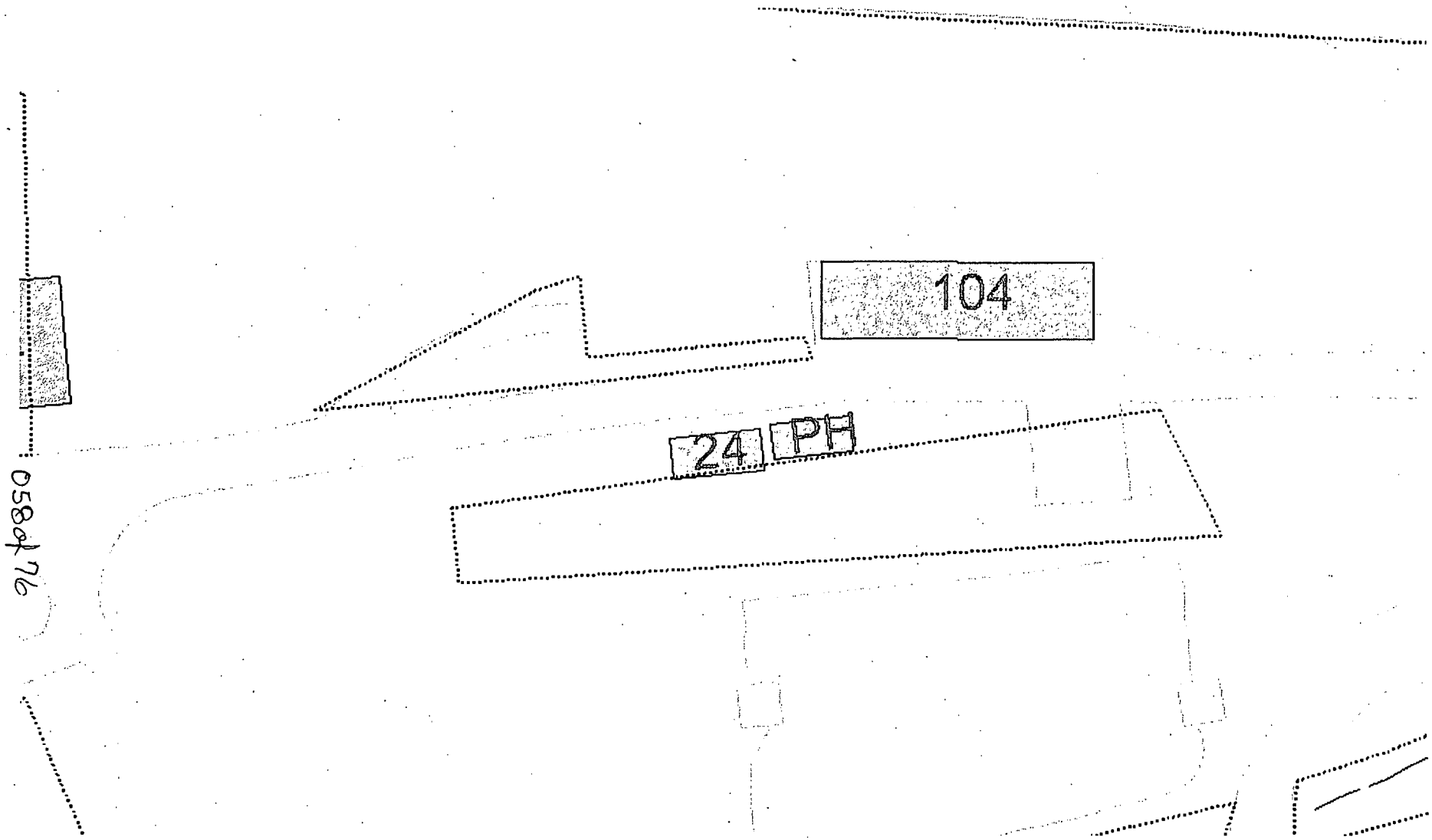
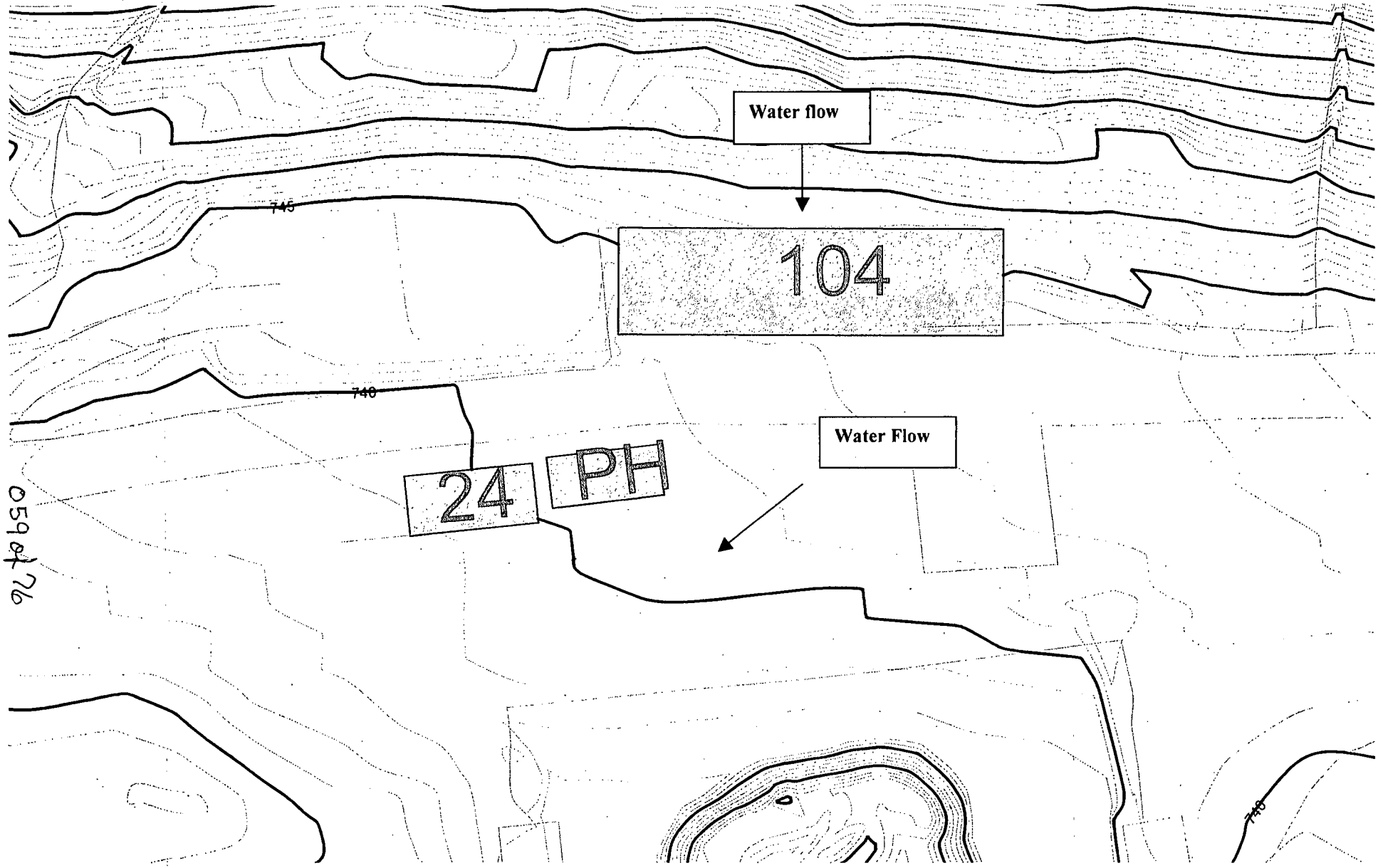


Proximity of Elevated Soil Sample 47 to PRS 59

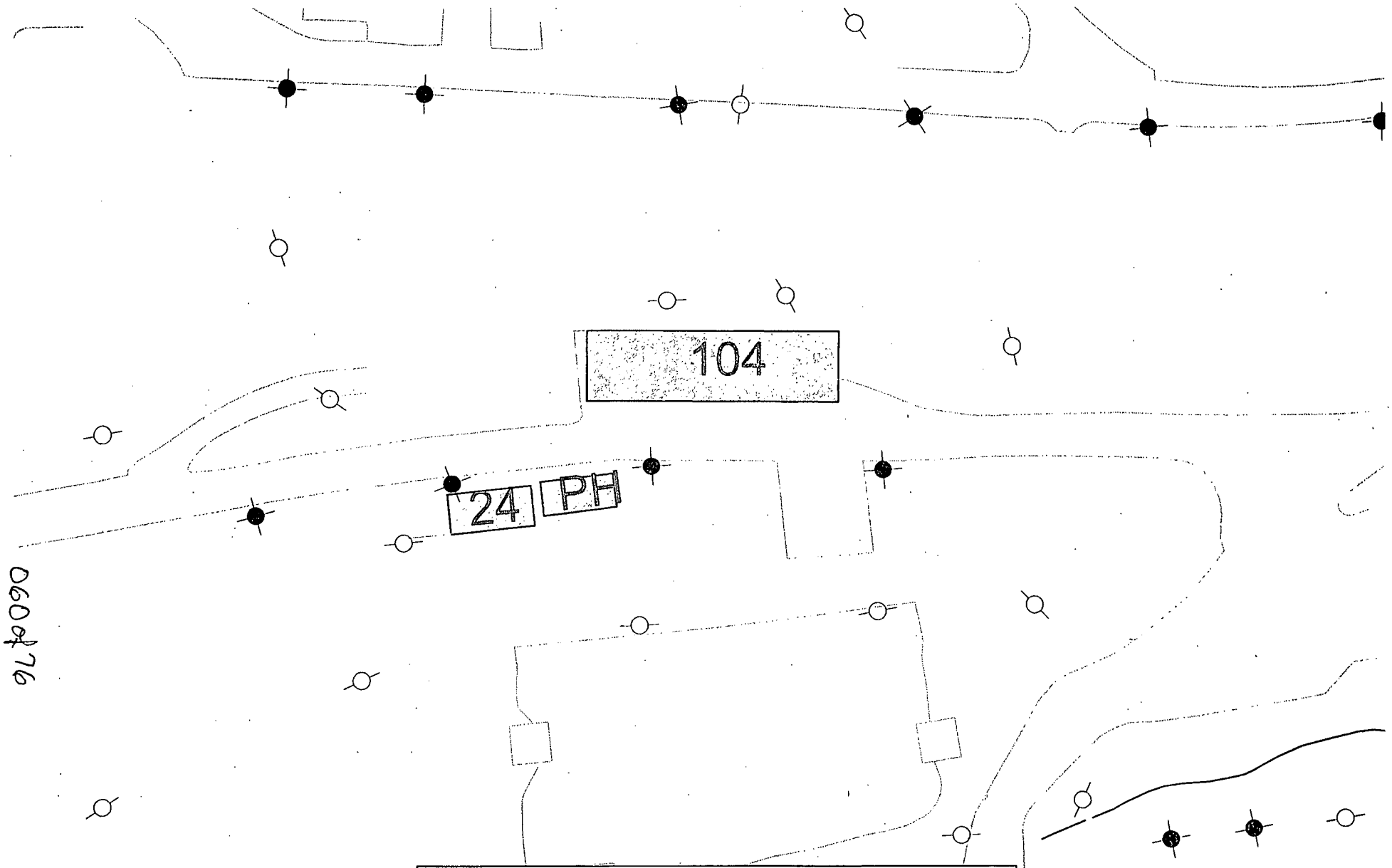
057476



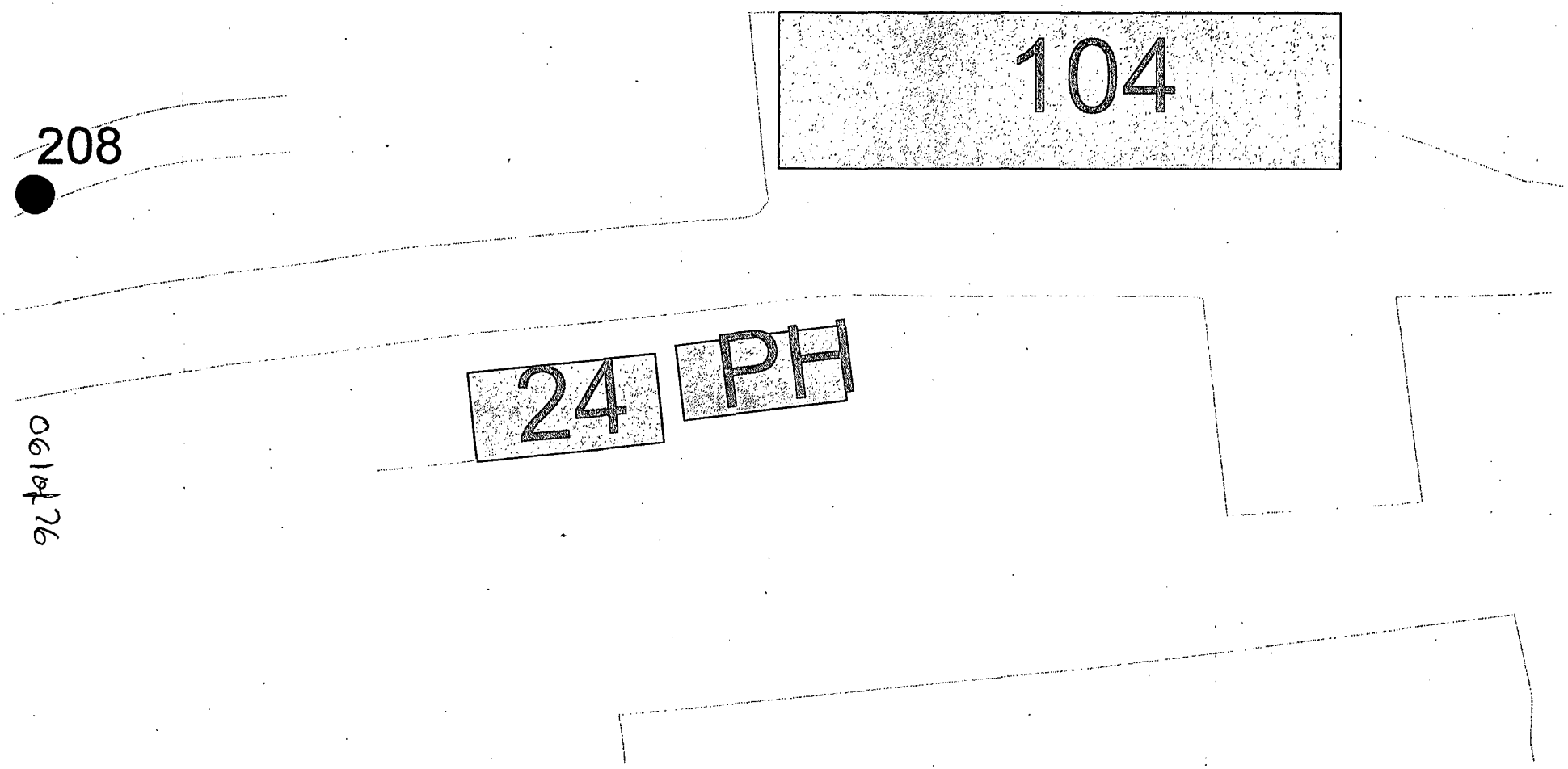
URMAs



Contour Lines



Power & Light Poles



Tanks

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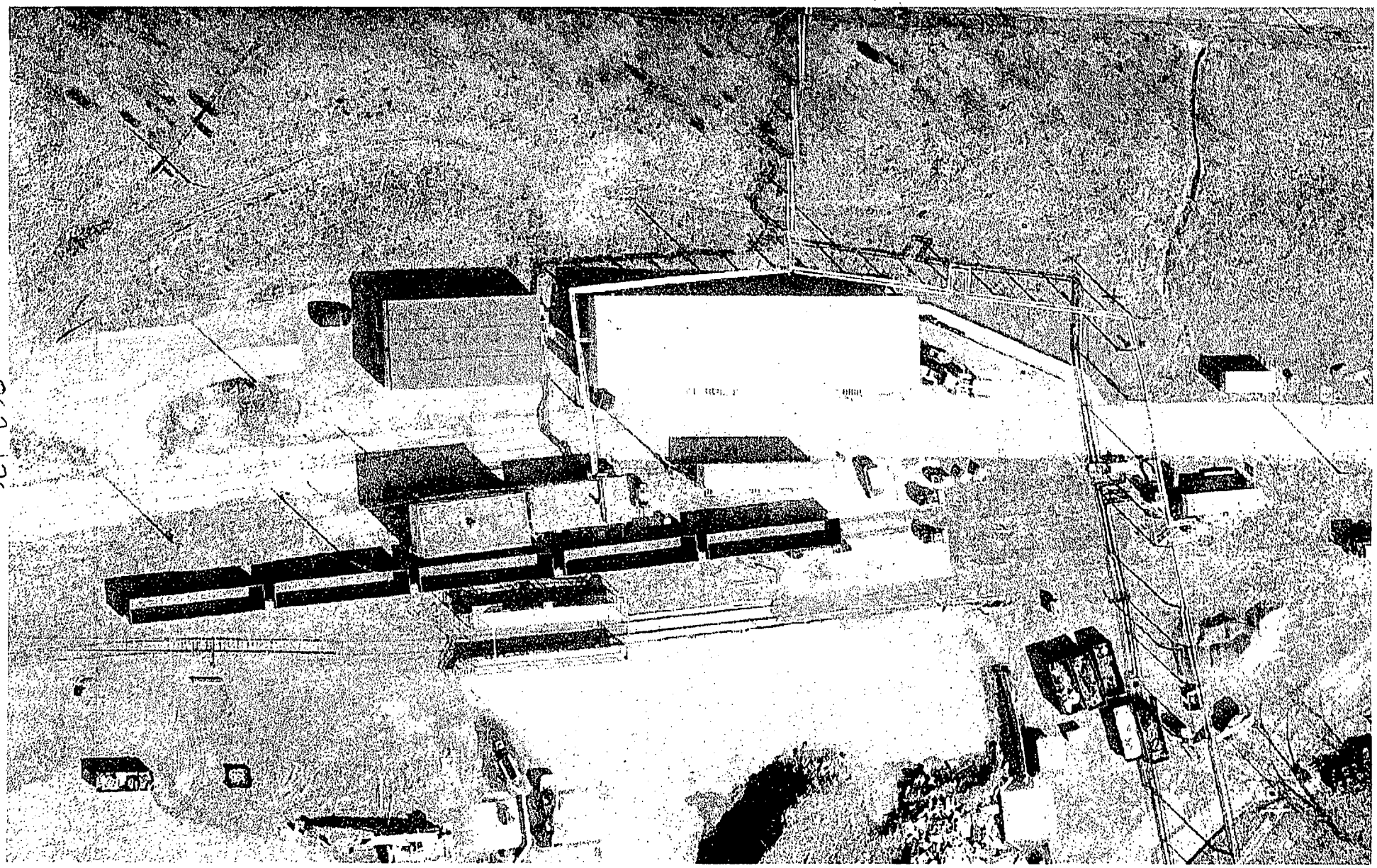

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Aerial Photo

Appendix D

Miscellaneous

- No USQ required for this Work Package
- No RWP required for this Work Package
- Solid Waste Debris/Rolloff Release form.
- PRSs around Building 104
- Work Package Material List
- Structural Engineering Survey Letter per 29 CFR 1926.850
- Road Closure Form

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Attachment 1, (Example) Solid Waste Debris/Roll-off Release – ML9901 (10/02)

SOLID WATE ROLL-OFF RELEASE

ROLL-OFF NUMBER: _____ **WASTE GENERATED:** _____

BUILDING/AREA	Buildings with no Rad History		**Buildings/Rooms with Rad History**	
	ANNUAL SURVEY (DATE/NO.)	**ROLL-OFF/ DEBRIS PILE SURVEY (DATE/NO.)**	**ITEM/AREA PRE-DEMOLITION/TRANSITION SURVEY or MARSSIM METHODOLOGY\ (DATE/NO.)**	**COMMENTS**

The demolition/solid waste being disposed of from the Mound Location identified above meets the standards established by the Mound Guidance for Disposal of Solid Waste in agreement with the Ohio Environmental Protection Agency and the Department of Health Bureau of Radiological Protection. The Mound Guidance for Disposal of Solid Waste establishes standards for the survey of demolition debris and solid waste. The radiological surveys of the demolition debris/solid waste comprising this shipment were conducted in accordance with approved procedures and the use of best available technology as described in the Mound Guidance for Disposal of Solid Waste.

_____ Date_____

Waste Operations Manager or Designated Representative

ML-9901 (10/02).

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Attachment 2 – FREE RELEASE SURVEY FOR WASTE DISPOSED OF IN ROLL-OFFS TO LOCAL LANDFILL

I. **BUILDINGS WITH NO RAD HISTORY** (MARSSIM NON-IMPACTED AREAS)	II **BUILDINGS/ROOMS WITH RAD HISTORY** (MARSSIM CAT,. 1, 2, & 3)	
ANNUAL SURVEY **AND** ROLL-OFF/DEBRIS PILE SURVEY	PRE-DEMOLITION/TRANSITION SURVEY OR MARRSIM methodology for unrestricted release of building structure. Equipment/furniture left in the building for D&D or that is part of a clean-out will have a representative survey of horizontal surfaces. OR Item Specific free release requires a survey/ evaluation in accordance with MD-80043, OP 400 or OP 500, as appropriate.	NOTES: Structural materials or specific item identified as contaminated above the limits in MD-80043, OP 400 may be decontaminated and resurveyed to determine if it meets release survey criteria

PRSs in Proximity to Building 104

PRS	CERCLA or Bldg. Related	Binning Status	Comments
59	CERCLA	NFA	Contaminated Soil Box Storage Area
300	CERCLA	NFA	Area 19, Underground Waste Transfer Line
441	CERCLA	RA	Soil Staging Area & Expansion

WORK PACKAGE MATERIAL LIST

Work Package # **Demolition of Building 104** Page ___ of ____

Work Package Description **BOSS-40464-00**

Item #	Qty.	Units	Material Description	Used For	Suggested Supplier
1		ea	Check spill kits	Spills	

Structural Engineering Survey Letter will go here.

Road Closure/Blockage Checklist
(COMPLETE PRIOR TO CLOSING ROAD)

	Yes	N/A
1. Determine location and length of time for road closure.		
2. Notify Security for possible site access changes as needed and for emergency access.		
3. Inspect re-route traffic pattern for overhead obstacles, pavement condition and narrow passageway.		
4. Determine one-way or two-way traffic pattern, assign flag personnel, utilize cones, barricades and appropriate signage.		
5. Assure clear distance from permanent structures (sidewalks, fences, building, stanchions, etc.).		
6. Issue plant notification (include subcontractors, MMCIC, etc.) and include location, length of closure, alternate route, identify clearances, blind spots and remind site supervision to discuss in daily briefings.		
7. List and notify Buildings/Projects Impacted:		
8. Notify MMCIC.		

Project Safety POC Review _____ Date _____

Project Manager Approval _____ Date _____

Appendix E

LESSONS LEARNED/ POST-JOB CONFERENCE

EVENTS

1. EXCAVATOR BOOM CONTACTS OVERHEAD 13.8 KILOVOLT POWER LINE

On April 22, 2002, at the Rocky Flats Environmental Technology Site, the boom of an excavator contacted an overhead 13.8 kilovolt high-voltage power line, causing a visible electrical arc and tripping a substation circuit breaker. The excavator was being used to dismantle a building using mechanical shears attached to the boom for breaking up concrete. The line was checked for damage and it was returned to service a short time later. There were no injuries to the operator or equipment damage. (ORPS Report RFO--KHLL-NONPUOPS3-2002-0092)

The equipment operator was moving the excavator to position it out of the work area by extending the boom to assist in turning (see Figure 1). During one of these maneuvers, the boom contacted the power line, which was approximately 23 feet above the ground. A spotter was not used because the excavator was not expected to operate near the overhead lines.

Figure 1. Excavator with boom positioned on the ground

A similar incident was reported in Operating Experience Summary 2000-09, in which a mobile television crew was injured when their transmission antenna contacted an overhead power line. The television crew was extending the antenna mast from their truck to transmit a live broadcast when the mast contacted an overhead power line and caused a small electrical fire and explosion inside their van. A camera operator outside the truck and an operator inside the truck were taken by helicopter to a hospital for treatment of burns.

The Occupational Safety and Health Administration regulation 29 CFR 1910.333(c)(3)(iii)(A), *Vehicular and Mechanical Equipment*, states that any vehicle or mechanical equipment capable of having parts of its structure elevated near energized overhead lines shall be operated so that a clearance of 10 feet is maintained.

This event demonstrates the importance of exercising extreme caution when operating excavators, cranes, front-end loaders, forklifts, and other vehicles in the vicinity of power lines. Pre-job briefings, facility procedures, and training programs should emphasize the dangers associated with these types of operations. Many events have occurred because equipment operators were not aware of potential hazards around and above them. The use of a spotter in this circumstance might have prevented this occurrence.

KEYWORDS: *Electric line, excavator, overhead line, electrical safety*

ISM CORE FUNCTIONS: *Develop and Implement Hazard Controls, Perform Work within Controls*

2. INADEQUATE EQUIPMENT GROUNDING RESULTS IN ELECTRICAL SHOCK

On January 29, 2002 at the Savannah River Site, a cafeteria services worker received a shock to his right hand while attempting to turn off an electric kitchen stove. The worker had seen electrical sparks underneath the 208-volt stove and decided to turn the stove control to the "off" position. Investigators later determined that the stove housing was inadequately grounded to prevent a shock. The worker did not require medical attention, but the shock to his right hand resulted in a near-miss occurrence. (ORPS Report SR--WSRC-FSSDGEN-2002-0001; final report filed March 25, 2002)

A critique of the event revealed that the stove was a replacement unit that had been installed in 2000, without upgrading the existing wiring and without verifying that the grounding was adequate after installation was complete. The electrical junction box for the replacement stove was located at the bottom of the unit and the power supply wires, inside a flexible conduit, rested against the sheet metal of the junction box.

The direct cause was a defective or failed part because the insulation on one of the power supply conductors touching the junction box had melted, causing an electrical short. Because of this short and the inadequate grounding of the stove, the worker received a shock. Daily use of the stove had generated high levels of heat for prolonged periods of time. Some of this heat apparently transferred to the junction box through conduction and melted the insulation.

The contributing cause was the electrician's failure to verify that the stove had been properly grounded after he installed it.

The root cause of this event was an inadequate or defective design. Maintenance personnel assumed that installation of the new stove was a direct replacement of the old one. The electrician failed to consider that the existing wiring would need to be upgraded, and used the same flexible conduit and wiring that was used for the old stove.

The following corrective actions have been implemented or are underway:

- Submit a lessons-learned document to the division lessons learned coordinator for review and sitewide distribution on the necessity of conducting a design review before replacing installed industrial-class electrical equipment.
- Ensure that all industrial-class equipment in the facility is properly grounded and that circuit breaker protection is adequately rated.
- Ensure that the new stove is grounded correctly and that it has effective circuit breaker protection.

Transporting Portable Fuel Tanks

(L03-012)

Lessons Learned Statement:

When moving portable fuel tanks, care should be taken to adjust lifting forks to the proper width required by the item being lifted. Setting of the forks into available lifting slots should be verified and spill kits should be readily available at the job site where portable fuel tanks are being used.

Discussion:

Oh March 26, 2003, a Heavy Duty operator attempted to lift a 550 gallon portable diesel fuel day tank, with a John Deere 644G loader equipped with forks. The tank assembly was equipped with two lifting slots; however the operator did not take time to adjust the loader forks to match their spacing. He attempted to pick up the tank by engaging only one lifting slot (a common practice) and placing the other fork under the lower tank support rails. In his haste to complete the job, the operator proceeded to lift the tank without first verifying that the fork had engaged the slot; the fork had missed the intended slot. As the tank was lifted it became unstable, rolled off of the forks, and tipped onto its end. At this point, diesel fuel began to pour out of the vent pipe. After three attempts, the operator was able to right the tank and stop the spill. Immediately, the Fire Department was called and several people in the area began to take measures to contain the spill. Through teamwork by the involved organizations, the spill was prevented from flowing into the adjacent stream. A total of approximately 24 gallons of fuel spilled from the tank onto a paved parking lot.

Analysis:

Failure to take the time necessary to adjust the loader forks and to verify that they were set into the tank lifting slots prior to lifting resulted in the spill of diesel fuel. Contributing to the event was the common practice of transporting the tank with only one fork set in the lifting slot. Additionally, work plans did not consider special precautions though the tank was being manipulated while in close proximity to a body of water.

Recommended Actions:

1. Operators must take the required time to adjust lifting forks to the proper width required by the item being lifted. The practice of moving the portable tanks with only one fork set into the lifting slots should be discontinued. Further, setting of the forks into both lifting slots must be verified prior to beginning the lift.

2. Spill kits should be located at the job site where portable fuel tanks are being used.

3. Work plans should provide special precautions when using or transporting portable fuel tanks near bodies of water.

POST JOB CONFERENCE

1. WORK PACKAGE TITLE: Demolition of Building 104
2. WORK PACKAGE NUMBER. BOSS-40464 - 00.

What went well?

What could be improved?

Other Comments:

Items Requiring Further Action:

POST-JOB CONFERENCE ATTENDEES

NAME	HP	NAME	HP

LESSONS LEARNED INPUT FORM

Title: (This is a brief descriptive title)

Lessons Learned Statement: (This is a brief, two or three sentence, summary of the lesson that was learned)

Discussion: (This is background and detail of what happened)

Analysis: (Discussion of what went wrong, or right and what should be done in the future)

Recommended Actions: (Identify specific corrective actions)

Submitted by: _____ Date: _____

OPTIONAL

Mail to: Lessons Learned Program Manager, or appropriate Project or Functional Manager