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MH-003-03
March 6, 2003

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

ATTENTION: Robert S. Rothman

SUBJECT: Contract No. DE-AC-03OH20152
ACTION MEMORANDUM, BUILDINGS R, SW, 58 AND 68 SLAB, REV. 1, PUBLIC REVIEW DRAFT
ACTION MEMORANDUM, T BUILDING, PUBLIC REVIEW DRAFT
BUILDING DATA PACKAGE, T BUILDING, PUBLIC REVIEW DRAFT

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

Dear Mr. Provencher:

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

ACTION MEMORANDUM, BLDGS.R, SW, 58 & 68 SLAB, REV.1, PUBLIC REVIEW DRAFT
- Response to Regulator Comments on Rev. 1 Draft

ACTION MEMORANDUM, T BUILDING, REV. 0, PUBLIC REVIEW DRAFT
- Response to Regulator Comments on Draft

BUILDING DATA PACKAGE, T BUILDING, PUBLIC REVIEW DRAFT
- Response to Regulator Comments on Draft

USEPA had no comments on the documents. The public review period is March 5 through April 5, 2003. Any public comments will be addressed in the final document.

If you or members of your staff have any questions regarding the documents, or if additional support is needed, please contact Mary Sizemore at extension 3901.

Sincerely,

Tim Heath
Project Manager
Main Hill Project

TRH/nr
Enclosures

cc: Dave Seely, USEPA, (1) w/attach.
Brian Nickel, OEPA, (4) w/attach.
Ruth Vandegrift, ODH, (1) w/attach.
Sam Cheng, DOE/MCP, (1) w/attach.
Randy Tormey, DOE/OH, (1) w/attach.
Terry Tracy, DOE/HQ, (1) w/attach.
Dann Bird, MMCIC, (3) w/attach.
D.J. Bonfiglio, MESH, (1) w/attach.
Dave Rakel, CH2MHill of Ohio, (1) w/attach.
Mary Sizemore, CH2MHill of Ohio, (1)w/attach.
Tim Heath, CH2MHill of Ohio, (2) w/attach.
Public Reading Room, (4) w/attach.
DCC

Response to Comments

Buildings R/SW, 58 and 68 Slab Action Memorandum, EE/CA, Draft, November 2002

USEPA COMMENTS

Comment 1. NO COMMENTS.

Response 1. None required.

OEPA COMMENTS

General Comments

Comment 1. Tritium – additional discussion is needed to determine how to proceed. There may be multiple tritium source areas (WD waste lines, R, SW, etc.) in close proximity on the Main Hill. This may represent, when combined, a large source area for a particular or similar ground water flow path. The larger the source area, the lower the level of contamination that can remain and still be protective for the ground water.

Our proposed path forward is to develop a conservative screening number for the tritium concentrations in the soil. If soil levels are below the screening level, no additional work is needed. If soil concentration exceeds the screening level, additional modeling/calculations utilizing the modified "leaching equation" will be needed to assess the level of clean up needed. This will allow us to move forward with the action memorandum, collect additional tritium data to assess the extent of soil tritium (source area), and assess the potential for the movement of tritium to move from the soil to the ground water. Please reference draft information shared with Ohio EPA, i.e., Draft Soil Screening Level for Tritium Migration to Groundwater at the Mound Facility, facsimile dated 3 December 2002 (Darnell to Nickel).

Ohio EPA OFFO would like to meet with DOE Miamisburg Closure Project and CH2MHill to discuss a proposed screening level and finalize the path forward for the work presented here and in all other effected action memorandums.

Response 1. Meeting was held on January 16, 2003 between Ohio EPA, DOE, and CH2MHill to establish a conservative screening number for the tritium concentrations in soil. The established screening number of 75 pCi/g was placed in Section 5.1.1. Revised paragraph 5.1.1 was modified as follows: (Ohio EPA modifications are in italics). Revised document attached.

"Phase II - Verification. This step includes, among other activities sampling and analysis of soil at the edges and base (if soil is available) of the excavations....."

"In addition to the risk-based clean-up objective identified in Table 5.1 for tritium, a screening level of 75 pCi/g is established for tritium in soil. A conservative transport model was used to develop a range of tritium concentrations in soil that would be protective of the buried valley aquifer (BVA) (to not exceed MCL). If the 95% upper confidence limit (UCL) of the measurements of tritium in soil is less than the screening level, the removal is protective of the BVA. The model used was described in draft information shared with Ohio EPA, i.e., Draft Soil Screening Level for Tritium Migration to Groundwater at the Mound Facility, facsimile dated 3 December 2002 (Darnell to Nickel). Seep 601, down slope of Buildings R and SW, will continue to be monitored."

Comment 2. If the necessity arises to remove contaminated soil during demolition, the regulators need to review and approve soil removal portion of any work plans generated during this effort. This needs to be stated in some manner in the action memorandum EE/CA. Such effort would be prior to any draft verification sampling plan. This is a topic that needs to be discussed by the Core Team, especially when considering future work pertaining to all future demolition efforts.

We also need the opportunity to review and approve environmental controls for dust and storm water controls. As the work progresses, we may also request in the future the NESHAP modeling results.

Response 2. Narrative is in the action memorandum EE/CA, section 5.1.1 that addresses regulators review and comment on work plans associated with Phase II. Table 5.2 schedule summary indicates the building demolition, soil remediation, verification and site restoration are part of Phase II.

Comment 3. Ohio EPA made a comment (see below) on the WD Waste Line Action Memo requesting we include the following text into the action memo or VSAP.

Please insert into the action memorandum (Section 5.1.1) or future VSAP for this project "Since multiple contaminants are present in the PRSs, the data will need to be reviewed to determine if cumulative risk is acceptable." For reference, this was previously inserted into the PRS 276 VSAP.

It was agreed to place it in the VSAP, but I believe Kathy was talking to Val (or at least she was going to try) about inserting this into the action

memos and VSAPs. I stated "or" in the comment above but I now believe we should do put it in both documents. I would like for this to apply to both the WD Waste Line Action Memo and R, SW, etc. Action Memo.

Response 3. Information was included in Section 5.1.1. Revised document attached.

Office of Federal Facilities Oversight COMMENTS

Specific Comments

Comment 1. Section 2.1.1, Last Sentence
Page 2-1
B Building is now demolished. Please delete this from the sentence.

Response 1. Suggestion taken. Revised document attached.

Comment 2. Section 2.1.2.2, Third Paragraph
Fourth Sentence, Page 4 of 16
Please remove the phrase "or by a staircase from the roof of Building B."

Response 2. Suggestion taken. Revised document attached.

Comment 3. Section 5.1.1, Phase II
First Bullet, Page 5-3
This states that some soil remediation will occur prior to the demolition of the building. Therefore, the USEPA and Ohio EPA will need to review and approve the soil removal portion of the work plan(s) addressing this effort, prior to reaching the verification portion of Phase II.

Response 3. Narrative is in the action memorandum EE/CA, section 5.1.1 that addresses regulators review and comment on work plans associated with Phase II. Table 5.2 schedule summary indicates the building demolition, soil remediation, verification and site restoration are part of Phase II.

Comment 4. Table 5.1
Page 5-4
What is the basis for the tritium clean up objective? Please see general comment.

Response 4. The tritium clean-up objective is based on the more restrictive of the Construction Worker and Site Employee Values. These values were

calculated using the methodology contained in Risk Based Guideline Values, March 1997, Final but were performed using April 2001 Heast slope factors.

Comment 5. Appendix B
Page 7 of 8
Under the ARARs column, item k states "Treatment specific ARARs are in their respective table." There is no table for treatment ARARs. Also, the appendix table organization is confusing. Please reorganize the table, categorizing the ARARs in some systematic fashion.

Response 5. Table was modified to include treatment ARARs. Table structure remained the same so that it would continue to be consistent with Building 38 ARAR table. Revised document attached.

Division of Hazardous Waste Management (DHWM) COMMENTS

General Comment.

The draft action memorandum lacks specific information regarding types of hazardous waste that may be generated, the quantities expected, locations for storage, etc. Based on this lack of specific information, it is difficult to determine whether the stated ARARs are complete and accurate.

The DHWM requests that DOE provide a narrative description of the ARARs evaluation in the text, similar to what DOE provided in the *Action Memorandum Building 38 Removal Action*, Final, Revision 1, September 2001.

For additional, more specific comments, please reference the December 3, 2002 e-mail from Paul Pardi, Ohio EPA SWDO-DHWM, to Rob Rothman.

Response. A narrative description of the ARARs evaluation and the rationale/justification for utilizing T Building for long-term storage was added to the front of Appendix B. Revised document attached.

Dec. 3, 2002 e-mail from Paul Pardi, Ohio EPA SWDO-DHWM, to Rob Rothman.

COMMENTS

Comment. Where is the waste to be stored in T building generated from? If some of the waste will come from Buildings R, SW, 58 and 68 slab, this information should be included in that action memorandum as well.

Response. Waste will be generated from maintenance, current operations, and decommissioning activities from R, SW, T, and 58. Information provided in revised action memorandum. See attached.

Comment. For T building, describe within the schedule and in the narrative when the mixed waste storage activity will occur (start and end point for activity).

Response. Information provided in revised action memorandum for T Building.

Comment. For any given container of waste, describe a storage time limit, and also describe a capacity limit for the mixed waste storage areas.

Response. As described on page 1 of Appendix B, any CERCLA hazardous/mixed waste generated will be stored until sufficient amounts are accumulated for transfer to a treatment/disposal facility. The capacity of the areas identified for storage (rooms T-21, 2b, and 2c) is more than adequate to store any volume of CERCLA hazardous/mixed waste anticipated to be generated.

Comment. Provide the rationale/necessity for utilizing T Building for this storage vs. other options, such as modifying Bldg. 72 to have the capability to store the mixed waste.

Response. T building was selected as a storage area for CERCLA hazardous/mixed waste due to the fact it is one of the buildings that is not to be demolished and it is already contaminated with radioactive materials and will need decontamination prior to transitioning to MMCIC. Information provided in revised action memorandum. See attached.

Other document changes:

Please note that in our draft response to your comments a reactive treatment ARAR was added to the Action Memorandum. Based on discussions with CH2MHill, DOE and OEPA, and further review of the regulatory definition of a reactive material, this reactive treatment ARAR has been removed.

References to BWXTO have been changed to "the site contractor."

Feb. 13, 2003 e-mail from Paul Pardi, Ohio EPA SWDO-DHWM, to Rob Rothman.
COMMENTS

Comment

1. Ohio EPA cannot determine the completeness/adequacy of the ARARs listed specific to the treatment of the tritiated liquids (oils). Ohio EPA needs more specific information regarding treatment activities/processes in order to conduct an evaluation of the ARARs.

For example, if treatment is to be conducted within 90 days of generation, and is being conducted in a tank, the tank standards in OAC 3745-66-90 through 992 may apply. If treatment is to be conducted within 90 days of generation in a tank or container, OAC 3745-270-07(A)(5) would apply.

If treatment is being conducted beyond 90 days of generation, and is being conducted in a tank, OAC 3745-55-90 through 99 would apply. If treatment is being conducted beyond 90 days of generation, OAC 3745-69-01(A)(B)and (C) apply. If treatment is being conducted beyond 90 days of generation in other than a tank, OAC 3745-69-01 through 06 apply.

Provide additional information, preferably in the "ARARs narrative", to justify the ARARs selected.

Response 1. Additional ARARs were added to the table to address tanks.

2. For each ARAR selected related to the treatment activities, provide a description of how the ARAR will be implemented. For example, should 3745-270-07(A)(5) be determined to be an ARAR, describe the development of a waste analysis plan (as defined in this rule).

Response 2. Additional ARARs were added to the table to address treatment activities.

3. For the Building R, SW Action Memo provide a site map or drawing for Buildings R, SW, and 58 and indicate the specific locations where waste will be staged prior to it being moved to central storage in T Building.

Response 3. Waste will be generated throughout the building during decommissioning.

ACTION MEMORANDUM

ENGINEERING EVALUATION/COST ANALYSIS

BUILDINGS R, SW, 58, AND 68 SLAB REMOVAL ACTION

MOUND CLOSURE PROJECT
MIAMISBURG, OHIO

February 2003

Revision 1 (Public Review Draft)

Department of Energy

CH2MHILL

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Figures

Tables

Appendices

Acronyms

AM	Action Memorandum
ARARs	Applicable or Relevant and Appropriate Requirements
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	contaminant of concern
D&D	decontamination and decommissioning
DOE	Department of Energy
DOT	Department of Transportation
EE/CA	Engineering Evaluation/Cost Analysis
ER	Environmental Restoration
ERS	Effluent Recovery System
FFA	Federal Facilities Agreement
HASP/JSHA	Health and Safety Plan/Job Specific Hazard Analysis
HEPA	High Efficiency Particulate Air
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MCP	Miamisburg Closure Project
MMCIC	Miamisburg Mound Community Improvement Corporation
NCDPF	Nuclear Component Development and Pre-Production Facility
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
OAC	Ohio Administrative Code
OEPA	Ohio Environmental Protection Agency
OSC	On-Scene Coordinator
OSHA	Occupational Safety and Health Administration
PRS	Potential Release Site
RA	Removal Action
RBGV	Risk-Based Guideline Value
ROD	Record of Decision
RCRA	Resource Conservation and Recovery Act
RSE	Removal Site Evaluation
SARA	Superfund Amendments and Reauthorization Act
USEPA	United States Environmental Protection Agency
VSAP	Verification Sampling and Analysis Plan

1. PURPOSE

The U.S. Department of Energy (DOE) and the U.S. Environmental Protection Agency (USEPA) have agreed on an approach for decommissioning surplus DOE facilities consistent with the *Policy on Decommissioning of Department of Energy Facilities under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)* dated May 22, 1995. According to this approach, decommissioning activities will be conducted as CERCLA removal actions, unless the circumstances at the facility make it inappropriate (DOE 1995).

The DOE is the designated lead agency under CERCLA and removal actions at the Mound Plant are implemented as federal-lead actions with DOE funds instead of the funds available to the EPA under CERCLA (i.e., non-Superfund). DOE provides the On-Scene Coordinator (OSC). Non-Superfund, federal-lead removal actions are not subject to United States Environmental Protection Agency (USEPA) limitations on the OSC ($50,000 authority) and are not subject to National Oil and Hazardous Substances Pollution Contingency Plan (NCP) limitations on removal actions (i.e., $2,000,000 in cost and 12 months in duration).

This Action Memorandum (AM) Engineering Evaluation/Cost Analysis (EE/CA) has been generated to document the general site conditions that would justify application of a Removal Action (RA) consistent with CERCLA, to propose the RA described herein, and to allow public input (USEPA 1990).

2. SITE CONDITIONS AND BACKGROUND

2.1 SITE DESCRIPTION

This section describes the physical location, characteristics, release of contaminants into the environment and the National Priorities List (NPL) status of the site of the proposed removal action.

2.1.1 Physical Location

The Mound Plant is a 306-acre facility on the southern border of the city of Miamisburg in Montgomery County, Ohio. The Mound Plant is approximately 10 miles south-southwest of Dayton and 45 miles north of Cincinnati. This removal action is proposed for Buildings R, SW, 58, the Building 68 slab, and contaminated soils in the vicinity of these buildings. The letter R stands for Research, the letters SW stand for Semi-Works. Buildings R, SW, 58, and the Building 68 slab are physically connected. The locations of Buildings R, SW, 58, and the Building 68 slab are shown in Figure 2.1. The R Building and the Building 68 slab are bordered by Building H to the north, Building SW to the west, and DS Building to the south. Buildings adjacent to Building SW and 58 are B Building to the north, Building I to the west, Building R to the east, and Building 48 to the south.

2.1.2 Site Characteristics

2.1.2.1 Building R and Building 68 Slab

Building R is a single-story structure, with a penthouse, constructed of concrete block with brick facing. The roof is metal with a built-up membrane of coal tar. Building R, one of the original buildings constructed in 1948, is located on the main hill. The total area of Building R is 55,006 square feet. The R Building penthouse contains a high efficiency particulate air (HEPA) filter bank and associated ductwork connecting it to the T-West stack. The building has central steam for heat, chilled water, and electrical service of 480V. The building was divided into two areas: the cold side and the hot side.

The hot side is associated with radiological areas, in particular, areas used for tritium recovery, rooms in which plutonium work was conducted and discontinued and rooms used for various analytical support activities. The cold side of the building contained research and development laboratories, analytical laboratories, a respirator fitting facility, offices, and the library.

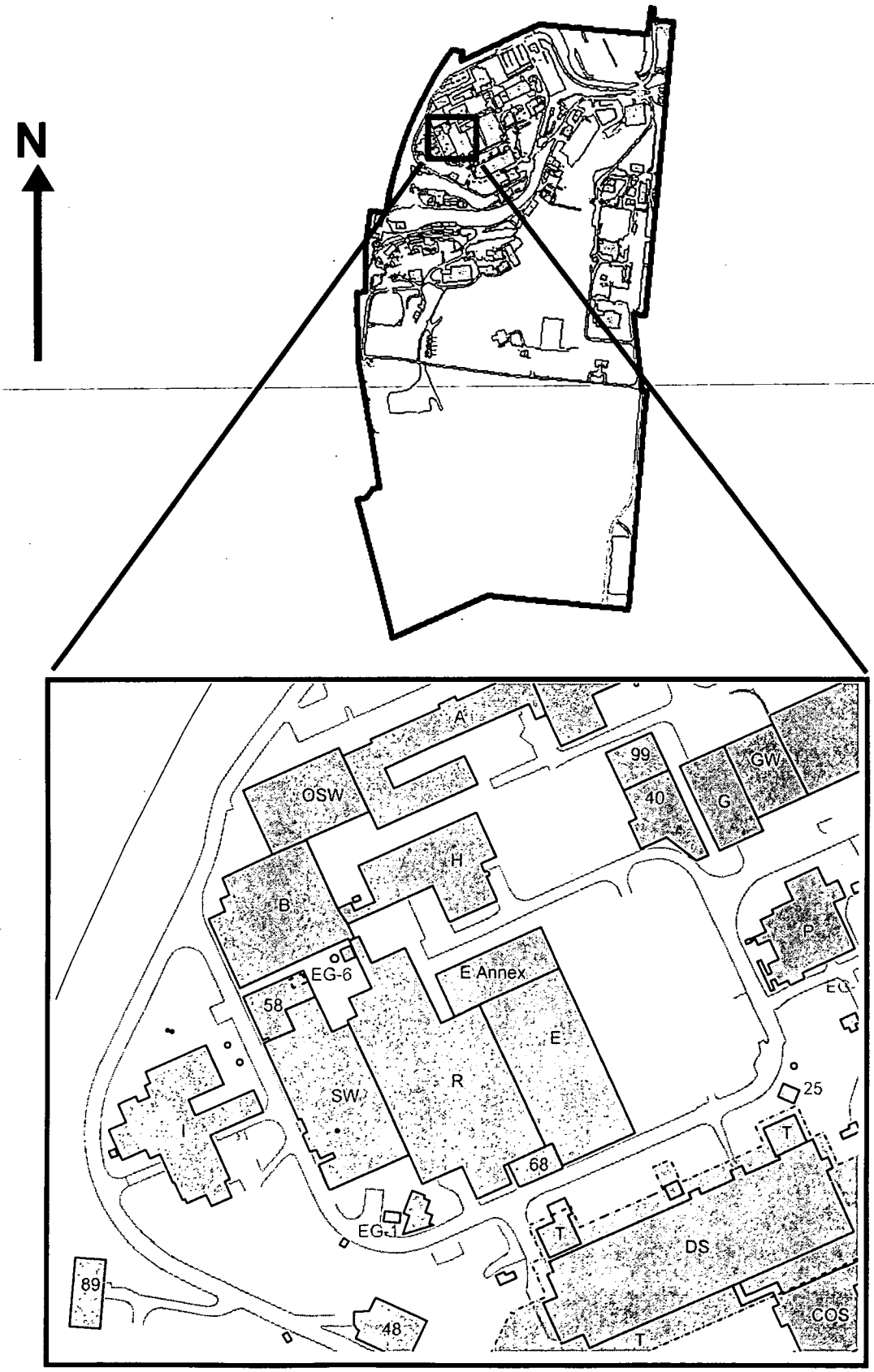

Figure 2.1
Location of Buildings R, SW, 58, and formerly 68

Seven Potential Release Sites (PRSs) (PRS 142, 143, 144, 145, 146, 327, and 328) are associated with Building R. The PRSs and a brief description are listed in Table 2.1. These PRSs are included in the removal action.

Figure 2.2 is a photograph of Building R and 68 Slab.

Table 2.1 - PRSs Associated with Building R

PRS	Description	Comments
142	Building SW/R Solid Radioactive Waste Compactor	
143	Building SW/R/T Stack Diesel Fuel Storage Tank (Tank 117)	
144	R Building Sanitary Waste Collection Tank (Tank 120)	
145	Room R-128 Alpha Waste Water Tank (Tank 19)	
146	R Building Rooms 121, 144, 146, and 148 entombed drains	Sealed in concrete in building floor drains.
327	R-111 Calorimetry Bath (Tank 255)	
328	R-111 Calorimetry Bath (Tank 256)	

Building 68 was a one-story structure constructed in 1979 of pre-fabricated metal with a metal roof. The Building 68 structure was demolished as part of the E Building demolition project in May 2000. (See E Building Action Memo, Final, April 2000.) Following the demolition of the Building 68 structure, the slab was left to be used as an equipment staging area for the Buildings R/SW demolition project. The total area of the Building 68 slab is approximately 1,990 square feet. Following completion of the R/SW demolition, the Building 68 slab will be removed along with the R and SW building slabs.

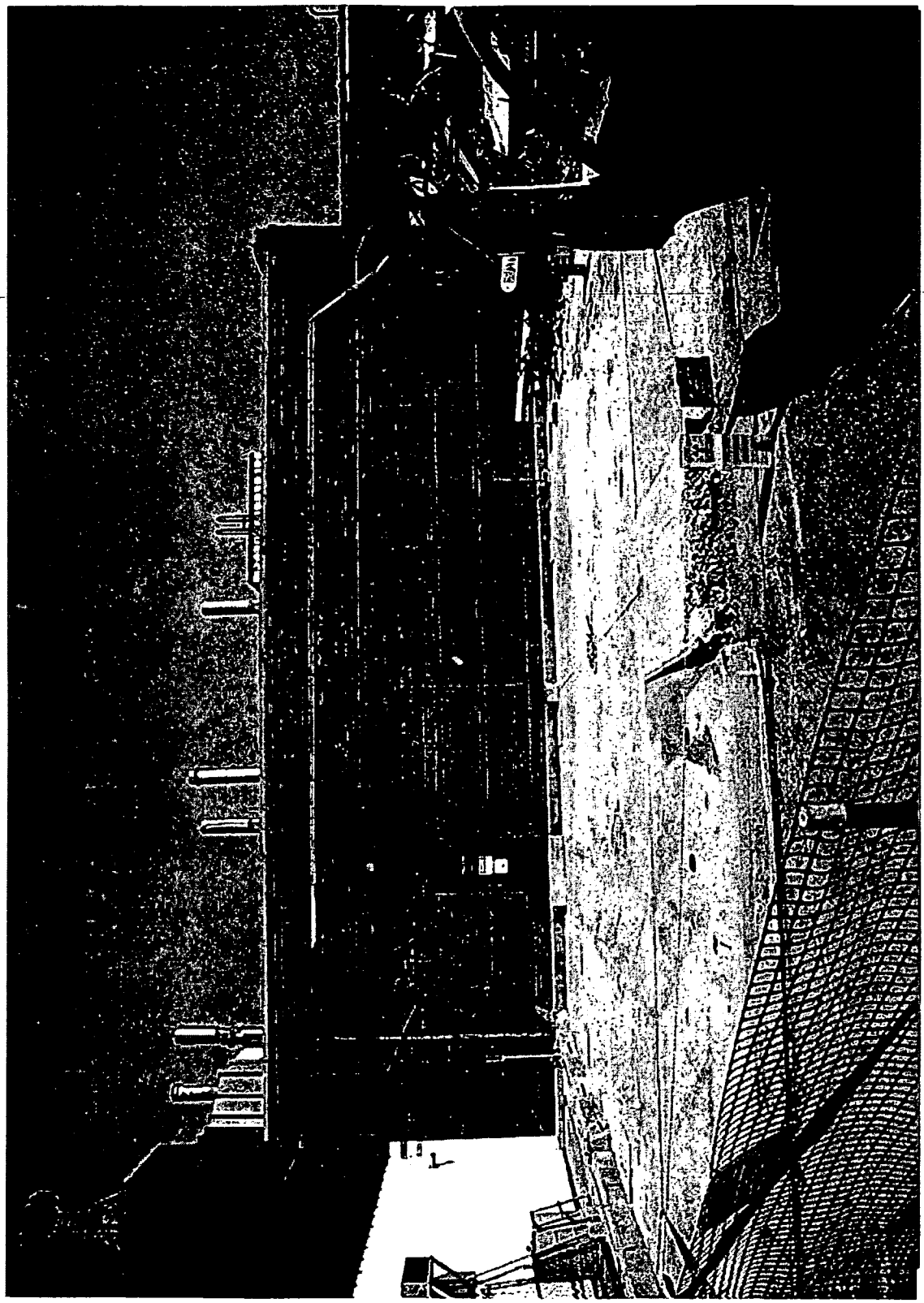

Figure 2.2
R Building and 68 Slab

Building 68 was used as a storage area for Decontamination and Decommissioning (D&D) operations. In one portion of Building 68 containers of radioactive waste, primarily of low-specific activity from Buildings R and SW were staged prior to shipment offsite. The other portion of Building 68 was used to store parts and materials for maintenance operations. No research, development, or production activities using radiation or energetic materials have occurred in the building.

2.1.2.2 Buildings SW and 58

Building SW is a two-story structure, with a penthouse, constructed of concrete block with brick facing. The roof is metal with built-up membrane of carboline, asphalt, and coal tar. Building SW is located on the main hill. Originally constructed in 1950, Building SW has undergone 13 major additions. One addition originally named Building 62 is now considered part of SW Building. The total area of Building SW is 43,066 square-feet. The building has central steam for heat, chilled water, and electrical service of 480V.

Building SW was used for tritium recovery and purification, tritium component development, component evaluation, and analysis of materials. The past operations included research projects on plutonium, actinium, radium, uranium, thorium, and protactinium. The building is contaminated with radiological materials. The building contains high-efficiency particulate air (HEPA) filters and alpha and beta hot drains.

Building 58 is an elevated one-story, steel-frame building with brick face exterior. The roof is a metal built-up membrane with asphalt. This building, which was erected in 1974, contains 6,100 square-feet. Access to the building is from the roof of Building SW. The building has central steam for heat, chilled water, and electrical service of 480V. Electrical service of 12,470V is provided to the SW Substation, which is part of Building 58.

Building 58 contains the alpha and beta filter banks and plenum exhaust for Building SW. A high efficiency filtration system is used to filter out alpha and beta particulate from the exhaust of several rooms in Building SW. The building has been used for the same purpose since construction. The building contains equipment possibly contaminated with radioactive materials.

Seventeen Potential Release Sites (PRSs) (PRS 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 209, 234, 249, 250, 251, and 329) are associated with Buildings SW and 58. The PRSs and a brief description are listed in Table 2.2. These PRSs are included in the removal action. Figure 2.3 is a photograph of Buildings SW and 58.

Table 2.2 - PRSs Associated with Buildings SW and 58

PRS	Description	Comments
131	SW Building Soils	Tritium and other radioisotopes beneath the building.
132	Area 15 Entombed SW Cave (Room SW-1A)	Radon-222, Actinium-227, and Thorium Isotopes
133	SW Building Room 1B	Radioisotopes sealed in concrete in building floor.
134	Building SW Drum Storage (Staging) Area	
135	Room SW-8, Beta Wastewater Tank (Tank 20)	
136	Room SW-125, Beta Wastewater Tank (Tank 21)	Suspected historical leaks. Tank lined.
137	Room SW-143, Beta Wastewater Tank (Tank 22)	Suspected historical leaks. Tank lined.
138	Room SW 137 Alpha Wastewater Sump (Tank 23)	Possible Uranium-233
139	Room SW-10, Beta Wastewater Sump (Tank 226)	Suspected historical leaks. Tank lined.
140	Beta Waste Solidification Facility, SW	Waste oils
141	Tritium Effluent Recovery System (ERS)	Pump oils and organic solvents
209	Building 62 Stack Deluge Tank	
234	Building 58 Diesel Fuel Storage Tank (Tank 222)	Tank removed December 1989. Binned No Further Assessment (NFA) 8/20/96. See Appendix A.
249	SW Building NCPDF Stack	
250	SW Building SW1C Stack	
251	SW Building HEFS Stack	
329	Building 62 Hot Waste Sump (Tank 258)	Sanitary waste water with potential alpha contamination.

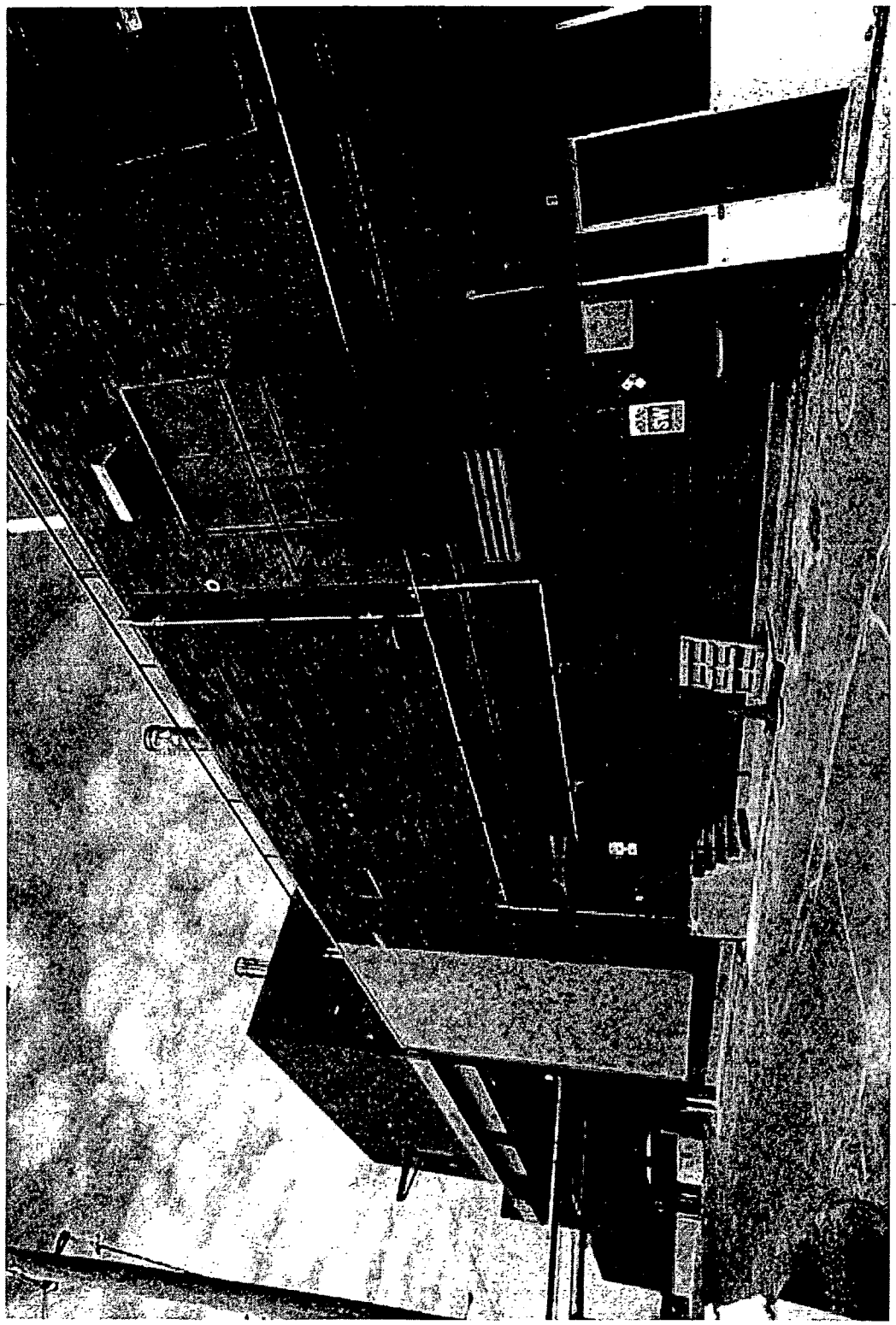

Figure 2.3
Buildings SW and 58

2.1.3 Release or Threatened Release into the Environment

The potential release of radionuclides prompted this removal action.

2.1.4 National Priorities List Status

The USEPA placed the Mound Plant in Miamisburg, Ohio on the National Priorities List (NPL) by publication in the Federal Register on November 21, 1989.

2.2 OTHER ACTIONS TO DATE

The Mound Plant initiated a CERCLA program in 1989, now guided by the agreement between the DOE, Ohio Environmental Protection Agency (OEPA), and USEPA. A Federal Facilities Agreement (FFA) under CERCLA Section 120 was executed between DOE and US EPA Region V on October 12, 1990. It was revised on July 15, 1993 (EPA Administrative Docket No. OH 890-008984) to include Ohio Environmental Protection Agency (OEPA) as a signatory. The general purposes of this agreement are to:

- Ensure that the environmental impacts associated with past and present activities at the site are thoroughly investigated and appropriate remedial action taken as necessary to protect the public health, welfare, and the environment.

- Establish a procedural framework and schedule for developing, implementing, maintaining, and monitoring appropriate response actions at the site in accordance with CERCLA, Superfund Amendments and Reauthorization Act (SARA), the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), Superfund guidance and policy, and Resource Conservation and Recovery Act (RCRA) guidance and policy.

- Facilitate cooperation, exchange of information, and participation of the parties in such actions.

2.2.1 Previous Removal Actions

No previous CERCLA Removal Actions were conducted at Buildings R, SW, 58, and the building 68 slab. The Building 58 Diesel Fuel Storage Tank designated as PRS 234 was previously removed. PRS 234 was binned No Further Assessment utilizing the Mound 2000 approach. As described earlier, the Building 68 structure was demolished during the E building demolition project conducted as a CERCLA removal action. Removal and administrative closure of the PRSs are included in this removal action.

2.2.2 Current Actions

2.2.2.1 Building R and Building 68 Slab

Research (R) Building (55,003 square feet) is a one-story concrete block and brick building constructed in 1948. The building contains laboratories for radioactive and non-radioactive work, offices and service rooms. Radioactive materials present in Building R include uranium, plutonium, americium, protactinium, radium, radon, actinium, cesium, thorium, strontium, bismuth, and tritium.

Current actions pertinent to Building R include a tritium removal project, work planning for D&D and safe shutdown. Work planning consists of the up-front work required to execute building disposition activities in accordance with Environmental Safety & Health requirements, DOE orders, and best management practices. Safe shutdown includes building surveillance (weekly and monthly contamination surveys), and the accumulation, decontamination, characterization and disposition of equipment and waste. Mound characterizes, manages, stores, treats and disposes of CERCLA hazardous/mixed waste in accordance with the ARARs identified in Appendix B.

There are two safe shutdown activities for Building R. The first is the safe shutdown of radiologically contaminated areas (Area A). Area A consists of the areas in the building in which primarily tritium removal work is underway. The majority of the remaining rooms are ones in which plutonium work was conducted and discontinued. The radiological control counting lab and the penthouse which includes the facility HEPA filter bank are also included in Area A, as well as the sumps and crawlspaces above the room ceilings.

The second safe shutdown activity involves the safe shutdown of non-contaminated areas (Area B). Area B consists mainly of the rooms presently being used as offices and storage areas with the building. The restrooms and the old plant library are included. There are some laboratories included in which non-radioactive development work was performed as well as laboratories, which have been previously decommissioned.

The Building 68 slab (1,990 square feet) was left following demolition of the Building 68 structure during the E Building demolition project in May, 2000. The Building 68 pad will be used as an equipment staging area for the Buildings R and SW demolition project. Following completion of the R and SW structures demolition, the Building 68 slab will be removed along with the slabs of Buildings R and SW.

2.2.2.2 Buildings SW and 58

The Semi-Works (SW) Building (43,066 square feet) is a two-story building with a penthouse constructed of concrete block with brick facing and is used primarily for handling tritium. Originally constructed in 1950, Building SW has undergone 13 major additions, including the Building 58 erected in 1974. Radioactive elements present in Building SW include uranium, plutonium, americium, protactinium, radium, radon, actinium, cesium, thorium, strontium, bismuth, and tritium.

Current actions pertinent to Buildings SW and 58 include tritium removal, work planning for D&D and safe shutdown. Work planning consists of the up-front work required to execute building disposition activities in accordance with Environmental Safety & Health requirements, DOE orders, and best management practices. Safe shutdown includes building surveillance (routine contamination surveys), and the accumulation, decontamination, characterization and disposition of equipment and waste. Mound characterizes, manages, stores, treats and disposes of CERCLA hazardous/mixed waste in accordance with the ARARs identified in Appendix B.

There are eight safe shutdown activities for Building SW. The first of the safe shutdown activities involves Area A, Accountable Tritium Area/Component Evaluation Organization. Area A includes a component evaluation and testing area. The first floor rooms are minimally contaminated, as is the second floor, which was used for component evaluation. The testing areas had some of the most heavily contaminated gloveboxes in the facility; however, most of the rooms including the testing console areas were only slightly contaminated. The old testing area (SW-210) is heavily contaminated. The area also included an old mass spectroscopy lab that had heavily contaminated equipment in fumehoods and behind wall enclosures. Room 208 work was scheduled up front to support critical path activities in Area F, Room SW-19. Safe Shutdown activities for Area A have been completed.

The second safe shutdown activity involves the safe shutdown of Area B, Building Systems/Effluent Recovery System. Area B contains primarily the equipment associated with the Effluent Recovery System (ERS) which was installed in a number of phases beginning in the late 1960s. The primary ERS area is in the two-story SW-8 area with the associated tritiated water collection and solidification systems in SW-149 & 149B and a Freon refrigeration system in SW-205P. SW-8 also includes an old, solids recovery boxline (discontinued in 1970s) as well as large fumehoods, which contain an abandoned thermal diffusion system used originally for tritium enrichment. The thermal diffusion system is heavily contaminated with mercury and the ground area under SW-8 is contaminated with a variety of radioactive materials (mainly tritium) and potentially hazardous chemicals.

The third safe shutdown activity involves the safe shutdown of Area C, Nuclear Component Development and Pre-production Facility (NCDPF). Area C contains primarily the tritium development and environmental testing facility originally constructed in the mid-1960s. The systems in this area include offices and storage vaults, laboratories containing gloveboxes and fumehoods for components, tritium processing areas, environmental storage areas, welding development, calorimetry and decontamination as well as inert atmosphere re-circulation system equipment and a central vacuum system. Whereas the office and storage areas are minimally contaminated, the majority of the equipment in the lab areas is heavily tritium contaminated.

The fourth safe shutdown activity involves the safe shutdown of Area D, Non-Rad Areas. Area D contains the primary change rooms and restrooms for the SW Building. The first floor section also contains two heavy electrical switch gear areas, most of the tritium component environmental temperature and shock testing laboratories, as well as a laboratory that contains non-radioactive equipment. The second floor section includes offices and a building-wide utility services area, such as cooling water and electrical. A central readout area for tritium stack monitors is also included. The safe shutdown activities associated with the environmental and testing items and the laboratory have been completed.

The fifth safe shutdown activity involves the safe shutdown of Area E, Metallography Area. Area E contains gloveboxes and equipment used most recently for metallographic support of tritium operations at Mound. The support equipment for these operations is also included. The only operable scanning electron microscope (capable of radioactive sample analysis) was in this area. Safe shutdown activities have been completed for Area E.

The sixth safe shutdown activity involves the safe shutdown of Area F, Tritium Operations. Area F consisted of a mass spectroscopy lab and a heavily contaminated area used for processing and disassembling components. This area also contained the inert re-circulation system equipment for the extensive gloveboxes. The equipment and gloveboxes were heavily contaminated with a variety of radioactive materials, and a significant amount of mercury. SW-19 needed to be completed in a timely manner before work on the Old Cave could begin. The "Old Cave", or entombment, lies under SW-19. SW-19 work activities included the removal of a contaminated vertical lathe and the enclosure, which surrounded it. The lathe and enclosure protruded into SW-208, the room above SW-19. Safe shutdown activities have been completed for Area F.

The seventh safe shutdown activity involves the safe shutdown of Area G, Old Cave. The Old Cave, which was used to process actinium, is under the floor of SW-18, SW-19 and SW-13. The knowledge of what is specifically entombed is not complete at this time. Area G contains the HEPA filter bank, which supports the alpha areas in the building. The filter bank will need to be left in place until alpha

contamination is at an acceptable level following remediation of the New Cave area. The Old Cave will use the HEPA filter bank in Building 58.

The eighth safe shutdown activity involves the safe shutdown of the New Cave Area. The New Cave Area was used most recently for repackaging of U-233 for removal from the site. The original transuranic processing operations in this area were terminated more than 10 years ago. Since then, the area has been used minimally except for storage. Some initial decontamination and decommissioning activities were performed in the area in 1996-1997, but most of the equipment remained in the area. The filter bank and stack can be removed only after sufficient remediation of the area precludes release of alpha materials from this area and the area under rooms 17, 18, and 19 (Old Cave) in Area G. The New Cave work utilized the 1C-North HEPA filter bank and the 1C-North stack. The New Cave work has been completed.

Safe shutdown activities for Building 58 and the HEFS stack, which are both integral parts of the building ventilation system will be initiated after SW Building site shutdown activities and the removal of SW, R, and 68 building slabs are completed. Safe shutdown includes building surveillance (routine contamination surveys), and the accumulation, decontamination, characterization and disposition of equipment and waste.

2.3 STATE AND LOCAL AUTHORITIES' ROLES

2.3.1 State and Local Action to Date

In 1990, as a result of Mound Plant's placement onto the NPL, DOE and USEPA entered into a Federal Facilities Agreement (FFA) which specified the manner in which the CERCLA program was to be implemented at Mound. In 1993, the FFA was amended to include the OEPA. DOE remains the lead agency.

2.3.2 Potential for Continued State and Local Response

OEPA will continue its oversight role until all the terms of the FFA have been completed.

3. THREAT TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT

3.1 THREATS TO PUBLIC HEALTH OR WELFARE

The potential release of radionuclides may create a potential threat to the public health or welfare.

3.2 THREATS TO THE ENVIRONMENT

The potential release of radionuclides may create a potential threat to the environment.

3.3 REMOVAL SITE EVALUATION

The Removal Site Evaluation (RSE) requirements, as outlined under USEPA's NCP regulations in the Code of Federal Regulations (CFR) 40 CFR 300.415, are presented throughout this AM/EE/CA. The source and nature of the potential release are listed in Tables 2.1 and 2.2. These PRSs except for PRS234 have not been binned because they are associated with the building. All of these PRSs will be sufficiently decontaminated or removed to afford no further assessment. The AM herein and the OSC report will be the avenue to close these PRSs. The tank associated with PRS234 was removed and the PRS was binned no further assessment. See Appendix A.

The NCP identifies eight factors that must be considered in determining the appropriateness of a removal action [40 CFR 300.415(b)(2)]. These criteria are evaluated in Table 3.1 on the next page.

Table 3.1 - Evaluation of Removal Action Appropriateness Criteria [40 CFR 300.415(b)(2)]

Criteria		Evaluation
(I)	"...potential exposure to nearby human populations, animals, or the food chain..."	There is potential exposure to nearby human populations, animals, or the food chain from radionuclides when present institutional controls are relaxed.
(ii)	"Actual or potential contamination of drinking water supplies..."	There is potential contamination of on-site drinking water supplies from the radionuclides. The contaminants could migrate to the ground water that is the source for the plant drinking water and is part of the buried aquifer.
(iii)	"Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of release;"	Non-applicable.
(iv)	"High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate;"	There are high levels of radioactive contaminants in soils largely at or near the surface that are migrating.
(v)	"Weather conditions that may cause hazardous substances to migrate or be released;"	This site is exposed to weather conditions. Rain might cause radioactive contaminants near the surface to migrate.
(vi)	"Threat of fire or explosion;"	Not applicable.
(vii)	"The availability of other appropriate federal or state response mechanisms to respond to the release;" and	There are no other appropriate federal or state mechanisms to respond. The Federal Facilities Agreement (FFA) established a combined state and federal mechanism to respond under CERCLA. DOE is the designated lead agency at Mound under CERCLA.
(viii)	"Other situations or factors that may pose threats to public health or welfare or the environment."	Not applicable.

4. ENDANGERMENT DETERMINATION

There is a potential or threat of release of pollutants or contaminants from this site that could pose an endangerment to public health or welfare or to the environment. To eliminate the possibility of endangerment, as the site transfers from DOE ownership and control, DOE has determined that removal of the contaminants is appropriate.

5. PROPOSED ACTION AND ESTIMATED COSTS

5.1 PROPOSED ACTION

The proposed action is the demolition of Buildings R, SW, 58, Building SW exhaust stacks, removal of the Building 68 slab, and removal of contaminated soils in the vicinity of Building SW. Since the proposed action is within the site boundaries, it is not expected to have a disproportionate impact on low income or minority populations.

5.1.1 Proposed Action Description

The proposed action is described as follows:

- **Project Planning**

  Planning and execution of the proposed action is divided into two phases, Phase I will be accomplished while the integrity of the building's environmental envelope is intact. Phase II will be accomplished after the environmental envelope is breached. The environmental envelope is defined as the building, the ability to maintain a negative pressure to the outside, and the environmental monitoring of discharge air to the outside environment. Due to the complexity of the work, multiple work plans will be generated during each phase. Because the environmental envelope is still intact during Phase I, work plan documents will be reviewed by DOE and made available to the USEPA and OEPA on request. DOE, USEPA, and OEPA will review Work plans for Phase II. DOE reviews project specific safety documentation (HASP/JSHA).

- **Public Participation**

  A notice of the availability of this Action Memorandum for 30-day public comment period will be published in a local newspaper.

- **Phase I - Establish Work Zones**

  This activity establishes the work zones for the facility in preparation for D&D. The efforts include mobilizing equipment and personnel, establishing air monitoring for personnel and work zone perimeters, establishing the personal protective equipment requirements, installing temporary facilities and utilities (if required), construction hazard abatement, general housekeeping, soil erosion control, and establishing dust control.

- **Phase I - Buildings R, SW, and 58, Decontamination**

  Decontamination is the removal of residual radioactive and hazardous materials by mechanical, chemical, or other techniques to achieve a stated objective or end condition. Activities being conducted prior to building demolition include removing excess equipment, removing lighting, removing tritium contaminated equipment (including bubblers, effluent recovery system, tritium transfer lines, gloveboxes, and fumehood), removing ductwork, removing asbestos piping, decontaminate/remove ceiling and overhead utilities, solidification of contaminated oil, deactivation of reactive materials and decontamination of rooms within the building. Some of the previously identified items, depending on contamination levels, will remain in place to come down with the building. Some sumps may be decontaminated to facilitate removal. Most sumps will be removed and dispositioned as low level waste. Mound characterizes, manages, stores, treats and disposes of CERCLA hazardous/mixed waste in accordance with the ARARs identified in Appendix B.

  Decontamination of Building R includes the removal of contaminants from the solid radioactive waste compactor (PRS 142), contaminated sumps (wastewater tanks) (PRSs 144, 145), the EG-1 diesel fuel storage tank (PRS 143), the R-111 calorimetry baths (PRS 327, 328), the contaminated (entombed) room drains (PRS 146), fixed contamination areas/walls, soil, waste handling, and disposal.

  Decontamination of Building SW and 58 includes the removal of contaminants from the contaminated sumps (wastewater tanks) (PRS 135, 136, 137, 138, 139), the drum storage staging area (PRS 134), the beta waste solidification facility (PRS 140), three exhaust stacks (PRS 249, 250, 251), contamination areas/walls, soils (PRS 131), waste handling, and disposal. The Building 58 (EG-6) diesel fuel storage tank (PRS 234) has been removed., The "Old Cave" (PRS 132), the floor of SW-1B (PRS 133) and the tritium effluent recovery system (PRS 141) will be removed and not decontaminated.

  Characterization involves mainly supplemental building characterization. Building R itself and its important components, such as the penthouse, the sumps and drains, and the crawlspaces above the room ceilings will be characterized. The SW building itself and its important components, such as stacks, the penthouse, the old cave entombment, the sumps, and the HEPA filter banks will be characterized.

- **Phase II - Demolish Buildings**

  This includes demolition of the structures, including some equipment (depending on contamination levels), waste handling and disposal. Demolition will typically be accomplished using heavy-duty equipment such as an

excavator-mounted shear and/or grapple.

- **Phase II - Remove Associated Foundations and Soils**

  The foundations and soils associated with Buildings R, SW, 58 and 68 will be removed. Some soil remediation will occur prior to the demolition of the building. This includes the area under SW-8 and the "Old Cave" area.

- **Phase II - Verification**

  This step includes, among other activities: sampling and analysis of soil at the edges and base (if soil is available) of the excavations to determine the residual contaminant concentration and verifying that the residual contamination concentration is within acceptable limits. An EPA approved Verification Sampling and Analysis Plan (VSAP) will further define the verification sampling and analysis process. Sampling for verification of contaminant removal will follow a Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)-like approach. Since multiple contaminants are present in the buildings, the data will need to be reviewed to determine if cumulative risk is acceptable. A partial listing of radionuclides processed in Buildings R and SW including the primary contaminants of concern (COC) for Buildings R, SW, and 58, is given in Table 5.1, along with the risk-based guideline values (RBGV) and cleanup objectives. The RBGV have been identified in (DOE 1997) Risk Based Guideline Values, Mound Plant, March 1997.

  In addition to the risk-based clean-up objective identified in Table 5.1 for tritium, a screening level of 75 pCi/g is established for tritium in soil. A conservative transport model was used to develop a range of tritium concentrations in soil that would be protective of the buried valley aquifer to not exceed minimum concentration limit. If the 95% upper confidence limit of the measurements of tritium in soil is less than the screening level, the removal is protective of the buried valley aquifer. The model used was described in draft information shared with Ohio EPA, i.e., Draft Soil Screening Level for Tritium Migration to Groundwater at the Mound Facility, facsimile dated 3 December 2002 (Darnell to Nickel). Seep 601, down slope of Buildings R and SW, will continue to be monitored.

- **Site Restoration**

  Equipment, materials, waste containers, and boundaries will be removed. The site will be back-filled and restored to industrial use standards. The grounds will be seeded and mulched.

- **Documentation of Completion**

  Completion of the removal action will be documented by an OSC report.

5.1.1.1 Rationale, Technical Feasibility, and Effectiveness

The removal action chosen is necessary for the removal of known contamination and to ensure that migration of the contamination does not occur. The removal action is technically feasible and the most effective method for removing known contamination.

5.1.1.2 Monitoring

Health and safety monitoring will be performed throughout the removal action according to standard Mound procedures. Sampling and analysis of excavated soil will be described in more detail in the Work Plan for this removal action.

Table 5.1 - Cleanup Objectives [pCi/g]

Contaminant	Risk Based Guideline Values (10^{-5})[2]	Background Values	Cleanup Objective
Actinium-227 + decay products in secular equilibrium to Lead-207	4.5	0.11[3]	4.6
Americium-241	63	ND	63
Bismuth-207	1.2	ND	1.2
Cesium-137 + decay products in secular equilibrium to Barium-137	3.4	0.42	3.8
Lead-210 + decay products in secular equilibrium to Lead-206	6.2	1.2[3]	7.4
Protactinium-231 + decay products in secular equilibrium to Lead-207	3.9	0.11[3]	4.0
Plutonium-238	61	0.13	55[1]
Plutonium-239/240	60	0.18	60.2
Radium-226 + decay products in secular equilibrium to Lead-206	0.9	2.0	2.9
Strontium-90 + decay products in secular equilibrium to Zirconium-90	94	0.72	94.7
Thorium-228 + decay products in secular equilibrium to Lead-208	1.1	1.5	2.6
Thorium-230 + decay products in secular equilibrium to Lead-206	0.9	1.9	2.8
Thorium-232 + decay products in secular equilibrium to Lead-208	0.7	1.4	2.1
Tritium	75,800	1.6	75,800
Uranium-233 + decay products in secular equilibrium to Bismuth-209	4.8	NA	4.8
Uranium-234 + decay products in secular equilibrium to Lead-206	0.9	1.1	2.0
Uranium-238 + decay products in secular equilibrium to Lead-206	1.0	1.2	2.2[4]

(1) The 10^{-5} RBGV for Pu-238 is 61 pCi/g, however, 55 pCi/g has been retained due to its familiarity to the public.

(2) These guideline values are based on the more restrictive of the Construction Worker and Site Employee Values. These values were calculated using the methodology contained in Risk Based Guideline Values, March 1997, Final but were performed using April 2001 HEAST slope factors.

(3) These radionuclides have comparatively short half-lives and are deduced to be in secular equilibrium with the parent nuclide. Thus the background value measured for the parent is considered to be the appropriate value for these as well. The validity of using this method for background determination for other radionuclides will be assessed on a case by case basis.

(4) If Uranium-238 is present in concentrations greater than 2.2 pCi/g, evaluate secular equilibrium with daughters. If secular equilibrium exists, use 2.2 pCi/g as cleanup goal. If secular equilibrium does not exist, adjust Uranium-238 cleanup goal upward to account for reduced daughter concentrations.

NA = Not Available; ND = Not Detected

5.1.1.3 Uncertainties

The major uncertainties are the concentration levels of the contaminants and the extent of contamination in soil.

5.1.1.4 Institutional Controls

DOE will remain in control of Buildings R, SW, 58, and 68 slab during the removal action.

5.1.1.5 Post-Removal Site Control

Initially, post removal site control will be provided by DOE/Mound. The Mound Plant is to be sold to Miamisburg Mound Community Improvement Corporation (MMCIC). The controls needed at the time of the transfer in order to ensure future protection of human health and the environment will be included in the Record of Decision (ROD).

5.1.1.6 Cross-Media Relationships and Potential Adverse Impacts

The potential cross-media impact associated with the removal action is the potential for unintended release of contaminated materials into the atmosphere. Careful monitoring and control will be implemented during the removal action.

No potential adverse impacts of the removal action have been identified.

5.1.2 Contribution to Future Remedial Actions

To facilitate further assessments and removal actions in or near the location of this removal action, the exact dimensions of the excavation and the levels of contamination identified and removed will be documented. The On-Scene Coordinator Report will document the removal action with photographs, drawings, and other information collected during the fieldwork.

The information obtained, as a result of this removal, will be used in determining the availability of the Mound Plant for final disposition and will be subject to review in the subsequent residual risk evaluation.

5.1.3 Description of Alternative Technologies

Alternative technologies frequently evaluated for CERCLA remediation include institutional controls, containment, collection, treatment, and disposal. Based on the prevailing conditions, the following alternatives (in addition to the proposed alternative of dismantlement) were developed.

1. No Action
2. Institutional Controls

The performance capabilities of each alternative with respect to the specific criteria are discussed below.

5.1.3.1 No Action

The levels of radioactive contamination in Buildings R, SW, and 58, and associated soils are unacceptable. The "No Action" option was eliminated from further consideration.

5.1.3.2 Institutional Controls

Existing Mound Plant institutional controls effectively minimize the potential for contact of the subject contamination with the general public. However, after ownership is transferred, these same institutional controls will be difficult to monitor and enforce. Also, the radioactivity can migrate and be transported beyond the site boundaries. Thus, institutional controls were eliminated from further consideration. A Removal Action is warranted.

5.1.4 Engineering Evaluation/Cost Analysis (EE/CA)

This document serves as the Action Memorandum and EE/CA.

5.1.5 Applicable, or Relevant and Appropriate Requirements (ARARs)

Miamisburg Closure Project (MCP) ARARs for the Environmental Restoration (ER) Program have been identified (DOE 1998, List of Ohio Administrative Code (OAC) and Ohio Revised Code ARARs). Letter from Nickel to Kleinrath, August 19, 1998) CERCLA regulations require that removal actions comply with ARARs.

Mound personnel will comply with the ARARs identified in Appendix B.

5.1.6 Other Standards and Requirements

Other standards, code of federal regulations (CFR) or requirements related to the actual implementation of the response action may be identified subsequently during the design phase and will be incorporated into the Work Plan for this removal action. Mound personnel will comply with the following requirements, as is applicable:

Transportation

- 49 CFR 172, 173: Department of Transportation (DOT) hazardous material transportation and employee training requirements.

Worker Safety Standards

- 29 CFR Part 1926: Occupational Safety and Health Act (OSHA) - Safety and Health Standards
- 29 CFR Part 1904: Occupational Safety and Health Act (OSHA) - Record keeping, Reporting, and Related Regulations

To Be Considered

- EPA/230/02-89/042: Methods for Evaluating the Attainment of Cleanup Standards.
- DOE Order 5400.5: Radiation Protection of the Public and the Environment

5.1.7 Project Schedule

5.1.7.1 Building R and Building 68 Slab Project Schedule

The schedule established for planning and implementing the removal action is summarized in Table 5.2.

Table 5.2 - Schedule Summary for Building R and Building 68 Slab

Activity	Start Date	Completion Date
Phase I		
Work Planning	01 June 1998	12 June 2004
Safe Shutdown	01 October 1998	19 May 2004
Characterization	01 August 1998	27 July 2004
Building Decontamination[(A)]	01 October 1998	04 March 2004
Phase II		
Building Demolition	07 January 2004	07 March 2005
Soil Remediation	11 November 2004	27 June 2005
Verification	08 June 2005	11 July 2005
Site Restoration	12 July 2005	27 July 2005
OSC Report	28 July 2005	29 August 2005

[(A)] Building R decontamination schedule includes entire Main Hill project schedule and portion of Main Hill-Rad project schedule prior to demolition.

Note: The schedule is subject to change pending approval of the baseline change proposal.

5.1.7.2 Buildings SW and 58 Project Schedule

The schedule established for planning and implementing the removal action is summarized in Table 5.3.

Table 5.3 - Schedule Summary for Buildings SW and 58

Activity	Start Date	Completion Date
Phase I		
Work Planning	01 June 1998	11 May 2004
Safe Shutdown	01 October 1998	11 May 2004
Characterization	01 August 1998	17 February 2004
Buildings Decontamination[A]	01 October 1998	28 February 2004
Phase II		
Building Demolition	09 August 2004	28 February 2005
Soil Remediation	16 November 2004	29 June 2005
Verification	21 June 2005	21 July 2005
Site Restoration	25 July 2005	09 August 2005
OSC Report	10 August 2005	29 August 2005

[A] Buildings SW & 58 decontamination schedule includes entire Main Hill project schedule and portion of Main Hill-Rad project schedule prior to demolition.

Note: The schedule is subject to change pending approval of the baseline change proposal.

5.2 ESTIMATED COSTS

5.2.1 R Building and Building 68 Slab Estimated Costs

The cost estimate to perform the removal action, based on the Main Hill Project work scope definition sheets for Building R, is shown in Table 5.4. Costs include the construction activities, all engineering and construction management, and site restoration.

Table 5.4 - Removal Action Cost Estimate for Building R

COST ESTIMATE	
Activity	**Cost**
Work Planning	$710,827
Buildings Decontamination[(A)]	$23,079,496
Buildings Demolition	$5,049,237
Remove Foundations & Soils	$155,833
Verification	$122,470
Site Restoration	$76,155
OSC Report	$32,564
TOTAL	**$29,231,370**

[(A)] Building R costs consist of historical costs plus the latest revised estimate to complete for work associated with Main Hill.

Note: Costs are subject to change pending award of the cost plus incentive fee contract for completing the work

5.2.2 Buildings SW and 58 Estimated Costs

The cost estimate to perform the removal action, based on Main Hill Rad work scope demolition sheets for Buildings SW & 58, is shown in Table 5.5. Costs include the construction activities, all engineering and construction management, and site restoration.

Table 5.5 - Removal Action Cost Estimate for Buildings SW and 58

COST ESTIMATE	
Activity	**Cost**
Work Planning	$1,823,805
Buildings Decontamination[(A)]	$42,108,578
Buildings Demolition	$5,416,489
Remove Foundations & Soils	$863,948
Verification	$117,440
Site Restoration	$75,241
OSC Report	$32,564
TOTAL	**$50,438,065**

[(A)] Buildings SW and 58 costs consist of historical costs plus the latest revised estimate to complete for work associated with Main Hill project.

Note: Costs are subject to change pending award of the cost plus incentive fee contract for completing the work

6. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

There is the potential for the contaminants to migrate.

7. OUTSTANDING POLICY ISSUES

There are currently no outstanding policy issues affecting performance of this removal action.

8. ENFORCEMENT

The core team consisting of DOE, USEPA, and OEPA has agreed on the need to perform the removal. The work described in this document does not create a waiver of any rights under the Federal Facility Agreement, nor is it intended to create a waiver of any rights under the Federal Facility Agreement. The DOE is the sole party responsible for implementing this clean-up. Therefore, DOE is undertaking the role of lead agency, per CERCLA and the NCP, for the performance of this removal action. The funding for this removal action will be through DOE budget authorization and no Superfund monies will be required.

9. RECOMMENDATION

This decision document represents the selected removal action for Buildings R, SW, 68 Slab and 58, developed in accordance with CERCLA as amended by SARA, and not inconsistent with the NCP. This decision is based on the administrative record for the site.

Conditions at the site meet the NCP Section 300.415 (b)(2) criteria for a removal and we recommend initiation of the response (removal) action.

Approved:

Rob Rothman, On Scene Coordinator	**DOE/MEMP**	2/12/03 **Date**
Timothy J. Fischer, Remedial Project Manager	**USEPA**	2/19/03 **Date**
Brian K. Nickel, Project Manager	**OEPA**	2/27/03 **Date**

10. REFERENCES

Policy on Decommissioning of Department of Energy Facilities under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) dated May 22, 1995.

USEPA 1990. Federal Facilities Agreement under CERCLA Section 120, USEPA, October 12, 1990.

USEPA 1993. Federal Facilities Agreement under CERCLA Section 120, USEPA, July 15, 1993.

DOE 1998. List of Ohio Administrative Code and Ohio Revised Code ARARs, Letter from Nickel to Kleinrath, August 19, 1998.

MOUND PLANT
PRS 234
FORMER TANK SITE
BUILDING 58 DIESEL FUEL

RECOMMENDATION:

This Potential Release Site (PRS) is the former location of a 1,000 gallon unlined, steel tank that was used to supply diesel fuel to an emergency generator. The tank was identified as a PRS because of its inclusion in the Mound Plant Underground Storage Tank Program Plan and Regulatory Status Review. Components of diesel fuel are the contaminants of concern associated with this PRS.

The tank was removed in December, 1989. During closure and removal, three soil samples were collected from the base, and the east and west walls of the open excavation. Lab analysis for Total Petroleum Hydrocarbon (TPH) indicated no contamination above the detection limit of 5 ppm as compared to the Bureau of Underground Storage Tank Regulations (BUSTR) guideline criteria of 105 ppm. Soil gas samples in the vicinity of PRS 234 detected trichloroethane (111-TCA), trichloroethene (TCE) and toluene. Calculations converting the 10^{-4} Risk Based Guideline Values for these compounds (given in mg contaminant per kg soil) into a corresponding 10^{-4} Risk Based Guideline Values for soil gas concentrations (parts contaminant per parts soil gas) showed the 111 TCA detection was approximately 60 times less than the guideline criteria, the TCE detection approximately 16 times less than the guideline criteria, and the toluene detection approximately 50,000 times less than guideline criteria. Radiological analysis also indicated Pu-238 and Th-232 below their guideline criteria of 25 pCi/g and 5 pCi/g respectively.

Therefore, since the VOC soil gas detections establishing this tank location as a PRS do not show evidence of contamination above guideline criteria and since there is no additional lab data or history to support evidence of contamination, PRS 234 requires NO FURTHER ASSESSMENT.

CONCURRENCE:

DOE/MB: Arthur W. Kleinrath, Remedial Project Manager — 8/20/96 (date)

USEPA: Timothy J. Fischer, Remedial Project Manager — 8/20/96 (date)

OEPA: Brian K. Nickel, Project Manager — 9/3/96 (date)

SUMMARY OF COMMENTS AND RESPONSES:

Comment period from 9/16/96 to 10/15/96

☒ No comments were received during the comment period.

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

Page R

B-2

Appendix A - No Further Assessment Recommendation for PRS 234

Page Redacted

Contains Proprietary Information

Appendix A

MOUND PLANT
PRS 234
FORMER TANK SITE
BUILDING 58 DIESEL FUEL

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CONCURRENCE:

DOE/MB: Arthur W. Kleinrath, Remedial Project Manager — 8/20/96 (date)

USEPA: Timothy J. Fischer, Remedial Project Manager — 8/20/96 (date)

OEPA: Brian K. Nickel, Project Manager — 9/2/96 (date)

SUMMARY OF COMMENTS AND RESPONSES:

Comment period from 9/15/96 9/16/96 to 10/15/96

☒ No comments were received during the comment period.

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

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Appendix A - No Further Assessment Recommendation for PRS 234

Appendix B

Buildings R, SW, 58 and 68 slab ARARs evaluation

CERCLA is the regulatory authority that governs the cleanup of the Mound facility. The CERCLA umbrella uses other environmental regulations to ensure that the cleanup of Mound is accomplished in a manner that is protective of human health and the environment. The regulations that are applied to the management of hazardous/mixed waste generated at a CERCLA remediation site are RCRA. The following ARAR (Applicable, or Relevant, and Appropriate Requirements) table includes the regulatory analysis of how RCRA will be applied to the management of hazardous waste during the maintenance, decommissioning and demolition of buildings R, SW, 58 and 68 slab.

Decommissioning and demolition of a nuclear facility takes time and planning to accomplish, and during that time the facility must be maintained in a safe condition. CERCLA hazardous/mixed wastes that may be generated during the buildings R, SW, and 58 and 68 slab maintenance period are anticipated to be lead acid batteries from back-up electrical systems, and waste oil from vacuum pumps. CERCLA hazardous/mixed waste that could be generated from decommissioning and demolition include oil in pumps and reservoirs, mercury, lead bricks and lead shielding, circuit boards, and miscellaneous small volume lab chemicals. CERCLA hazardous/mixed waste that could be generated from current operations in the tritium recovery facility includes waste oil from vacuum pumps.

CERCLA hazardous/mixed waste, with the exception of tritiated oil, generated from maintenance, current processes and decommissioning activities will be managed in accordance with the ARAR table until sufficient amounts are accumulated for transfer to an on-site hazardous waste facility or transfer to an offsite regulated treatment/disposal facility. Tritiated oils will be treated on site in accordance with treatment ARARs prior to shipment to an offsite disposal facility. Monthly inspections will be conducted and documented to ensure containers are safely stored. Visual inspections will be conducted and documented to ensure containers are in good condition each time waste is added or removed from the area.

Small quantities of CERCLA hazardous/mixed waste are currently staged in various locations throughout the buildings R, SW, and 58 and will be relocated to a central area in T building (rooms T-2a, 2b, and 2c). Potential for exposure to workers or the public is extremely low, since waste staging areas are unoccupied and secured from unauthorized entry.

Each activity identified in the schedule summary is associated with the RCRA related elements in Appendix B. Current schedules have all work associated with buildings R, SW, 58 and 68 slab demolition completed by June 2005.

Appendix B – ARAR Application Table for R, SW, 58 and 68 Slab Building CERCLA Hazardous/Mixed Waste

Solids Including: ▪ Lead bricks and shapes (approx. 1,700lbs.) ▪ Lead pipe joints (approx. 300) ▪ Lead-acid batteries (approx. 4 dozen) ▪ Mercury-contaminated equipment (approx. 55 gal.) ▪ Uranium beds (approx. 3) ▪ Additional solid waste materials not previously identified		**Liquids** Including: ▪ Vacuum pump oil, vane pump oil, and other oils to be solidified (approx. 3,500 liters) ▪ Elemental mercury (approx. 12 liters) ▪ Miscellaneous lab chemicals ▪ Additional liquid waste materials not previously identified	
Proposed actions involving waste	**Specific actions**	**ARARs**	**Implementation of ARARs**
1. Following generation, CERCLA hazardous/mixed wastes will be stored in drums, on pallets, or in other appropriate containers pending characterization and disposition.	1. Storage of hazardous/mixed waste solids will comply with the following RCRA requirements:	1. CERCLA Hazardous/Mixed waste storage ARARs:	1. Monthly Inspections will be documented in a log maintained by waste management personnel or building manager
	a. Condition of containers	a. 40 CFR 265.171; Ohio Administrative Code (OAC) 3745-55-71	a. Inspection element - containers are in good condition, no evidence of leaks or spillage.
	b. Compatibility of waste with container	b. 40 CFR 265.172; OAC 3745-55-72	b. Inspection element - appropriate container used for storage.

Proposed actions involving waste	Specific actions	ARARs	Implementation of ARARs
	c. Management of containers	c. 40 CFR 265.173; OAC 3745-55-73	c. Inspection element - containers closed except when adding or removing waste.
	d. Inspections	d. 40 CFR 264.15(a) and (c); OAC 3745-54-15 (A) and (C)	d. Document inspections monthly; visual inspections done periodically by personnel in the area.
	e. Requirements for incompatible wastes	e. 40 CFR 265.177; OAC 3745-55-77; 40 CFR 264.13, OAC 3745-54-13	e. Inspection element – incompatible wastes will have adequate segregation if present in the same storage area. Information from MSDS, process knowledge or analytical data will be used to determine compatibility.
	f. Marking requirements	f. 40 CFR 262.34 (c)(1)(ii); OAC 3745-52-34 (C)(1)(b)	f. Inspection element - containers marked with words to indicate contents, or as "hazardous waste."

Proposed actions involving waste	Specific actions	ARARs	Implementation of ARARs
	g. Required equipment	g. 40 CFR 265.32 (a), (b), (c), (d); OAC 3745-54-32 (A), (B), (C), (D)	g. Inspection element - verify that appropriate equipment is available on plant site or in building.
	h. Communication or alarm system	h. 40 CFR 265.34 (a), (b); OAC 3745-54-34 (A), (B)	h. Inspection element - verify that communication devices in the building are operable or that other means of communication are available.
	i. Aisle Space	i. 40 CFR 265.35; OAC 3745-54-35	i. Inspection element – maintain aisle space to allow the unobstructed movement of personnel and equipment.
	j. Training	j. 40 CFR 265.16 (a), (b), (c); OAC 3745-54-16 (A), (B), (C)	j. Personnel will be trained to perform inspections.

Proposed actions involving waste	Specific actions	ARARs	Implementation of ARARs
	k. Treatment	k. Treatment specific ARARs will be determined and submitted	k. See Treatment ARAR
	l. Closure	l. 40 CFR 264.178, OAC 3745-55-78	l. Contaminants of concern and their clean-up objectives will be identified in the Verification Sampling and Analysis Plan.
2. CERCLA hazardous/mixed waste will be characterized to determine RCRA and radiological status.	2. Wastes must be characterized following generation.	2. Characterization ARARs:	
	a. RCRA and Radiological characterization – by sampling or process knowledge.	a. 40 CFR 262.11, OAC 3745-52-11	a. If sampling is done, a copy of the analytical results will be kept in the project file.

TRITIATED OIL (APPROX. 1,000 LITERS)

- End date June 2003
- Location to be treated SW-149
- Treatment standard solidification
- Final waste package DOT specification container (typically 30 gal steel drum)
- Final disposal at Nevada Test Site

Proposed actions involving waste	**Specific actions**	**ARARs**	**Implementation of ARARs**
1. Solidify oil with No-char or suitable solidification agent	1. MD-21358, Tritiated Liquid Waste Packing Procedure For SW-149 and MD-10167, Radioactive Waste Procedures.	1. 40 CFR 268.7(a)(1) OAC-3745-270-07(A)(1)	1. Determination treatment is required
		40 CFR 268.9(a) OAC-3745-270-09(A)	Determine waste codes (D006,D008, D009)
		40 CFR 268.7(a)(3) OAC-3745-270-07(A)(3) 40 CFR 268.9(d); OAC-3745-270-09(D);	Notification that treatment met treatment standards
		40 CFR 268.40(a)(1) OAC-3745-270-40(A)(1)	Documentation of treatment. Includes documentation treatment met treatment standards. Sampling per SW-846

Proposed actions involving waste	Specific actions	ARARs	Implementation of ARARs
		40 CFR 264.192(a)(b)(d)(e)(g) OAC-3745-55-92(A)(B)(D)(E)(G) 40 CFR 264.193(a) OAC-3745-55-93(A)	Documentation that system passed helium leak check.
		40 CFR 264.193(a)(1)(3)(b)(1)(2)(c)(1)(2)(3)(d)(2)(e)(2)(f) OAC-3745-55-93(A)(1)(3)(B)(1)(2)(C)(1)(2)(3)(D)(2)(E)(2)(F)	Documentation that system passed helium leak check. Containment of oils in existing system is continuously monitored by monitoring for tritium
		40 CFR 264.194(a)(b)(2) OAC-3745-55-94(A)(B)(2)	System is approved only for use of oil or water. Level sensing devices and alarms are provided on systems
		40 CFR 264.195 OAC-3745-55-95	Systems are continuously monitored for tritium release. Daily inspections are conducted on monitoring equipment per Nuclear Safety Facility Authorization Basis Requirements
		40 CFR 264.196 OAC-3745-55-96	Spill response provided through site emergency response procedures
		40 CFR 264.197 OAC-3745-55-97(A)(B)	Process equipment will be disposed of as waste. In the event of a actual release clean-up will be satisfied with OEPA approved Verification Sampling and Analysis Plan

Proposed actions involving waste	Specific actions	ARARs	Implementation of ARARs
	a. Condition of containers	a. 40 CFR 265.171; Ohio Administrative Code (OAC) 3745-55-71	a. Inspection element - containers are in good condition, no evidence of leaks or spillage.
	b. Compatibility of waste with container	b. 40 CFR 265.172; OAC 3745-55-72	b. Inspection element - appropriate container used for storage
	c. Management of containers	c. 40 CFR 265.173; OAC 3745-55-73	c. Inspection element - containers closed except when adding or removing waste.
	d. Inspections	d. 40 CFR 264.15(a) and (c); OAC 3745-54-15 (A) and (C)	d. Document inspections monthly; visual inspections done periodically by personnel in the area.
	e. Containment	e. 40 CFR 264.175 (b)(3) OAC 3745-55-75 (b)(3)	e. Secondary containment will be provided with sufficient capacity.
	f. Marking requirements	f. 40 CFR 262.34 (c)(1)(ii); OAC 3745-52-34 (C)(1)(b)	f. Inspection element - containers marked with words to indicate contents, or as "hazardous waste."
	g. Required equipment	g. 40 CFR 265.32 (a), (b), (c), (d); OAC 3745-54-32 (A), (B), (C), (D)	g. Inspection element - verify that appropriate equipment is available on plant site or in building.

Proposed actions involving waste	Specific actions	ARARs	Implementation of ARARs
	h. Communication or alarm system	h. 40 CFR 265.34 (a), (b); OAC 3745-54-34 (A), (B)	h. Inspection element - verify that communication devices in the building are operable or that other means of communication are available.
	i. Aisle Space	i. 40 CFR 265.35; OAC 3745-54-35	i. Inspection element – maintain aisle space to allow the unobstructed movement of personnel and equipment.
	j. Training	j. 40 CFR 265.16 (a), (b), (c); OAC 3745-54-16 (A), (B), (C)	j. Personnel will be trained to perform inspections.
	k. Treatment	k. Treatment specific ARARs will be determined and submitted	k. See Treatment ARAR
	l. Closure	l. 40 CFR 264.178, OAC 3745-55-78	l. Contaminants of concern and their clean-up objectives will be identified in the Verification Sampling and Analysis Plan.

ARAR Table for Air Quality

40 CFR Part 61 Subpart H: National Emissions Standards for Emissions of Radionuclides other than Radon from Department of Energy Facilities.
40 CFR Part 61 Subpart M: National Emission Standards for Asbestos.
Ohio Administrative Code (OAC) 3745-15-07(A): Air Pollution Nuisances Prohibited.
OAC 3745-17-02 (A,B,C): Particulate Ambient Air Quality Standards.
OAC 3745-17-05: Particulate Non-Degradation Policy.
OAC 3745-17-08: (A1), (A2), (B), (D): Emission Restrictions for Fugitive Dust.
OAC 3745-20: Asbestos Emission Control.