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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5  
77 WEST JACKSON BOULEVARD  
CHICAGO, IL 60604-3590

MAR 18 1999

REPLY TO THE ATTENTION OF:

SRF-6J

Mr. Richard B. Provencher  
Director  
U.S. Department of Energy  
Miamisburg Environmental Management Project  
P.O. Box 3020  
Miamisburg, OH 45343-3020

RE: U.S. DOE Mound Plant  
Release Block D  
Request for Concurrence to Transfer

Dear Mr. Provencher:

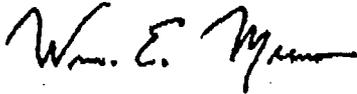
Thank you for your letter dated February 25, 1999, requesting concurrence to transfer Release Block D at the United States Department of Energy (U.S. DOE) Mound Plant in Miamisburg, Ohio.

The United States Environmental Protection Agency (US EPA) has reviewed the *Record of Decision for Release Block D, Mound Plant, Miamisburg, Ohio, Final, March 1999*, which has now been signed by U.S. DOE, U.S. EPA, and the Ohio Environmental Protection Agency, and the *Environmental Summary - Notice of Hazardous Substances for Release Block D, Mound Plant, Miamisburg, Ohio, Final, February 1999*. Based upon this information, U.S. EPA concurs that all remedial action necessary to protect public health and the environment with respect to any substance remaining in Release Block D has been taken, and that transfer of Release Block D may take place.

It is understood that any additional remedial action found to be necessary in the future shall be conducted by U.S. DOE to the extent necessary to protect human health and the environment.

The U.S. EPA fully supports redevelopment and reuse of the structures and other property available at the Mound Plant. However, assurances must be provided that all property and building leases and transfers will be protective of public health and the environment. If you have any questions or concerns about this or future economic development issues at the site, please contact Timothy Fischer, of my staff, at (312) 886-5787.

Sincerely yours,



William E. Muno, Director  
Superfund Division  
U.S. EPA, Region 5

cc: Gary Schafer, SRF-5J  
Tim Thurlow, ORC  
Graham Mitchell, Ohio EPA  
Brian Nickel, Ohio EPA  
Jeff Hurdley, Ohio EPA - Columbus  
Ruth Vandegrift, ODH  
Art Kleinrath, US DOE-MEMP  
Debbie White, US DOE-MEMP

## MEMORANDUM

Date: 2/17/99

To: File

From: Randolph Tormey, Deputy Chief Counsel, Ohio Field Office, US DOE

Subject: Institutional Controls, Mound Facility, Miamisburg, Ohio

A question has arisen as to the validity and method of enforcement of restrictive covenants ("institutional controls") in deeds of conveyance for real property at the DOE Mound Facility, Miamisburg, Ohio. Currently in question are restrictive covenants to be placed upon a portion of the real property known as "Parcel D" as follows:

"The parties hereto intend the following restrictions and covenants to run with the land and to be binding upon the Grantee and its successors, transferees, and assigns or any other person acquiring an interest in the Premises, for the benefit of Grantor, USEPA and the State of Ohio, acting by and through the Director of the Ohio EPA or ODH, their successors and assigns.

Grantee covenants that any soil from the Premises shall not be placed on any property outside the boundaries of that described in instruments recorded at Deed Book 1214, pages 10, 12, 15, 17 and 248; Deed Book 1215, page 347; Deed Book 1246, page 45; Deed Book 1258, pages 56 and 74; Deed Book 1256, page 179; Micro-Fiche 81-376A01; and Micro-Fiche 81-323A11 of the Deed Records of Montgomery County, Ohio (and as illustrated in the CERCLA 120(h) Summary, Notices of Hazardous Substances Release Block D, Mound Plant, Miamisburg, Ohio dated January, 1999) without prior written approval from the Ohio Department of Health (ODH), or a successor agency.

Grantee covenants not to use, or allow the use of, the Premises for any residential or farming activities, or any other activities which could result in the chronic exposure of children under eighteen years of age to soil or groundwater from the Premises. Restricted uses shall include, but not be limited to:

- (1) single or multifamily dwellings or rental units;
- (2) day care facilities;
- (3) schools or other educational facilities for children under eighteen years of age; and
- (4) community centers, playgrounds, or other recreational or religious facilities for children under eighteen years of age.

Grantor shall be contacted to resolve any questions which may arise as to whether a particular activity would be considered a restricted use.

Grantee covenants not to extract, consume, expose, or use in any way the groundwater underlying the premises without the prior written approval of the United States Environmental Protection Agency (Region V) and the Ohio Environmental Protection Agency."

Under Ohio law there is no uniform or standard manner to encumber property since there are as many valid reasons for restricting the use of property as there are means to effect those purposes. Recordation of the

restrictions with the county recorder for the county in which the land is situated is generally required for the restrictions to be enforced so as to provide knowledge of their existence. While all courts disfavor restrictions upon the free use of land, Ohio law provides that "courts must enforce a restriction where it is clearly and unambiguously found in a covenant." Brooks v. Orshoski, 1998 WL 484560 (Oh App. 6 Dist.) In general, the court will "construe the language of the restriction by giving it its common and ordinary meaning, and read the restrictive covenants as a whole to ascertain the intent of the creator." Id. This states the basic rule followed by courts in Ohio. It also seems that restrictive covenants are viewed more favorably when they serve some public purpose. The above covenants seem to be of this nature. Based upon the case law in Ohio, the above-stated restrictive covenants are in a form that is acceptable in Ohio and should be enforced by the courts in this state.

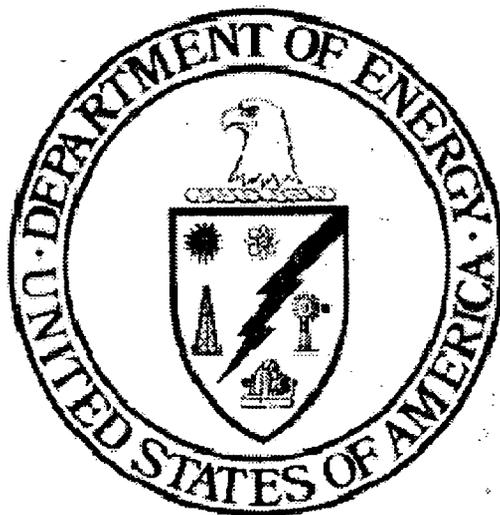
Ohio Revised Code (ORC) § 5301.25(A) provides "All ... instruments of writing properly executed for the conveyance or encumbrance of lands ... shall be recorded in the office of the county recorder of the county in which the premises are situated..." Further, Note 2 under this section mentions that "Proper recording of instrument serves as constructive notice of interest or encumbrance to all who claim through or under grantor by whom such deed was executed," citing Thames v. Asia's Janitorial Service, Inc., (Lucas 1992) 81 Oh App. 3d 579, 611 N.E. 2d 948, motion overruled 65 Ohio State 3d 1458. Furthermore, under ORC § 5301.48 to have "marketable record title" a landowner must have an unbroken chain of title of record for forty years or more. This places upon the buyer of property the need to search the record title for at least the past 40 years, which typically reveals any "cloud" on the title. Of course, the above-mentioned covenants would be such a cloud and would be noted by the subsequent buyer. In a subsequent sale that buyer would then place the covenants in the following deed thereby perpetuating this notice. It should be noted that the lack of a cloud for the forty-year period would normally eliminate the restriction, except under ORC § 5301.53(G) any right, title or interest of the United States may not be extinguished in this manner. This indicates that the restrictive covenants will run with the land and will be enforced against any property owner who takes the property through a deed in the chain of title from DOE.

Enforcement of the restrictive covenants would be through an injunctive action which could be brought by any party for whose benefit the restrictions were put in place. Brooks v. Orshoski, 1998 WL 484560 (Ohio App. 6 Dist.), Meisse v. Family Recreation Club, Inc., 1998 WL 70503 (Ohio App. 2 Dist.). Obviously the governmental agencies mentioned in the draft deed for Parcel D would be such a party, however it is also conceivable that any other party intended as the beneficiary of the restrictive covenants could likewise bring an action for enforcement. In view of the public purposes served by the above-mentioned covenants this class of persons could be quite large. As the grantor creating the restrictive covenants, the United States would likely take the lead in their enforcement, probably through the Department of Justice or the local US Attorney's office.

Based upon the foregoing, I conclude that restrictive covenants (institutional controls) are enforced by the courts of Ohio, particularly when they serve a public purpose. The covenants suggested would run with the land and recordation would assure notice of their existence. They are typically enforced through an injunctive action by any party intended to be a beneficiary of the restrictions. In this case, most likely by the United States.

*Randy Tormay*

**CERCLA 120(h) SUMMARY  
NOTICE OF HAZARDOUS SUBSTANCES  
Release Block D,  
Mound Plant, Miamisburg, Ohio**



**February, 1999**

**FINAL**

## ACRONYMS

BDP	Building Data Package
BIO	Basis of Interim Operation
BVA	Buried Valley Aquifer
CAS	Chemical Abstracts Service
CERCLA	Comprehensive Environmental Response Compensation & Liability Act
DOE	Department of Energy
EA	Environmental Assessment
FONSI	Finding of No Significant Impact
IDM	Investigative Derived Material
MMCIC	Miamisburg Mound Community Improvement Corporation
MOA	Memorandum of Agreement
NCP	National Contingency Plan
NEPA	National Environmental Policy Act
NFA	No Further Assessment
NPL	National Priority List
ODH	Ohio Department of Health
OEPA	Ohio Environmental Protection Agency
OSC	On-Scene Coordinator
pCi	picocurie
PAH	Polynuclear aromatic hydrocarbon
PCB	Polychlorinated biphenyl
PRS	Potential Release Site
RB	Release Block
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
RRE	Residual Risk Evaluation
US DOE	United States Department of Energy
US EPA	United States Environmental Protection Agency
UST	Underground Storage Tank

**CERCLA 120(h) SUMMARY  
NOTICE OF HAZARDOUS SUBSTANCES  
RELEASE BLOCK D  
MOUND PLANT, MIAMISBURG, OHIO**

**I. PURPOSE**

The information contained in this notice is required under the authority of regulations promulgated under Section 120 (h) of the Comprehensive Environmental Resource Compensation and Liability Act (CERCLA). This summary is intended to support the transfer by deed to new ownership for economic development by documenting that the U.S. Department of Energy's (US DOE) Mound Plant has met the requirements of CERCLA 120 (h) for Release Block D (RB D). A copy shall be provided to all future owners.

**II. PROPERTY DESCRIPTION**

**A. Description of Property Suitable for Transfer:**

Situate in the State of Ohio, County of Montgomery, being in the City of Miamisburg, being part of Section 30, Range 5, Township 2, lying in the Miami Rivers Survey (M.R.S.), and being part of city lots numbered 2259 within the Corporation Limits of the City of Miamisburg, and being more particularly bounded and described with bearings referenced to the Ohio State Coordinate System, South Zone, as follows:

Beginning at a iron spike, being the North East corner of Section 35 and the South East corner of Section 36, said point being the center of Benner Road (40 feet R/W) and being referenced North  $84^{\circ} 27' 09''$  West 3102.92 feet from spike (0.5' deep) at the intersection of the center line of Mound Road (60 feet R/W) with the centerline of said Benner Road in said City of Miamisburg, and being the point of beginning for the land herein described, thence  $S 84^{\circ} 28' 03'' E$  1333.66 feet along the center line of Benner Road to a railroad spike (0.2' deep) located in the center of Benner Road, thence  $N 4^{\circ} 44' 28'' E$  2010.06 feet to a concrete monument, thence  $N 83^{\circ} 57' 37'' W$  34.19 feet to a concrete monument being the TRUE POINT OF BEGINNING; thence  $N 84^{\circ} 31' 10'' E$  613.33 feet to a point, thence  $N 5^{\circ} 35' 49'' E$  291.47 feet to a point, thence  $N 84^{\circ} 24' 07'' W$  93.5 feet to a point, thence  $N 5^{\circ} 35' 49'' E$  360.00 feet to a point, thence  $S 84^{\circ} 24' 18'' E$  35.50 feet to a point, thence  $N 5^{\circ} 35' 48'' E$  131.13 feet to a point, thence along the arc of a curve to the right having a radius of 130 feet for a distance of 203.83 feet to a point, thence  $S 85^{\circ} 04' 40'' E$  495.72 feet to a point located in the center of Mound Road, thence along the centerline of Mound Road  $S 5^{\circ} 33' 37'' W$  218.17 feet to an railroad spike, thence  $N 85^{\circ} 26' 39'' W$  111.00 feet to and iron pipe, thence  $S 7^{\circ} 05' 12'' E$  714.44 feet to the true point of beginning containing 12.43 acres more or less, and subject to all legal highways and easements of record.

Release Block D (Figure II.1) is located in the southeast corner of the

developed area of the plant. RB D is generally bounded to the south by the "South Property" (the undeveloped portion of the Mound Plant), to the east by offsite residences, to the north by a parking lot and group of small buildings (numbered 39, 77, 78, 97, 95, 101 and 102), and to the west by a fenced area for storage of Investigative Derived Material (IDM) (just west of Building 100). There are two (2) main structures in RB D, Building 100 and Building 105.

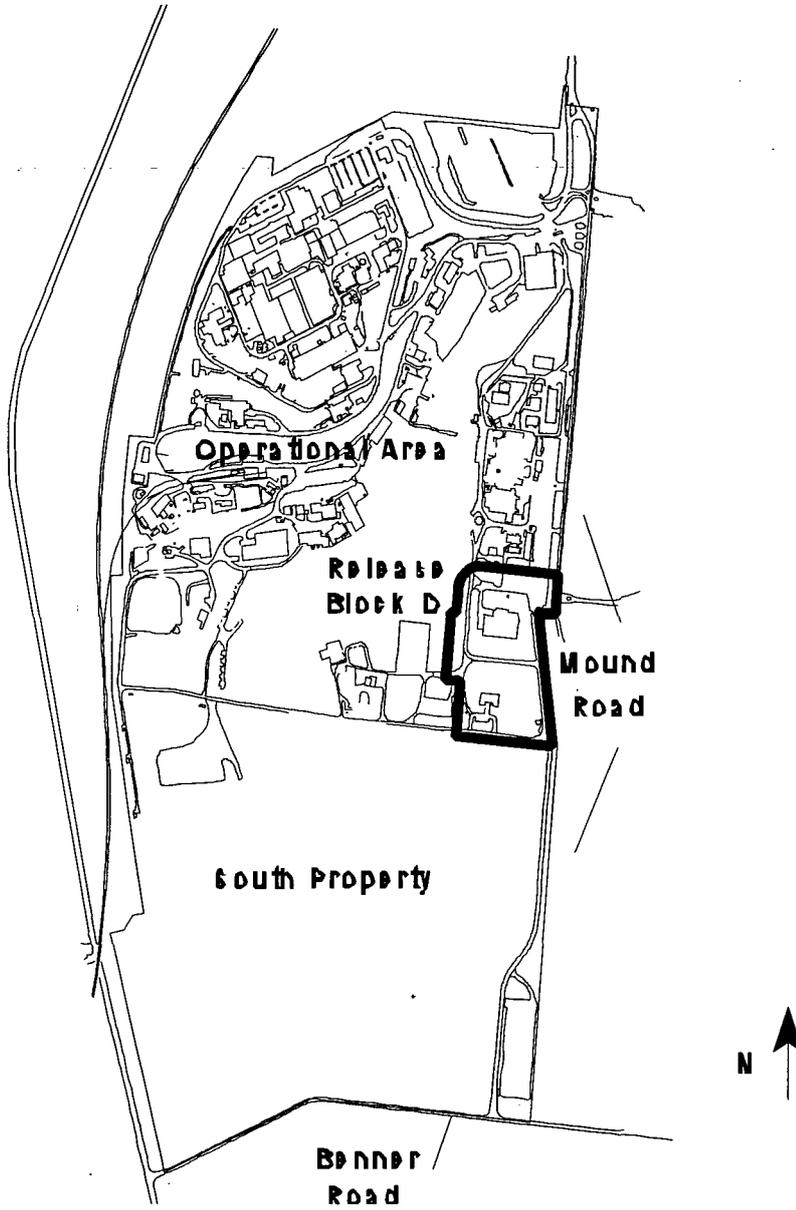
**B. Regional Context of Mound Plant and Transferred Property:**

The Mound Plant occupies approximately a 306 acre site in Montgomery County within the City of Miamisburg, Ohio. The northern boundary of the plant is approximately 0.13 miles south of Mound Avenue in Miamisburg. Benner Road forms the southern boundary of the plant, and the Conrail Railroad roughly parallels the western boundary at a distance of 50-200 feet. The Mound Plant consists of the Operational Area and the New Property (also referred to as the South Property). Approximately 130 buildings with a total of 1.4 million square feet of floor space existed at one time at the Mound Plant (although the number of buildings is constantly diminishing as buildings are decommissioned and demolished), all of which were located in the Operational area.

**C. Historical Uses of Property**

Two main structures in Release Block D include Building 105, which was built in 1990 as a machine shop. The other is Building 100, which was a Guard Force Precinct bunker. Both buildings are currently leased for industrial purposes. Portions of Release Block D were previously used for storage of trailers, roll-off boxes, small above-ground tanks and other assorted containers, as well as ground disposal of soils and construction spoils. Also located on the block was a large sewer manway/dump station. No other uses of the area of the Mound facility referred to as Release Block D are known.

**FIGURE II.1 Location of Release Block D**



### III. ENVIRONMENTAL FINDINGS

#### A. Methodology:

In accordance with Section 120 (h)(3) of CERCLA, to the extent that information is available based on a complete search of DOE files, the following shall be placed in deeds: (1) a notice of the type and quantity of hazardous substances stored, disposed of, or released; (2) a notice of the time at which such storage, disposal, or release took place; and (3) a description of any remedial action taken. Information sources reviewed to obtain the information include:

- ▶ Federal Government records
- ▶ Recorded chain of title documents
- ▶ Reasonably obtainable aerial photographs
- ▶ Visual inspection of the property and adjacent properties
- ▶ Reasonably obtainable records of releases on adjacent properties
- ▶ Interviews with current or former employees
- ▶ Sampling, if appropriate under the circumstances

RB D includes a collection of individual areas called Potential Release Sites or PRSs that have undergone previous investigations. The PRSs in RB D were identified on the basis of potential radiological and chemical (non-radioactive) contamination using knowledge of historical land use or on actual measurements of contaminants. Before transfer of a release block can be completed, all buildings and PRSs must be evaluated for protectiveness or remediated to be protective. Any residual risks associated with remaining contamination in RB D have been evaluated.

A Core Team with representatives from the US Department of Energy (DOE), US Environmental Protection Agency (US EPA), and Ohio EPA (OEPA) perform a joint agency evaluation of each of the potential contamination problems and recommend the appropriate response. The Core Team uses process knowledge, site visits, and existing data to determine whether or not any action is warranted concerning the possible problem area.

This summary is a result of a thorough Core Team analysis of information contained in the following reference documents:

1. Building Data Packages (BDP) for Buildings Located within Release Block D. The locations of these buildings are shown on Figure III.1. The rationale for designation is outlined in Table III.1.

*Provides notice for buildings of the type and quantity of hazardous substances stored, disposed of, or released and a notice of the time at which such storage, disposal, or release took place, if known as a result of the review of the seven sources of information listed in Section A.*

- a. Mound Plant, Building Data Package, Building 100 Located within Release Block D, Final, November 4, 1997.
- b. Mound Plant, Building Data Package, Building 105 Located within Release Block D, Final, November 4, 1997.

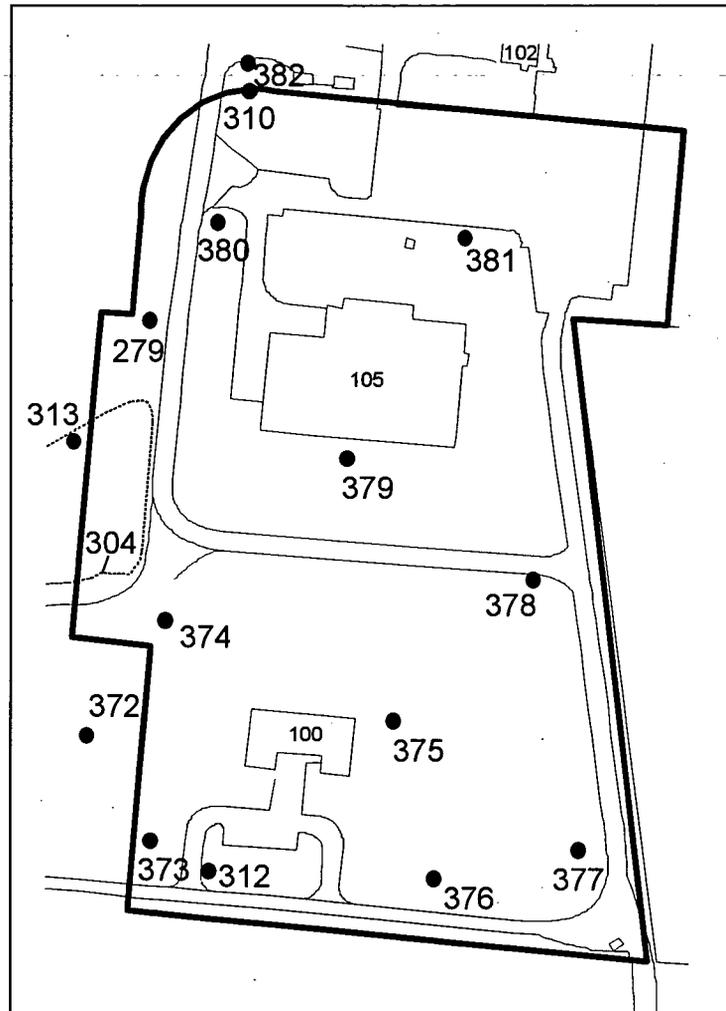
2. Potential Release Site (PRS) Data Packages for PRSs located within Release Block D. The locations of these PRSs are shown on Figure III.1. The rationale for designation of RB D PRSs is outlined in Table III.1.

*Provides notice for soil and groundwater of the type and quantity of hazardous substances stored, disposed of, or released and a notice of the time at which such storage, disposal, or release took place, if known, as a result of the review of the seven sources of information listed above.*

Potential Release Sites (PRSs) in RB D were identified on the basis of potential radiological and chemical (non-radioactive) contamination using knowledge of historical land use or on actual measurements of contaminants. The primary sources of potential radioactive contamination in RB D resulted from wastewater treatment, storage of radioactive materials, and ground disposal of soils and construction spoils.

- a. Mound Plant, Potential Release Site Package,  
PRS # 279, Final, Revision 2, November 19, 1996.
- b. Mound Plant, Potential Release Site Package,  
PRS # 304/313, Final, Revision 1, July 28, 1997.
- c. Mound Plant, Potential Release Site Package,  
PRS # 310, Final, Revision 4, February 26, 1997.
- d. Mound Plant, Potential Release Site Package,  
PRS # 312, Final, Revision 3, December 5, 1996.
- e. Mound Plant, Potential Release Site Package,  
PRS # 372/374, Final, Revision 2, November 19, 1996.
- f. Mound Plant, Potential Release Site Package,  
PRS # 375/377/378, Final, Revision 2, November 19,  
1996.
- g. Mound Plant, Potential Release Site Package,  
PRS # 376, Final, Revision 1, November 27, 1996.
- h. Mound Plant, Potential Release Site Package,  
PRS # 379, Final, Revision 2, November 19, 1996.
- i. Mound Plant, Potential Release Site Package,  
PRS # 380/381, Final, Revision 4, February 26, 1997.
- j. Mound Plant, Potential Release Site Package,  
PRS # 382, Final, Revision 4, February 26, 1997.

FIGURE III.1 PRSs and Buildings Within Release Block D



**TABLE III.1 Release Block D PRSs/Buildings and Conclusions**

PRS / Bldg	Reason for Identification	Joint Agency Decision (DOE & EPAs)	Close Out of PRS / BDP
279	Location of the Old Firing Range Drum Storage Area	No Further Assessment	Recommendation for NFA signed on 10/18/95
304	Past use as a soil disposal area - thorium contamination.	Removal Action conducted in October 1998.	OSC Report signed on 12/17/98.
310	Elevated cesium-137 sample location	No Further Assessment	Recommendation for NFA signed on 1/14/97
312	Elevated thorium sample location	No Further Assessment	Recommendation for NFA signed on 10/18/95
313	Elevated thorium sample location	No Further Assessment	Recommendation for NFA signed on 2/19/97
372/374	Elevated qualitative soil gas detections	No Further Assessment	Recommendation for NFA signed on 5/8/96
373	Elevated plutonium sample location	No Further Assessment	Recommendation for NFA signed on 10/18/95
375/377/378	Elevated qualitative soil gas detections	No Further Assessment	Recommendation for NFA signed on 5/8/96
376	Elevated plutonium sample location	No Further Assessment	Recommendation for NFA signed on 10/3/96
379	Elevated plutonium sample location	No Further Assessment	Recommendation for NFA signed on 10/18/95
380/381	Elevated qualitative soil gas detections	No Further Assessment	Recommendation for NFA signed on 5/8/96
382	Elevated qualitative soil gas detections	No Further Assessment	Recommendation for NFA signed on 1/14/97
Bldg. 100	Building used as machine shop	No Further Assessment	Recommendation for NFA signed on 8/5/97
Bldg. 105	Building used as guard force precinct	No Further Assessment	Recommendation for NFA signed on 8/5/97

3. Residual Risk Evaluation, Release Block D, Final, December 1996. *Provides the evaluation of human health risks associated with any residual contamination that may remain in the block after all remedies within a parcel have been completed. The evaluation ensures that future users of the land will not be exposed to contamination levels that would pose unacceptable health risks. This document should be used in conjunction with Items 6 & 7 below.*
4. On Scene Coordinator (OSC) Report for PRS 304, Mound Plant, December, 1998. *Summary report prepared to record the threat, describe the chronology of action(s) taken, and discuss effectiveness of remedial action.*
5. Proposed Plan for Release Block D, Mound Plant, Miamisburg, Ohio, Final, December, 1998. *Identifies the preferred option for addressing the contamination at the Mound Site, Release Block D to the public by briefly summarizing the alternatives studied and highlighting the key factors that led to identifying the preferred alternative.*
6. Technical Position Report In Support of the Release Block D Residual Risk Evaluation, Final, Revision 0, January 1999. *Supplemental review of key risk data for soil and groundwater related pathways. This document should be used in conjunction with Items 1 & 7.*
7. Residual Risk Evaluation (RRE) - Release Block D Revision Summary, Mound Plant, Miamisburg, Ohio, Final, January 1999. *Supplemental prepared for Item 3 above as a result of additional information obtained from a recent radiological survey and sampling event conducted in the fall of 1998. This document contains the final risk evaluation for RB D and should be used in conjunction with Items 1 & 6 above.*
8. Record of Decision (ROD) for Release Block D, Mound Plant, Miamisburg, Ohio, Final, March, 1999. *Documents the remedial action plan for a site and serves the following three functions: (1) certifies the remedy selection process was carried out in accordance with CERCLA, (2) describes the technical parameters of the remedy, specifying the treatment, engineering, and institutional components as well as clean up levels, and (3) provides the public with a consolidated summary of information about the site and the chosen remedy, including the rationale behind the selection.*

## Results Summary:

### 1. Building Data Analysis:

A joint agency decision between DOE, the US EPA, and OEPA has determined no contamination within Buildings 100 and 105 warrants a remedial action and no environmental concerns are associated with Buildings 100 or 105. Lease or sale of Building 100 and 105 for commercial/industrial use is protective of human health and the environment. A brief summary follows. For a more detailed description of each, refer to the building data packages as identified in Section III.A.1 of this report.

#### a. Asbestos

Asbestos material in buildings can be found in five forms: sprayed or troweled on ceilings and walls (surfacing materials); insulation around pipes, ducts, boilers and tanks (pipe and boiler insulation); transite (in ground piping); roofing materials (roofing felts); and other products such as ceiling and floor tiles and wall boards (miscellaneous materials). A Building 105 facility review conducted in June, 1994 indicated no asbestos in the building. Additionally, both buildings were constructed after 1983 when the EPA's ban went into effect for friable asbestos containing materials.

#### b. Lead Paint

Lead based paint was used almost exclusively in the U.S. prior to the 1970's. Congress established maximum lead concentrations in residential paint in 1978. Due to the age of the buildings (100 was constructed 1988 and 105 constructed in 1986), no lead based paint was believed to have been used within the buildings.

#### c. Radon

The results of a 1989-1990 Mound indoor radon study indicated an average radon concentration of 0.5 picocuries/liter in Building 105 and 1.0 picocuries/liter in Building 100 as compared to the EPA recommended

standard for radon of 4.0 picocuries/liter.

d. **Radiological Surveys**

There is no history of radiological processes performed in or around Buildings 100 or 105. Radiation surveys were conducted in both buildings during safe shutdown activities prior to lease. No direct or removable contamination was found on the building floors, corridors or stairways.

e. **Polychlorinated Biphenyls (PCB's)**

Fluorescent lighting fixtures were used in Buildings 100 and 105. Fluorescent lamp ballasts contain a small capacitor that may contain PCBs. All lamp ballasts manufactured before 1979 should be regarded as containing PCBs. These buildings were constructed after 1983, therefore assumed not to contain PCBs in the lamp ballasts. No wet type transformers were utilized.

2. **Results of Potential Release Site Soil Data Analysis:**

The US DOE, US EPA and OEPA have jointly decided that no additional remedial action of PRSs in RB D is necessary with the placement of Institutional Controls in the form of deed restrictions on future land use for RB D upon transfer.

Risks are quantified for both carcinogenic and non-carcinogenic contaminants. The risk associated with the intake of a known or suspected carcinogen is reported in terms of the incremental lifetime cancer risk presented by that COC, as estimated using the appropriate slope factor and the amount of material ingested. Residual levels of contamination that remain on RB D for carcinogens indicate a probability or likelihood of one chance in 10,000 to one chance in 1,000,000 of an individual developing cancer based on industrial use scenario. This probability or likelihood is consistent with the US EPA target risk range.

Potential human health hazards from exposure to non-carcinogenic contaminants are evaluated by using a Hazard Quotient (HQ). The HQ is determined by the ratio of the intake of a COC to a reference dose or concentration for the COC that is believed to represent a no-observable effect level. The COC-specific HQs are then summed to provide an overall Hazard Index (HI). US EPA guidance sets a limit of 1.0 for the Comprehensive HI. The HIs for the future groundwater scenarios, however, are near or above the 1.0-limit. This is based on the bedrock groundwater contaminants flowing directly to the BVA that supplies drinking water for the plant. As a result, the selected remedy prohibits the use of bedrock groundwater. This institutional control, in the form of a deed restriction, will ensure that the residual risks associated with RB D remain acceptable.

Evaluation of residual contaminants within RB D have resulted in a determination that future users of the land will not be exposed to contaminant levels that would pose unacceptable risks as long as compliance with the deed restrictions described in the RB D Record of Decision are maintained. Remediation activities are nearing completion for adjacent property to the west. Remediation activities and additional assessment activities are scheduled in the future for adjacent properties to the north. The Mound site has experience with environmental remediation of both soils and buildings. Each removal action will be designed with containment methods to prevent migration via air pathways, surface water pathways and groundwater pathways. Stormwater management and sediment erosion control will be outlined in each of the decontamination and/or demolition project work plans. DOE believes that no additional contamination of RB D is likely from adjacent activities.

A brief summary of the history of the RB D PRSs and measurements follows. For a more detailed description of each, refer to the PRS data packages as identified in Section III.A.2 of this report:

- a. At PRS 310, elevated cesium-137 was found in a surface soil sample in 1987, and was remediated immediately upon its detection. In December 1991, soil samples were again collected from this area. Of the 28 samples collected, two had cesium-137 concentrations above the detection limit. At the same location, 25 samples were analyzed for radium-226. All samples contained detectable concentrations of radium-226. In 1995, additional soil samples collected in this area did not indicate the presence of cesium-137 or any other contaminant.
- b. At PRS 373, PRS 376 and PRS 379, plutonium-238 was detected in surface samples in 1994, 1995 and 1996, respectively, and found (as measured by the Mound Soil Screening Laboratory) at or slightly above the method detection limit. The surface samples with detectable plutonium-238 concentrations were shown (by surrounding samples) to be isolated to the PRS locations only.
- c. At PRS 312, a surface sample collected in 1993 indicated an elevated thorium-232 concentration of 5.02 pCi/g. Nearby samples did not indicate elevated levels, suggesting the elevated result was an isolated event.
- d. PRS 279 was identified based on photographs that showed drum storage at this location. Plutonium-238, cobalt-60, radium-226, and thorium-228 were measured in this area. This drum storage area had been incorrectly referred to as the Old Firing Range Storage Site which was believed to be used between 1970 and 1974. Subsequent reviews indicated the Old Firing Range was actually located at PRS 277.

There were no elevated soil gas measurements detected at this location. A deep (3 to 5 feet) soil sample near PRS 279 had detectable polynuclear aromatic hydrocarbons (PAHs) at an elevated concentration of approximately 59 mg/kg. This sample was a composite of four samples collected at the corners of a 30 foot x 30

foot square. A second composite prepared similarly from about 100 feet away found similar contaminants at 1 to 3 mg/kg. Other nearby sample locations nearby did not detect any of the contaminants. These chemicals are commonly associated with asphalt, which is present in the area.

A February 1996 soil sample in the vicinity of PRS 279 contained low levels of organic and inorganic compounds, plutonium-238, radium-226, and thorium-228.

- e. PRS 313, which neighbors PRS 304, was a soil segregation area that contained the overburden soils excavated from the decommission and decontamination of a waste transfer line (PRS 300) and from Area 12 (PRS 273). PRS 313 was identified due to an elevated thorium result. Sampling in 1995 in the area of PRS 313 indicated no contaminants in excess of guideline criteria.
- f. PRS 304 was identified as a former soil disposal area. PRSs 304/313 were originally binned NFA on February 19, 1997, based on data existing at that time. However, a recent radiological survey and sampling event conducted in the fall of 1998 identified two small "hot spots" which were subsequently removed. The results from the 1998 removal actions are available in the "On Scene Coordinator (OSC) Report for PRS 304 Removal Action, December 1998."

**C. Summary of All Soil and Groundwater Contaminants Detected**

Table III.2 and Table III.3 presents a summary of all soil and groundwater contaminants above the detection limit. The American Chemical Society's Chemical Abstracts Service Registry Number (which is a numeric designation and uniquely identifies a specific chemical compound) is provided where available. Background levels are also provided where available.

Table III.2 Summary Table of All Soil Contaminants Detected in Release Block D					
Soil contaminants above detection limit	CAS Registry Number	Maximum concentration Any Depth	Maximum concentration Shallow - only	Soil background	Detects / Analyses
<b>ORGANICS (mg/kg)</b>					
Acenaphthene	83-32-9	6.4	3.80		10 / 55
Acenaphthylene	208-96-8	0.22	0.029		4 / 53
Acetone	67-64-1	0.23	0.210		21 / 47
Alpha Chlordane	5103-71-9	0.086	---		2 / 74
Anthracene	120-12-7	11.65	4.8		16 / 60
Aroclor-1248	12672-29-6	0.059	0.059		1 / 60
Aroclor-1254	11097-69-1	0.3025	0.3025		1 / 60
Benzene	71-43-2	0.001	---		1 / 63
Benzo(a)anthracene	56-55-3	41.5	6.8		24 / 61
Benzo(a)pyrene	50-32-8	33.5	7.5		25 / 60
Benzo(b)fluoranthene	205-99-2	53	12		24 / 60
Benzo(g,h,i) perylene	191-24-2	3.9	3.9		15 / 60
Benzo(k)fluoranthene	207-08-9	1.3	1.3		13 / 61
Benzoic Acid	65-85-0	0.750	0.750		6 / 52
Beta-BHC	319-85-7	0.360	0.360		5 / 78
Bis(2-ethylhexyl)phthalate	117-81-7	4.2	3.650		43 / 60
Bromoform	75-25-2	0.002	0.001		3 / 63
2-Butanone	78-93-3	0.028	0.010		4 / 24
Carbazole	86-74-8	0.165	0.165		2 / 13
Carbon Disulfide	75-15-0	0.004	0.004		1 / 48
2-Chlorophenol	95-57-8	0.1	0.1		1 / 60
Chrysene	218-01-9	51.5	5.4		24 / 60
2,4-Dinitrophenol	51-28-5	0.970	0.970		4 / 72
Di-n-butyl phthalate	84-74-2	0.140	---		1 / 48
Di-n-octyl phthalate	117-84-0	0.089	0.089		1 / 48
Dibenz(a,h)anthracene	53-70-3	1.3	1.3		10 / 60
Dibenzofuran	132-64-9	3.8	3.0		12 / 60
Dibromochloromethane	124-48-1	0.001	0.001		2 / 63
Ethylbenzene	110-54-3	0.003	0.001		8 / 48
Fluoranthene	206-44-0	65	5.3		34 / 60
Fluorene	86-73-7	6.3	3.3		16 / 60
Indeno(1,2,3-cd)pyrene	193-39-5	20.5	4.7		17 / 60
2-Hexanone	591-78-6	0.011	0.008		2 / 63
Methoxychlor	72-43-5	0.0055	0.0055	30	1 / 61
2-Methylnaphthalene	91-57-6	1.4	1.4		12 / 59
4-Methyl-2-pentanone	108-10-1	0.002	---		1 / 24
Methylene Chloride	74-87-3	0.066	0.056		53 / 62

<b>Table III.2 Summary Table of All Soil Contaminants Detected in Release Block D</b>					
<b>Soil contaminants above detection limit</b>	<b>CAS Registry Number</b>	<b>Maximum concentration Any Depth</b>	<b>Maximum concentration Shallow - only</b>	<b>Soil background</b>	<b>Defects / Analyses</b>
Naphthalene	91-20-3	1.9	1.9		14 / 60
N-Nitrosodiphenylamine	86-30-6	0.083	—		1 / 60
Pentachlorophenol	87-86-5	0.97	0.97		2 / 60
Phenanthrene	129-00-0	49.5	13		24 / 60
Phenol	108-95-2	0.120	0.120		1 / 60
Pyrene	129-00-0	62	3.4		35 / 61
Styrene	100-42-5	0.001	—		1 / 63
Toluene	108-88-3	0.016	0.004		31 / 51
1,1,1-Trichloroethane	71-55-6	0.0025	0.002		6 / 48
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.003	0.003		2 / 4
Tetrachloroethene	127-18-4	0.0295	0.027		30 / 63
Trichloroethene	79-01-6	0.00175	0.001		3 / 63
Xylenes, total	1330-20-7	0.019	0.005		17 / 48
<b>INORGANICS (mg/kg)</b>					
Aluminum	7429-90-5	24300	24300	19000	61 / 61
Antimony	7440-36-0	39.2	39.2		41 / 60
Arsenic (total)	7440-38-2	15.8	12.35	8.6	56 / 60
Barium (total)	7440-39-3	185	185	180	61 / 61
Beryllium	7440-41-7	1.8	1.8	1.3	47 / 49
Bismuth	7440-69-9	5.7	5.7		2 / 13
Cadmium (total)	7440-43-9	10.2	10.2	2.1	21 / 61
Calcium (total)	7440-70-2	276000	232000	310000	61 / 61
Chloride	16887-00-6	59	—	107	3 / 6
Chromium (total)	7440-47-3	29.6	28	20	61 / 61
Cobalt (total)	10198-40-0	15	15	19	59 / 61
Copper (total)	7440-50-8	33.1	30.5	26	61 / 61
Cyanide	57-12-5	1.0	1.0		33 / 54
Fluoride	16984-48-8	6.38	2.2	6.7	6 / 6
Iron (total)	7439-89-6	43600	38900	35000	61 / 61
Lead (total)	7439-92-1	35.8	35.8	48	61 / 61
Lithium	7439-93-2	25.3	25.3	26	9 / 10
Magnesium (total)	7439-95-4	64500	64500	40000	61 / 61
Manganese (total)	7439-96-5	757	746	1400	61 / 61
Mercury (total)	7439-97-6	1.6	0.71		25 / 60
Molybdenum	7439-98-7	14.5	2.3	27	9 / 11
Nickel (total)	7440-02-0	52.05	36.0	32	49 / 61
Nitrate	7697-37-2	2.07	—	26	1 / 1
Nitrate/Nitrite		3.7	3.7		10 / 13

<b>Table III.2 Summary Table of All Soil Contaminants Detected in Release Block D</b>					
<b>Soil contaminants above detection limit</b>	<b>CAS Registry Number</b>	<b>Maximum concentration Any Depth</b>	<b>Maximum concentration Shallow - only</b>	<b>Soil background</b>	<b>Defects / Analyses</b>
Organic Carbon		10189.1	--		1 / 1
Potassium (total)	7440-09-7	2580	2580	1900	59 / 61
Silicon (total)	7440-21-3	1100	--		1 / 1
Silver (total)	007440-02-0	18.6	17.6	1.7	40 / 61
Sodium (total)	7440-23-5	2490	2490	240	57 / 60
Sulfate	14808-79-8	129	--	150	2 / 6
Thallium	7440-28-0	0.23	--	0.46	2 / 60
Tin	7440-31-5	1.7	1.7	20	7 / 9
Vanadium	7440-62-2	41	41	25	60 / 61
Zinc (total)	607440-66-6	754	238	140	61 / 61
<b>RADIONUCLIDES (pCi/g)</b>					
Actinium-227	14952-40-0	0.38	0.38		17 / 17
Americium-241	14596-10-2	0.05	0.05		17 / 24
Cesium-137	10045-97-3	1.7	1.7	0.42	43 / 79
Cobalt-60	10198-40-0	0.055	0.055		17 / 24
Lead-210	14255-04-0	2.91	2.91		17 / 17
Plutonium-238	13981-16-3	60	60	0.13	332/394
Plutonium-239/240	15117-48-3/ 14119-33-6	0.0196	0.0196	0.18	10 / 21
Potassium-40	13966-00-2	34.9	26.9	37	46 / 46
Radium-224	13233-32-4	12.2	12.2		25 / 25
Radium-226	<del>13282-26-7</del>	<del>3.055</del>	<del>2.25</del>	2	<del>28 / 28</del>
Radium-228					
Strontium-90	10098-97-2	0.854	--	0.72	1 / 5
Thorium-228	14274-82-9	3.57	3.57	1.5	18 / 18
Thorium-230	14269-63-7	5.75	5.75	1.9	34 / 39
Thorium-232	7440-29-1	7	7	1.4	221/393
Thorium-234	15065-10-8	1.48	1.17	1.2	25 / 25
Tritium	10028-17-8	0.58	0.58	1.6	5 / 14
Uranium-234	13966-29-5	1.14	1.14	1.1	19 / 19
Uranium-235	15117-96-1	0.1195	0.1195	0.11	16 / 19
Uranium-238	7440-61-1	1.14	1.14	1.2	19 / 24

**NOTE:**

Contaminants with no background available were left blank.

-- No shallow data available.

**Table III.3. Summary Table of All Current Groundwater Contaminants Detected in BVA Production Wells**

Groundwater contaminants above detection limit	CAS Registry Number	Maximum concentration	BVA background
<b>ORGANICS (mg/L)</b>			
Acetone	67-64-1	0.012	
Bromodichloromethane	75-27-4	0.0037	
2-Butanone	78-93-3	0.041	
Chloroform	67-66-3	0.0022	0.0005
1,1-Dichloroethane	75-34-3	0.0035	
1,1-Dichloroethene	75-35-4	0.0017	
1,2-Dichloroethene	540-59-0	0.0047	
1,2-cis-Dichloroethene	156-59-2	0.0021	0.0010
1,2-trans-Dichloroethene	156-60-5	0.003	
Dichloromethane - Methylene Chloride	75-09-2	0.0098	
Isophorone	78-59-1	0.010	
Tetrachloroethene	127-18-4	0.002	
1,1,1-Trichloroethane	71-55-6	0.0018	0.0007
Trichloroethene	79-01-6	0.0046	
Trichlorofluoromethane	75-69-4	0.0025	
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.0087	
<b>INORGANICS (mg/L)</b>			
Alkalinity		335	
Aluminum	7429-90-5	0.0737	0.0375
Ammonia	7664-41-7	0.58	0.162
Barium	7440-39-3	0.0884	0.3102
Cadmium	7440-43-9	0.0077	
Calcium	7440-70-2	126	111
Chloride	16887-00-6	133	106
Chromium	7440-47-3	0.0249	0.0061
Copper	7440-50-8	0.593	0.0012
Dissolved Solids		719	603
Fluoride	16984-48-8	0.18	0.419
Iron	7439-89-6	0.780	4.065

<b>Table III.3. Summary Table of All Current Groundwater Contaminants Detected in BVA Production Wells (cont.)</b>			
<b>Groundwater contaminants above detection limit</b>		<b>Maximum concentration</b>	<b>BVA background</b>
Manganese	7439-96-5	0.0248	0.2296
Nitrate/Nitrite		4.9	5.349
Nitrate	7697-37-2	2.55	
Nitrite	14797-65-0	0.066	
Nitrogen	7727-37-9	0.62	0.324
Organic Carbon		1.1	1.987
Phosphate	14265-44-2	0.22	0.231
Potassium	7440-09-7	3.8	4.461
Silver	7440-22-4	0.0242	
Sodium	7440-23-5	82.4	62.43
Sulfate	14808-79-8	83.0	142.7
Suspended Solids		8.0	26.44
Vanadium	7440-62-2	0.0244	0.0171
Zinc	7440-66-6	0.0577	0.1196
<b>RADIONUCLIDES (pCi/L)</b>			
Actinium-227	14952-40-0	0.335	
Bismuth-210	13982-38-2	0.39	
Plutonium-239/240	13981-16-3 / 15117-48-3	2.0	0.125
Radium-226	13982-63-3	0.4	0.996
Strontium-85	13967-73-2	25	
Strontium-90	10098-97-2	0.3	0.975
Thorium-228	14274-82-9	2.17	0.779
Thorium-230	14269-63-7	1.99	0.289
Thorium-232	7440-29-1	0.1	
Tritium	10028-17-8	7200	1485
Uranium-234	13966-29-5	8.14	0.792
Uranium-238	7440-61-1	8.25	0.688

3. **Other Factors Considered:**

DOE developed a generic checklist of the issues to be considered in evaluating property to be transferred. The list was developed using the Cross-Cut Guidance on Environmental Requirements for DOE Real Property Transfers and checklists used by the Department of Defense in releasing property. The list includes environmental problems from Mound Plant that are likely to concern a potential purchaser as well as items relating to the operational concerns from ongoing and future remedial actions. Table III.4 contains a brief summary and references for all factors considered. Results of only those factors with a recommendation for disclosure relating to RB D are presented as follows:

a. **Drinking Water**

Mound Plant has exceeded the action levels for lead and copper due to the corrosiveness of the water distribution system. When the action level for lead is exceeded, EPA regulations require corrosion control and public education programs. These programs are in place at Mound. Information on the steps being taken to reduce lead concentrations in the Mound Plant water system, and on the hazards associated with ingesting lead, will be made available to all Mound drinking water users.

b. **Monitoring Equipment**

An easement will be executed between the US DOE and MMCIC prior to transfer of RB D to maintain access for continued monitoring and maintenance on the following. Questions regarding terms and conditions should be directed to the DOE Realty Officer, Ohio Field Office.

1. One monitoring well in bedrock (Well # 0351), exists to the west of the gravel road next to Building 100.
2. One air sampling station (#216) is located within the boundary of Release Block D.

TABLE III.4 Summary of Other Factors Considered for Release Block D, Mound Plant

FACTOR CONSIDERED	RB D DISCLOSURE?		RECOMMENDATION/CONCLUSION	REFERENCE
	YES	NO		
Cultural Resources		✓	There are no historic or cultural resources within RB D that would fall under a Memoranda of Agreement (MOA) or require deed restrictions to be put in place prior to transfer to limit alterations to the structures.	Correspondence From Mark J. Epstein, Department Head, Resource Protection and Review, Ohio Historic Preservation Office dated July 31, 1998.
Drinking Water Quality	✓		Mound Plant has exceeded the action levels for lead and copper due to the corrosiveness of the water distribution system. When the action level for lead is exceeded, EPA regulations require corrosion control and public education programs. <i>These programs are in place at Mound.</i> Information on the steps being taken to reduce lead concentrations in the Mound Plant water system, and on the hazards associated with ingesting lead, will be made available to all Mound drinking water users.	Miamisburg Environmental Management Project, Annual Site Environmental Report for Calendar Year 1997, September 1998.
Endangered Species		✓	Two state protected species were found, the dark-eyed junco ( <i>Junco hyemalis</i> ) and the inland rush ( <i>Juncus interior</i> ). Because only one individual inland rush was located, it is not considered a viable breeding population at the Mound facility. The dark-eyed junco is not known to breed in southwestern Ohio. It has also been determined that the plant site is in the habitat range of the federally endangered species of Indiana Bat ( <i>Myotis sodalis</i> ), however, the Mound site does not provide a suitable habitat for the Indiana Bat. Neither the solitary sitings of the rush and the junco, nor the potential habitat for the Indiana bat, are expected to affect ongoing or future activities at the site.	Operable Unit 9 Hydrogeologic Investigation: Wetlands Determination Report, Technical Memorandum, Revision 1, January 1994.

TABLE III.4 Summary of Other Factors Considered for Release Block D, Mound Plant

FACTOR CONSIDERED	RB D DISCLOSURE?		RECOMMENDATION/CONCLUSION	REFERENCE
	YES	NO		
Monitoring Equipment	✓		An easement will be executed between the US DOE and MMCIC prior to transfer of RB D to maintain access for continued monitoring and maintenance on the following. Questions regarding terms and conditions should be directed to the DOE Realty Officer, Ohio Field Office.	Groundwater Monitoring Program and Groundwater Protection Management Program Plan, April 1997, Revision 1.  Mound Plant Environmental Monitoring Plan dated July 1997.
National Environmental Policy Act (NEPA)		✓	A Finding of No Significant Impact (FONSI) was issued on October 27, 1994 for Commercialization activities at the Mound Plant.  Documented the rationale supporting the Categorical Exclusion for the proposed sale of Mound Plant under 10 CFR 1021, Appendix A to Subpart D, Section A.7 ("use unchanged").	The Mound Plant EA for Commercialization of the Mound Plant, DOE/EA-1001 dated October, 1994  FONSI for the Commercialization of the Mound Plant EA dated October 27, 1994.  December 8, 1995 memorandum from Nat Brown, Assistant Manager Compliance and Support, Ohio Field Office to George R. Gartrell, Director, Miamisburg Area Office.
Resource Conservation and Recovery Act (RCRA)		✓	DOE has found no RCRA regulated units within Release Block D warranting a RCRA closure action.  It has been determined that the closest facility boundary from Buildings 23 and 72 will not change with the sale of release block D. Therefore, the risk assessment information in the RCRA Part B Permit will not change.	RCRA Part B Permit Application, Volume I, Section A, September 1995 (as amended) Responses to Information Requested by the Ohio HWFB Technical Staff transmitted to Bob Brown of the State of Ohio Hazardous Waste Facility Board dated March 12, 1996.

TABLE III.4 Summary of Other Factors Considered for Release Block D, Mound Plant

FACTOR CONSIDERED	RB D DISCLOSURE?		RECOMMENDATION/CONCLUSION	REFERENCE
	YES	NO		
Safety Basis Risk		✓	<p>DOE Order 5480.23, "Nuclear Safety Analysis Reports", requires preparation of safety analysis to demonstrate adequate protection of health and safety of workers and the public. Accident scenarios have been identified which have the potential to impact the health and safety of the public. Changing the site boundaries, by transferring Release Blocks D decreases the fence line distance used in calculations of potential dose consequences for accidents having ground level releases.</p> <p>The Building 22 Basis for Interim Operation (BIO) was modified to account for the decreased buffer zone. The DOE approved BIO was implemented on 2/01/98.</p>	Correspondence from J. Kreuger, Waste Management Manager, Babcock and Wilcox of Ohio, Inc. to R. Provencher, Director, Miamisburg Environmental Management Project, 12/04/98.
Wetlands		✓	<p>Three characteristics must be present to be classified as jurisdictional wetlands: (1) hydrophytic vegetation, (2) hydric soils, and (3) wetlands hydrology. Absence of any one of these characteristics removes an area from consideration. None of the sites examined within Release Block D constitute jurisdictional wetlands.</p>	<p>Operable Unit 9 Hydrogeologic Investigation: Wetlands Determination Report, Technical Memorandum, Revision 1, January 1994.</p> <p>Correspondence, T. Ballieul, Director, Columbus Environmental Management Project to S. Smiley dated 08/27/98.</p>
Wild and Scenic Rivers		✓	<p>Section 8(a) of the statute withdraws all public land within Wild and Scenic Rivers Act designated areas from sale or other disposition except for leasing. There are no wild and scenic rivers located within RB D.</p>	Correspondence, S. Lewis, Ohio Department of Natural Resources to M. Gilliat, EG&G Mound Applied Technologies, Miamisburg, Ohio dated July 14, 1992.

#### IV. FINDING OF SUITABILITY TO TRANSFER

In accordance with provisions of CERCLA Section 120 (h), contaminated property can only be transferred if one of the following applies:

- (1) a remedial action has been taken that protects human health and the environment and EPA deems this conditions to be satisfied if a remedy has been constructed and is operating successfully,
- (2) a decision has been made that no remedial action is necessary.

This future industrial use of the Mound Plant has been determined based upon agreement among US DOE, US EPA and OEPA, and interested stakeholders. This land use is reflected in the Mound Comprehensive Reuse Plan of the Miamisburg Mound Community Improvement Corporation (MMCIC) and is currently codified in the City of Miamisburg Zoning Ordinance for industrial use.

A joint agency decision among the US DOE, US EPA and OEPA has been made that a remedial action has been taken that protects human health and the environment. EPA deems this condition to be satisfied if the Institutional Controls are implemented and operating successfully. Institutional controls in the form of deed restrictions on future land use will be placed on RB D upon transfer as part of the remedy. The objective of these institutional controls is to prevent an unacceptable risk to human health and the environment by restricting the use of RB D, including RB D soils, to that which is consistent with assumptions in the RB D RRE. DOE or its successors will retain the right and responsibility to monitor, maintain, and enforce these institutional controls. The following property deed restrictions and requirements will be imposed on the property to maintain protection of human health and the environment in the future:

- A. Ensure that industrial land use is maintained;
- B. Prohibit the use of bedrock ground water;
- C. Provide site access for Federal and State agencies for the purpose of sampling and monitoring; and
- D. Soils from RB D shall not be removed from the Mound Facility boundary without approval from the Ohio Department of Health (ODH).

V. **ENVIRONMENTAL COVENANTS:**

DOE is committed to include a covenant in accordance with Section 120 (h)(3) of CERCLA in the deed for the sale or transfer of the property that warrants that:

- A. All remedial action necessary to protect human health and the environment has been taken.
- B. Any additional response action or corrective action found to be necessary after the date of sale or transfer shall be conducted by the United States [Section 120(h)(4)(D)(i)]. The requirements of the covenant shall not apply in any case in which the person or entity to whom the property is transferred is a potentially responsible party with respect to the property.
- C. A clause granting the United States access to the property in any case in which a response action or corrective action is found to be necessary or such access is necessary to carry out a response action or corrective action on the adjoining property [Section 120 (h)(4)(D)(ii)]

## VI. NOTIFICATION/PUBLIC PARTICIPATION

The community has been an active participant in this process to date. Comments from the public on the PRS and building disposition recommendations have been incorporated as part of the remedy evaluation. DOE believes all comments have been resolved with the commentor and the documents, comments, and responses have been placed in the CERCLA Public Reading Room.

Table VI.1 lists all RB D PRS packages, Building Data Packages, and the RB D RRE, along with the dates they were made available for public comment.

**Table VI.1 Release Block D Documents and Public Comment Periods**

DOCUMENT (PRS/BUILDING)	COMMENT PERIOD (BEGIN)	COMMENT PERIOD (END)
279	02/15/96	02/29/96
304/313	05/08/97	06/16/97
PRS 304 Action Memo	10/01/98	10/31/98
310	01/15/97	02/15/97
312	10/24/95	02/15/96
372/374	05/15/96	06/17/96
373	02/15/96	02/29/96
375/377/378	05/15/96	06/17/96
376	10/15/96	11/15/96
379	02/15/96	02/29/96
380/381	05/15/96	06/17/96
382	01/15/97	02/15/97
Building 100	09/04/97	10/20/97
Building 105	09/04/97	10/20/97
RB D Residual Risk Evaluation	08/21/96	09/20/96
Supplemental RB D Residual Risk Evaluation	12/22/98	01/21/99
Proposed Plan for RB D	12/22/98	01/21/98

**Record of Decision for Release Block D,  
Mound Plant, Miamisburg, Ohio**

*Rec'd 3/1/99  
via e-mail  
from D. White  
Revised 3/2/99*



**FINAL**

**February 1999**

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## ACRONYMS

AOC	Area of Concern
ARAR	Applicable or Relevant and Appropriate Requirement
BDP	Building Data Package
BVA	Buried Valley Aquifer
CERCLA	Comprehensive Environmental Response Compensation & Liability Act
COC	Chemical of Concern
DOE	Department of Energy
FFA	Federal Facilities Agreement
FOD	Frequency of Detection
GV	Guideline Value
HEAST	Health Effects Assessment Summary Table
HI	Hazard Index
HQ	Hazard Quotient
IDM	Investigative Derived Material
IRIS	Integrated Risk Information System
MEMP	Miamisburg Environmental Management Project
MMCIC	Miamisburg Mound Community Improvement Corporation
NCP	National Contingency Plan
NFA	No Further Assessment
NPL	National Priority List
OAC	Ohio Administrative Code
OEPA	Ohio Environmental Protection Agency
O&M	Operations and Maintenance
ORC	Ohio Revised Code
OSC	On-Scene Coordinator
OU	Operable Unit

## ACRONYMS (CONTINUED)

pCi	picocurie
PAH	Polynuclear aromatic hydrocarbon
PETREX	(trade name for a type of soil sampling)
PRS	Potential Release Site
<hr/>	
RB	Release Block
RD/RA	Remedial Design/Remedial Action
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RRE	Residual Risk Evaluation
RREM	Residual Risk Evaluation Methodology
SARA Superfund Amendments and Reauthorization Act	
SCM	Site Conceptual Model
SM/PP	Special Metallurgical/Plutonium Processing
US DOE	United States Department of Energy
US EPA	United States Environmental Protection Agency
UTL	Upper Tolerance Limit

## **Record of Decision (ROD) for Release Block D, Mound Plant, Miamisburg, Ohio**

This Record of Decision (ROD) documents the remedy selected for Release Block D of the Mound Plant, Miamisburg, Ohio. The ROD is organized in three sections: a declaration, a decision summary, and a responsiveness summary.

### **1.0 DECLARATION**

This section summarizes the information presented in the ROD and includes the data certification sheet and authorizing signature page.

#### **1.1 Site Name and Location**

The U.S. Department of Energy (U.S. DOE) Mound Plant (CERCLIS ID No. 04935) is located within the City of Miamisburg, in southern Montgomery County, Ohio. The Plant is approximately ten (10) miles southwest of Dayton and 45 miles north of Cincinnati. This ROD addresses Release Block (RB) D which is located in the southeast corner of the developed area of the plant.

#### **1.2 Basis and Purpose**

This decision document presents the selected remedy for Release Block D (RB D) of the Mound Plant. The remedy was chosen in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA), and to the extent practicable, the National Contingency Plan (NCP). Information used to select the remedy is contained in the Administrative Record file. The file is available for review at the Mound CERCLA Reading Room, Miamisburg Senior Adult Center, 305 Central Avenue, Miamisburg, Ohio.

The State of Ohio concurs with the selected remedy.

### **1.3 Site Assessment**

As documented in the Residual Risk Evaluation (RRE) for RB D, the RB D RRE Revision Summary, and the Technical Position Report in Support of the RB D RRE, the risks from carcinogens and non-carcinogens to current and future occupants of RB D were evaluated. In those analyses, the type of occupant was limited to an industrial use scenario and was represented by a construction worker and a site employee (office employee). Based on the RRE, the risks for current industrial use are within the acceptable range. However, in order to ensure that future use of the site conforms to the RRE assumptions, it was necessary to consider a remedy that would prevent the site being used for non-industrial purposes.

As described below, the remedy will protect future occupants of RB D from the threat of contaminants in the groundwater, and will ensure that RB D soils are appropriately evaluated prior to any removal of RB D soils from the Mound Plant NPL facility boundary.

### **1.4 Description of Selected Remedy**

The selected remedy for RB D is institutional controls in the form of deed restrictions on future land use. DOE or its successors, as the lead agency for this ROD, has the responsibility to monitor, maintain and enforce these institutional controls. In order to maintain protection of human health and the environment at RB D in the future, the institutional controls to be adopted would:

- ▶ Ensure that industrial land use is maintained;
- ▶ Prohibit the use of bedrock ground water;
- ▶ Provide site access for federal and state agencies for the purpose of taking response actions, including sampling and monitoring; and
- ▶ Prohibit removal of RB D soils from the Mound NPL Facility boundary without approval from the Ohio Department of Health.

A copy of the deed is attached in Appendix A.

## 1.5 Statutory Determinations

The selected remedy for RB D is protective of human health and the environment, complies with Federal and State requirements that are applicable or relevant and appropriate (ARAR), is cost-effective, and utilizes a permanent solution to the maximum extent practicable. Because this remedy will result in hazardous substances remaining in Release Block D above levels that allow for unlimited use and unrestricted exposure, DOE, in consultation with USEPA, Ohio EPA and ODH, will review the remedial action each year to assure that human health and the environment are being protected by the remedial action being implemented. DOE reserves the right to petition the USEPA, OEPA, and ODH for a modification to the frequency established for conducting the effectiveness reviews.

## 1.6 ROD Data Certification Checklist

Based on a commitment made by the U.S. Environmental Protection Agency (US EPA) to the General Accounting Office, RODs must contain a checklist which certifies that key information regarding the selection of the remedy has been included in the ROD.

Therefore, note that the following information is located in the Decision Summary (Section 2) of this ROD. Additional information on any of these topics can be found in the Administrative Record for Mound.

- chemicals of concern (COCs) and their respective concentrations,
- guideline levels for the COCs;
- risks represented by the COCs;
- current and future land and groundwater use assumptions used in the risk assessment and ROD;
- land and groundwater uses that will be available at the site as a result of the remedy;
- estimated cost of the remedy; and the
- decisive factor(s) that led to the selection of the remedy.

**1.7 Authorizing Signatures and Support Agency Acceptance**

This Record of Decision for Release Block D of the Mound Plant has been prepared by the DOE. Approval of the US EPA and OEPA is required and has been secured as documented below.

This ROD is authorized for implementation.

\_\_\_\_\_  
G. Leah Dever  
Ohio Field Office Manager,  
U. S. Department of Energy

\_\_\_\_\_  
Date

\_\_\_\_\_  
William E. Muno  
Director, Superfund Division,  
U. S. Environmental Protection Agency, Region V

\_\_\_\_\_  
Date

\_\_\_\_\_  
Christopher Jones  
Director,  
Ohio Environmental Protection Agency

\_\_\_\_\_  
Date

## **2.0 DECISION SUMMARY**

This section provides an overview of the site and the alternatives evaluated. The selected remedy, and the basis for its selection, are also described.

### **2.1 Site Description**

The U.S. Department of Energy (US DOE) Mound Plant (CERCLIS ID No. 04935) is located within the city limits of Miamisburg, in southern Montgomery County, Ohio (Figure 2-1). The Site is approximately ten (10) miles south-southwest of Dayton and 45 miles north of Cincinnati. Miamisburg is predominantly a residential community with supportive commercial facilities and industrial development. The adjacent upland areas are used primarily for residences and agriculture or are unused open spaces.

The Mound property is divided into eighteen "release blocks," which are contiguous tracts of property designated for transfer of ownership. These eighteen release blocks may be reconfigured to accommodate transfer of Mound property for economic development.

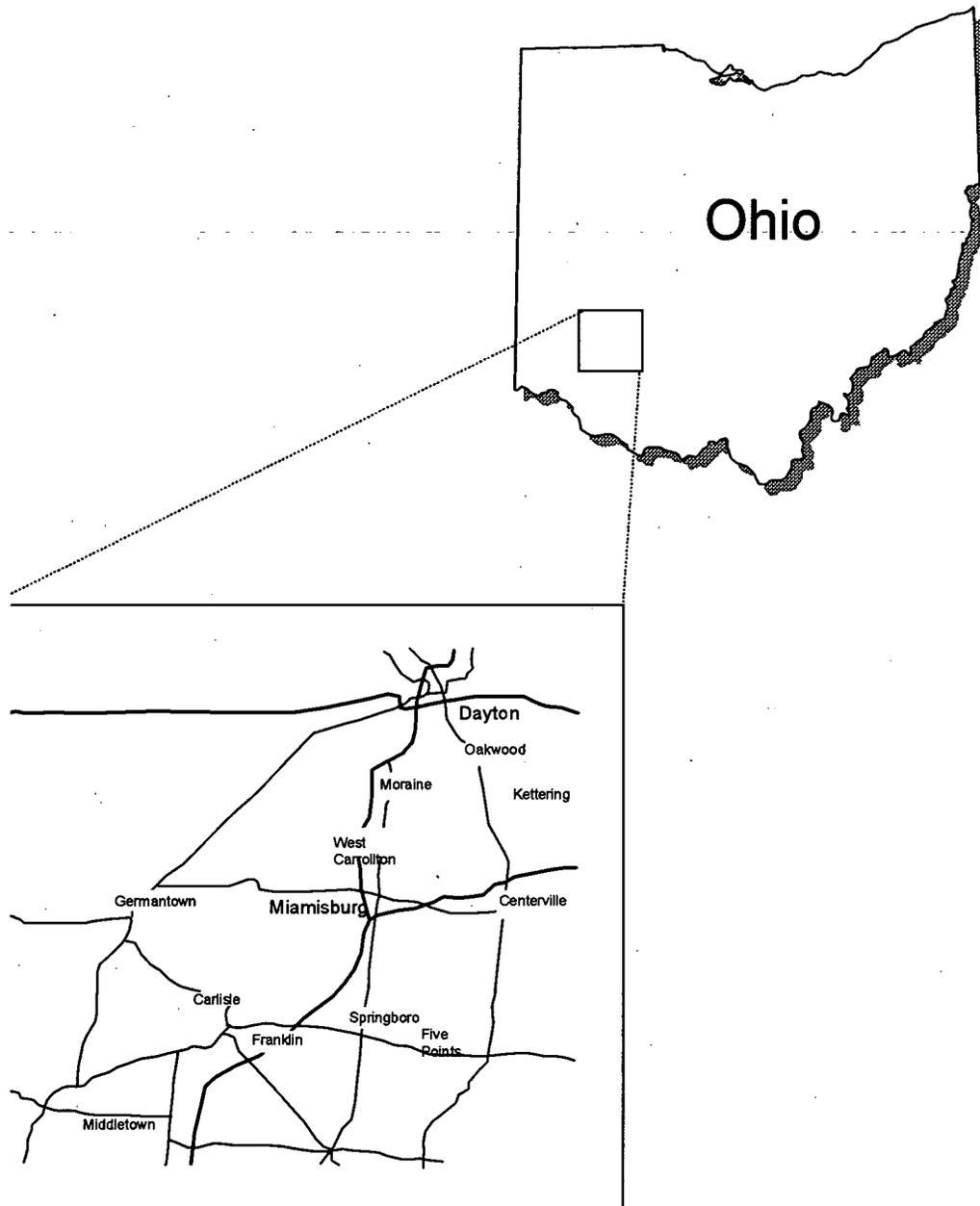
This ROD addresses Release Block (RB) D (Figure 2-2) which is located in the southeast corner of the developed area of the plant. The legal description of RB D is reproduced in Appendix B. RB D is generally bound to the south by the "South Property" (the undeveloped portion of the Mound Plant), to the east by offsite residences, to the north by a parking lot and group of small buildings, and to the west by a fenced area for storage of Investigative Derived Material (IDM).

There are two (2) main structures in RB D. Building 105, which was built in 1990 as a machine shop and is still used for that purpose, and Building 100, which was the Guard Force Precinct bunker.

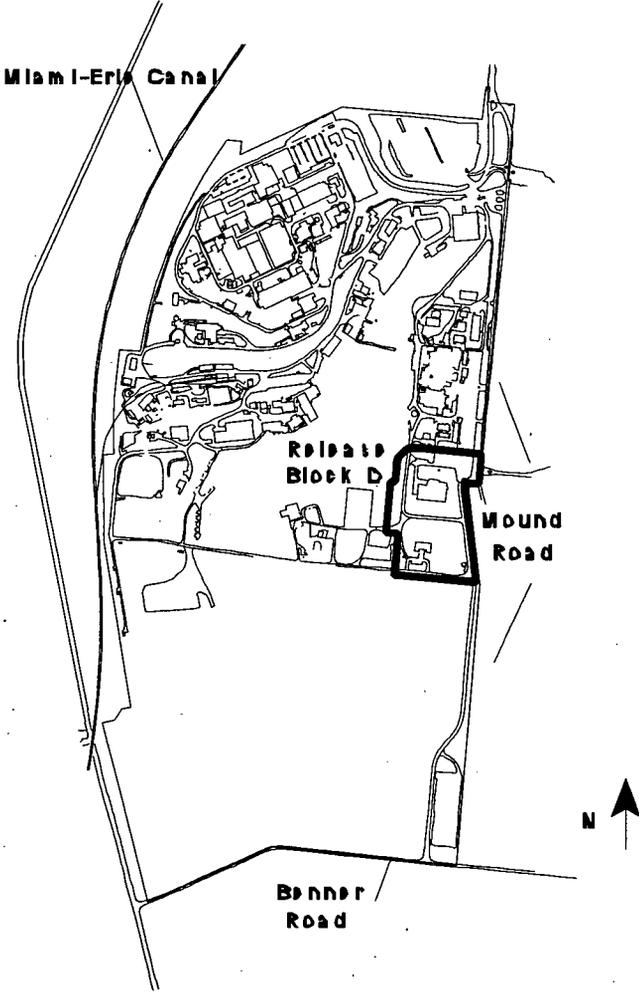
### **2.2 Site History and Enforcement Activities**

As a result of historic disposal practices and contaminant releases to the environment, the Mound Plant was placed on the National Priorities List (NPL) on November 21, 1989. The DOE signed a Comprehensive Environmental Resource Compensation and Liability Act (CERCLA) Section 120 Federal Facility Agreement (FFA) with the US EPA, effective October 1990. In 1993, this agreement was modified and expanded to include the OEPA. DOE serves as the lead agency for CERCLA-related activities at Mound.

Figure 2-1. Regional Context of the Mound Plant



**Figure 2-2. Location of Release Block D**



The DOE, the US EPA, and the OEPA had originally planned to address the Plant's environmental restoration issues under a set of Operable Units (OUs), each of which would include a number of Potential Release Sites (PRSs). For each OU, the site would follow the traditional CERCLA process: a Remedial Investigation/Feasibility Study (RI/FS) followed by a Record of Decision (ROD), followed by Remedial Design/Remedial Action (RD/RA). After initiating remedial investigations for several OUs, the DOE and its regulators realized during a strategic review in 1995 that, for Mound, the OU approach was inefficient. The DOE and its regulators agreed that it would be more appropriate to evaluate each PRS or building separately, use removal action authority to remediate them as needed, and establish a goal for no additional remediation other than institutional controls for the final remedy. To evaluate any residual risk after all removals have been completed, a residual risk evaluation is conducted to ensure the block or parcel is protective of human health for industrial reuse. This process was named the Mound 2000 process. DOE and its regulators pursued this approach with the understanding that the USEPA and OEPA reserve all rights to enforce all provisions of the FFA and participation in the Mound 2000 process does not constitute a waiver of USEPA and OEPA rights to enforce the FFA.

The Mound 2000 process established a "core team" consisting of representatives of the Miamisburg Environmental Management Project (MEMP) of DOE, US EPA, and OEPA. The Core Team evaluates each of the potential contamination problems and recommends the appropriate response. The Core Team uses process knowledge, site visits, and existing data to determine whether or not any action is warranted concerning the possible problem area. If a decision cannot be made, the Core Team identifies specific information needed to make a decision (e.g., data collection, investigations). The Core Team also receives input from technical experts as well as the general public and/or public interest groups. Thus, all stakeholders have the opportunity to express their opinions or suggestions involving each potential problem area. The details of this process are explained in the "Workplan for Environmental Restoration at the Mound Plant, The Mound 2000 Approach," December 1998.

"The Mound 2000 Residual Risk Evaluation Methodology (RREM), Mound Plant, Final, Revision 0, January 6, 1997" was developed as a framework for evaluating human health risks associated with residual levels of contamination. The RREM is applied to a release block once necessary remediation has been completed, and the remaining PRSs or buildings in the release block have been designated as No Further Assessment (NFA). Once these environmental concerns have been adequately addressed by the Core Team, a residual risk evaluation (RRE) is performed. The RRE forms part of the basis for determining what restrictions should be placed on the site.

### 2.3 Community Participation

Opportunities to comment on RB D PRSs and Building Data Packages (BDPs) were provided. A listing of those opportunities is shown in Table 2-1.

**Table 2-1. Public Comment Periods for Release Block D Documents**

<b>DOCUMENT (PRS/BUILDING)</b>	<b>COMMENT PERIOD (BEGIN)</b>	<b>COMMENT PERIOD (END)</b>
279	02/15/96	02/29/96
304/313	05/08/97	06/16/97
<b>PRS 304 Action Memo</b>	10/01/98	10/31/98
310	01/15/97	02/15/97
312	10/24/95	02/15/96
372/374	05/15/96	06/17/96
373	02/15/96	02/29/96
375/377/378	05/15/96	06/17/96
376	10/15/96	11/15/96
379	02/15/96	02/29/96
380/381	05/15/96	06/17/96
382	01/15/97	02/15/97
Building 100	09/04/97	10/20/97
Building 105	09/04/97	10/20/97
RB D Residual Risk Evaluation	08/21/96	09/20/96
Supplemental RB D Residual Risk Evaluation	12/22/98	01/21/99

The Proposed Plan for RB D was made available to the public on December 22, 1998. Copies were distributed to stakeholders and were placed in the Administrative Record file in the CERCLA Public Reading Room, Miamisburg Senior Adult Center, 305 Central Avenue, Miamisburg, Ohio. The notice of the availability of the Plan was published in the *Miamisburg News* on December 16, 1998. A public comment period was held from December 22, 1998, through January 21, 1999. In addition, a public meeting was held on January 20, 1999 to present the Proposed Plan. Representatives of DOE, US EPA, and the OEPA were present at the public meeting to answer questions regarding the proposed remedy. Responses to comments received during the comment period and public meeting are included in the Responsiveness Summary, which is Section 3 of this ROD.

## **2.4 Scope and Role of RB D**

RB D lies within what was once called Operable Unit 5 (OU5). RB D includes a collection of individual areas called Potential Release Sites or PRSs that have undergone previous investigations. Before transfer of a release block can be completed, all buildings and PRSs must be evaluated for protectiveness or remediated to be protective. Any residual risks associated with remaining contamination in RB D have been evaluated and presented in the RB D Residual Risk Evaluation (RRE) (December, 1996), its supplement "Residual Risk Evaluation, Release Block D Revision Summary, December 1998," and the "Technical Position Report in Support of the Release Block D Residual Risk Evaluation," January, 1999.

The PRSs in RB D were identified on the basis of potential radiological and chemical (non-radioactive) contamination using knowledge of historical land use or on actual measurements of contaminants. The locations of the PRSs and buildings within RB D are shown in Figure 2-3; descriptions appear in Table 2-2. As shown in Table 2-2, all but one of the PRSs was determined by the Core Team to require no further assessment.

## **2.5 Site Characteristics**

### **2.5.1 Geologic Setting**

The bedrock section beneath Mound Plant consists of thin, nearly flat-lying beds of alternating shale and limestone of the Richmond Stage of the Cincinnati Group (Upper Ordovician – about 450 million years ago). The Cincinnati Group is present at the surface at Mound Plant and underlies RB D. The limestone beds range from 2 to 6 inches in thickness and the shale layers are commonly 5 to 8 feet thick.

Pleistocene age (less than about 2 million years old) glacial deposits at Mound Plant include both till and outwash deposits. The till in the area of Mound Plant is composed of an unsorted, unstratified mixture of clay, silt, sand, and coarser material. Water-lain deposits consist of outwash composed of well-sorted sand and gravel. The sand and gravel is horizontally layered, and commonly cross-bedded. The outwash in the vicinity of Mound Plant occurs as restricted valley-train deposits that were formed by the aggregation of glacial meltwater streams. The outwash deposited in the Miami River Valley and the associated tributary valley forms the Buried Valley Aquifer (BVA) and contiguous deposits. A general discussion of the geology is presented in the "Remedial Investigation/Feasibility Study, Operable Unit 9, Site-Wide Work Plan, Final, May 1992."

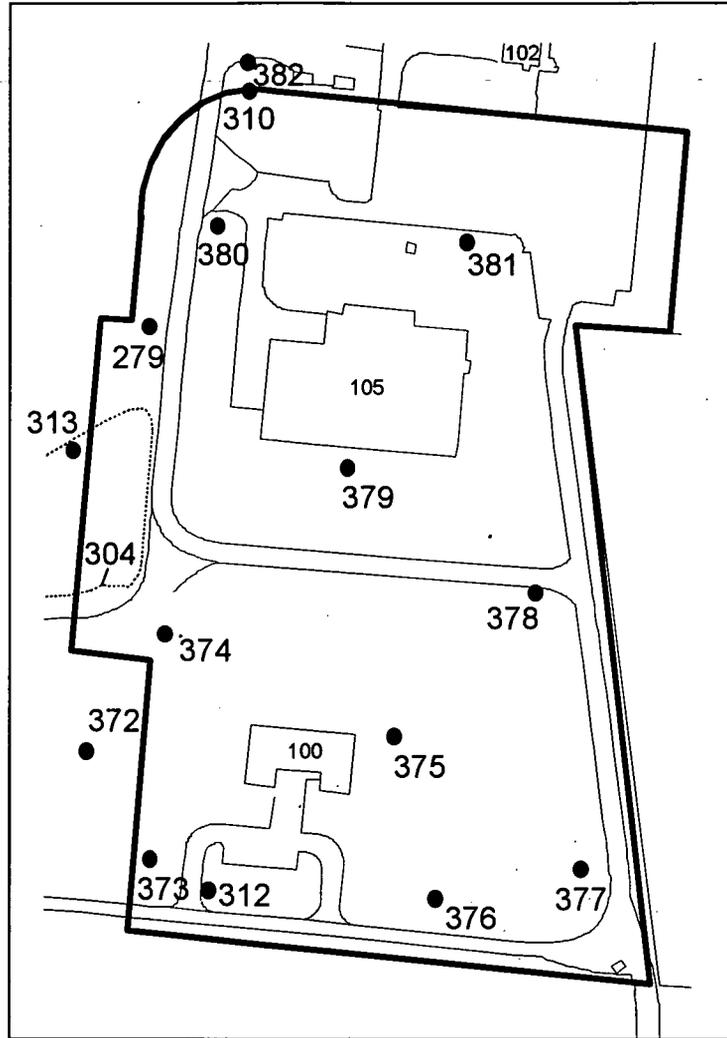
### **2.5.2 Hydrogeologic Setting**

There are two hydrogeologic regimes at Mound Plant: flow through the bedrock beneath the Main Hill and the SM/PP Hill, and flow within the unconsolidated glacial deposits and alluvium associated with the BVA in the Great Miami River Valley and the tributary valley between the Main Hill and SM/PP Hill. The BVA is a US EPA-designated sole source aquifer. The bedrock system, an interbedded sequence of shale and limestone, is dominated by fracture flow especially in the upper portions of the bedrock. Groundwater movement within the till and sand and gravel, within the buried valley, is through porous media. Groundwater flow from Mound Plant is generally to the west and southwest toward the BVA of the Great Miami River Valley. A discussion of the hydrogeology of Mound is presented in the OU9 Work Plan and the "Operable Unit 9; Hydrogeologic Investigation: Buried Valley Aquifer Report, Technical Memorandum, Revision 1 (September 1994)" and "Operable Unit 9 Hydrogeologic Investigation: Bedrock Report, Technical Memorandum, Revision 0 (January 1994)."

### **2.5.3 Available Data for Release Block D**

All of the PRSs within RB D have been evaluated by the Core Team and, if necessary, addressed by either assessment or remediation. The following sections discuss the data relevant to RB D that are available from the general source documents and the individual Potential Release Site packages.

Figure 2-3. Location of PRSs and Buildings within RB D



**Table 2-2. Release Block D PRSs and Buildings and Core Team Conclusions**

PRS/ BLDG	Reason for Identification	Core Team Decision	Close Out of PRS/BDP
279	Location of the Old Firing Range Drum Storage Area	Binned for No Further Assessment	Recommendation for NFA signed by Core Team on 10/18/95
304	Past use as a soil disposal area - thorium contamination.	Removal Action conducted in October 1998.	OSC Report signed by Core Team on 12/17/98.
310	Elevated cesium-137 sample location	Binned for No Further Assessment	Recommendation for NFA signed by Core Team on 1/14/97
312	Elevated thorium sample location	Binned for No Further Assessment	Recommendation for NFA signed by Core Team on 10/18/95
313	Elevated thorium sample location	Binned for No Further Assessment	Recommendation for NFA signed by Core Team on 2/19/97
372/374	Elevated qualitative soil gas detections	Binned for No Further Assessment	Recommendation for NFA signed by Core Team on 5/8/96
373	Elevated plutonium sample location	Binned for No Further Assessment	Recommendation for NFA signed by Core Team on 10/18/95
375/377/ 378	Elevated qualitative soil gas detections	Binned for No Further Assessment	Recommendation for NFA signed by Core Team on 5/8/96
376	Elevated plutonium sample location	Binned for No Further Assessment	Recommendation for NFA signed by Core Team on 10/3/96
379	Elevated plutonium sample location	Binned for No Further Assessment	Recommendation for NFA signed by Core Team on 10/18/95
380/381	Elevated qualitative soil gas detections	Binned for No Further Assessment	Recommendation for NFA signed by Core Team on 5/8/96
382	Elevated qualitative soil gas detections	Binned for No Further Assessment	Recommendation for NFA signed by Core Team on 1/14/97
Bldg. 100	Building used for site operations	Binned for No Further Assessment	Recommendation for NFA signed by Core Team on 8/5/97
Bldg. 105	Building used for site operations	Binned for No Further Assessment	Recommendation for NFA signed by Core Team on 8/5/97

### **2.5.3.1 Background Data**

**Soils.** Background concentrations measure the amount of a chemical that is naturally occurring (like metals) or anthropogenic (man-made but, for purposes of evaluating background, originating from sources other than the Mound Plant). Background concentrations are used as a screening tool to determine which contaminants should be carried through a risk evaluation as described in Section 2.7 of the ROD. Regional background concentrations in soil were determined during investigations conducted in September 1994 and August 1995 and are documented in reports titled "Operable Unit 9 Background Soils Investigation Soil Chemistry Report" and "Operable Unit 9, Regional Soils Investigation Report."

**Groundwater.** Background concentrations for groundwater were developed from two sources of data. For the Buried Valley Aquifer, background values were reported in the April 1995 "OU9 Hydrologic Investigation: Groundwater Sweeps Report." Background concentrations for bedrock groundwater were reported in the April 1995 "OU5 New Property Remedial Investigation Report."

### **2.5.3.2 Groundwater Contaminant Data**

Groundwater data consist of water analyses of the Mound production wells screened within the Buried Valley Aquifer, and analyses of groundwater from monitoring wells screened in the bedrock aquifer on the Mound property. These wells are sampled as part of the site-wide groundwater monitoring network. Section 2.2.2 of the RRE for RB D documents the specific groundwater data used to evaluate the current and future groundwater profile for RB D. Summaries of the contaminants detected in Mound Plant groundwater, and those projected to be present in Mound Plant groundwater in the future, are shown in Tables 2-3 and 2-4, respectively.

### **2.5.3.3 Soil Contaminant Data**

Soil data can be divided into three types: (a) data obtained through commercial analytical laboratory analysis, (b) data obtained through "screening" techniques conducted in a DOE laboratory, and (c) data obtained through screening techniques conducted in the field. Analytical laboratory data are obtained using strict methods and are subjected to exacting quality control procedures. These data are of the highest quality, and are quantitative. The laboratory screening data are considered to be of lower quality because sample preparation does not occur, and the measuring instruments are less precise. The field screening techniques are the least accurate due to instrument limitations and the effects of ambient conditions on field measurements. Due to these limitations, field screening data were not used

for any calculations in the RRE for RB D.

**Table 2-3. Current Mound Plant Groundwater Contaminants of Concern Based on the Plant Water Supply**

Groundwater Constituent	Maximum concentration	Screening Concentration (either background or G.V.)
<b>ORGANICS (mg/L)</b>		
1,1-Dichloroethene	0.0017	---
1,1,1-Trichloroethane	0.0018	0.0007 <sup>4</sup>
1,1,2-Trichloro-1,2,2-trifluoroethane	0.0087	---
<b>INORGANICS (mg/L)</b>		
Cadmium	0.0077	0.051 <sup>2</sup>
Copper	0.593	0.0012 <sup>4</sup>
Lead	0.040	0.0101 <sup>4</sup>
<b>RADIONUCLIDES (pCi/L)</b>		
Actinium-227	0.335	0.26 <sup>3</sup>
Bismuth-210	0.39	---
Plutonium-239/240	2.0	0.125 <sup>4</sup>
Tritium	7200	1485 <sup>3</sup>
Uranium-234	8.14	0.792 <sup>4</sup>
Uranium-238	8.25	0.688 <sup>4</sup>

- 1- Guideline values (GVs) are decision-making tools for the Core Team. GV's help the Core Team determine if contaminants are present at levels that warrant evaluation.
- 2- For increased conservatism, decision made on 0.1 x G.V. GV includes ingestion, dermal, and inhalation pathways.
- 3- GV corresponds to a total risk of 10<sup>-6</sup> for ingestion only.
- 4- Background value. When adequate numbers of measurements are available, background values are based on the 95th% upper tolerance limit.

Reference: "Residual Risk Evaluation, Release Block D," December 1996.

**Table 2-4. Future Mound Plant Groundwater Contaminants of Concern**

Groundwater Constituent	Estimated Maximum concentration	Screening Concentration <sup>1</sup> (either background or G.V.)
<b>ORGANICS (mg/L)</b>		
1,1-Dichloroethene	0.0017	---
1,1,1-Trichloroethane	0.0065	0.0007 <sup>4</sup>
1,1,2-Trichloro-1,2,2-trifluoroethane	0.0087	---
<b>INORGANICS (mg/L)</b>		
Beryllium	0.0001	6.6E-05 <sup>2</sup>
Bismuth	0.0016	---
Cadmium	0.0077	0.051 <sup>2</sup>
Chromium	0.4961	0.0061 <sup>4</sup>
Cobalt	0.0039	0 <sup>4</sup>
Copper	0.5964	0.0012 <sup>4</sup>
Lead	0.040	0.010 <sup>4</sup>
Molybdenum	0.0096	0.0056 <sup>4</sup>
<b>RADIONUCLIDES (pCi/L)</b>		
Actinium-227	0.355	0.26 <sup>3</sup>
Bismuth-210	0.39	---
Plutonium-239/240	2.020	0.125 <sup>4</sup>
Tritium	10427	1485 <sup>3</sup>
Uranium-234	8.14	0.792 <sup>4</sup>
Uranium-238	8.25	0.688 <sup>4</sup>

- <sup>1</sup> - Guideline values (GVs) are decision-making tools for the Core Team. GV's help the Core Team determine if contaminants are present at levels that warrant evaluation.
- <sup>2</sup> - For increased conservatism, decision made on 0.1 x G.V. GV includes ingestion, dermal, and inhalation pathways.
- <sup>3</sup> - GV corresponds to a total risk of 10<sup>-6</sup> for ingestion only.
- <sup>4</sup> - Background value. When adequate numbers of measurements are available, background values are based on the 95th% upper tolerance limit.

Reference: "Residual Risk Evaluation, Release Block D," December 1996.

Soil contaminant data for RB D collected prior to the Mound 2000 process are documented in a number of DOE reports. These references include:

- Other Soils Characterization Report, Volume I - Text. Final, Revision 0. May 1, 1995 (*results of systematic sampling*),
- OU-5 Operational Area Phase I Investigation Non-AOC Field Reports, Volume I - Text. Final, Revision 0. June 1, 1995 (*results of systematic sampling in southern area of site, gives general overview of soils not thought to be contaminated*),
- OU-9 Regional Soils Investigation Report, Revision 2. August 1, 1995 (*purpose was to give a regional soil description away from impacts of Mound operations*),
- OU-3 Miscellaneous Sites Limited Field Investigation Report, Volumes 1, 2, and 3. Final, Revision 0. July 1, 1993 (*purpose was to address areas noted in previous surveys; but, not thought to endanger human health or environment*),
- OU-9 Site Scoping Report, Volume 3 - Radiological Site Survey, Final, June 1, 1993 (*a compendium of existing data*), and
- Soil Gas Confirmation Sampling. Revision 0. April 1, 1996 (*results of a study following up on a prior qualitative study*).

In the Mound 2000 process, radionuclide and chemical contaminants were studied on a PRS basis. Many of the PRSs (372, 374, 375, 377, 378, 380, 381, and 382) were established based solely on soil gas readings. The soil gas study that identified these PRSs was conducted in 1994 utilizing PETREX tubes. The PETREX collector tubes measure relative ions counts of volatile and semi-volatile organic compounds; therefore, the method only provides qualitative indications of possible contamination. Eight of the PRSs, conversely, were identified based on radionuclide measurements. Those measurements are described below.

- At PRS 310, elevated cesium-137 was found in a surface soil sample in 1987, and was remediated immediately upon its detection. In December 1991, soil samples were again collected from this area. Of the 28 samples collected, two had cesium-137 concentrations above the detection limit. At the same location, 25 samples were analyzed for radium-226. All samples contained detectable concentrations of radium-226. In 1995, additional soil samples collected in this area did not indicate the presence of cesium-137 or any other contaminant.
- At PRS 373, PRS 376 and PRS 379, plutonium-238 was detected in surface samples in 1994, 1995 and 1996, respectively, and found (as measured by the Mound Soil Screening Laboratory) at or slightly above the method detection limit. The surface samples with detectable plutonium-238 concentrations were shown (by surrounding samples) to be isolated to the PRS locations only.
- At PRS 312, a surface sample collected in 1993 indicated an elevated thorium-232 concentration of 5.02 pCi/g. Nearby samples did not indicate elevated levels, suggesting the elevated result was an isolated event.
- PRS 279 was identified based on photographs that showed drum storage at this location. Plutonium-238, cobalt-60, radium-226, and thorium-228 were measured in this area. This drum storage area had been incorrectly referred to as the Old Firing Range Storage Site which was believed to be used between 1970 and 1974. Subsequent reviews indicated the Drum Storage Area was actually located at PRS 277.

There were no elevated soil gas measurements detected at this location. A deep (3 to 5 feet) soil sample near PRS 279 had detectable polynuclear aromatic hydrocarbons (PAHs) at an elevated concentration of approximately 59 mg/kg. This sample was a composite of four samples collected at the corners of a 30 foot x 30 foot square. A second composite prepared similarly from about 100 feet away found similar contaminants at 1 to 3 mg/kg. Other nearby sample locations did not detect any of the contaminants. These chemicals are commonly associated with asphalt, which is present in the area. A February 1996 soil sample in the vicinity of PRS 279 contained low levels of organic and inorganic compounds, plutonium-238, radium-226, and thorium-228.

- PRS 313, which neighbors PRS 304, was a soil segregation area that contained the overburden soils excavated from the decommission and decontamination of a waste transfer line (PRS 300) and from Area 12 (PRS 273). PRS 313 was identified due to an elevated thorium result. Sampling in 1995 in the area of PRS 313 indicated no contaminants in excess of guideline criteria.
- PRS 304 was identified as a former soil disposal area. PRSs 304/313 were originally binned NFA on February 19, 1997, based on data existing at that time. However, a recent radiological survey and sampling event conducted in the fall of 1998 identified two small "hot spots" which were subsequently removed. The results from the 1998 removal actions are available in the "On Scene Coordinator (OSC) Report for PRS 304 Removal Action, December 1998."

A summary of the contaminants detected in RB D soils is shown in Table 2-5.

## **2.6 Potential Future Uses for Mound**

The Mound Plant will remain in industrial use into the future. This future use has been determined based upon agreement among DOE, US EPA, OEPA, and interested stakeholders. This land use is also reflected in the Mound Comprehensive Reuse Plan of the Miamisburg Mound Community Improvement Corporation (MMCIC) and is currently codified in the City of Miamisburg Zoning Ordinance for industrial use.

## **2.7 Summary of Site Risks**

The human health risks for RB D were evaluated using the Residual Risk Evaluation Methodology (RREM) document developed for Mound. A residual risk evaluation (RRE) is a five-step process:

- (1) identification of contaminants,
- (2) exposure assessment,
- (3) toxicity assessment,
- (4) risk characterization, and
- (5) evaluation of potential cumulative risks.

**Table 2-5. Soil Contaminants of Concern for RB D**

Soil Constituent	Maximum concentration Any Depth	Maximum concentration Shallow (<2' deep)	Screening Concentration (either Bkgd or G.V.) <sup>1</sup>
<b>ORGANICS (mg/kg)</b>			
Acenaphthene	6.4	3.8	
Acenaphthylene	0.22	0.029	
Benzo(a)anthracene	41.5	6.8	4.10 <sup>2</sup>
Benzo(a)pyrene	33.5	7.5	0.41 <sup>2</sup>
Benzo(b)fluoranthene	53	12	4.10 <sup>2</sup>
Benzo(g,h,i) perylene	3.9	3.9	
Carbazole	0.165	0.165	
Dibenz(a,h)anthracene	1.3	1.3	0.41
Dibenzofuran	3.8	3.0	
2,4-Dinitrophenol	0.97	0.97	
Fluorene	6.3	3.3	
Indeno(1,2,3-cd)pyrene	20.5	4.7	4.10 <sup>2</sup>
2-Methylnaphthalene	1.4	1.4	
Naphthalene	1.9	1.9	
Phenanthrene	49.5	13	
1,1,1-Trichloroethane	0.0025	0.002	
1,1,2-Trichloro-1,2,2-trifluoroethane	0.003	0.003	
<b>INORGANICS (mg/kg)</b>			
Antimony	39.2	39.2	85 <sup>4</sup>
Beryllium	1.8	1.8	0.7
Bismuth	5.7	5.7	
<b>RADIONUCLIDES (pCi/g)</b>			
Lead-210	2.91	2.91	
Plutonium-238	60	60	5.50 <sup>3</sup>
Thorium-228	3.57	3.57	0.83 <sup>5</sup>

- <sup>1</sup>- Guideline values (GVs) are decision-making tools for the Core Team. GV help the Core Team determine if contaminants are present at levels that warrant evaluation.
- <sup>2</sup>- GV corresponds to a total risk of 10<sup>-6</sup> for the ingestion pathway.
- <sup>3</sup>- GV corresponds to a total risk 10<sup>-6</sup> for the ingestion, inhalation and external pathways.
- <sup>4</sup>- For additional conservatism, decision made on 0.1 x G.V. (for the ingestion pathway).
- <sup>5</sup>- The Th-228 GV has not been formally modified to reflect new risk data. However, all Th-228 risk calculations were performed using updated slope factors.

Reference: "Residual Risk Evaluation - Release Block D Revision Summary," Final Report, January, 1999

### **2.7.1 Identification of Contaminants**

The contaminants of concern (COCs) for RB D were identified by reviewing all of the sampling data for the release block. Based on that review, contaminants were eliminated for further evaluation based on criteria established in the RREM. Specifically, only contaminants exceeding (1) background, (2) a base level of potential health concern, and (3) certain frequency of detection (FOD) criteria were carried through the RRE. The COCs established for RB D were listed in Tables 2-3, 2-4, and 2-5.

### **2.7.2 Exposure Assessment**

The Site Conceptual Model (SCM) for Mound provides the basis for evaluating human exposure scenarios. Because DOE and its regulators and stakeholders agree that the future use of Release Block D will be industrial in nature, two receptor scenarios from the Mound SCM apply: a construction worker and a site employee. The routes of exposure applicable to these two receptors are shown in Figure 2-4. The significant pathways for RB D include ingestion of soil and groundwater.

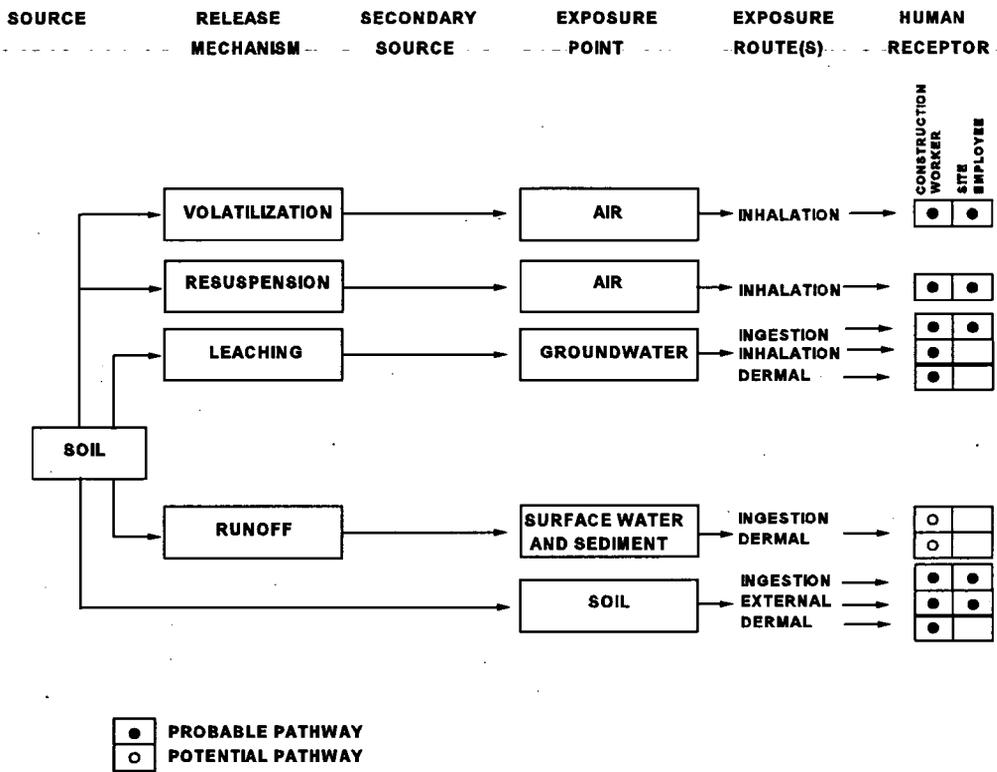
Using equations developed to support the SCM, exposures to specific concentrations of COCs are evaluated based on assuming intake rates for soil and groundwater. Once the intakes are estimated, the human health implications of those intakes are evaluated by reviewing toxicological data for the COCs.

For the special case of groundwater, the possible exposures to current and future COCs are evaluated. This approach ensures that the cumulative and long-term impacts of the COCs are adequately characterized.

### **2.7.3 Toxicity Assessment**

The toxicological properties of each COC for RB D were evaluated by reviewing the Integrated Risk Information System (IRIS) and/or Health Effects Assessment Summary Table (HEAST) data for the COC. IRIS files provide no-observable effect levels and slope factors (for translating intake into cancer risk) for many of the chemicals encountered at Mound. HEAST provides slope factors for many of the radionuclides encountered at Mound. Based on the information collected from IRIS and HEAST, an adequate understanding of the toxicology of the RB D COCs has been developed.

Figure 2-4. Exposure Pathways for the Mound Site Conceptual Model



#### **2.7.4 Risk Characterization**

Pursuant to the RREM, risks are quantified for both carcinogenic and non-carcinogenic contaminants. The risk associated with the intake of a known or suspected carcinogen is reported in terms of the incremental lifetime cancer risk presented by that COC, as estimated using the appropriate slope factor and the amount of material ingested. Potential human health hazards from exposure to non-carcinogenic contaminants are evaluated by using a Hazard Quotient (HQ). The HQ is determined by the ratio of the intake of a COC to a reference dose or concentration for the COC that is believed to represent a no-observable effect level. The COC-specific HQs are then summed to provide an overall Hazard Index (HI). US EPA guidance sets a limit of 1.0 for the Comprehensive HI.

The risks and hazards associated with residual concentrations of COCs in RB D are shown in Table 2-6. As shown in the table, the overall risk values are in the acceptable range of  $10^{-4}$  to  $10^{-6}$ . The HIs for the future groundwater scenarios, however, are near or above the 1.0-limit. This is based on the bedrock groundwater contaminants flowing directly to the BVA that supplies drinking water for the plant. As a result, the selected remedy prohibits the use of bedrock groundwater. This institutional control, in the form of a deed restriction, will ensure that the residual risks associated with RB D remain acceptable.

Because the scope of the RRE was limited to industrial use, the soils within RB D have not been evaluated for unrestricted release (e.g., residential use). Disposition of RB D soils without proper handling, sampling and management could create an unacceptable risk to human health and the environment.

#### **2.7.5 Evaluation of Potential Cumulative Risks**

For purposes of the RREM, risks resulting from contaminants that originate outside the release block under consideration are called cumulative risks. In general, cumulative risks are possible via air, surface water, and ground water. For Mound, cumulative risks from surface waters are not expected because, other than storm water drainage, there are no surface water bodies flowing through RB D from other release blocks. Groundwater and air are therefore the media of concern for cumulative risks.

**Current groundwater.** The Mound RREM accounts for cumulative groundwater risks by evaluating current and future groundwater contamination. Since all groundwater currently used at Mound is drawn from the production wells located onsite, the risk posed by current groundwater contamination is equal to the risk resulting from exposure to contaminants found in the production wells. This risk is identical for all release blocks and represents the cumulative risk from contaminants that migrate to the production wells from all release blocks.

**Future groundwater.** The future risk from groundwater was estimated for RB D based on the assumption that contaminants found in bedrock will eventually migrate to the Mound Plant production well located in the BVA. A simple and extremely conservative flow model was used to estimate the concentrations as a function of time. These concentration estimates were reported in Table 2-4.

**Air.** The Mound RREM accounts for cumulative residual risk via the air pathway by using data collected in 1994 from the Mound Plant perimeter air sampling stations to bound the concentrations and therefore the risks from inhalation of radionuclides present in ambient air. These values are reported in the "Technical Position Report in Support of the Release Block D Residual Risk Evaluation" and are included in Table 2-6.

The HI and risk values presented in Table 2-6 for the current groundwater, future groundwater, and air scenarios are therefore believed to adequately bound the potential cumulative risk for RB D.

### **2.7.6 Ecological Risk Assessment**

Based on the results of an ecological characterization of the Mound Plant (OU-9 Ecological Characterization, March, 1984) there are no endangered species or critical habitats of endangered species on RB D. In addition, RB D is composed entirely of buildings, roads, and mowed lawns. There are no wetlands or surface waters located in RB D and no sensitive habitats. Therefore, DOE has determined, with concurrence from US EPA and OEPA, that an ecological assessment for RB D is not necessary.

### **2.8 Remediation Objectives**

The primary remediation objective for RB D is to ensure the residual risk associated with the release block is acceptable for the defined use scenario of industrial occupants.

**Table 2-6. Current and Future Residual Risks for Release Block D**

<b>Construction Worker</b>							
	<b>Soil</b>	<b>Air</b>	<b>Groundwater Current</b>	<b>Groundwater Future</b>	<b>Sum of Soil, Air and Groundwater Current</b>	<b>Sum of Soil, Air and Groundwater Future</b>	
<b>Non-carcinogenic Hazard Index for Organics &amp; Inorganics</b>	1.3E-01	N/A	3.7E-02	1.6E+00	HI = 1.7E-01	HI = 1.8E+00	
<b>Carcinogenic Risks for Organics &amp; Inorganics</b>	9.6E-06	N/A	N/A	N/A	Risk = 9.6E-06	Risk = 9.6E-06	
<b>Carcinogenic Risks for Radionuclides</b>	2.3E-05	2.0E-07	2.5E-06	2.9E-06	Risk = 2.6E-05	Risk = 2.8E-05	
<b>Construction Worker</b>					<b>Overall HI =</b>	<b>1.7E-01</b>	<b>1.8E+00</b>
					<b>Overall Risk =</b>	<b>3.6E-05</b>	<b>3.8E-05</b>

<b>Site Employee</b>							
	<b>Soil</b>	<b>Air</b>	<b>Groundwater Current</b>	<b>Groundwater Future</b>	<b>Sum of Soil, Air and Groundwater Current</b>	<b>Sum of Soil, Air and Groundwater Future</b>	
<b>Non-carcinogenic Hazard Index for Organics &amp; Inorganics</b>	1.7E-02	N/A	3.7E-02	1.6E+00	HI = 5.4E-02	HI = 1.6E+00	
<b>Carcinogenic Risks for Organics &amp; Inorganics</b>	2.0E-06	N/A	N/A	N/A	Risk = 2.0E-06	Risk = 2.0E-06	
<b>Carcinogenic Risks for Radionuclides</b>	2.3E-05	9.9E-07	1.3E-05	1.4E-05	Risk = 3.9E-05	Risk = 3.8E-05	
<b>Site Employee</b>					<b>Overall HI =</b>	<b>5.4E-02</b>	<b>1.6E+00</b>
					<b>Overall Risk =</b>	<b>4.1E-05</b>	<b>4.0E-05</b>

Reference: "Residual Risk Evaluation - Release Block D Revision Summary," Final Report, January, 1999

## **2.9 Description of Alternatives**

As documented in Section 2.7, the risk from both carcinogens and non-carcinogens from RB D is within the acceptable range for the current industrial use. In light of the planned exit of DOE from the site, and the residual levels of contaminants in the soil and groundwater in RB D, a remedy must be implemented to protect human health and the environment into the future. Two alternatives were considered for RB D; they are described below.

### **2.9.1 No Action**

Regulations governing the Superfund program require that the "no action" alternative be evaluated at each site to establish a baseline for comparison. Under this alternative, DOE would take no action to prevent exposure to soil and groundwater contamination associated with RB D.

### **2.9.2 Institutional Controls**

In this alternative, institutional controls in the form of deed restrictions would be placed on RB D. The objective of these institutional controls would be to prevent an unacceptable risk to human health and the environment by restricting the use of RB D, including RB D soils, to that which is consistent with assumptions in the RB D RRE. DOE or its successors would retain the right and responsibility to monitor, maintain, and enforce these institutional controls.

In order to maintain protection of human health and the environment at RB D in the future, the institutional controls to be adopted would:

- ▶ Ensure that industrial land use is maintained;
- ▶ Prohibit the use of bedrock ground water;
- ▶ Provide site access for federal and state agencies for the purpose of taking response actions, including sampling and monitoring; and
- ▶ Prohibit removal of RB D soils from the Mound NPL Facility boundary without approval from the Ohio Department of Health.

## **2.10 Selected Remedy**

### **2.10.1 Description**

The selected remedy for RB D is institutional controls in the form of deed restrictions on future land use. The specific restrictions to be adopted are provided in the deed attached to this ROD as Appendix A. The objective of these restrictions is to:

- ▶ Ensure that industrial land use is maintained;
- ▶ Prohibit the use of bedrock ground water;
- ▶ Provide site access for federal and state agencies for the purpose of taking response actions, including sampling and monitoring; and
- ▶ Prohibit removal of RB D soils from the Mound NPL Facility boundary without approval from the Ohio Department of Health.

DOE or its successors, as the lead agency for this ROD, has the responsibility to monitor, maintain and enforce these institutional controls. This responsibility includes the duty to conduct annual assessments of compliance with the deed restrictions and the duty to enforce the deed restrictions if any noncompliance is detected. The assessment and enforcement processes are outlined in Appendix C, which is intended to serve as a framework for discussion of operation and maintenance activities for the selected remedy.

Within ninety (90) days of the date this ROD is signed, DOE shall submit to USEPA and Ohio EPA for their approval a formal proposal regarding operation and maintenance of the institutional controls. This proposal and the annual compliance assessments shall be considered primary documents under the Federal Facility Agreement. If the DOE, USEPA and OEPA agree, the frequency of the compliance assessments can be changed at any time.

The soils within RB D have not been evaluated for any use other than on-site industrial use. Any off-site disposition of the RB D soil without proper handling, sampling, and management could create an unacceptable risk to off-site receptors. An objective of the preferred alternative is to prevent residential exposure to soils from RB D.

### **2.10.2 Estimated Costs**

The initial costs associated with these deed restrictions are those associated with the writing and recording of the restrictions with the deed. The costs associated with monitoring and enforcing the land use and property deed restrictions are estimated to be \$5,000 per year.

### 2.10.3 Decisive Factors

The US EPA has developed threshold, balancing and modifying criteria to aid in the selection of the remedy. There are two (2) threshold criteria, five (5) balancing criteria and two (2) modifying criteria. Each is described below.

#### 2.10.3.1 THRESHOLD CRITERIA - *Must be met for an alternative to be eligible for selection:*

##### (1) Overall protection of human health and the environment

This criterion addressed whether an alternative provides adequate protection of human health and the environment. The "no action" alternative does not meet this criterion in that the level of risk to human health posed by the site was found to be acceptable only for an industrial scenario. No evaluation was made of the risks posed by unrestricted use of the property. Deed restrictions are therefore required as a mechanism to ensure the continued future use of RB D is limited to industrial purposes.

##### (2) Compliance with applicable or relevant and appropriate requirements

Section 121(d) of CERCLA requires that remedial actions at CERCLA sites attain legally applicable or relevant and appropriate Federal and State requirements, standards, criteria, and limitations which are collectively referred to as "ARARs," unless such ARARs are waived under CERCLA Section 121(d)(4).

Applicable Requirements are those substantive environmental protection requirements, criteria, or limitations promulgated under Federal or State law that specifically addresses hazardous substances, the remedial action to be implemented at the site, the location of the site, or other circumstances present at the site. Relevant and Appropriate Requirements are those substantive environmental protection requirements, criteria, or limitations promulgated under Federal or State law which, while not applicable to the hazardous materials found at the site, the remedial action itself, the site location, or other circumstances at the site, nevertheless address problems or situations sufficiently similar to those encountered at the site that their use is well-suited to the site.

Compliance with ARARs addresses whether a remedy will meet all the applicable or relevant and appropriate requirements of other Federal and State environmental statutes or provides the basis for invoking a waiver. ARARs are of several types: chemical-specific, location-specific, and action-specific. Chemical-specific ARARs are usually health- or risk-based numerical values or methodologies which, when applied to site-specific conditions, result in the establishment of numerical values. These values establish the acceptable amount or concentration of a chemical that may be found in, or discharged to, the ambient environment. For RB D, "Maximum Contaminant Levels" or "MCLs" established under the Safe Drinking Water Act constitute chemical-specific ARARs and are listed in Appendix D. They apply to the bedrock groundwater beneath RB D. No evidence of any contamination above MCLs has been found in this ground water. Consequently, ARARs with respect to ground water are deemed to have been met.

Location-specific ARARs are restrictions placed on the concentration of hazardous substances or the conduct of activities solely because they are located in specific locations, e.g. floodplains, wetlands, historic places, etc. For RB D, Ohio has identified two statutory provisions that describe site conditions that would prompt certain response actions. (See Appendix D). These provisions are similar to location-specific ARARs. The selected remedy meets both of these requirements.

Action-specific ARARs are usually technology- or activity-based requirements or limitations on actions taken with respect to hazardous wastes. These requirements are triggered by the particular remedial activities that are selected to accomplish a remedy. In this case, the remedy is an institutional control - deed restrictions. The ARARs are applicable State requirements concerning the recording of deeds. (See Appendix D). The selected remedy will comply with these requirement.

It should be noted that any onsite management of RB D soils, not associated with a CERCLA response action, in a manner inconsistent with State law or any disposition of RB D soils away from the Mound Superfund Site would be subject to applicable Ohio regulations, which are independently enforceable from CERCLA.

**2.10.3.2 BALANCING CRITERIA** - *used to weigh major trade-offs among alternatives:*

**(1) Long-term effectiveness and permanence**

Long-term effectiveness and permanence refers to expected residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time, once clean-up levels have been met. This criterion includes the consideration of residual risk and the adequacy and reliability of controls. Only Alternative 2, Institutional Controls, provides some degree of long-term protectiveness. The implementation of institutional controls in the form of land use restrictions is necessary to ensure that future use remains compatible with the evaluated residual risk associated with RB D.

Because this remedy will result in hazardous substances remaining in the RB D above levels that allow for unlimited use and unrestricted exposure, an annual review and report will be submitted to OEPA, ODH, and USEPA (pursuant to CERCLA) determining whether or not the remedy is in effect and being complied with to ensure that it is adequately protective of human health and the environment. DOE reserves the right to petition the USEPA, OEPA, and ODH for a modification to the frequency established for conducting the effectiveness reviews.

**(2) Reduction of toxicity, mobility or volume through treatment**

Reduction of toxicity, mobility or volume through treatment refers to the anticipated performance of the treatment technologies that may be included as part of the remedy.

Since neither of the alternatives includes treatment, this criterion does not require further evaluation. All necessary remediation in RB D was accomplished previously on an individual PRS basis.

**(3) Short-term effectiveness**

Short-term effectiveness addresses the period of time needed to implement the remedy and any adverse impacts that may be posed to workers and the community during construction and operation of the remedy until clean-up goals are achieved.

Alternative 1, No Action, would not provide short-term effectiveness because there is no assurance of protection of human health and the environment after the property is transferred. Alternative 2, Institutional Controls, provides this assurance.

#### **(4) Implementability**

Implementability addresses the technical and administrative feasibility of a remedy from design through construction and operation. Factors such as availability of services and materials, administrative feasibility, and coordination with other governmental entities are also considered. Since Alternative 1 involves no action, there is no time or cost required for implementation. Alternative 2, Institutional Controls, is expected to require approximately one month and minimal cost to implement in accordance with the memorandum to file from Randolph Tormey, Deputy Chief Counsel, Ohio Field Office, USDOE dated February 17, 1999.

#### **(5) Cost**

The range of costs is zero dollars (\$0) for Alternative 1, No Action, to approximately \$5,000 annually for the maintenance of the deed restrictions for Alternative 2, Institutional Controls.

### **2.10.3.3**

**MODIFYING CRITERIA** - *to be considered after public comment is received on the Proposed Plan and of equal importance to the balancing criteria:*

#### **(1) State/Support Agency Acceptance**

Both US EPA and the State do not believe that Alternative 1, No Action, provides adequate protection of human health and the environment in the future. However, both agencies support the selected remedy, Alternative 2, Institutional Controls.

#### **(2) Community Acceptance**

Based on input received during the public comment period and the public hearing, the community accepts and support the selected remedy.

## **2.11 Statutory Determinations**

The selected remedy for RB D is protective of human health and the environment, complies with Federal and State requirements that are applicable or relevant and appropriate (ARAR), is cost-effective, and utilizes a permanent solution to the maximum extent practicable. Because this remedy will result in hazardous substances remaining in Release Block D above levels that allow for unlimited use and unrestricted exposure, DOE, in consultation with USEPA, Ohio EPA and ODH, will review the remedial action each year to assure that human health and the environment are being protected by the remedial action being implemented. DOE reserves the right to petition the USEPA, OEPA, and ODH for a modification to the frequency established for conducting the effectiveness reviews.

## **2.12 Documentation of Significant Changes**

Although this ROD has been signed, new information may be received or generated that could affect the implementation of the remedy. DOE, as the lead agency for this ROD, has the responsibility to evaluate the significance of any such new information. The type of documentation required for a post-ROD change depends on the nature of the change. Three categories of changes are recognized by the US EPA: non-significant, significant, and fundamental. Non-significant post-ROD changes may be documented using a memo to the Administrative Record file. Changes that significantly affect the ROD must be evaluated pursuant to CERCLA Section 117 and the NCP at 40 CFR 300.435(c)(2)(I). Fundamental changes typically require a revised Proposed Plan and an amendment to the ROD. Significant or fundamental changes to the ROD for Release Block D are not anticipated.

## **3.0 RESPONSIVENESS SUMMARY**

This section of the ROD presents stakeholder concerns about RB D and explains how those concerns were addressed prior to issuance of the ROD.

Stakeholders provided no formal comments during the January 20, 1999 public meeting on the Proposed Plan. During the public review period for the Proposed Plan, stakeholders provided comments about the Proposed Plan, the Supplemental Residual Risk Evaluation, and the On-Scene Coordinator Report for PRS 304. The Core Team responded to stakeholders by letter and included responsiveness summaries in the RRE and OSC reports. The comments and responses are also presented in the following pages.

- **Comments on the Proposed Plan**

**Comment:**

Chromium should be added to the list of non-radioactive substances.

**Response:**

Chromium is on the list of non-radioactive, inorganic substances. This may not be readily apparent because the Proposed Plan builds on information presented in the RRE. In the RRE (December, 1996), Chromium is listed on Table II.2 "Summary Table of All Soil Contaminants Detected," Table II.3 "Summary Table of All Groundwater Contaminants Detected in BVA Production Wells," and Table II.4 "Summary Table of All Future Groundwater Contaminants Assumed to be in Production Wells with Input from the Bedrock Aquifer." The Proposed Plan includes tables of contaminants carried through the entire RRE process. Chromium is listed in Table 5.3 "Future Groundwater Contaminants Carried Through RRE for RB D."

**Comment:**

The \$5,000 per year for monitoring should be put into a contingency fund to be used in case an individual has an elevated reading. The fund could be used to follow-up with monitoring and whatever would need to be done for that individual.

**Response:**

The selected remedy for RB D is protective of human health and the environment, and utilizes a permanent solution to the maximum extent practicable. Therefore, it is not expected that an individual would receive an exposure resulting in an elevated reading or that future personnel monitoring would be required. The \$5,000 per year as referenced is the estimated annual cost for maintaining deed restrictions and performing the effectiveness reviews for US EPA and OEPA as described in the Proposed Plan.

Comment:

A professional property survey has been completed for Release Block D. Will the complete legal description of Release Block D, with a thorough description of the property boundaries, be included in the Release Block D Record of Decision?

Response:

The complete legal description of Release Block D will be included in the ROD as an Appendix.

Comment:

Clarify the term "industrial use" or "industrial land use" as it appears in the Proposed Plan. The first sentence of Section 3.0, Exposure Assessment, of the *Release Block D Residual Risk Evaluation (RRE)* states that "[DOE], Ohio EPA, U.S. EPA, and the Mound Facility stakeholders have agreed that the future use of the Mound Plant property will be commercial/industrial use." The section then goes on to describe the two commercial/industrial exposure scenarios utilized in the RRE and defined in the *Mound 2000 Residual Risk Evaluation Methodology* as 1) a construction worker assumed to work on the property eight hours per day for 250 days per year over a 5-year period, and 2) a site employee assumed to work eight hours per day for 250 days per year over a 25-year period and who does not shower in water from a well on the property.

It is assumed, therefore, based on the foregoing scenarios, that the use of the term "industrial" in the Release Block D Proposed Plan refers to the risk exposure scenario evaluated for this property and is not restricted solely to the industrial land use category, but incorporates both commercial and industrial land uses. Are the assumptions correct?

Response:

Yes, the assumption is correct that "industrial" refers to the risk exposure scenario evaluated for the property. This incorporates both commercial and industrial land uses that are consistent with the restrictions placed on the deed and as described in the ROD.

- **Comments on the On Scene Coordinator (OSC) Report, PRS 304 Removal Action**

**Comment:**

The derivation of the "not to exceed 3 pCi/g" Objective for  $^{232}\text{Th}$  in Table 2, page 4 needs to be included in the text. How was this value calculated?

**Response:**

The clean-up objective for  $^{232}\text{Th}$  was identified in the Action Memo. It was derived by adding the  $10^{-5}$  risk level (1.6 pCi/g) and the observed Mound background level (1.4 pCi/g, "Operable Unit 9 Background Soils Investigation Soil Chemistry Report," Sept. 1994). The  $10^{-5}$  risk level was calculated using the latest  $^{228}\text{Th}$  + daughters slope factor.

**Comment:**

The sequence of sampling at this site (pages 4 and 5) suggests that final verification of adequate soil removal was based on two samples. What was the surface area of soil that was contaminated? How was it determined that two samples represent the extent of contamination at this hot spot?

**Response:**

Seven samples were identified as verification samples (004373, 004374, 004375, 004376, 004377, 004313, and 004416). See Figure B-2 of the OSC report. The off-site laboratory results for sample 004416 exceeded the cleanup objective (4 pCi/g vs. 3 pCi/g). An additional 2 cubic feet of soil was removed at this location. Two samples (004428 and 004429) were used to confirm that the hot spot identified by sample 004416 was removed by the additional excavation. This additional excavation encompassed a volume described by 2 ft. x 2 ft. x 0.5 ft. deep. Using the two samples for this location was a field judgement based on the limited surface area (2 ft. x 2 ft.) involved in the additional excavation. In addition, investigatory samples and field screening were used to guide the entire excavation. The locations of the investigatory samples are shown in Figure B-3 of the OSC report and measurement results of those samples are summarized in Table B-1 of the OSC report.

- **Comments on the RRE Revision Summary**

Comment:

The results of this risk assessment were not verified because of inadequate documentation, however if the concentration terms FOR SOIL are accurate, the conclusions drawn in this risk assessment for the on-site surface soil exposure pathway are reasonable. The exposure parameter values and equations used for each exposure pathway for soil need to be included in the text for the construction worker and site employee. The document should stand on its own without extensive citation.

Response:

All exposure parameter values and equations are shown in Appendix D of the 1996 Residual Risk Evaluation (RRE). The text of the 1998 RRE Revision Summary has been expanded to refer the reader to this Appendix. The 1998 Revision Summary includes all soil data used to update the soil component of the RRE. Therefore, the information presented in these two documents allows a reviewer to reproduce any of the soil risk calculations reported in the Revision Summary.

Comment:

Please provide the equations, raw analytical data, and spreadsheet calculations used to calculate intake for Benzo(a)pyrene (B(a)P) in soil. This is a good spot check for this risk assessment (for chemicals). It seems odd that with GV values of 0.41 and 0.78 mg/kg for B(a)P in soil for the construction worker and site employee, respectively, risks of  $6.0E-6$  or less are calculated using 95% UCL of 2.4 and 1.17 mg B(a)P per Kg of surface soil.

Response:

The calculations for benzo(a)pyrene have been reproduced as an attachment. (Please see the last page of this Responsiveness Summary.) As seen on the attachment, the calculations in the Responsiveness Summary are correct. Based on those calculations, the guideline values are appropriate for benzo(a)pyrene. Specifically, since 0.41 mg/kg corresponds to a  $1 \times 10^{-6}$  risk level for the construction worker, then a concentration six times higher ( 2.4 mg/kg) would correspond to a risk level that is six times higher ( $6 \times 10^{-6}$ ). Similarly, since 0.78 mg/kg corresponds to a  $1 \times 10^{-6}$  risk level for the site employee, then a concentration 1.5 times

higher (1.2 mg/kg) would correspond to a risk level that is 1.5 times higher ( $1.5 \times 10^{-6}$ ).

**Comment:**

The site is contaminated with some type of diesel fuel and several radionuclides. Is TPH or free product of concern?

**Response:**

Neither diesel fuel nor TPH represent unacceptable risks for the construction or site worker scenarios analyzed for Release Block D. No free product was identified in Release Block D.

**Comment:**

I still need clarification on the construction worker scenario. Do you assume that a person wears protective gear for inhalation? If not, inhalation of dust is greater than incidental ingestion of soil and dust.

**Response:**

The residual risk evaluation methodology does not take credit for an individual wearing protective gear for inhalation. On a per unit soil concentration basis, for a five-year exposure period, the construction worker inhales  $5.85 \times 10^{-6}$  mg of dust. Conversely, the incidental soil ingestion rate specified in the RRE methodology document is 480 mg/d, or 600,000 mg per five-year period. Therefore, unless extremely high soil concentrations were encountered, intake via inhalation of dust would not be expected to be greater than intake by incidental ingestion.

**Comment:**

Soil was the only medium evaluated for Release Block D for this risk assessment even though [the] groundwater pathway was included in several Tables. I think policy about how groundwater is handled for this risk assessment needs to be clearly articulated in this text. Consumption of water is expected for both worker scenarios. As it stands, this pathway has been excluded from the risk analysis. Is leaching of soil to groundwater or streams considered as a pathway of exposure?

**Response:**

The availability of new soil data served as the basis for revisiting the RRE. As a result, the focus of the Revision Summary is on soil data, and minimal text on groundwater has been included. Although no new groundwater concentration data were generated for the RRE, the risks from groundwater-related pathways were captured in the risk tables that appear in the Revision Summary (see pp. 30 - 32). Subsequent to the development of the Revision Summary, the groundwater risk data were re-validated. The results of that re-validation effort are summarized in a stand-alone report entitled "Technical Position Report in Support of the Release Block D Residual Risk Evaluation." The technical position report has been added to the CERCLA Public Reading Room. The text of the Revision Summary has been modified to more clearly state the role of the groundwater pathway and to highlight the presence of groundwater risk data in Tables V.7 through V.9 of the Revision Summary.

**Comment:**

For the construction worker, are both surface soil contaminant levels and subsurface levels used for calculating risks? It appears that some chemicals increase in concentration below the shallow surface dirt. This is important when considering the construction worker scenario for excavation of soil. The health risks may be understated for this situation. It is unclear how many samples are near the surface or subsurface and how the samples were lumped for risk assessment purposes.

**Response:**

Both surface and subsurface data were used to determine a 95th percentile upper confidence limit (UCL) or maximum soil concentration value for the construction worker scenario. (Maximum concentrations are used when the data set contains fewer than 20 points.) Typically, surface and subsurface sample results are given equal weight for the construction worker exposure scenario. By including the subsurface results, and using the 95th% UCL or maximum concentration detected, a conservative estimate of the exposure to the construction worker is developed.

**Comment:**

The methods used to detect radionuclides and chemicals in soil and water and a list of the compounds tested for need to be included in the text. In other words, what materials were tested for but not detected?

**Response:**

The methods used are specified in the Methods Compendium which is available in the CERCLA Public Reading Room. Though not used for the RRE process, data regarding contaminants tested for, but not detected in, Release Block D were reported in PRS packages, Building Data Packages (BDPs) and the "OU5 Operational Area Phase I Investigation Non-AOC Field Report, Volume 1 - Text, Final, Revision 0, June 1, 1995." All of these documents are available in the Public Reading Room.

**Comment:**

It is not clear from the risk assessment if off-site migration of contaminants in soil or groundwater was considered. Release Block D is on the Mound property border.

**Response:**

Offsite migration was considered but is not of concern for RB D. More detailed explanations follow below.

**Soil to air.** The potential for airborne movement of soil was examined in the 1996 RRE. The RRE is believed to bound the risks likely to be encountered from continuous exposure to radionuclides driven aloft by resuspension.

**Soil to surface water.** RB D surface water runoff is not expected to move offsite. Stormwater runoff drains toward the south and then west -- ultimately discharging into the Mound Plant overflow pond or the main drainage channel. Based on results from Mound's effluent and environmental monitoring programs, contaminants are not present in stormwater at levels of concern.

**Groundwater.** As reported in the 1996 RRE, the movement of groundwater from bedrock toward the Buried Valley Aquifer and the Mound Plant production well field has been estimated using a conservative transport model. The risk values reported for future groundwater include these concentration estimates.

**ATTACHMENT**

**Response to Comments**

**Release Block D Revision Summary**

**Risk Calculations for Benzo(a)pyrene Soil Ingestion**

**Soil Concentration**

2.44 mg/kg	Construction Worker	(Ref: Revision Summary, p. 15)
1.17 mg/kg	Site Employee	(Ref: Revision Summary, p. 15)

**Slope Factor**

7.3 mg/kg-d	(Ref: Revision Summary, p. 17)
-------------	--------------------------------

**Construction Worker Intake**

(Ref: Equation and parameter values from Appendix D, 1996 RRE)

Intake, mg/kg-d =  $(CS \cdot EF \cdot ED \cdot 10^{-6} \text{ kg/mg} \cdot IR) / (AT \cdot BW \cdot 365 \text{ d/yr})$

CS =	2.44 mg/kg	(CS = concentration in soil)
EF =	250 days/year	(EF = exposure frequency)
ED =	5 years	(ED = exposure duration)
IR =	480 mg/day	(IR = ingestion rate)
AT =	70 years	(AT = averaging time)
BW =	70 kilograms	(BW = body weight)

Intake = 8.19E-07 mg/kg-d

**Construction Worker Risk, Soil Ingestion, B(a)P**

(Reference for equation: Page 5-1 of 1996 RRE)

Risk = Intake \* Slope Factor

Risk =	5.98E-06
vs.	
Risk =	6.0E-06 (reported on p. 20 of Revision Summary)

**Site Employee Intake**

(Ref: Equation and parameter values from Appendix D, 1996 RRE)

Intake, mg/kg-d =  $(CS \cdot EF \cdot ED \cdot 10^{-6} \text{ kg/mg} \cdot IR) / (AT \cdot BW \cdot 365 \text{ d/yr})$

CS =	1.17 mg/kg	(CS = concentration in soil)
EF =	250 days/year	(EF = exposure frequency)
ED =	25 years	(ED = exposure duration)
IR =	50 mg/day	(IR = ingestion rate)
AT =	70 years	(AT = averaging time)
BW =	70 kilograms	(BW = body weight)

Intake = 2.04E-07 mg/kg-d

**Site Employee Risk, Soil Ingestion, B(a)P**

(Reference for equation: Page 5-1 of 1996 RRE)

Risk = Intake \* Slope Factor

Risk =	1.49E-06
vs.	
Risk =	1.5E-06 (reported on p. 21 of Revision Summary)

#### **4.0 ADMINISTRATIVE RECORD FILE REFERENCES**

Information used to select the remedy is contained in the Administrative Record file. The file is available for review at the Mound CERCLA Reading Room, Miamisburg Senior Adult Center, 305 Central Avenue, Miamisburg, Ohio. The Administrative Record File references for RB D includes the following:

Remedial Investigation/Feasibility Study, Operable Unit 9, Site-Wide Work Plan, Final, May 1992.

Operable Unit 3 Miscellaneous Sites Limited Field Investigation Report, Volumes 1, 2, and 3. Final, Revision 0. July 1, 1993.

Operable Unit 9 Site Scoping Report, Volume 3 - Radiological Site Survey, Final, June 1, 1993.

Operable Unit 9; Hydrogeologic Investigation: Bedrock Report, Technical Memorandum, Revision 0, January 1994.

Operable Unit 9; Hydrogeologic Investigation: Buried Valley Aquifer Report, Technical Memorandum, Revision 1, September 1994.

Operable Unit 9 Background Soils Investigation Soil Chemistry Report, Technical Memorandum, Revision 2, September 1994.

Operable Unit 5 New Property Remedial Investigation Report, Final, Revision 0, April, 1995.

Operable Unit 9 Hydrogeologic Investigation: Groundwater Sweeps Report, Technical Memorandum, April, 1995.

Other Soils Characterization Report, Volume I - Text. Final, Revision 0. May 1, 1995.

Operable Unit 5 Operational Area Phase I Investigation Non-AOC Field Reports, Volume I - Text. Final, Revision 0. June 1, 1995.

Operable Unit 9 Regional Soils Investigation Report, Revision 2, August 1, 1995.

Soil Gas Confirmation Sampling. Revision 0. April 1, 1996.

Residual Risk Evaluation, Release Block D, December 1996.

The Mound 2000 Residual Risk Evaluation Methodology (RREM), Mound Plant, Final, Revision 0, January 6, 1997.

Mound Plant Building Data Packages, Building 100 and 105 Located within Release Block D, Final, November 4, 1997.

Workplan for Environmental Restoration at the Mound Plant, The Mound 2000 Approach, December 1998.

Action Memorandum, PRS 304 Removal Action, Final, December, 1998.

On Scene Coordinator (OSC) Report for PRS 304, Mound Plant, December 1998.

Residual Risk Evaluation, Release Block D Revision Summary, December 1998.

Letter from Mr. Timothy J. Fischer, Remedial Project Manager, US EPA to Mr. Arthur Kleinrath, US DOE dated December 4, 1998, RE: Ecological Risk Assessment, Release Block D.

Letter from Mr. Brian Nickel, Mound Project Manager, Office of Federal Facilities and Oversight, OEPA to Mr. Oba Vincent, US DOE dated December 8, 1998, RE: DOE Mound Release Block D Ecological Assessment.

Technical Position Report In Support of the Release Block D Residual Risk Evaluation, Final, Rev. 0, January 1999.

Operable Unit 9, Background Soils Investigation Soil Chemistry Report, Technical Memorandum, Rev. 2, September 1994.

Memorandum, Randolph Tormey, Deputy Chief Counsel, Ohio Field Office, US DOE dated February 17, 1999 regarding Institutional Controls, Mound Facility, Miamisburg, Ohio.

Appendix A  
Quitclaim Deed for RB D

## QUITCLAIM DEED

The UNITED STATES OF AMERICA, acting by and through the Secretary of the Department of Energy (hereinafter sometimes called "Grantor"), under and pursuant to the authority of the Atomic Energy Act of 1954, Section 161 (g) (42 U.S.C. §2201(g) for the sum of Ten Dollars (\$10.00), the covenants contained herein, and other good and valuable consideration, duly paid by the Miamisburg Mound Community Improvement Corporation, a non-profit corporation subsisting under the laws of Ohio and recognized by the Secretary of Energy as the agent for the community wherein the former Mound Facility is located (hereinafter sometimes called "Grantee"), the receipt of which is hereby acknowledged, hereby QUITCLAIMS unto Grantee its successors and assigns, subject to the reservations, covenants, and conditions hereinafter set forth, all of its right, title and interest, together with all improvements thereon and appurtenances thereto, in the following described premises, commonly known as Parcel D:

Situate in the State of Ohio, County of Montgomery, being in the City of Miamisburg, being part of Section 30, Range 5, Township 2, lying in the Miami Rivers Survey (M.R.S.), and being part of city lots numbered 2259 within the Corporation Limits of the City of Miamisburg, and being more particularly bounded and described with bearings referenced to the Ohio State Coordinate System, South Zone, as follows:

Beginning at a iron spike, being the North East corner of Section 35 and the South East corner of Section 36, said point being the center of Benner Road (40 feet R/W) and being referenced North  $84^{\circ} 27' 09''$  West 3102.92 feet from spike (0.5' deep) at the intersection of the center line of Mound Road (60 feet R/W) with the centerline of said Benner Road in said City of Miamisburg, and being the point of beginning for the land herein described, thence S  $84^{\circ} 28' 03''$  E 1333.66 feet along the center line of Benner Road to a railroad spike (0.2' deep) located in the center of Benner Road, thence N  $4^{\circ} 44' 28''$  E 2010.06 feet to a concrete monument, thence N  $83^{\circ} 57' 37''$  W 34.19 feet to a concrete monument being the TRUE POINT OF BEGINNING; thence N  $84^{\circ} 31' 10''$  W 613.33 feet to a point, thence N  $5^{\circ} 35' 49''$  E 291.47 feet to a point, thence N  $84^{\circ} 24' 07''$  W 93.5 feet to a point, thence N  $5^{\circ} 35' 49''$  E 360.00 feet to a point, thence S  $84^{\circ} 24' 18''$  E 35.50 feet to a point, thence N  $5^{\circ} 35' 48''$  E 131.13 feet to a point, thence along the arc of a curve to the right having a radius of 130 feet for a distance of 203.83 feet to a point, thence S  $85^{\circ} 04' 40''$  E 495.72 feet to a point located in the center of Mound Road, thence along the centerline of Mound Road S  $5^{\circ} 33' 37''$  W 218.17 feet to an railroad spike, thence N  $85^{\circ} 26' 39''$  W 111.00 feet to and iron pipe, thence S  $7^{\circ} 05' 12''$  E 714.44 feet to the true point of beginning containing 12.43 acres more or less, and subject to all legal highways and easements of record. Prior Deed Reference: Deed Book 1214, Page 8.

RESERVING UNTO Grantor, the United States Environmental Protection Agency (USEPA) and the State of Ohio, acting by and through the Director of the Ohio Environmental Protection Agency (Ohio EPA) or the Ohio Department of Health (ODH), their successors and assigns, an easement to, upon or across the Premises in conjunction with the covenants of Grantor and/or Grantee in paragraphs numbered 1.1-1.3, 3.2 and 3.3 of this Deed and as otherwise needed for purposes of any response action as defined under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended, including but not limited to, environmental investigation or remedial action on the Premises or on property in the vicinity thereof, including the right of access to, and use of, to the extent permitted by applicable law, utilities at reasonable cost to Grantor. Grantee understands that any such response action will be conducted in a manner so as to attempt to minimize interfering with the ordinary and reasonable use of the Premises.

This Deed and conveyance is made and accepted without warranty of any kind, either express or implied, except for the warranty in paragraph 3.3 of this Deed, and is expressly made under and subject to all reservations, restrictions, rights, covenants, easements, licenses, and permits, whether or not of public record, to the extent that the same affect the Premises.

1. The parties hereto intend the following restrictions and covenants to run with the land and to be binding upon the Grantee and its successors, transferees, and assigns or any other person acquiring an interest in the Premises, for the benefit of Grantor, USEPA and the State of Ohio, acting by and through the Director of the Ohio EPA or ODH, their successors and assigns.
  - 1.1 Excepting those soils in an area approximately 40 feet wide and 218.17 feet long, bounded on the east by the centerline of Mound Road as described above, Grantee covenants that any soil from the Premises shall not be placed on any property outside the boundaries of that described in instruments recorded at Deed Book 1214, pages 10, 12, 15, 17 and 248; Deed Book 1215, page 347; Deed Book 1246, page 45; Deed Book 1258, pages 56 and 74; Deed Book 1256, page 179; Micro-Fiche 81-376A01; and Micro-Fiche 81-323A11 of the Deed Records of Montgomery County, Ohio (and as illustrated in the CERCLA 120(h) Summary, Notices of Hazardous Substances Release Block D, Mound Plant, Miamisburg, Ohio dated January, 1999) without prior written approval from the Ohio Department of Health (ODH), or a successor agency.

1.2 Grantee covenants not to use, or allow the use of, the Premises for any residential or farming activities, or any other activities which could result in the chronic exposure of children under eighteen years of age to soil or groundwater from the Premises. Restricted uses shall include, but not be limited to:

- (1) single or multifamily dwellings or rental units;
- (2) day care facilities;
- (3) schools or other educational facilities for children under eighteen years of age; and
- (4) community centers, playgrounds, or other recreational or religious facilities for children under eighteen years of age.

Grantor shall be contacted to resolve any questions which may arise as to whether a particular activity would be considered a restricted use.

1.3 Grantee covenants not to extract, consume, expose, or use in any way the groundwater underlying the premises without the prior written approval of the United States Environmental Protection Agency (Region V) and the Ohio Environmental Protection Agency.

2. The Grantor hereby grants to the State of Ohio and reserves and retains for itself, its successors and assigns an irrevocable, permanent, and continuing right to enforce the covenants of this Quitclaim Deed through proceedings at law or in equity, including resort to an action for specific performance, as against and at the expense of Grantee, its successors and assigns, including reasonable legal fees, and to prevent a violation of, or recover damages from a breach of, these covenants, or both. Any delay or forbearance in enforcement of said restrictions and covenants shall not be deemed to be a waiver thereof.

3. Pursuant to Section 120(h)(3) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended (42 U.S.C. §9620(h)(3)), the following is notice of hazardous substances, the description of any remedial action taken, and a covenant concerning the Premises.

3.1 **Notice of Hazardous Substance:** Grantor has made a complete search of its files and records concerning the Premises. Those records indicate that the hazardous substances listed in Exhibit "B," attached hereto and made a part hereof, have been stored for one year or more or disposed of on the Premises and the dates that such storage/disposal took place.

3.2 **Description of Remedial Action Taken:**  
A soil removal action was performed and Institutional Controls are established. The Institutional Controls are set forth as covenants in Sections 1.1, 1.2, and 1.3 of this Deed.

3.3 **Covenant:** Grantor covenants and warrants that all remedial action necessary for the protection of human health and the environment with respect to any hazardous substances remaining on the property has been taken, and any additional remedial action found to be necessary after the date of this Deed regarding hazardous substances existing prior to the date of this Deed shall be conducted by Grantor, provided, however, that the foregoing covenant shall not apply in any case in which the presence of hazardous substances on the property is due to the activities of Grantee, its successors, assigns, employees, invitees, or any other person subject to Grantee's control or direction.

4. Unless otherwise specified, all the covenants, conditions, and restrictions to this Deed shall be binding upon, and shall inure to the benefit of the assigns of Grantor and the successors and assigns of Grantee.

**IN WITNESS WHEREOF**, the United States of America, acting by and through its Secretary of the Department of Energy, has caused these presents to be executed this \_\_\_\_\_ day of \_\_\_\_\_, 1999.

UNITED STATES OF AMERICA

WITNESSETH:

\_\_\_\_\_  
\_\_\_\_\_

State of Ohio )  
County of Montgomery ) SS.

Before me, a Notary Public in and for said State and County, appeared this \_\_\_\_ day of \_\_\_\_\_, 1999, G. Leah Dever, who acknowledged that she is the Manager of the Ohio Field Office for the United States Department of Energy, with full authority to execute the foregoing on behalf of the United States of America, and who acknowledged the above to be her signature and her free act and deed.

SEAL \_\_\_\_\_  
\_\_\_\_\_  
Notary Public

This instrument was prepared by: Randolph T. Tormey, Attorney at Law  
PO Box 3020  
Miamisburg, OH 45343  
937.865.3025

Appendix B

Legal Description of RB D

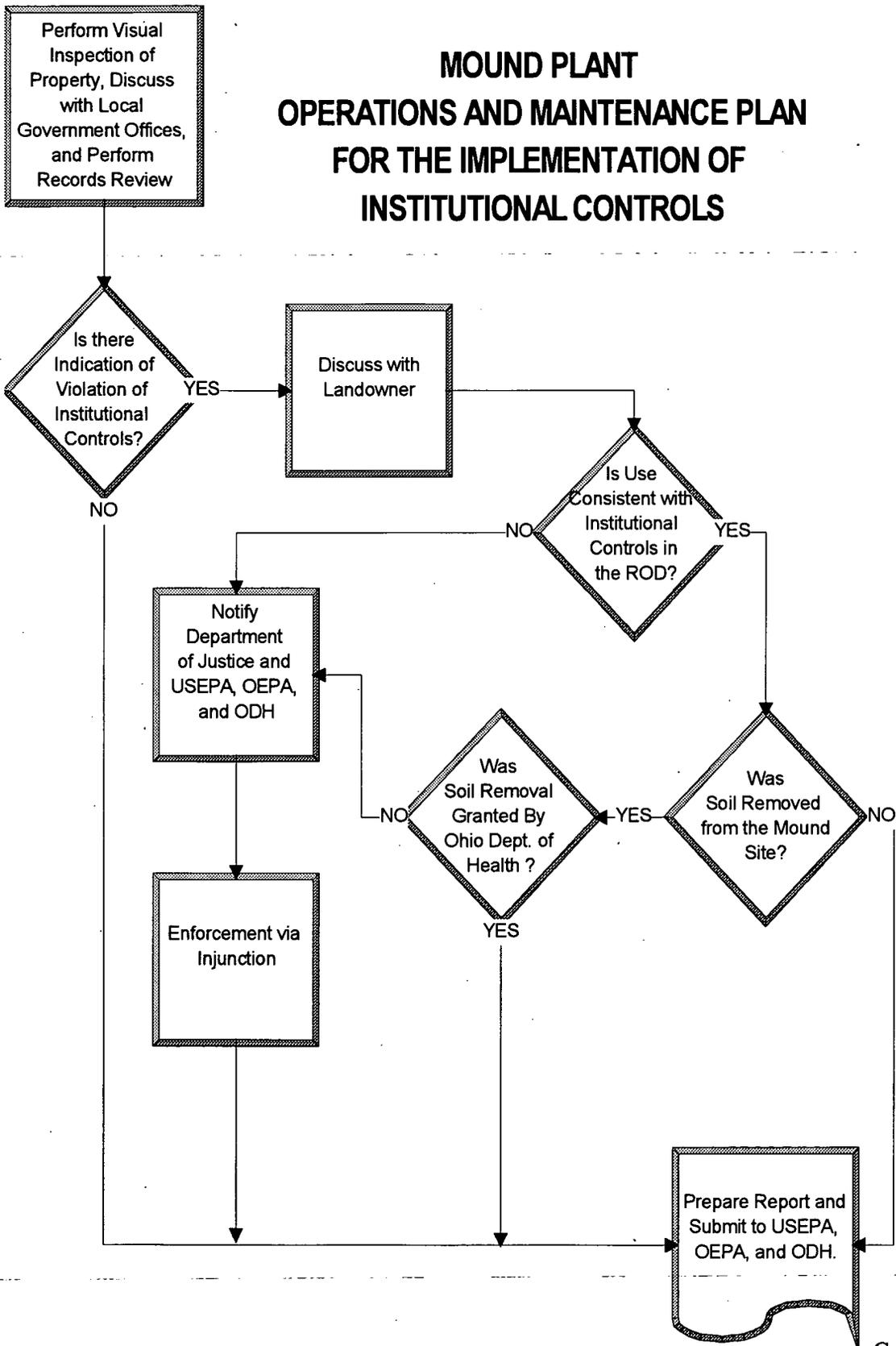
Situate in the State of Ohio, County of Montgomery, being in the City of Miamisburg, being part of Section 30, Range 5, Township 2, lying in the Miami Rivers Survey (M.R.S.), and being part of city lots numbered 2259 within the Corporation Limits of the City of Miamisburg, and being more particularly bounded and described with bearings referenced to the Ohio State Coordinate System, South Zone, as follows:

Beginning at a iron spike, being the North East corner of Section 35 and the South East corner of Section 36, said point being the center of Benner Road (40 feet R/W) and being referenced North  $84^{\circ} 27' 09''$  West 3102.92 feet from spike (0.5' deep) at the intersection of the center line of Mound Road (60 feet R/W) with the centerline of said Benner Road in said City of Miamisburg, and being the point of beginning for the land herein described, thence S  $84^{\circ} 28' 03''$  E 1333.66 feet along the center line of Benner Road to a railroad spike (0.2' deep) located in the center of Benner Road, thence N  $4^{\circ} 44' 28''$  E 2010.06 feet to a concrete monument, thence N  $83^{\circ} 57' 37''$  W 34.19 feet to a concrete monument being the TRUE POINT OF BEGINNING; thence N  $84^{\circ} 31' 10''$  W 613.33 feet to a point, thence N  $5^{\circ} 35' 49''$  E 291.47 feet to a point, thence N  $84^{\circ} 24' 07''$  W 93.5 feet to a point, thence N  $5^{\circ} 35' 49''$  E 360.00 feet to a point, thence S  $84^{\circ} 24' 18''$  E 35.50 feet to a point, thence N  $5^{\circ} 35' 48''$  E 131.13 feet to a point, thence along the arc of a curve to the right having a radius of 130 feet for a distance of 203.83 feet to a point, thence S  $85^{\circ} 04' 40''$  E 495.72 feet to a point located in the center of Mound Road, thence along the centerline of Mound Road S  $5^{\circ} 33' 37''$  W 218.17 feet to an railroad spike, thence N  $85^{\circ} 26' 39''$  W 111.00 feet to and iron pipe, thence S  $7^{\circ} 05' 12''$  E 714.44 feet to the true point of beginning containing 12.43 acres more or less, and subject to all legal highways and easements of record.

Appendix C

**Mound Plant Operations and Maintenance Plan  
for the Implementation of Institutional Controls**

# MOUND PLANT OPERATIONS AND MAINTENANCE PLAN FOR THE IMPLEMENTATION OF INSTITUTIONAL CONTROLS



Appendix D

Listing of Applicable Relevant and  
Appropriate Requirements (ARARs)

**Chemical Specific ARARs**

OAC 3745-81-11,	Maximum Contaminant Levels for Inorganic Chemicals
OAC 3745-81-12,	Maximum Contaminant Levels for Organic Chemicals
OAC 3745-81-13,	Maximum Contaminant Levels for Turbidity
OAC 3745-81-15,	Maximum Contaminant Levels for Radium 226, 228, Gross Alpha
OAC 3745-81-16,	Maximum Contaminant Levels for Beta Particle & Photon Radioactivity

**Location Specific ARARs**

ORC 6111.03,	Protection of Waters of the State
ORC 3734.20,	Description of Ohio EPA Director's power for Protection of Public Health and the Environment

**Action Specific ARARs**

ORC 317.08,	Criteria for County Recording of Deeds
ORC 5301.25(A),	Proper Recording of Land Encumbrances