R-010-203.2

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# ENGINEERING EVALUATION/COST ANALYSIS (EE/CA) APPROVAL MEMORANDUM WASTEPIT AREA STORM WATER RUNOFF CONTROL

DOCUMENT DATE 04-05-90

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# ENGINEERING EVALUATION/ COST ANALYSIS (EE/CA)

## APPROVAL MEMORANDUM

## WASTE PIT AREA STORM WATER RUNOFF CONTROL

## FEED MATERIALS PRODUCTION CENTER U.S. DEPARTMENT OF ENERGY

## 1.0 INTRODUCTION

On July 18, 1986, a Federal Facilities Compliance Agreement (FFCA) was jointly signed by the U.S. Department of Energy (DOE) and the U.S. Environmental Protection Agency (U.S. EPA). It addressed environmental impacts associated with DOE's Feed Materials Production Center (FMPC) in Fernald, Ohio. The FFCA is intended to ensure that environmental impacts associated with past and present activities at the FMPC are thoroughly and adequately investigated so that appropriate remedial response actions can be formulated, assessed, and implemented.

In response to the FFCA, a Remedial Investigation and Feasibility Study (RI/FS) is in progress pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA). The technical strategy adopted for the RI/FS is to issue distinct RI/FS reports for each of five operable units at the FMPC. By accommodating separate schedules for each operable unit, the remedial action decision process is accelerated to completion for the most problematical units.

One of the identified operable units of the FMPC includes those facilities utilized for the storage/disposal of radiological and chemical wastes from FMPC operations in the waste pit storage area. These facilities include Waste Pits 1, 2, 3, 4, 5 and 6, the Burn Pit, and the Clearwell. Analytical results indicate that elevated concentrations of uranium and sulfates are present in the storm water runoff from the waste pit area. Uranium poses the principal potential threat to human health and the environment.

The DOE is planning a removal action to control storm water runoff from the waste pit area consistent with the final remedial action for the waste storage units. This removal action will address the potential contaminants of concern.

Removal actions, as described in the National Contingency Plan (NCP) (40 Code of Federal Regulations (CFR) 300.415), are primarily intended to abate, minimize, stabilize, mitigate, or eliminate a release or threat of release prior to a final action if there is a threat to public health or welfare, or the environment. Once a non-time critical removal action is deemed appropriate, an engineering evaluation/cost analysis (EE/CA) is performed to analyze removal action alternatives and to support the selection of a preferred alternative. The EE/CA will be prepared and used by DOE as the basis for determining the need for a removal action and the selection of an appropriate technology. The selected alternative will be consistent with the anticipated long-term remedial action and it will contribute to the efficient performance of the long-term remedy to the extent practicable.

The National Environmental Policy Act of 1969 (NEPA) requires that Federal Agencies include in their decision making processes appropriate and careful consideration of all environmental effects of proposed actions. Therefore, if this memorandum approved, the EE/CA will be prepared so as to integrate the requirements of both CERCLA and NEPA, and will be used by DOE as the basis for the potential selection of a non-time-critical removal action.

## 2.0 SITE DESCRIPTION

The FMPC site is located on 1,050 acres in a rural area approximately 20 miles northwest of downtown Cincinnati, Ohio. The production area is limited to an approximate 136-acre tract near the center of the FMPC site. The villages of Fernald, New Baltimore, Ross, New Haven, and Shandon are all located within a few miles of the plant. There is an estimated population of over 14,000 within a five-mile radius of the site.

The area surrounding the FMPC is mainly agricultural, with dairy, beef, corn, and soybean production. Several industries, including Delta Steel, Albright & Wilson Chemical Company, Rutgers-Nease Chemical Company, two commercial gravel operations, and a cement plant are located south of the site. The Miami Whitewater Forest, a Hamilton County park, is located five miles to the southwest of the FMPC.

The area surrounding the FMPC contains several sites of historical interest, but none are within the immediate study area of the waste pit storage area. The National Register of Historic Places lists four prehistoric Indian sites within a 3-mile radius. They include the Adena Circle, the Demoret Mound, the Colerain Work, and the Dunlap Work. The closest site, the Colerain Work, is situated approximately one mile east of the FMPC. The State Historical Preservation Officer reports that there are no known sites of archaeological significance on the FMPC site. There are also no known archaeological sites in the waste pit area where the storm water runoff control removal action is being planned.

The FMPC is located within the Great Miami River Basin drainage, but above the river's present day floodplain. Paddy's Run is the receiving stream for storm water runoff from the waste pit area. Paddy's Run originates north of the site, drains southward along the west side of the FMPC, and eventually enters the Great Miami River approximately 1.5 miles south of the FMPC (Figure 1). This stream loses flow to the ground water along most of its course due to its highly permeable channel bottom and limited elevation above the regional ground water table. Paddy's Run is an engaged, intermittent stream that flows primarily between January and May.

Paddy's Run also serves as an important recharge mechanism to the regionally important Great Miami Aquifer that underlies the site. This aquifer serves as a principal source of domestic, municipal, and industrial water throughout the region. Leachate from seepage in the waste pit area along with contaminated storm water runoff entering Paddy's Run can potentially migrate vertically to the underlying Aquifer.

The FMPC is within the geographic ranges of several species determined by the U.S. Fish and Wildlife Service to be endangered or threatened. These include the Indiana bat, bald eagle, peregrine falcon, and the northern wild monkshood (50 CFR 17.11 and 17.12). The cave salamander is recognized as state endangered. There are no critical habitats in the vicinity of the FMPC. The bald eagle and peregrine falcon do not nest in the counties surrounding the FMPC site and would occur only as rare transients along the Great Miami River. The northern wild monkshood has not been observed in the FMPC area.

During RI/FS biological sampling, Indiana bats were not found on or adjacent to the FMPC, but were netted at a monitoring site three miles northeast of the FMPC boundary. Potential habitat for the Indiana bat along Paddy's Run ranges in quality from poor to excellent, with over 50 percent fair. The cave salamander was not found within FMPC boundaries during RI/FS sampling. Marginal habitat for this species was identified along Paddy's Run.

A number of fish have been identified in the area, mainly minnows, creek chubs, and darters in Paddy's Run, and carp, gizzard shad, and sunfish in the Great Miami River. Fish populations in the Great Miami River remain healthy and have not changed appreciably since 1984.

A study to assess the acute and chronic toxic effects of effluent from the FMPC on algae, invertebrates, and fish is being conducted as part of the RI/FS for the environmental media operable unit. The effects of the effluent on the macroinvertebrate community structure in the Great Miami River and Paddy's Run are also being examined as part of the RI/FS.

Potential jurisdictional wetlands exist in the drainage ditches along the railway north of Pit 5, along Paddy's Run, and in other drainage ditches in the waste pit area. Aquatic species such as cattails and rushes grow along these drainage ditches and portions of Paddy's Run. Area habitats support a number of species, although the habitats have not been described as unique.

The United States Atomic Energy Commission (AEC), predecessor to the DOE, established the FMPC to produce uranium metal and

compounds from uranium ore concentrates for U.S. Government needs. This integrated production complex began operations in the early 1950s. In 1951, NLO Inc. (formerly National Lead Company of Ohio) entered into contract with the AEC as Operations and Maintenance (O&M) Contractor. This contractual relationship lasted until January 1, 1986. Westinghouse Materials Company of Ohio (WMCO), a wholly-owned subsidiary of Westinghouse Electric Corporation, then assumed management responsibilities of the site operations and facilities for a minimum five-year period.

A variety of chemical and metallurgical processes are utilized at the FMPC for the manufacture of uranium products. During the manufacturing process, high quality uranium compounds are introduced into the FMPC processes at several points. Various starting materials are dissolved in nitric acid and the uranium is removed through solvent extraction to yield a solution of uranyl nitrate. Evaporation and heating convert the nitrate solution to uranium trioxide ($UO_3$) powder. This compound is reduced with hydrogen to uranium dioxide ($UO_2$) and then converted to uranium tetrafluoride ($UF_4$) by reaction with anhydrous hydrogen fluoride. Uranium metal is produced by reacting $UF_4$ and magnesium metal in a refractory-lined reduction vessel. This primary uranium metal is then remelted with scrap uranium metal to yield a purified uranium ingot. Various uranium metal working processes also exist.

Large quantities of liquid and solid wastes are generated by the various operations at the FMPC. Solid waste materials associated with uranium metals production are presently stored on site in steel drums awaiting further processing or off-site disposal at approved facilities. These wastes include oils, sludge, contaminated combustibles, filter cake, off-spec $UF_4$ or thorium tetraflouride ($ThF_4$), and reject $UO_3$. The drums sit on various pads and/or warehouses and are inspected on a weekly basis. Contents of deteriorated drums are repackaged. Other stored waste materials include spent degreasing solvents and PCB-contaminated material.

Prior to 1985, solid and slurred wastes from FMPC processes were disposed in the on-site Waste Pit Storage Area (Figure 2). This area, which is located west of the production facilities, includes six low-level radioactive waste storage pits, a burn pit, two earthen-bermed concrete silos containing K-65 residues (i.e., high specific activity, low-level radium-bearing residues resulting from the pitchblende refining process), a concrete silo containing metal oxides, two lime sludge ponds, and a sanitary landfill.

Pit 1 was constructed in 1952 into existing native clay and then lined with an additional four feet of clay. Waste Pit 1 has been out of service since 1959 when it was backfilled, covered with clean soil, and graded to provide surface

drainage away from the waste pit area. The maximum depth of the pit is 17 feet. It has an 80,000 square foot surface area with an estimated 40,000 cubic yards of buried waste. This pit contains neutralized waste filter cake, fly ash, scrap graphite, brick scraps, sump liquor/cake, depleted slag, and an estimated 115,000 pounds of uranium.

Pit 2 was constructed in 1957 into native clay with a 17-foot maximum depth. Waste Pit 2 has been out of service since 1964 when it was backfilled and covered with clean soil. It has a 48,215 square foot surface area with an estimated 13,000 cubic yards of buried waste. This pit contains neutralized waste filter cake, scrap graphite, brick scrap, concrete, construction rubble, sump liquor/cake, depleted slag, and an estimated 2,700,000 pounds of uranium and approximately 900 pounds of thorium.

Waste Pit 3 was constructed in 1959 and has been out of service since 1968 when it was backfilled and covered with various on-site materials. The pit was constructed into a variety of till soil types, to an elevation equivalent to the base of the till and was lined with a foot of clay. The maximum depth of the pit is 27 feet. It has a 238,500 square foot surface area with an estimated 227,000 cubic yards of buried waste. This pit contains lime-neutralized raffinate, raffinate concentrate, slag leach residues, filter cake, and fly ash, with an estimated 290,000 pounds of uranium and approximately 900 pounds of thorium.

Waste Pit 4 has been out of service since 1986 when it was backfilled and covered with soil. Recently, an interim cap providing an additional cover of compacted clay overlain by a 45-mil thick Hypalon [chlorosulfanated reinforced polyethylene (CRP)] liner was installed to further ensure segregation of encapsulated materials from surface water during the interim period prior to implementation of a final remedial action under the Record of Decision (ROD). This is a clay-lined pit and was constructed in 1960 with a 24-foot maximum depth. It has an 85,685 square-foot surface area with an estimated 53,000 cubic yards of buried waste. This pit contains process residues, raffinates, slurries, filter cake, lime sludge, 23,500 pounds of barium chloride, scrap graphite, noncombustible trash, asbestos, and construction rubble, with an estimated 1,400,000 pounds of uranium and 140,000 pounds of thorium.

Waste Pit 5 has been out of service since 1987, although it has not yet been dewatered and covered. It is a 183,737 square foot, 30-foot deep pond lined with a 60-mil thick Royal-Seal ethylene rubber elastomeric membrane. The pit was constructed in 1968 and served as a settling pond for slurred waste from various production processes. It contains an estimated 102,500 cubic yards of settled waste material

consisting of neutralized raffinate, slag leach slurry, sump slurry, lime sludge, some construction debris, with an estimated 110,000 pounds of uranium and 38,000 pounds of thorium. Only rainfall currently enters Waste Pit 5.

Waste Pit 6 has been out of service since 1985, although it has not been covered. It is a 32,400 square foot, 24-foot-deep elastomeric membrane. The pit was constructed in 1979 and contains an estimated 9000 cubic yards of waste material consisting of green salt, filter cake, depleted slag, and process residues, with an estimated 1.9 million pounds of uranium. Standing water remains trapped within the berms of the pit.

The burn pit was excavated in 1957 as a clay borrow pit for lining Waste Pit 2. The depth and size of the pit are not precisely known, but it is believed to be approximately 20 feet deep. The pit was subsequently used to dispose of and burn laboratory chemicals including pyrophoric and reactive chemicals, waste oils, and other low-level contaminated materials such as wooden pallets. The residual waste quantities are not known.

The Clearwell served as a settling basin for process water and storm water runoff from the waste pits. Most recently, the Clearwell was used as a final settling basin for process water that passed through Waste Pit 5 prior to its discharge to the Great Miami River via a National Pollutant Discharge Elimination System (NPDES) discharge point. This use was terminated in March 1987 when Pit 5 was removed from the process water treatment scheme. The Clearwell currently receives surface water runoff from Pits 1, 2, 3 and 5. Water of varying depth remains in the Clearwell at all times. The sediments resulting from material deposition were removed on at least one occasion during the period of operation. The depth of sediment remaining in the Clearwell is unknown.

The main effluent line to the Great Miami River, is permitted for discharge of wastewater and stormwater from the FMPC. The discharge is regulated by an NPDES permit and DOE orders, with compliance monitoring performed at Manhole 175 before the effluent leaves the site boundary. The effluent line is a 4200-foot-long, 16-inch-diameter cast iron pipe constructed in 1952. Because the lower reaches of the effluent pipeline would be submerged under high water conditions in the Great Miami River, the pipeline was designed to accommodate pressure flow in these lower reaches. The flow capacity of the pipeline has been computed to about 6.5 million gallons per

day (mgpd), or 10 cubic feet per second ($ft^3/s$). This greatly exceeds the value that would be realized under gravity flow only. In 1987, the average rate of discharge from the pipeline was 0.576 mgd or 0.89 $ft^3/s$, far below the design capacity.

One requirement of the NPDES permit for the FMPC specifies that the following effluent characteristics be monitored at Manhole 175: flow rate, BOD, pH, suspended solids, ammonia, oil and grease, residual chlorine, and nitrate. DOE orders, as to be considered (TBC) standards identified in the Preliminary Assessment for this removal action, also require daily sampling for radionuclides, with the daily samples composited on a weekly basis for laboratory analysis. Based on the analytical data from the weekly composites, the average concentration of total uranium in the FMPC effluent discharge in 1987 was found to be 660 picocuries per liter (pCi/l). This was about the same as the average value of 661 pCi/l measured in 1985 and more than the average value of 450 pCi/l measured in 1986 as reported in the FMPC Environmental Monitoring Reports for 1985 and 1986.

To ensure compliance with the NPDES limits for nitrate, a demonstration biodenitrification (BDN) facility was constructed and placed into operation in 1986. This treatment system includes a biodenitrification surge lagoon (BSL) and biodenitrification towers. The BSL is used to equalize and settle process wastewater and storm water runoff flows before processing for nitrate removal in the downstream towers. The BDN is currently being upgraded to full production status.

## 3.0 INCIDENT CHARACTERISTICS

The waste storage area at the Feed Materials Production Center (FMPC) has undergone storm water runoff samplings by four contractors: 1) Westinghouse Materials Company of Ohio (WMCO), 2) Roy F. Weston, Inc., 3), ASI/IT, and 4) Dames and Moore. Analyses included, uranium and other chemical and radiological parameters as indicated in the Preliminary Assessment.

In March of 1985, August of 1986, February and March of 1988, and March, September and November of 1989, total uranium was sampled and analyzed. Analytical results indicated that TBCs, as addressed in 40 CFR 300.400 (g)(3), were exceeded.

In July of 1988, during storm water runoff, total dissolved solids (TDS), total suspended solids (TSS), sulfates, Ra-226, Ra-228 and U-238 were sampled and analyzed. Analytical results indicated that contaminant-specific ARARs were exceeded.

In March of 1989, during storm water runoff, chromium, nitrate, U-234 and U-238 were sampled and analyzed. Analytical results indicated that TBCs were exceeded.

The flow of storm water runoff from the waste pit area, if averaged over an annual cycle, is estimated to be 23 gallons per minute (gpm). The concentration of uranium entering the aquifer from Paddy's Run is conservatively assumed to remain unchanged from the annual average concentration entering the stream from storm water runoff (1700 ug/1).

During each significant rainfall event creating surface water runoff the contamination in the runoff increases down-gradient from the pits. The measured uranium isotopic content of the surface water samples indicates that the uranium is depleted (i.e., less than 0.7% uranium-235 by weight). This evidence (U-238 to U-234 activity ratio) strongly suggests the source of contamination can originate from seepage of materials in the pits in addition to the erosion of uranium surface contamination around Pits 4 and 6 by storm water runoff.

## 4.0 QUANTITIES AND TYPES OF SUBSTANCES PRESENT

Storm water runoff data collected to date from the waste pit drainage areas indicate the presence of radionuclides, inorganic metals, and other water quality parameters may exceed contaminant-specific ARARs (refer to Appendix A of the preliminary Assessment (PA) for this removal action. Although total organic carbon and total organic halogens were detected, no standards or guidelines were available for comparison.

A number of constituents including organic compounds were identified in the solid samples collected from the waste pits (Characterization Investigation Study, Volume 2: Chemical and Radiological Analyses of the Waste Storage Pits, Roy F. Weston-November, 1987). There was no evidence of significant dissolution and transport of these materials in surface water. The pathway of migration to the underlying aquifer for these constituents is being addressed in Operable Unit 1 of the RI/FS.

Due to its much longer half-life and relatively low specific activity, the mass of total uranium is almost entirely due to the U-238 as derived through total uranium analyses. Uranium-234, in addition to U-238 has been detected (31 of 93 samples) in multiple values of the draft DOE Order 5400.XX derived concentration guidelines (DCGs) as presented in table 3 of the PA referenced above. For this reason, total uranium (average U-238: U-234 ratio equal to 3.7:1 with U-235 depleted to less than .7% by weight) has been designated as the principal contaminant of concern for storm water runoff from the waste pit area.

For those samples exceeding the DCG, U-238 concentrations range from 11,000 pCi/1 (34 mg/1) to 510 pCi/1 (1.5 mg/1). Uranium-234 concentrations range from 3100 pCi/1 ($6 \times 10^{-4}$ mg/1) to 140 pCi/1 ($2.7 \times 10^{-5}$ mg/1).

Other parameters presented that challenged criteria for environmental compliance were presented in Table 2 and Appendix A of the PA for this removal action and are summarized in this memorandum for convenience.

Summary of Elevated Concentrations
of
Non-Radiological Parameters

| Parameter | Criteria | Analytical Result | Sample Identification |
|---|---|---|---|
| Chromium | 50 ug/1 (MCL)[a] | 52.5 ug/1 | ASIT 30 |
| Sulfate | 250 mg/1 (OAC) | 317 mg/1 | d-01 |
| Nitrate | 10 mg/1 (MCL)<br>10 mg/1 (OAC)[b] | 10.9 mg/1 | AS/IT-30 |
| TDS[c] | 500 mg/1 (SMCL)[d]<br>500 mg/1 (OAC) | 1190 mg/1 | DD-07 |
| TSS[e] | 20 mg/1 (NPDES)[f]<br>40 mg/1 (NPDES)[g] | 20 mg/1<br>148 mg/1<br>385 mg/1<br>266 mg/1 | DD-07<br>DD-09<br>DD-23<br>DD-01 |

a. Maximum Contaminant Level
b. Ohio Administrative Code
c. Total Dissolved Solids
d. Secondary Maximum Contaminant Level
e. Total Suspended Solids
f. National Pollutant Discharge Elimination System (daily average)
g. National Pollutant Discharge Elimination system (daily maximum)

A complete description of the sample collection and preparation techniques common to WMCO and Dames and Moore can be found in WMCO Procedure ESH-P-S2-016 "SOP-Environmental Surface Water Sampling" (07/01/87) and the Ground and Surface Water Sampling Manual, Dames and Moore, November 1986.

A summary of the sampling and analytical methods used by Roy F. Weston in the 1986-1987 Characterization Study is given in Volume 2, "Chemical and Radiological Analysis of Waste Pits" FMPC/SUB-008, November 1987. Section 2 describes geotechnical, chemical, and radiochemical sampling and analysis.

A summary description and bibliography for sampling and analytical methods used by ASI and IT in the conduct of the RI/FS, is in Section 4, Volume V of the RI/FS Quality Assurance Project Plan.

## 5.0 STATE AND LOCAL AUTHORITIES ROLES

Executive Order 12580 delegates CERCLA Section 104 response authority to DOE for DOE sites. The state and local roles have been one of participation in the negotiations of the CERCLA Section 120 Consent Agreement and technical information exchanges, and identification of state and local ARARs.

## 6.0 ACTIONS TO DATE

A series of projects have been completed that are related to storm water runoff control from the waste pit area:

1) Plant 1 Pad Storm Water Runoff Control
2) Biodenitrification Surge Lagoon
3) Installation of a Resource Conservation and Recovery Act (RCRA) Cap for Pit 4

The Plant 1 Pad has been used as a storage/staging area for material to be processed at FMPC. Drainage area I (Figure 3 of PA), immediately to the west of Plant 1 Pad was controlled to prevent storm water runoff from entering drainage area A of the Waste Pit Storage Area. This was completed in October of 1988 at a cost of $245,163.00.

The biodenitrification surge lagoon (BSL) went on line from March 1987 to July 1987 to support a Demonstration Test Run of Biodenitrification (BDN) facility. The BSL (8.0 million gallons capacity) receives waste water from the General Sump and from the Clearwell (Figure 4 of PA). The purpose of the BSL is to buffer surges of high flow rates and high nitrate concentrations going to the BDN facility. The BSL also collects some waste pit storage area stormwater runoff that drains to the Clearwell. The BSL has remained on line since the liner was repaired in September 1988 at a cost of $2.8 million.

The RCRA cap cover was installed over Pit 4 to provide an interim closure of the facility as requested by U.S. EPA. The closure prevents surface water from infiltrating into the pit and potential leaching of waste material into the ground water. The interim closure consists of two protective barriers having been placed over the pit. The first protective barrier is a two-foot thick layer of compacted clay. The second barrier is a synthetic liner made of Hypalon. The Hypalon liner has a very high resistance to water penetration enabling it to act as a water shed for the pit. The project was completed in July, 1989 at a cost of $1.2 million.

## 7.0 THREAT TO PUBLIC HEALTH OR ENVIRONMENT

The site conditions meet certain criteria listed in the NCP for categorization of specific cleanup efforts as removal actions. The eight factors to be considered in determining the appropriateness of a removal action, as listed in section 300.415 of the NCP, are:

1. Actual or potential exposure to hazardous substances, pollutants or contaminants by nearby populations, animals, or food chains.

2. Actual or potential contamination of drinking water supplies or sensitive ecosystems.

3. Hazardous substances, pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers that may pose a threat of release.

4. High levels of hazardous substances, pollutants or contaminants in soils, largely at or near the surface, that may migrate.

5. Weather conditions that may cause hazardous substances, pollutants or contaminants to migrate or be released.

6. Threat of fire or explosion.

7. Availability of other appropriate federal or state response mechanisms to respond to the release.

8. Other situations or factors that may pose threats to public health or welfare and the environment.

Of the eight factors to be considered, the off-site migration of radiological or hazardous substances or pollutants as a result of uncontrolled storm water runoff from the waste pit area, as reflected in Factors 4 and 5, establishes the justification for further consideration of a removal action. The potential resulting contamination of drinking water supplies or sensitive ecosystems from this migration, and the associated potential exposure to these contaminants by various receptors (Factors 1 and 2), are also relevant to the waste pit runoff control removal action.

Natural drainage from the waste pit area is primarily westward toward Paddy's Run. Storm water runoff from this area carries concentrations of uranium in excess of the <u>proposed DOE Derived Concentration Guide (DCG) for releases to the environment</u>. Upon entering Paddy's Run, the potential exists for these contaminants to migrate to the Great Miami Aquifer. This aquifer is within the buried valley aquifer of the Great

Miami River Basin, which has been designated as a Sole-Source Aquifer by the U.S. EPA under Section 1424(e) of the Safe Drinking Water Act (Federal Register, Vol. 53, No. 131, Friday, July 8, 1988). Under this designation, the Administrator of Region V of the U.S. EPA has determined that this aquifer is the sole or principal source of drinking water for this area. Contamination of Paddy's Run and/or the underlying aquifer may pose potential exposure risks to public health and the environment.

The State of Ohio is the only potential Natural Resource Trustee party. Other potential Federal Trustees (Dept. of Interior, Dept. of Commerce, etc.) do not have jurisdiction since the natural resources under evaluation are DOE owned land, never in the public domain, and state controlled surface and ground water. As demonstrated in the State of Ohio's complaint and subsequent Consent Decree, Ohio is aware of the potential threat to natural resources. In the Consent Decree signed in December 1988, OEPA deferred action on the complaint dealing with potential damage to natural resources. Ohio agreed that activity under the RI/FS was the appropriate mechanism for assessing any natural resource damage.

## 8.0 ENFORCEMENT

Executive Order 12580 delegates CERCLA Section 104 response authority to DOE for DOE sites. Therefore, enforcement issues as they relate to PRP's are not applicable.

## 9.0 PROPOSED PROJECT AND COST

The objective of the EE/CA is to evaluate possible removal actions and associated costs, select a response, and document the decision. Adequate information from the RI/FS process exists to prepare the EE/CA. As new information becomes available, it will be incorporated into the decision making process, as appropriate.

The preparation of the EE/CA involves compilation of the data, providing a description of the site background and removal action alternatives, evaluating the alternatives with respect to effectiveness of protecting public health and the environment, and selection of preferred alternative.

The estimated cost for preparation of the EE/CA is $80,000. The final EE/CA will be submitted to EPA for review and approval and released for public review and comment by May 30, 1990 in accordance with the requirements of the FFA. By no later than that date, the Administrative Record will be made available for public inspection.

The removal action could involve a cost of as much as $6.8 million dollars (present worth value).

## 10.0 RESULTS IF NO ACTION IS TAKEN

The no-action alternative would result in no reduction to the amount of runoff being contaminated by the various sources of radionuclides and chemicals within the waste pit drainage areas. Likewise, no reduction in contaminant mobility or toxicity would be provided. The relative risk to the public and the environment would remain relatively constant to what is currently present. Any reduction in contamination would be brought about by natural phenomena such as radioactive decay and removal of contaminated soil through erosion. Any direct ingestion of water runoff reaching Paddy's Run could result in unacceptable exposure levels of both radiological and chemical toxicity.

Decreases in macroinvertebrate diversity in those reaches of Paddy's Run subject to discharges from the FMPC have been observed by both Miami University in 1986-87 and ASI/IT in 1989. This provides circumstantial evidence of an environmental impact associated with site releases. In addition, several fish samples from Paddy's Run were found to contain low but detectable levels of uranium.

Potential wetland areas have been identified within most of the drainage ways that form an integral part of the storm water runoff collection and conveyance system within the waste pit area. A second high potential area is located in the topographic depression just south of the Clearwell. Under the no-action alternative, contaminated discharges would continue to flow through these areas and could represent a long-term threat to the wetlands communities.

## 11.0 IMPORTANT POLICY ISSUES

Mitigation of possible adverse impacts to potential wetlands areas may result from removal action alternatives under evaluation. The mitigation of these adverse impacts must be addressed.

## 12.0 APPROVAL

Because conditions at the FMPC meet the NCP Section 300.415 criteria for a removal action, your approval to prepare an engineering evaluation/cost analysis (EE/CA) document is requested. Please indicate your approval by signing below.

DOE/HQ

Approve:_____ Date:_____

U.S. EPA

Approve:_____ Date:_____ 14