

**R-009-1002.1**

**171**

**COMMUNITY RELATIONS PLAN FOR THE  
SOUTH GROUNDWATER CONTAMINATION  
PLUME REMOVAL ACTION APRIL 1990**

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# **Community Relations Plan for the South Groundwater Contamination Plume Removal Action**

**Feed Materials Production Center (FMPC)  
Fernald, Ohio**



April 1990

**U. S. DEPARTMENT OF ENERGY  
OAK RIDGE OPERATIONS OFFICE**

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## OVERVIEW

This Community Relations Plan (CRP) has been prepared to guide community relations activities of the U. S. Department of Energy (DOE) to support the development and implementation of the South Groundwater Contamination Plume Removal Action at the Feed Materials Production Center (FMPC) located near Fernald, Ohio. The scope of this removal action -- referred to as the South Plume Removal Action -- can be broadly defined as management of radioactively contaminated groundwater in an off-site area south of the FMPC. (A detailed discussion is provided in Section 2.0.)

The removal action is being conducted pursuant to the CERCLA Consent Agreement (CA) between DOE and the U. S. Environmental Protection Agency (EPA). This CRP follows the guidance offered in EPA's Community Relations Handbook (EPA/540/6-88/002) and supplements the overall community relations program of the FMPC as identified in the Community Relations Plan for the Remedial Investigation and Feasibility Study at the U.S. DOE FMPC.

This removal action is designed to comply with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, known as Superfund, the Superfund Amendments and Reauthorization Act (SARA) of 1986, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) of 1990 (40 CFR 300.415(m)). The CA, relevant laws such as CERCLA and SARA, and the NCP describe the process to be followed during a removal action.

South Plume community relations activities at the FMPC are designed to achieve two overall objectives. These are:

- To ensure that interested parties are provided with information necessary to understand key issues and decisions relating to the South Plume
- To provide opportunities for the community to comment on documents that support DOE's decision to take the recommended removal action.

Community interest in the South Plume is characterized by the following distinctive features that this CRP is intended to address, including:

- The South Plume represents the only known area of substantial off-site contamination in the vicinity of the FMPC.
- The Great Miami Aquifer, which underlies the South Plume study area, is a major source of potable water for the region.
- The community has expressed interest in timely dissemination of findings which define the nature and extent of uranium contamination in the aquifer.

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This CRP presents an overview of the FMPC, the RI/FS and its relationship to the South Plume, a detailed discussion of contamination of the South Plume, a community profile, and highlights of the community relations activities to support the South Plume Removal Action.

2.0

## SITE BACKGROUND

### FMPC Background

The FMPC is composed of 1,050 acres that are located in the Greater Miami River valley, approximately 20 miles northwest of downtown Cincinnati. The FMPC lies within two counties, Hamilton (850 acres) and Butler (200 acres). The immediate area is largely agricultural, with outlying areas devoted mostly to suburban housing clusters that serve the metropolitan needs of Cincinnati. Figure 1 presents the geographic location of the FMPC.

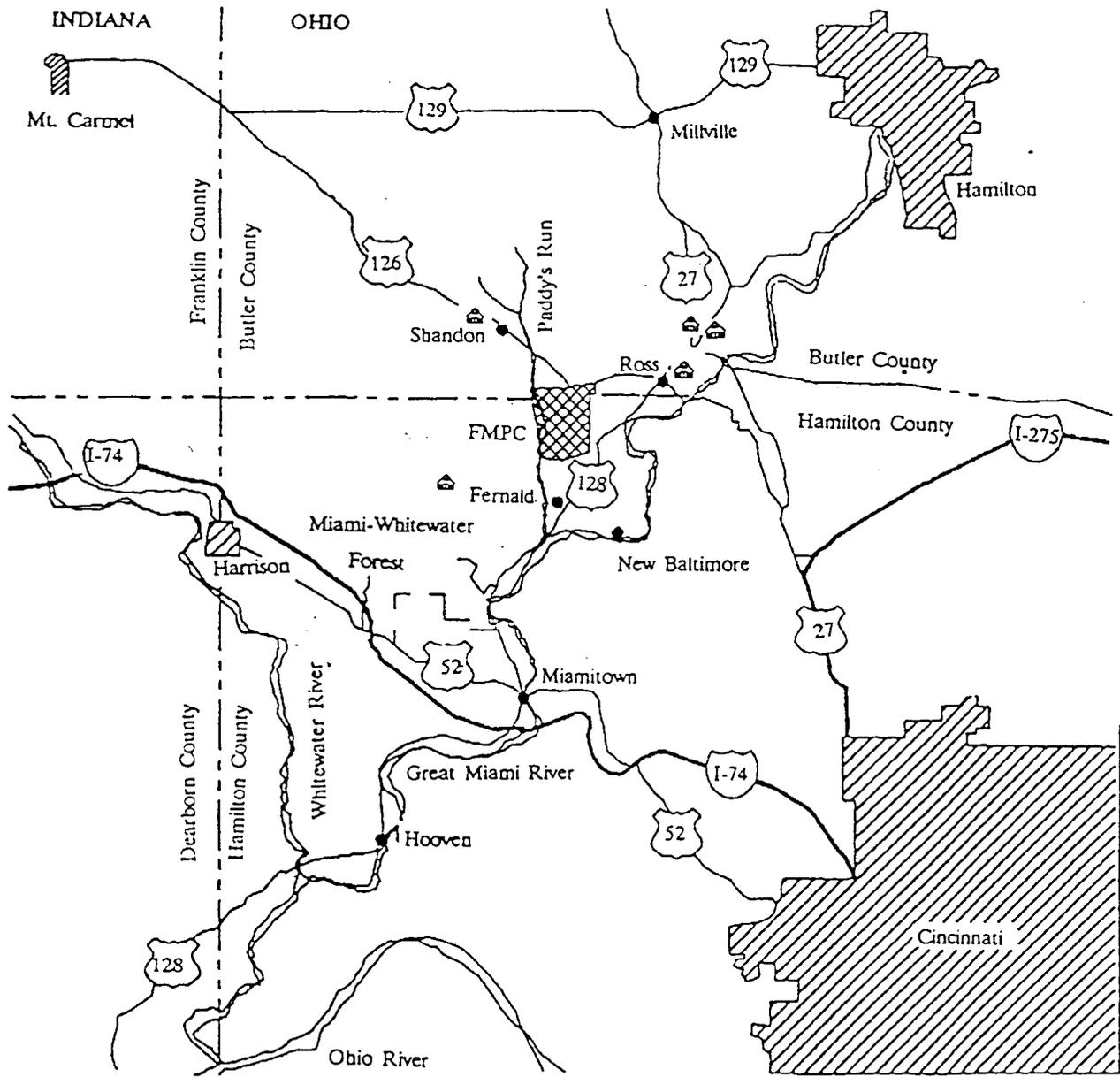
Although the two counties are generally urbanized, the area immediately surrounding the FMPC is primarily rural, dominated by agriculture, with some light industry and scattered residences. Residential, commercial, and light industrial development exist along the Great Miami River and highway corridors. Commercial and public land uses include sand and gravel operations along the Great Miami River, industrial facilities, parks, and primary and secondary transportation corridors. One recreational park, the Miami Whitewater Forest, lies approximately five miles southwest of the FMPC. It is one of the largest parks in Hamilton County and is used primarily during the summer. Approximately 20 percent of the 2,260-acre park is available or may be developed for public use (i.e., golfing, paddle boats). The remainder is dedicated as a wildlife sanctuary. The National Register of Historic Places lists four prehistoric Indian sites within a three mile radius.

Figure 2 presents a site map for the FMPC. Construction was started in 1951 and the property was operational as a production site in 1952. The facility was originally under the auspices of the Atomic Energy Commission (AEC), followed by the Energy Research and Development Administration (ERDA), and currently, the U.S. Department of Energy (DOE). From 1951 to 1985, the FMPC was managed by National Lead of Ohio, Inc. (NLO) under contract with the government. In 1986, Westinghouse Materials Company of Ohio (WMCO) assumed management of the FMPC.

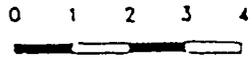
The FMPC's mission was to convert uranium ore concentrates and recycle materials to either uranium oxides for shipment to gaseous diffusion plants or machined uranium ingots and billets for manufacturing fuel cores used in production reactors as part of the U.S. nuclear weapons program. The principal product was purified uranium metal in various physical forms.

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

FIGURE 1 - Regional Location of the Feed Materials Production Center

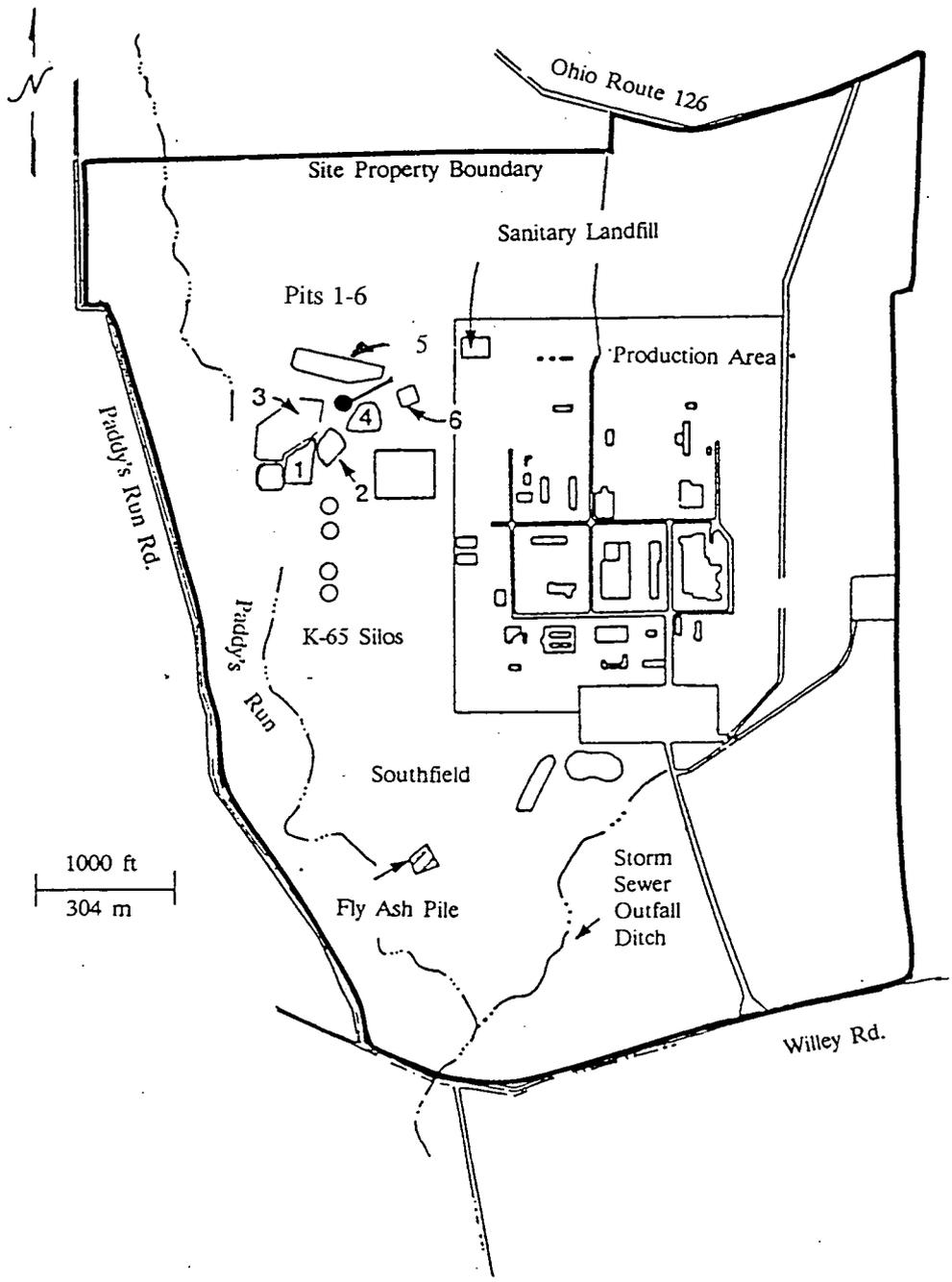


 = Schools



SCALE  
IN  
MILES

FIGURE 2 - Simplified Site Map of the Feed Materials Production Center



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

Two fly ash piles are located approximately 3000 feet south-southeast of the Waste Storage Area. One pile remains active for the disposal of fly ash from the FMPC boiler plant. An area north of and adjacent to the fly ash piles, known as the Southfield Area, is believed to be a former disposal site for construction debris and possibly other types of solid wastes from FMPC operations.

Surface water runoff from the Waste Storage Area, fly ash piles, and other affected areas within the western portion of the FMPC enters Paddy Run, a tributary of the Great Miami River. Paddys Run originates just north of the FMPC and flows south-southeast along the western edge of the site, and for a part of the year it is a dry stream bed with occasional rainfall-induced flows.

Leachate from these same areas can potentially migrate vertically to the regionally important Great Miami Aquifer which underlies the site. This aquifer serves as a principal source of domestic, municipal, and industrial water throughout the region.

Liquid waste effluent generated from FMPC process operations is sent to a general plant sump for treatment and analysis prior to release to the Great Miami River through the main effluent line. The main effluent line to the Great Miami River represents a permitted discharge for wastewater from the FMPC.

The DOE is the Lead Agency responsible for the FMPC and the implementation of this removal action. The Ohio EPA and the U.S. EPA have oversight responsibility over DOE for this removal action.

### **Background of South Plume Removal Action**

On July 18, 1986, a Federal Facility Compliance Agreement (FFCA) was jointly signed by the DOE and the U.S. Environmental Protection Agency (U.S. EPA) pertaining to 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 response actions can be formulated, assessed, and implemented.

In response to the FFCA, and consistent with the new CERCLA Consent Agreement signed by DOE and U.S. EPA in April 1990, a Remedial Investigation and Feasibility

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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 original technical strategy adopted for the RI/FS was to issue distinct RI/FS reports for each of six operable units into which the FMPC has been separated; that number has since been changed to five, in recognition of the need to focus more near-term attention to the South Plume. By accommodating separate schedules for each operable unit, the remedial action decision process is proceeding to completion for the most problematical units while data collection and analysis continue for other operable units.

Operable Unit 5 includes those environmental media that serve as migration pathways and/or environmental receptors of radiological or chemical releases from the FMPC. Important elements of Operable Unit 5 are the on- and off-site areas of the regionally important Great Miami Aquifer that exhibit elevated levels of uranium. Because of the off-site location of portions of the plume within developed areas south of the FMPC and the associated potential threat to human health, the DOE is considering a removal action for this off-site area, known as the South Plume, pending the outcome of the RI/FS and the implementation of a final remedial action for the regional aquifer.

Removal actions, as described in the National Oil and Hazardous Substances Contingency Plan (NCP) of March 1990 (40 Code of Federal Regulations (CFR) 300.415, are primarily intended to abate, minimize, stabilize, mitigate, or eliminate a release or a threat of release prior to a final action if there is a threat to public health or welfare or the environment. A second reason for implementing a removal action is to mitigate contaminant migration pending final action if site conditions permit a straightforward mitigative action and if significant migration would occur in the interim if no action is taken. Additionally, based on proposed revisions to this portion of the NCP, the South Plume Removal Action will be consistent with the anticipated long-term remedial action, and will contribute to the efficient performance of the long-term remedy to the extent practicable.

A removal action for the South Plume has been deemed appropriate, based on the above criteria. The South Plume Removal Action is a non-time critical removal action since more than six months' time is available for planning. An engineering evaluation/cost analysis (EE/CA) has been performed to analyze removal action alternatives and to support DOE's selection of a preferred alternative. The South Plume EE/CA will be used by DOE as the basis for remedy selection and implementation. (Refer to Section 4.0 of this CRP for EE/CA availability.)

### **Background of South Plume Contamination**

Elevated levels of uranium have been recorded as early as 1981 in groundwater south of the FMPC. During the RI/FS process at the site, additional monitoring wells were installed and others are proposed for on- and off-site locations to evaluate further the

extent and magnitude of the uranium plume and to determine if other radionuclides or chemicals are present.

RI/FS analytical data available as of September 15, 1989 were utilized for the evaluation of the South Plume Removal Action. This data indicates the presence of radionuclides and inorganic metals in the groundwater south of the FMPC. Most of the radionuclides are found at natural background concentrations. None of the radionuclides or metals exceed established or derived drinking water limits with the exception of uranium. Certain organic chemicals have also been observed in some samples, but these observations have not been persistent for the same monitoring wells and are far below allowable maximum concentration levels for all organics detected. For this reason, uranium has been designated as the contaminant of concern for the South Plume Removal Action. All considered actions that account for public health and environmental protection against uranium will also provide protection against other radionuclides and chemicals due to the low levels present.

Uranium presents potential health risks due to its chemical toxicity and as a result of alpha radiation emissions. Insoluble uranium compounds primarily pose a radiological hazard resulting from inhalation and lung irradiation. Chemical toxicity is considered the controlling hazard for soluble uranium compounds of principal concern in the groundwater of the South Plume. If ingested at sufficiently high rates, these compounds can lead to kidney damage and arterial lesions. Other potential adverse health effects that can result from ingestion of soluble uranium compounds are damage to the cardiovascular, hematopoietic, endocrine, and immunological systems.

The extent and distribution of uranium in the South Plume have been established by combining groundwater monitoring data with the results of a groundwater flow/solute transport model. The monitoring data were utilized to establish the following: (1) a lower limit on the maximum concentration in the South Plume [i.e., the maximum observed off-site RI/FS value of 292 micrograms per liter (ug/l)]; (2) a conservative estimate of the shape and extent of the plume (as defined by those wells closest to the plume that exhibit background levels of uranium); (3) direct evidence of the uranium levels at actual receptor locations; and (4) the general shape of the uranium plume for use in calibrating the model.

The model was then used to interpolate between and extrapolate beyond the points of field observation. By doing so, the full distribution pattern of uranium in the South Plume both today and under assumed future conditions could be estimated. The plume is predicted by the model to be an elongated ellipse oriented in a northwest/southeast direction due to the groundwater flow patterns through a narrow, north/south trending buried channel. The center of the plume is predicted to lie approximately 800 feet south of Willey Road and north of the developed areas along Paddys Run and New Haven Road.

Based on this representation of the plume, approximately 100 acres of off-site property is underlain by groundwater with uranium concentrations exceeding the Derived Concentration Guide which is applicable for uranium in drinking water and is equivalent to 33 ug/l. This value is calculated from the 50-year committed effective dose equivalent (CEDE) limit of 4 millirems (mrem) from an annual intake of radioactive materials in drinking water. The DOE has specified that this CEDE limit shall apply to releases to all-off site areas where water could be used as a drinking water source (DOE 5400.5).

There is no known use of groundwater with uranium levels exceeding the derived concentration limit of 33 ug/l from the south plume areas for drinking water, feedstock watering, or crop irrigation. Residences along Paddys Run Road to the west reportedly use cisterns with imported water. Groundwater monitoring results from commercial and residential wells along New Haven Road in or near the Village of Fernald indicate no elevated levels of uranium in the water supply. These results indicate that the uranium plume either is not present at the level of aquifer pumping or has not yet migrated to these locations.

The only known users of groundwater with uranium levels exceeding the derived concentration for uranium in drinking water are the two industries located along Paddys Run Road southwest of the projected center of the plume.

Potential future receptors of the uranium in groundwater south of the FMPC include: (1) persons who pump groundwater for potable uses, crop irrigation, or livestock feeding from areas not currently impacted but located along the future migration pathway of the plume, and (2) persons who would use surface waters into which contaminated groundwater has been discharged.

Figure 3 identifies the South Plume simulated uranium concentrations (as of December 1989) which are the target of this removal activity.

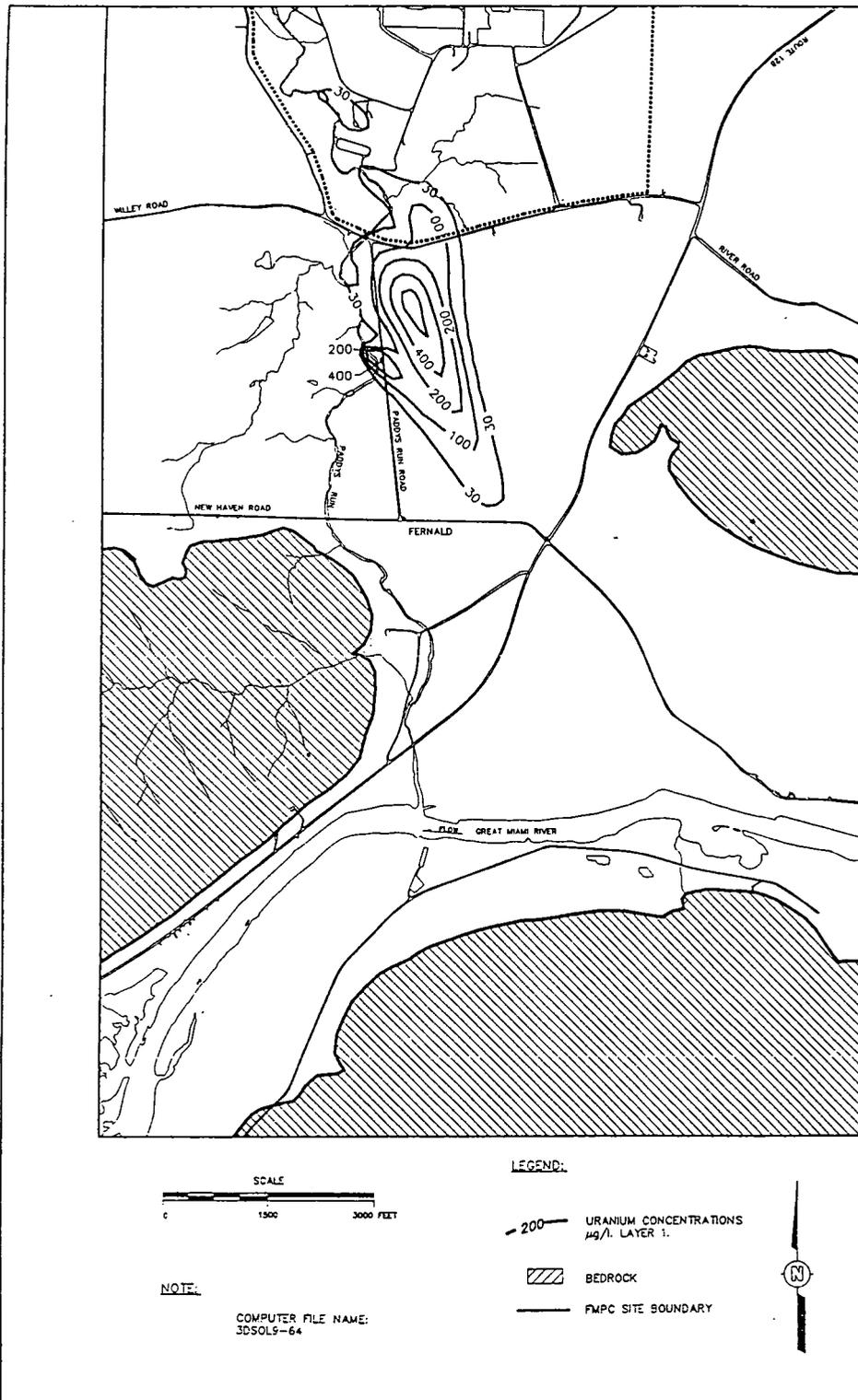
3.0 COMMUNITY BACKGROUND

The combined population of Hamilton and Butler Counties is 1,153,800. Hamilton County has 874,100 inhabitants and Butler has 279,700. Most of the communities surrounding the FMPC are unincorporated towns varying in population from 39 at Fernald to 3,000 in Ross.

The township is the basic unit of government in the immediate FMPC area. Ross and Morgan Townships are located in Butler County and Crosby Township is located in Hamilton County. Township representatives participate in emergency preparedness activities and are on the notification mailing lists of FMPC. There are no retirement homes or hospitals within five miles of FMPC. Five schools are located within two to three miles. Air monitoring stations and emergency warning systems are located

FIGURE 3 - Simulated Uranium Concentrations  
Conditions as of December 1989

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near the schools. A detailed discussion of the local community profile is provided in Section 3 of the RI/FS CRP (March 1990).

Community information and involvement activities which are related to the South Plume removal action include:

- DOE held four community meetings in the year following the announcement of the off-site well contamination in 1984.
- A local citizens group named Fernald Residents for Environment, Safety and Health (FRESH) was formed in 1984 as a result of these disclosures. Since then, FRESH has been an active voice in the community with an interest in health, DOE accountability, and site cleanup issues. According to a FRESH spokesperson, the group began with about 50 involved persons; that number has since risen to about 300. WMCO Public Affairs presents a brief status reports at monthly FRESH meetings.
- Public reading rooms have been open to the public since 1985 in the Administration Building of the FMPC and in the Lane Public Library in Hamilton. Two additional reading rooms were established in 1989; at the suggestion of a local resident, materials were placed in the Greater Cincinnati and Hamilton County Main Library in downtown Cincinnati in July and in response to community requests, in the Public Library in Harrison, Ohio in September. (Appendix A of the FMPC RI/FS CRP provides locations, telephone numbers and hours.)
- Area residents have participated in media interviews since 1985, resulting in both local and national television programs, and newspaper and magazine articles focusing on the FMPC and including off-site contamination. National media attention was prevalent in the fall of 1988 and again in late 1989-early 1990, with articles about the FMPC and the entire DOE nuclear defense facilities network appearing in Time (cover story), U. S. News and World Report and Newsweek magazines, as well as in newspapers with national circulation and syndicated television programs, such as the Phil Donahue Show.
- In 1986 when the RI/FS began, a community assessment identified community concerns about the health and welfare of those who live near the FMPC and shortly thereafter WMCO named a Community Relations Manager as a point of contact for the community. Another community assessment was held in 1989.
- The FMPC Update began publication in 1987 and had been the primary communications tool with the local community until regular public meetings began to be held in 1989. The FMPC Update is issued on an "as needed" basis (approximately four times a year) and distributed to nearly 900 persons who asked to be on the FMPC mailing list. The FMPC Update covers a wide range of

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activities and recently has given more attention to RI/FS topics, although this is not its primary focus.

- In 1989, three community meetings were held to discuss the RI/FS and included discussions of the South Plume contamination and removal action. RI/FS-specific fact sheets are to be prepared and distributed during these community meetings and through the public reading rooms. Area residents submit comment cards during or following these meetings; most ask to be added to the RI/FS mailing list. DOE responds to all queries needing follow-up in writing.
- An Administrative Record for the RI/FS and all removal actions was established in 1989 and placed in the reading rooms in the FMPC Administration Building and in the Lane Public Library.
- A series of community roundtables was initiated in 1990 to discuss a wide range of FMPC issues with area residents. These roundtables are typically informal and small group in nature. Area residents have shown high interest in groundwater contamination, including the South Plume.
- WMCO Public Affairs makes regular reports to local township trustees and attends trustee meetings.

The FMPC RI/FS CRP identifies a range of community concerns and information needs. The local community concerns about the RI/FS that apply to the South Plume removal action are as follows:

- The effect of aquifer contamination on human health
- The effect of aquifer contamination on property value
- The fear of a FMPC plant closing prior to aquifer clean-up

A common concern identified in the interview efforts is an underlying distrust of information that has been provided by U.S. DOE.

#### 4.0

#### HIGHLIGHTS OF THE SOUTH GROUNDWATER CONTAMINATION PLUME CRP

Members of the community have asked DOE to demonstrate: (1) that DOE deserves their trust; (2) that the contamination problems at the FMPC can be cleaned up; and (3) that DOE is pledged to doing the job that is necessary to clean up contamination at and near the FMPC. These sentiments have been expressed frequently by the community during interviews, at public meetings, in the media, and during informal contacts.

Consistent with these community sentiments, DOE will focus on communicating

three major messages during the implementation of the South Plume community relations effort. These messages are:

- Credibility/Trust: DOE is committed to sharing all relevant information about the South Plume with the public in an accurate and timely manner.
- Capability: The environmental problems at the FMPC -- including cleaning up the South Plume -- are solvable. Technologies exist to identify and solve the majority of these environmental problems.
- Commitment: DOE is committed to cleaning up the FMPC and the nearby environment.

South Plume removal action community relations activities will include the following:

- A South Plume removal action Administrative Record File will be established and updated at all AR File locations consistent with NCP criteria, to include the plans and memoranda regarding the planned removal action. (See Appendix A of the FMPC RI/FS CRP.) This will include the EE/CA report.
- A Notice of Availability (NOA) and brief description of the EE/CA report on the South Plume removal action will be placed in at least one major local newspaper (with a large local and area circulation). The NOA will also announce the associated public comment period.
- A brief description of the removal action will be placed in the next planned issue of the RI/FS Progress Report.
- A fact sheet regarding the removal action will be developed and mailed to groups and individuals identified in Appendix C and D of the FMPC RI/FS CRP.
- A period of 30 days will be established for the submission of public comments after the EE/CA is submitted to the U.S. EPA. An additional 15 days may be granted based upon a timely request of interested parties. Requests for such an extension may be made to:

Gerald W. Westerbeck, Site Manager  
 U. S. Department of Energy  
 Feed Materials Production Center  
 P. O. Box 398705  
 Cincinnati, OH 45239-8705  
 Telephone: 738-6655

All requests for extension must be made by the end of the initial 30 day comment period. The U.S. DOE will respond to any significant concerns by publishing a Responsiveness Summary.

Key U.S. DOE, U.S. DOE contractor and regulatory agency contacts are:

**DOE/DOE CONTRACTORS AT THE FMPC**

Contacts During Business Hours:

Andy Avel		513-738-6161
Department of Energy RI/FS Manager	(FAX)	513-738-6650
P. O. Box 398705		
Cincinnati, OH 45239-8705		

Susan Wolinsky		513-738-3100
RI/FS Community Relations Task Leader	(FAX)	513-738-3207
Advanced Sciences, Inc.		
P. O. Box 475		
Ross, OH 45061-0475		

Pete Kelley		513-738-6644
Public Affairs Manager	(FAX)	513-738-6968
Westinghouse Materials Company of Ohio		
P. O. Box 398704		
Cincinnati, OH 45239-8704		

Evening and Weekend Contact:

FMPC Security		513-738-6295
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**U.S. EPA**

U.S. EPA Hotline		800-621-8431
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Catherine McCord		312-886-1478
Remedial Project Manager	(FAX)	312-886-1489
U.S. EPA - Region 5, HR-12		
230 S. Dearborn Avenue		
Chicago, IL 60604		

Dan O'Riordan		312-886-4359
Superfund Community Relations Coordinator	(FAX)	312-353-1155
U.S. EPA - Region 5, HR-12		
230 S. Dearborn Avenue		
Chicago, IL 60604		

**OHIO EPA**

Ohio EPA, Southwest District Office  
40 South Main Street  
Dayton, OH 45402-2086  
513-285-6357  
(FAX) 513-285-6249

Graham Mitchell, Project Coordinator  
For questions about specific areas, contact the following staff in Dayton:

- Mike Starkey, Corrective Actions
- Rich Bendula, Groundwater
- Martyn Burt, Water Pollution Control
- Paul Pardi, Hazardous Waste
- Jim Crawford, Emergency Response
- Dan Riestenberg, Emergency Response

Al Frank, Community Relations  
Ohio EPA 1800 Watermark  
Columbus, OH 43266  
614-644-2160

**Departments of Health in Ohio**

Ohio Department of Health  
246 N. High Street  
Columbus, OH 43212  
800-523-4439  
614-481-3543

Robert Owen, Director  
Radiological Health Program  
1224 Kinnear Road  
Columbus, OH 43212  
614-644-2727

Hamilton County Health Department  
138 E. Court Street, Room 707  
Cincinnati, OH 45202  
513-632-8451

Butler County Health Department  
Administration Building  
130 High Street  
Hamilton, OH 45011  
513-887-3111

Alan Blevens, Chief of Environmental Services  
Patricia Burg, Director of Administration  
513-887-3120  
513-887-3098

5.0

TIMETABLE

	<u>Date(s)</u>
1. Establish Administrative Record File at all AR file locations for the records of this removal action	11/27/89
2. File of Notice of Availability (NOA) of Administrative Record File in at least one major local newspaper	4/20/90
3. File of NOA of EE/CA and associated public comment period in at least one major local newspaper	4/16/90
4. Add South Plume EE/CA to all AR file locations	4/20/90
5. Provide description of removal action in <u>RI/FS Progress Report</u>	5/90
6. Prepare fact sheet for special mailout	5/22/90
7. Provide 30-day period for public comment on the EE/CA	4/16/90-5/16/90
8. Decide whether to extend public comment period for 15 days	5/16/90
9. Develop responses to significant community concerns	5/17/90-5/31/90
10. Add the Responsiveness Summary to all AR file locations	6/1/90