209 G-000-306.8

REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS) DESCRIPTION OF CURRENT SITUATION - (RESPONSES TO EPAs' COMMENTS AND CHANGE PAGES)

11/01/1987

DOE-ORO
80
REPORT

USEPA

Department of Energy
Oak Ridge Operations
P. O. Box E
Oak Ridge, Tennessee 37831

NOV 20 1987

DOE 161-88

Ms Catherine McCord
Environmental Review Branch
Planning and Management Division
USEPA
Region V - 5HE-12
230 S. Dearborn Street
Chicago, Illinois 60604

REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS) DESCRIPTION OF CURRENT SITUATION

Dear Ms McCord:

Reference is made to the August 24 (DOE 322-87) letter to you, to provide a response package on USEPA and Ohio EPA comments relative to Task 1 - Description of Current Situation.

DOE has reviewed USEPA-5 and Ohio EPA comments on Task 1 of the RI/FS, and a comment response volume is provided in the three attachments to this letter which are described as follows:

- o Attachment 1 - Response to specific USEPA-5 comments.
- o Attachment 2 - Response to specific Ohio EPA comments.
- o Attachment 3 - Change pages to the Description of Current Situation document submitted to USEPA-5 on January 30, 1987.

A revised RI/FS Description of Current Situation incorporating all agreed-upon changes will be issued within 45 days of USEPA-5 approval of the Description of Current Situation.

We look forward to your approval of the RI/FS Work Plan.

Sincerely,

James A. Reafsnyder
Site Manager

DP-84:Reafsnyder

Attachments (3):As stated

cc w/atts.

Bill Franz, USEPA-5
Amy Blumberg, USEPA-5
Graham Mitchell, OEPA-Dayton
Rich Bendula, OEPA-Dayton
Margaret Wilson, SE-31, ORO
Bob Sleeman, ER-121, ORO
Bob Conner, WMCO
Dick Wilde, ASI

REMEDIAL INVESTIGATION AND FEASIBILITY STUDY, FEED MATERIALS PRODUCTION CENTER Fernald, Ohio

RESPONSES TO TASK 1 REPORT: DESCRIPTION OF CURRENT SITUATION

EPA Comments

OEPA Comments

Change Pages

U.S. DEPARTMENT OF ENERGY
OAK RIDGE OPERATIONS

REMEDIAL INVESTIGATION
AND
FEASIBILITY STUDY
FEED MATERIALS PRODUCTION CENTER
FERNALD, OHIO

U.S. DEPARTMENT OF ENERGY RESPONSES TO THE U.S. ENVIRONMENTAL PROTECTION AGENCY COMMENTS ON THE FMPC DESCRIPTION OF CURRENT SITUATION

NOVEMBER 1987

U.S. DEPARTMENT OF ENERGY RESPONSES TO THE
U.S. ENVIRONMENTAL PROTECTION AGENCY COMMENTS
ON THE FMPC DESCRIPTION OF CURRENT SITUATION

U. S. EPA COMMENTS TO THE TASK 1 REPORT: DESCRIPTION OF CURRENT SITUATION

COMMENT:

SECTION/FIGURE: Section 1.1 **PAGE:** 1-1
Should specify that studies conducted at the waste storage area will be integrated into the final FS report for the site.

RESPONSE:
The Characterization Investigation Study (CIS), conducted at the waste storage area, was initiated to support the EIS and implement DOE order 5480.14. The relationship between the CIS and the subsequent RI/FS was not, therefore, fully clarified at the time of Work Plan submittal. An attempt was made to integrate the two studies by including a sampling plan for the waste storage areas (which essentially matched the scope of the CIS) in Section 4.2 of the technical approach to the RI. This inclusion of the CIS as an RI/FS activity negated any need to independently relate the CIS to the FS.

Subsequent to Work Plan submittal, the CIS was viewed as a separate study that would simply provide an extended data base for use in the RI/FS. The revised scope of the RI, as detailed in the sampling plan of Volume I, was consequently prepared with the objective of augmenting the CIS such that all RI/FS data needs are satisfied. This latter relationship between the CIS and the RI/FS has been described in the introduction to Volume I: Sampling Plan. Individual additions to the waste storage area CIS (e.g., monitoring wells in areas contiguous to the pits) can be found in the individual sampling plans.

RESOLUTION:
No change in text is required for this response.

COMMENT:

SECTION/FIGURE: Section 1.2 **PAGE:** 1-2
Should explain how DOE arrived at the conclusion that excessive emissions from Plant 9 operations have caused no discernible impacts off-site.

RESPONSE:
The release incident, between September and December 1984, at the Plant 9 Dust Collector was determined to have no discernible impacts off-site in the Investigation of

September-December 1984 Plant 9 Excessive Uranium Emissions, February 6, 1985, FMPC, DOE, ORO 0855, provided to U. S. EPA. Air monitoring stations, located at the FMPC perimeter did not show evidence of elevated uranium concentrations at the time of the incident. Various environmental monitoring studies performed after the release incident showed no discernible off-site environmental impacts.

RESOLUTION:

The above response will be incorporated into Section 1.2 of the Task 1 Report: Description of Current Situation.

COMMENT:

SECTION/FIGURE: Section 1.2 **PAGE:** 1-3

Should include a discussion on whether the contaminant concentrations in off-site wells are below U.S. EPA proposed criteria.

RESPONSE:

The following statement will be added to Section 1.2, Page 1-3:

> "...the maximum uranium levels observed in these wells is below the proposed DOE derived concentration standard as in DOE order 5480.XX of 0.81 mg/l total uranium in ground water, but above the proposed U. S. EPA drinking water standard of 0.1 mg/l total uranium."

A comparison between DOE and promulgated U. S. EPA standards will be addressed in the Endangerment Assessment section and the Radiological Risk Assessment section of the RI.

RESOLUTION:

The above response will be incorporated into Section 1.2 of the Task 1 Report: Description of Current Situation.

COMMENT:

SECTION/FIGURE: Section 1.3 **PAGE:** 1-3

Mentions that DOE's specific objective of the RI is to predict future impacts with and without remedial action in lieu of future observations. We would appreciate an explanation of this statement as we find disagreement with its intent.

RESPONSE:

The fourth bullet of Section 1.3 establishes that one objective of the RI is to "Develop, validate, and apply

various site models..." The reference to the prediction of future impacts in lieu of field observations is meant to reflect an important purpose of the overall modeling efforts, and is not meant as an objective of the RI itself. In fact, the application of the models for predicting future impacts for all actions other than the "no-action" will be performed as part of the FS.

RESOLUTION:
No change in text will be required for this response.

COMMENT:

SECTION/FIGURE: Section 2.2.7.2 **PAGE:** 2-18
States the Dames and Moore conclusion that the most likely transport pathway by which uranium reaches the off-site wells is from contaminated surface water runoff to Paddy's Run. They further concluded that the uranium is most likely not being transported off-site from the waste pit storage area via the ground water. The ground water sampling study must determine whether these assumptions are correct or not. Both pathways are viable. We should ensure that all studies at DOE are thoroughly integrated to make this verification.

RESPONSE:
The conclusion of the Dames and Moore report was a starting point of the RI and provided one basis for the Work Plan. It was augmented with other historical and regional ground water studies. The RI will not be limited to the specific pathway postulated in the Dames and Moore study; all the pathways will be accounted for in the planned study. Refer, for example, to Section 1.4 in the Work Plan for clarification of these issues.

RESOLUTION:
No change in text is required for this response.

COMMENT:

SECTION/FIGURE: Section 2.3 and Figure 2.13 **PAGE:** 2-25 and 2-26
Both specify that the Knollman grazing areas on FMPC are located on areas with high uranium contamination in the soils. However, DOE does not appear to be proposing to conduct further dairy and beef studies of cows grazing in these areas. This must be rectified.

RESPONSE:
No additional sampling and analysis, other than that of the ongoing EMR, is planned for dairy products. Such sampling

and analysis results are a part of the historical data base and will be evaluated for their importance in the environmental pathways analysis. Only milk has been studied as an analysis of milk is indicative of beef contamination.

RESOLUTION:
No change in text is required for this response.

COMMENT:

SECTION/FIGURE: Section 3.1 **PAGE:** 3-1
Should identify all waste generation and disposal practices conducted by the National Lead Company of Ohio (NLO) since 1951. Any other areas not mentioned in this report that were used for disposal by NLO will also need to be identified.

RESPONSE:
The waste generation locations are identified in Table 3.1. Refer to sections 3.6.8 through 3.6.14 and Sections 3.7.1 through 3.7.5 of the Task 1 Report: Description of Current Situation for details of disposal practices used at the FMPC. Any other areas suspect of containing waste will be investigated and the results combined with continued efforts to analyze historical data to determine any previous disposal practices.

RESOLUTION:
No change in text is required for this response.

COMMENT:

SECTION/FIGURE: Section 3.1 **PAGE:** 3-5
Leaves us to question whether DOE has maintained manifests for all hazardous wastes that have been shipped off-site. These procedures are relevant and should be followed.

RESPONSE:
Manifests are maintained at the FMPC in compliance with RCRA and DOT standards.

RESOLUTION:
No change in text is required for this response.

COMMENT:

SECTION/FIGURE: Section 3.1 **PAGE:** 3-7
Should identify the methods of disposal of all the waste streams identified in Table 3.1.

RESPONSE:
Table 3.1 has been revised to include the current disposition of each waste stream.

RESOLUTION:
The above response will be incorporated into Table 3.1 of the Task 1 Report: Description of Current Situation.

COMMENT:

SECTION/FIGURE: Section 3.4.1 **PAGE:** 3-20
Leaves us to question whether DOE will propose to investigate the integrity of the Clear Well and whether contamination has occurred there. An analysis is recommended.

RESPONSE:
Detailed sampling of the water and sediments in the Clear Well was performed as part of the CIS. An investigation of the Clear Well is within the scope of the FMPC sitewide RI/FS as defined in the Task 2 Work Plan submittal.

RESOLUTION:
No change in text is required for this response.

COMMENT:

SECTION/FIGURE: Section 3.5 **PAGE:** 3-25
Is confusing as to the number and years of operation of the different incinerators at the facility. DOE must clarify the location of the deactivated solid waste incinerator that operated prior to 1979 and the location of the oil burner which is now deactivated, which DOE proposed to study. DOE must further clarify which solid waste incinerator and oil burner are the subject of the pending Air Program action. The dates of operation of the incinerator and oil burner that are the subject of the pending Air Program action should be identified. In addition, DOE should identify the hazardous substances burned at each of these facilities and the dates such materials were burned.

RESPONSE:
The FMPC has six inactive incinerator facilities. A deactivated solid waste incinerator is located adjacent to the FMPC Sanitary Sewage Treatment Plant. The years of operation and typical substances burned at the facility are described in Section 3.5.2 of the Task 1 Report: Description of Current Situation.

A deactivated oil burner is located adjacent to the FMPC Boiler Plant. This oil burner has, in a large part, been disassembled. The years of operation and typical substances burned at the facility are described in Section 3.5.4 of the Task 1 Report: Description of Current Situation.

A Kelley solid waste incinerator, which is currently on standby status, is located adjacent to the FMPC Refinery (Plant 2/3). The Kelley incinerator was operated from 1980 to May of 1986 at which time operations were discontinued by DOE/WMCO. The Kelley solid waste incinerator was issued a Permit To Operate by the OEPA. Typical substances burned at the incinerator included combustible office refuse, burnable process litter and combustible cafeteria waste. No hazardous materials are recorded as being incineratored at this facility. The Kelley incinerator was a subject of the recent Air Program Action.

The Trane oil burner, which is currently on standby status, is located adjacent to the FMPC refinery (Plant 2/3). The Trane oil burner was operated from 1982 until May 1986, at which time operations were discontinued by DOE/WMCO. As defined in the OEPA Permit To Install application, waste oils containing minor quantities of degreasing solvents and other solvents were typically incinerated at the facility. The Trane oil burner was a subject of the recent Air Program action.

A deactivated graphite burner is located adjacent to the FMPC Boiler Plant. The years of operation and typical materials burned at this facility are addressed in Section 3.5.3 of the Task 1 Report: Description of Current Situation.

A classified materials incinerator which is currently on standby status, is located adjacent to the FMPC security offices. The incinerator was used to incinerate classified paper wastes. Operations at this incinator were initiated in the early 1950's and continued until 1986.

The Trane oil burner is being investigated as part of a RCRA closure. The environmental impacts associated with the deactivated oil burner, solid waste incinerator and graphite burner will be investigated as part of the RI/FS.

RESOLUTION:

The above response will be incorporated into Sections 3.5, 3.5.5, and 3.5.6 of the Task 1 Report: Description of Current Situation.

COMMENT:

SECTION/FIGURE: Section 3.6 **PAGE:** 3-27
Mentions the location of the Southfield area, however it is not identified in Figure 2.2. This site should be shown in Figure 2.2.

RESPONSE:
The location of the Southfield area will be shown on a revised site map, Figure 2.2

RESOLUTION:
The above response will be incorporated into Figure 2.2 of the Task 1 Report: Description of Current Situation.

COMMENT:

SECTION/FIGURE: Section 3.6.4 **PAGE:** 3-28
Does not mention how drums are stacked such that DOE can make the determination that they are in good condition. If the drums are stacked too high and too close together to make this determination, DOE is requested to revise this statement accordingly.

RESPONSE:
The majority of the stored drums at the FMPC may be inspected on three sides. Inspection of drums and storage areas are conducted on a weekly basis. Drum storage pads are inspected routinely for drum spills and leakages. This inspection schedule is sufficient to address the relative hazards of these materials. All liquid hazardous material or drums and solid materials which are in a soluble form are stored in a manner which provides a secondary containment system.

RESOLUTION:
No change in text is required for this response.

COMMENT:

SECTION/FIGURE: Table 3.2 **PAGE:** 3-33
Specifies the FMPC Material code 129 as having a "high uranium content." We would appreciate an explanation on the requirements of this classification.

FMPC Material Code 135 should specify if this is a classification for uranium that is greater than 20% assay. We would appreciate and exact assay number and information of whether this is still less than a fissionable quantity.

RESPONSE:

Code 129 primarily specifies break-out from the castings of derbies, and may contain as much as 70% total uranium by weight. Code 135 specifies solids removed from the dust collectors located at various sites at the FMPC. While all these materials are analyzed, their assay may range from 20% to as high as 70% total uranium, depending on the original location of the dust collector. The assay of a material is a determination of the percentage of all isotopes of uranium in the material, measured by weight. The subject materials are of insufficient quality to be fissile. The material does not contain U-235 in quantities exceeding 1.2 percent by weight.

RESOLUTION:

No change in text is required for this response.

COMMENT:

SECTION/FIGURE: Section 3.6.8 **PAGE:** 3-36

Describes past waste disposal activities. DOE should provide U. S. EPA with the sample results of all groundwater samples taken in the waste pit storage area, particularly during the time that shallow groundwater was pumped as described on page 5-9. The shallow groundwater pumping scheme took place in the early 1960's. Data results and the reasons for the pumping in the early 1960's must be reported.

RESPONSE:

The shallow ground water pumping scheme was initiated to control high levels of nitrates, sulfates, and chlorides that were being found in the area downgradient of the Waste Pits. The scheme was designed to lower the water table such that it was no longer in contact with the Waste Pits. This data has been presented to the U. S. EPA in the Aquifer Contamination Control Reports to the Manager, 1965 through 1985.

RESOLUTION:

No change in text is required for this response.

COMMENT:

SECTION/FIGURE: Section 3.4 **PAGE:** 3-38 and 3-39

Offer only uranium, uranium-235 and thorium quantities for the facilities. Other radionuclides may be present at these facilities, such as the radium content at the K-65 silos. Their quantities should be recorded.

Data in this table indicates that, for K-65 Silos 1 and 2 at least, this material should be handled in accordance with requirements for transuranic wastes. U. S. EPA Office of Radiation Programs, on January 2, 1987 offered a judgement (Attachment 4) that, for K-65 wastes stored at the Niagara Falls Storage Site (NFSS), the concentrations were sufficiently high that

(1) the K-65 residues should be maintained isolated from other wastes at NFSS;
(2) the provisions of Subpart A of 40 CFR 191 should be satisfied by the interim storage site;
(3) the K-65 wastes should be disposed of in conformance with Subpart B of 40 CFR 191 as soon as a suitable repository is available.

The NFSS K-65 wastes had an average peak concentration of 520 nanocuries per gram (nCi/gm). FMPC K-65 wastes appear to have an average concentration of about 1600 nCi/gm (assuming 2 gm/cm^3 for 17600 curies in 7200 yd3). 40 CFR 191.03 specifies standards of 25 millirem to the whole body, 75 millirem to the thyroid and 25 millirem to any other critical organ which, therefore, are applicable to emissions of radon. Radon (both Radon-222 and Radon 220) emissions will have to be controlled to meet those dose limits. A determination should be made for all stored wastes, with special attention to thorium wastes, as to whether or not the peak concentrations meet or approach the 100 nCi/gm criteria for transuranic wastes.

RESPONSE:

A July 10, 1987 letter, W. Bibb, DOE-ORO to V. Adamkus, U. S. EPA Region 5, addressed the issue of "Applicability of 40 CFR Part 191 to the FMPC". A commitment was made as part of this correspondence to perform dispersion modeling calculations on the K-65 silos and thorium-containing structures to determine if the FMPC was in compliance with the 25 mrem/75 mrem criteria presented in 40 CFR 191. This modeling was contingent upon agreements being reached on the technical assumptions required to execute the AIRDOSE-EPA and RAD-RISK models. During the July 30, 1987 meeting with USEPA-5 in Chicago on the subject of NESHAPS and Dose Modeling at the FMPC, substantial agreement was reached with U. S. EPA on these assumptions. The FMPC is therefore proceeding with dispersion modeling of the K-65 silos/thorium containing structures as defined in the July 10 letter.

RESOLUTION:

No change in text is required for this response.

209

COMMENT:

SECTION/FIGURE: Section 3.6.8 **PAGE:** 3-41
Should include information of known present problems with the waste storage silos, including any continuing problems with the structural support and radon releases from the silos. The information presented here seems to indicate that there are no continuing problems at the storage sites. In addition, it is recommended that DOE identify the boundaries of the burn pit area as part of the RI study.

RESPONSE:
The subject of the radon releases and the structural support problems are covered in further detail in sections 5.1.9 and 5.2.1 of the Task 1 Report: Description of Current Situation.

Additionally, the boundaries of the burn pit were investigated in the CIS report, 1987, Geophysical Survey, Volume 1, submitted to EPA October 23, 1987.

RESOLUTION:
No change in text is required for this response.

COMMENT:

SECTION/FIGURE: Section 3.6.10 **PAGE:** 3-46
Should include analysis of the effects on the milk and beef from cows grazing in the Knollman acres as soil is contaminated with radionuclides. In addition, it may be beneficial to analyze for polychlorinated biphenyl (PCB) content, the oils that were spread over the fly ash to control dust.

RESPONSE:
The results of the milk samples are detailed in Section 3.8.4.2 of the Task 1 Report: Description of Current Situation. Beef will not be analyzed as an analysis of milk is indicative of beef contamination. The inactive fly ash pile and possible past use of PCB contaminated oils were investigated as part of the CIS. Composite samples collected from the inactive pile were analyzed for the complete Hazardous Substance List, including PCB's.

RESOLUTION:
No change in text is required for this response.

COMMENT:

SECTION/FIGURE: Section 3.7.1 **PAGE:** 3-47
Should describe the interim remedial measures that have been made on the current inventories of thorium-bearing compounds. Any waste materials awaiting recycling or recovery must be stored in compliance with RCRA pursuant to 40 CFR Part 261.6 and in compliance with 40 CFR 191 high-level and transuranic waste standards.

RESPONSE:
Remedial measures developed as part of the Federal Facilities Compliance Agreement (FFCA) are covered in detail in the revised 30 day deliverable, submitted to EPA January 23, 1987, FMPC Response to Item B of Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Section, FFCA.

The actions of these plans and procedure are intended to protect the public health and safety of off-site and on-site personnel, limit or reduce any possible insult to the environment, and control and limit any radioactive releases.

The thorium compounds are not classified as a waste or waste stream. They are identified and accounted for as materials of commercial value that are being placed in an approved long term retrievable storage facility for their later extraction and processing as the need for these materials becomes evident.

RESOLUTION:
No change in text will be required for this response.

COMMENT:

SECTION/FIGURE: Section 3.7.3 **PAGE:** 3-47
States that "thorium is currently not classified as waste." Thorium constitutes a hazardous substance and is therefore a proper subject of the RI.

RESPONSE:
Thorium stored on the FMPC is not currently classified as waste materials. This subject is covered in greater detail in the previous response.

Samples collected from the FMPC waste storage facilities and adjacent areas during the CIS were analyzed for isotopic thorium. Selective samples collected during the RI/FS will also be analyzed for thorium content. The impact associated with the identified levels of thorium will be evaluated as part of the RI risk assessment.

209

RESOLUTION:
No change in text is required for this response.

COMMENT:

SECTION/FIGURE: Table 3.7 **PAGE:** 3-48
Does not state anything about the contents of the 2,448 drums. This information is essential knowledge.

RESPONSE:
The 2,448 drums referred to are located in the miscellaneous table since an exact definition of each drum would require a separate entry for each of the 2,448 drums. The contents do not fit into a precise category that may be tabulated. Typical substance in these drums are gloves and coveralls. The subject drums are classified as low level radioactive waste materials. The drums do not contain mixed wastes. A representative sampling program to verify the RCRA classification of these materials and the materials at the Plant 1 pad is ongoing at the FMPC.

RESOLUTION:
No change in text is required for this response.

COMMENT:

SECTION/FIGURE: Table 3.9 **PAGE:** 3-55
Leaves us with a question as to whether contaminated solvents that are stored in the pilot plant are stored in compliance with RCRA. This question needs to be resolved.

RESPONSE:
The tanks referred to are diked, elevated and are inspected daily, with operating records and inspection logs maintained. The tanks meet 40 CFR 265 Subpart J requirements for RCRA waste storage tanks, and were the subject of an EPA inspection during the week of July 14.

RESOLUTION:
No change in text is required for this response.

COMMENT:

SECTION/FIGURE: Table 3.10 **PAGE:** 3-56
States that 35.7 metric tons of high grade thorium residues are stored in Building 67 and West Building 65, and 0.2 metric tons of low grade residues are stored in Building 67. For residues with greater than 30% thorium, an estimate of

how great the assay is will be necessary information and if there is any potential for fission of this material.

RESPONSE:

The 35.7 metric tons of high grade thorium is stored in drums in Building 67 and West Building 65. The percent thorium in each of these drums is highly variable, ranging from 30% to 100% thorium by weight. An approximate average of the thorium content is 75% by weight. Thorium is not a fissile material.

RESOLUTION:

The above response will be incorporated into Table 3.10 of the Task 1 Report: Description of Current Situation.

COMMENT:

SECTION/FIGURE: Section 3.8.1.2 **PAGE:** 3-61

States that "radionuclides in surface water on the downgradient off-site locations are substantially reduced." This statement should be further qualified to identify the distance between the sampling locations that were used in order to support this comment.

RESPONSE:

Sampling points W1, W3, and W4 are on the Great Miami River. Sampling points W3 and W4 are approximately 10 and 16 miles downstream of Site W1, respectively. Sampling point W6 is on the storm sewer outfall ditch, about 2600 feet above the confluence with Paddy's Run, and sampling points W5, W9, W10, W11, W7, and W8 are on Paddy's Run. The distances of sampling points W7 through W11 are approximately 5000, 8000, 11000, 12000, and 17000 feet below sampling point W5, respectively (Figure 3.7).

RESOLUTION:

The above response will be incorporated into Section 3.8.1.2 of the Task 1 Report: Description of Current Situation.

COMMENT:

SECTION/FIGURE: Section 3.8.2.1 **PAGE:** 3-61

Must describe the location and the construction of the "numerous" other wells in the vicinity of the FMPC that have been investigated over various times. As part of the Task 1 Report, DOE should be assembling all of this information and reporting it to U. S. EPA. This is particularly true, if DOE intends to rely upon the information obtained from the "numerous" other wells.

209

RESPONSE:

The subject paragraph in Section 3.8.2.1 is inaccurate. The on-site wells are monitored monthly for total uranium and quarterly for pH, alpha, beta, total uranium, chlorides, NO3, NO3-N, and SO4. These wells are shown on Figure 3.8.

Off-site wells are monitored monthly for total uranium and pH and annually for 17 different metals. The wells are shown on Figure 3.9.

The numerous other wells referred to are privately owned wells and are monitored on an owners request basis only. The numerous other wells are not part of the ongoing monitoring well program and are not shown on any map. These wells are not intended for use in the RI groundwater sampling program.

RESOLUTION:

The above response will be incorporated into Section 3.8.2.1 of the Task 1 Report: Description of Current Situation.

COMMENT:

SECTION/FIGURE: Table 3.13 **PAGE:** 3-62
Table 3.14 3-63

Do not offer the source of the presented data. Assuming this is 1985 data, with uranium-238 discharges at W-2 running at 54% of FMPC guideline, then we can reasonably assume discharges to the Great Miami River in the past were higher. This substantiates the need to thoroughly examine this rivers environs. In addition, the analytical results reported throughout the report indicate that DOE selected different radionuclides to analyze at different periods of time, at different locations, and for different media. The sampling program should apply consistent analytical parameters for the different media, or supply a justification for selecting among the different radionuclides used for analysis.

RESPONSE:

The effects of the uranium-238 discharges at W-2 are studied in the Hydrogeologic Study of FMPC Discharge to the Great Miami River, ASI, 1987. In addition, a structured sampling program has been presented in the Work Plan for the RI in Section 4.2.1.5.

RESOLUTION:

No change in text is required for this response.

COMMENT:

SECTION/FIGURE: Table 3.14 **PAGE:** 3-64
Footnote (b) specifies a non-uniform collection schedule which makes comparisons extremely difficult and/or impossible. The schedules must be consistent.

RESPONSE:
Collection schedules follow existing Environmental Monitoring Program schedules. The data is not available in any other form. The applicability of this data to the RI will be evaluated.

RESOLUTION:
No change in text is required for this response.

COMMENT:

SECTION/FIGURE: Figure 3.8 **PAGE:** 3-67
Displays that no ground water monitoring wells are located to the southeast of the FMPC and only one is located to the east. Additional wells in both areas are recommended.

RESPONSE:
The Ground Water Sampling Plan (including applicable change pages resulting from U. S. EPA comments), submitted as part of Volume I: Sampling Plan and the revised Work Plan define the proposed monitoring well network proposed under the RI. The proposed monitoring network addresses this concern.

RESOLUTION:
No change in text is required for this response.

COMMENT:

SECTION/FIGURE: Figure 3-9 **PAGE:** 3-68
Depicts monitoring well clusters upstream of the FMPC discharge pipe on the Great Miami River, but none are present between the discharge and Paddy's Run (including near New Baltimore). Additional wells are recommended between the discharge and Paddy's Run.

Section 3.8.2.1, Page 3-61 had referred to Figure 3.9 by stating wells were used at various times. The report should state if all wells are potentially usable for the RI study.

This Task 1 Report should include information on the construction of off-site monitoring wells depicted in Figure 3.9 and any analytical results obtained from these off-site wells.

209

RESPONSE:

Previous comments and responses have addressed these same concerns. In summary: 1) Both the updated Ground Water Sampling Plan (revised to include change pages resultant from responses to EPA comments) and the addition of off-site monitoring programs address this concern; 2) Numerous wells at various times is inaccurate as identified in the response to the comment on Section 3.8.2.1, these wells will not be used in the RI; and 3) Information on the construction of off-site monitoring wells was transmitted to EPA during the Technical Information Exchange meeting of October 6, 1987.

RESOLUTION:

No change in text is required for this response.

COMMENT:

SECTION/FIGURE: Section 3.8.2.2 **PAGE:** 3-69

Discusses the 41 site monitoring wells. A site map should be included to clarify which "off-site" and "on-site" wells will make up the 41 well monitoring system.

RESPONSE:

The 41 wells are identified in Figure 3.8. There are 35 on-site wells and 6 off-site wells.

RESOLUTION:

The above response will be incorporated into Section 3.8.2.2 of the Task 1 Report: Description of Current Situation.

COMMENT:

SECTION/FIGURE: Table 3.18 **PAGE:** 3-72

Should compare sampling results to U. S. EPA proposed or accepted criteria, standards or guidelines. Sampling results of wells shown in Figure 3.8 should be listed in this table.

RESPONSE:

These results are compared to DOE derived concentration standards for uranium in drinking water as proposed in DOE Order 5480.XX. A comparison between DOE and promulgated U. S. EPA standards will be addressed in the Endangerment Assessment section and the Radiological Risk Assessment section of the RI.

RESOLUTION:

No change in text is required for this response.

COMMENT:

SECTION/FIGURE: Table 3.19 **PAGE:** 3-73
Does not mention the time frame in which the data was collected. It is not a reasonable comparison to use the FMPC uranium in water guideline for this well water data. At least two sampling points would be in excess of EPA proposed standards.

RESPONSE:
This data was collected in 1985 and reported in 1986. These results are compared to proposed DOE derived concentration standards for uranium in drinking water. A comparison between DOE and promulgated U. S. EPA standards will be addressed in the Endangerment Assessment section and the Radiological Risk Assessment section of the RI.

RESOLUTION:
No change in text is required for this response.

COMMENT:

SECTION/FIGURE: Section 3.8.2.2 **PAGE:** 3-74
Is not tabulated information in the document. An explanation of the statement under the Till Groundwater Quality headline as to the amount of "excess from U. S. EPA drinking water standards" that has been detected in wells would be beneficial knowledge. In addition, the second bullet contains a double negative. This sentence needs to be corrected.

Under the Sand and Gravel Aquifer Water Quality - Production Area, the second bullet needs to display a consistent unit of pCi/l.

Sand and Gravel Aquifer Water Quality - Outside Production Area should quantitatively compare the background water samples for manganese and/or phenols. The report simply concludes that the background was high in these two parameters, but fails to indicate whether there was any increase.

The report concludes that "generally widespread VOC, pesticides, herbicides and heavy metal contamination has not been present in ground water at the FMPC." The report should indicate whether localized areas of these contaminants have been discovered.

RESPONSE:
The comment pertaining to the Till Groundwater Quality was

addressed in the Technical Information Exchange Meeting of October 6, 1987.

The identified first bullet on page 3-74 is meant to state that no radionuclides above background levels have been detected.

Utilizing the conversion factor given in Health physics, Volume 48 No. 5, Page 601-633, 1985, the levels above background identified in the second bullet on page 3-74 were 0.74 pCi/l to 21.44 pCi/l.

The subject Sand and Gravel Aquifer data for phenols and Manganese was collected as part of the 4 rounds of RCRA ground water monitoring. No consistent trend was evident in the levels of manganese and phenols identified during the monitoring program, nor were VOC's, pesticides, or herbicides of measurable amounts detected with any consistency. Statistical comparisons between indicator parameters will be completed as part of the report on round 5 of RCRA monitoring.

RESOLUTION:
The above response will be incorporated into Section 3.8.2.2 of the Task 1 Report: Description of Current Situation.

COMMENT:

SECTION/FIGURE: Section 3.8.3.1 **PAGE:** 3-76
Should identify by name or site symbol the existing and new air monitoring sites.

RESPONSE:
The nine on-site air monitoring stations and the five off-site air monitoring stations are shown in the new Figure 3.10. The five existing off-site monitoring sites are identified in Figure 3.10 as the OS1 through OS5.

RESOLUTION:
The above response will be incorporated into Section 3.8.3.1, and Figures 3.10 of the Task 1 Report: Description of Current Situation. Figure 3.11 will be deleted form the text.

COMMENT:

SECTION/FIGURE: Section 3.8.3.1 **PAGE:** 3-79
Conveys the schedule and device for thoron sampling. The U. S. EPA, Region V has found alpha track monitors incapable of

giving meaningful results for thoron (refer to 1985 Environmental monitoring Report, page 18)

RESPONSE:

Continuous environmental thoron monitoring can be accomplished by the "two-filter" method using Terradex Track-Etch detectors (Health Physics, 39, p. 957, 1980 and Health Physics, 40, p. 693, 1981). This is the method currently in use at the FMPC. The 1985 EMR, page 18 says nothing about thoron. Track etch detectors are a widely-accepted method for obtaining accurate measurements of radon concentrations (FMPC response to Item B of CERCLA Section FFCA, 30 day deliverable, DOE to EPA, August 17, 1986)

RESOLUTION:

No change in text is required for this response.

COMMENT:

SECTION/FIGURE: Section 3.8.3.2 **PAGE:** 3-79

Specifies compliance with Federal and State 24-hour total suspended particulate standards. However, it is not stated whether all FMPC air monitors met EPA siting criteria in 40 CFR 58. During a site visit, it became apparent that a western sample site near the Clear Well was in a gully sheltered by trees.

RESPONSE:

The FMPC air monitoring stations are presently slightly below the 2 meter height specified in EPA siting criteria. All stations will be brought into compliance with EPA siting criteria as per 40 CFR 58.

The device referred to is a Passive Environmental Radon Monitor (PERM). The location was deemed an acceptable PERM location by Mr. Franz of U.S. EPA on June 5, 1987.

RESOLUTION:

No change in text is required for this response.

COMMENT:

SECTION/FIGURE: Table 3.22 **PAGE:** 3-84

Footnote (a) does not clearly identify which concentration in the table correlates with which particular Sampling Station. This problem needs to be resolved.

RESPONSE:
The minimum concentrations for each year and the station at which they occurred will be included in Table 3.22.

RESOLUTION:
The above response will be incorporated into Table 3.22 of the Task 1 Report: Description of Current Situation.

COMMENT:

SECTION/FIGURE: Section 3.8.3.2 **PAGE:** 3-85
Must clarify if locations 1-9 are also known as locations BS1 - BS9. In addition, the designations for air monitoring sites in Table 3.22 and in this section do not agree with those on Figure 3.10.

We can only assume that the reason for high readings at sampler BS3 is due to its location near the incinerator. However, it is unclear as to why BS2 and BS8 readings are not as high since they are located between high reading sites BS1 and BS3. The cause for this discrepancy must be investigated.

RESPONSE:
Monitors at locations 1-9 are also known as BS1 - BS9, and are currently known as AM1 - AM9.

The reason that AM2 and AM8 readings are not as high as those of AM1 and AM3 are twofold: (1) AM8 was not in operation until 1985, and (2) that both AM2 and AM8 are farther from the site than AM1 and AM3, especially AM2.

RESOLUTION:
No change in text is required for this response.

COMMENT:

SECTION/FIGURE: Table 3.23 **PAGE:** 3-87
Footnote (a) indicates that comparisons were not consistently made against the same standard. Each applicable standard should be identified.

RESPONSE:
The standards have changed twice during the period shown and three different standards are referenced separately in Table 3.23.

RESOLUTION:
The above response will be incorporated into Table 3.23 of the Task 1 Report: Description of Current Situation.

COMMENT:

SECTION/FIGURE: Section 3.8.4.1 **PAGE:** 3-93
Should be changed to reference Figure 2.12, not Figure 2.11. More information could have been obtained from the Biological Resources Monitoring Program, if gamma scans were performed first and subsequently followed by further analyses for specific radionuclides present. In addition, the report should identify the locations where milk samples were taken and the soil concentrations of the acres that were grazed by the sampled cows.

RESPONSE:
The correct figure reference is Figure 2.12.

Historically, studies in the region of the FMPC have looked primarily for uranium since this is the most likely substance to be found. Gamma scans at these locations are not part of the Environmental Monitoring Program (EMP).

The milk samples were taken from cattle which graze on or adjacent to the FMPC land. Control samples were taken from a remote site in northern Kentucky approximately 30 km south-east of the FMPC.

Soil samples results for the FMPC areas are available in Task 1 Report: Description of Current Situation Report. No soil samples are available for the Kentucky location.

RESOLUTION:
The above response will be incorporated into Section 3.8.4.1 of the Task 1 Report: Description of Current Situation.

COMMENT:

SECTION/FIGURE: Section 3.8.4.2 **PAGE:** 3-93
Should not only focus on uranium in the soil analyses.

This section makes a citation to Figure 2.9 which is an incorrect cite. The cite should be to Figure 2.12

RESPONSE:
The identified data in Section 3.8.4.2 was collected as part of the FMPC Environmental Monitoring Program. No other data exists as part of this program.

The reference to Figure 2.9 is incorrect, the correct Figure is 2.12.

RESOLUTION:

The above response will be incorporated into Section 3.8.4.2 of the Task 1 Report: Description of Current Situation.

COMMENT:

SECTION/FIGURE: Table 3.28 **PAGE:** 3-94

Display sampling points 7, 10, and 27 to be close together as are points 13 and 26. We question why these are not grouped together with the results of sampling efforts. For the RI, soil and vegetation sampling points must be added at high uranium concentration sites identified in the 1985 Environmental Report (Figure 10, page 25).

RESPONSE:

The soil sampling program that was conducted as part of the EMP was designed to characterize soil concentrations in the area adjacent to the FMPC. Each sample was analyzed separately and no attempt was made to group samples. As part of the RI, a radiation measurements program will be conducted along an established grid system. This grid system will incorporate the areas identified in the 1985 EMR as having high uranium content. Additionally, biased soil sampling will take place at all anomalous areas of direct radiation as indicated by the radiation measurements program.

RESOLUTION:

No change in text is required for this response.

COMMENT:

SECTION/FIGURE: Table 3.29 **PAGE:** 3-95

Should include parallel grass and soil samples at locations 22-29.

RESPONSE:

The results tabulated in tables 3.28 and 3.29 are the results of two different studies. The collection points generally do not correspond. The study tabulated in Table 3.29 was the only study to compare soil and vegetation samples.

RESOLUTION:

No change in text is required for this response.

COMMENT:

SECTION/FIGURE: Section 3.8.4.2 and Table 3.30 **PAGE:** 3-97 and 96

Raises an uncertainty in the usage of potatoes as an indicator of foodstock contamination. This problem should be evaluated. Table 3.30 lists the highest concentration of uranium in potatoes as 1.22 pCi/gm. However, the 1981 study by Batelle uses 0.016 mg/gm as an average uranium concentration in vegetables. This converts to 10.8 pCi/gm, an order of magnitude greater than the potato level. Moreover, this is an average level while the potato concentration was at peak level. It must be assumed that vegetables with uranium concentrations greater than 0.016 mg/gm were measured.

RESPONSE:

The use of potatoes as an indicator of uranium uptake has been evaluated. Samples of other types of garden produce have been collected and analyzed as reported in the 1986 EMR.

RESOLUTION:

No change in text is required for this response.

COMMENT:

SECTION/FIGURE: Section 3.8.4.2 **PAGE:** 3-97

Should identify the areas where milk samples were taken.

Consumption of canned vegetables is only one of several pathways of exposure to persons living near FMPC. The RI report must assess the cumulative exposure from various pathways.

DOE should describe the basis for its analyzing certain samples for parameters other than uranium, and why other samples were only analyzed for uranium.

RESPONSE:

The areas where the milk samples were taken are identified in the footnotes on table 3.31.

The Section 3.6 of the RI Work Plan will assess the cumulative exposure from the various pathways.

Many of the samples are analyzed for fluoride, in addition to uranium, as Hydrogen Fluoride (HF) is used in many of the FMPC processes. Many samples are not analyzed for parameters other than uranium due to the limited sample size.

RESOLUTION:
No change in text is required for this response.

COMMENT:

SECTION/FIGURE: Table 3.30, Table 3.31, Table 3.32 **PAGE:** 3-96, 3-98, 3-99

Must state against what concentration criteria should these foodstuffs be judged or, alternatively, their corresponding dose levels as a result of consumption.

RESPONSE:
In each table a control sample has been included. This sample is assumed to be a background for the area as it is collected from a location either upgradient or remote from the FMPC. In Table 3.30, the control is labeled as such. In table 3.32 the control sample is designated as the upstream sample. In table 3.31 the sample location 2, identified as a dairy in Kentucky, is considered the control sample.

There are no concentration criteria for uranium in potatoes, milk, and fish. The corresponding radiation dose due to ingestion of these foodstuffs will be determined as part of the RI.

RESOLUTION:
No change in text is required for this response.

COMMENT:

SECTION/FIGURE: Section 3.8.5.2 and Section 4.3.2 **PAGE:** 3-102 and 4-14

Suggests the use of 35.0 pCi/gm as the acceptable soil contamination guideline. Assuming this is natural uranium (which was the primary feedstock of the site for decades and also the most protective assumption healthwise), then 10.0 pCi/gm is a more appropriate level relying upon Nuclear Regulatory Commission's uranium guidelines in 46 CFR 52061 and 5.0 pCi/gm may be reasonable relying upon the radium content of the EPA standards in 40 CFR 192

RESPONSE:
A reference level of 35.0 pCi/g for uranium-238 in soil is intended to be the soil concentration indicated by portable survey instrument measurements for which biased soil sampling is indicated. This reference level is not chosen as the remediation guideline, since such a level is

209 determined after the environmental dose pathways analysis is completed as part of the RI/FS. The reference level is not a concentration corresponding to any "derived" soil concentration which gives a maximum allowable dose for the site.

Based on a review of the operating history and radionuclide emission inventories for the FMPC, it has been determined that uranium isotopes (uranium-238 and uranium-234) were the principle radionuclides released from the FMPC which would be present in surface soils in the vicinity of the FMPC. In-situ detection of these radionuclides in soil requires the use of portable radiation survey instruments which can detect gamma rays emitted by uranium-238 daughter radionuclides (thorium-234 and protactinium-234m).

Low-energy photons, such as 63 keV gamma rays emitted by thorium-234, are best detected with a Field Instrument for Detecting Low-Energy Radiations (FIDLER). Calibration of and use of the FIDLER are described in the radiation measurement procedures of the Sampling Plan. The estimated lower limit of detection (LLD) of the FIDLER is approximately 35.0 pCi/g for uranium-238 in soil. This value is based on calculations, discussions with the manufacturer, and discussions with several organizations which have used FIDLERS to measure uranium-238 concentrations in soil. This value of the LLD for the FIDLER is the principal factor upon which the reference level is based.

Another factor which influences the choice of the reference level is the precedent at other sites which are being remediated for uranium-238 contamination. The lowest derived soil concentration identified for such a site (Colonie, New York) is 35.0 pCi/g for uranium-238 in soil. This concentration yields a calculated annual dose equivalent to a resident on the site of 100 mrem and was determined by a site specific environmental dose pathways analysis.

Although the reference level of 35.0 pCi/g will be used to guide the collection of biased soil samples, the choice of the level will not preclude collection of soil samples with concentrations of uranium-238 less than 35.0 pCi/g. In fact, random soil sampling will be performed throughout the site, including areas previously determined to have soil concentrations of uranium-238 less than 10 pCi/g.

Additionally, as part of the procedure to correlate portable survey instrument response with surface soil concentration, soil samples will be collected from locations ranging from known low concentrations (1-4 pCi/g) to known elevated

concentrations (100 pCi/g). After radiochemical analysis of each soil sample at the off site laboratory, the measured concentration of uranium-238 will be correlated with the response of the portable survey instrument taken at the time of sample collection. A linear regression analysis will be performed on the data to determine the correlation between instrument response and soil concentration. This correlation will be performed at the beginning of the radiation measurement program and is described in detail in the radiation measurement procedures of the Sampling Plan.

Since the FMPC is an operating site with stored radioactive materials, there are areas with elevated radiation fields. These fields may hinder the use of the FIDLER for direct determination of soil concentrations. In these areas, FIDLER measurements will be performed and the correlation between instrument response and soil concentration (as determined by laboratory analysis) will be repeated.

Upon completion of radiation measurements on the site using the FIDLER, a map of the site will be prepared showing isopleths of constant instrument readings. A separate map of the site will be prepared showing isopleths of constant soil concentrations of uranium-238 as determined by laboratory analysis and instrument response correlation. Since soil samples will be collected and analyzed in areas with low concentrations (1-4 pCi/g) of uranium-238, soil concentration isopleths will be generated for all measured concentrations above approximately 1 pCi/g.

Direct radiation measurement will also be made with large-volume scintillation detectors. These instruments are the most sensitive detectors for gamma rays with energies greater than approximately 100 keV. Each 100-foot grid will be surveyed with these detectors during a complete walkover survey with the detector at ground level. Additional measurements at grid points (both 100-foot grids and 1,000 foot grids) will be integrated readings with the detector held at one meter above the ground. A discussion of the rationale behind the selection of the sampling spacing is given in Section 4.2.1.2 of the Work Plan.

After completion of the walkover survey using large-volume scintillation detectors, a map of the site will be prepared showing isopleths of constant exposure rates. A separate map will be prepared using the results of the integrated measurements at one meter height above each grid point, showing isopleths of constant exposure.

Large-volume scintillation detectors will be field calibrated using a pressurized ionization chamber (PIC) at

no fewer than 50 locations on the site. These locations will be chosen uniformly spaced throughout the site so that the range of exposure rates are measured. The PIC will be calibrated by the manufacturer with an NBS traceable calibration.

RESOLUTION:
No change in text is required for this response.

COMMENT:

SECTION/FIGURE: Table 3.35 **PAGE:** 3-105
Leaves us to question whether DOE has determined the chemical or radiological composition of the smoke which is released during blowouts at the Rockwell furnace. This may prove to be beneficial information.

RESPONSE:
During top and bottom blowouts, continuous air sampling is maintained in the area. Air samples have been analyzed for radiological content and found to contain low levels of uranium bearing particulates. Chemical content has not been analyzed, but process knowledge indicates that the smoke contains mainly magnesium fluoride.

RESOLUTION:
The above response will be incorporated into Table 3.35 of the Task 1 Report: Description of Current Situation.

COMMENT:

SECTION/FIGURE: Section 4.2.2 **PAGE:** 4-5
Makes an incorrect assumption the analysis of on-site pathways are more important than the definition of off-site pathways. Both on-site and off-site pathways must be analyzed. This is true particularly where contaminants migration off-site has already occurred. The sampling programs described in the Task 2 Report fail to go off-site of FMPC. This is contrary to our agreement.

RESPONSE:
Both on-site and off-site pathways will be analyzed as presented in the RI Work Plan.

Extensive off-site sampling results previously obtained from other DOE programs will be used as part of the RI. An off-site ground water sampling program has also been proposed in the revised Work Plan.

RESOLUTION:
No change in text will be required for this response.

COMMENT:

SECTION/FIGURE: Section 4.2.3.3 **PAGE:** 4-8
States that surveys are underway for the study of the flora and fauna of the FMPC. These surveys that FMPC intends to rely upon, and all other studies and surveys which DOE intends to rely upon, must be reviewed by U. S. EPA to determine whether or not we can rely upon that data.

RESPONSE:
These surveys are being performed by an independent ecological consultant. The protocols and results of this program will be validated prior to use in the RI.

RESOLUTION:
No change in text is required for this response.

COMMENT:

SECTION/FIGURE: Section 4.2.3.4 **PAGE:** 4-8
Is misleading in its suggestion that the off-site wells that demonstrated contamination are not used as a potable water supply. The date at which these wells were discontinued as a potable water supply source should be identified in the report. Prior to that date, residents were using these wells as a potable water supply.

RESPONSE:
The discontinued wells are detailed as follows:

Well OS-1	discontinued as a potable water supply in April 1985.
Well OS-2	discontinued in 1982-83.
Well OS-3	discontinued in 1974.

RESOLUTION:
The above response will be incorporated into Section 4.2.3.4 of the Task 1 Report: Description of Current Situation.

COMMENT:

SECTION/FIGURE: Section 4.2.4.1 **PAGE:** 4-9
Is premature in stating that direct contact is not a

209

principal public health threat. This determination cannot be make until the RI is completed.

RESPONSE:

All exposure pathways to the public will be evaluated during the RI (Section 3.6 of the Work Plan), including direct contact.

RESOLUTION:

No change in text is required for this response.

COMMENT:

SECTION/FIGURE: Section 4.2.4.2 **PAGE:** 4-9
States that DOE intends to rely upon past and current studies to compute the inhalation exposure. U. S. EPA must be assured that this data is reliable.

RESPONSE:

Inhalation pathways will be evaluated in accordance with the peer-reviewed assessment of atmospheric dispersion and associated dose assessment being performed by the Center for Disease Control. U. S. EPA has an individual on the peer-review board who will be evaluating these studies.

RESOLUTION:

The above response will be incorporated into Section 4.2.4.2 of the Task 1 Report: Description of Current Situation.

COMMENT:

SECTION/FIGURE: Section 4.2.4.3 **PAGE:** 4-9
Should include the potential health impacts from the ingestion of surface soil or stream sediments by children playing in Paddy's Run or the Great Miami River.

RESPONSE:

All exposure pathways to the public will be evaluated during the RI, including ingestion of surface soil and stream sediments.

RESOLUTION:

The above response will be incorporated into Section 4.2.4.3 of the Task 1 Report: Description of Current Situation.

COMMENT: 209

SECTION/FIGURE: Section 4.3.1 **PAGE:** 4-10
Mentions that the on-site uranium contamination in groundwater near the storage areas was first detected in 1985. DOE should supply us with sample results, if any were obtained from this area in the early 1960's, when a groundwater pump-out scheme was initiated.

RESPONSE:
Results of ground water monitoring during that period have been presented to the U. S. EPA in the Aquifer Contamination Control Reports to the Manager, 1965 through 1984.

RESOLUTION:
No change in text is required for this response.

COMMENT:

SECTION/FIGURE: Section 4.3.1 **PAGE:** 4-11
Offers a 6.8 pCi/l level as a Great Miami River uranium concentration in water. Table 3.14, page 3-64 and Figure 3.7, page 3-60 indicate that the upstream uranium level is 1.57 pCi/l.

RESPONSE:
The 6.8 pCi/ value is referenced from Exhibit B dated November 14, 1986, Final Interim Report - Air, Soil, Water and Health Risk Assessment in the Vicinity of the FMPC-Fernald, Ohio, submitted to EPA July 27, 1987. The 1.57 pCi/l value is referenced from the 1985 FMPC Environmental Monitoring Report (EMR). The text will identify the source of the 6.8 pCi/l value.

RESOLUTION:
The above response will be incorporated into Section 4.3.1 of the Task 1 Report: Description of Current Situation.

COMMENT:

SECTION/FIGURE: Section 4.3.1 **PAGE:** 4-12
Makes references to previous sampling of existing wells in the waste storage areas. DOE should identify the years those samples were obtained and provide us with that data.

RESPONSE:
These wells were sampled during the RCRA compliance sampling. This data was provided to US and Ohio EPA during calendar years 1986 and 1987.

209.

RESOLUTION:

The above response will be incorporated into the appropriate Section of the Task 1 Report: Description of Current Situation.

COMMENT:

SECTION/FIGURE: Section 4.3.2 **PAGE:** 4-13

Refers to Section 3.0 This should be a reference to Section 5.0

RESPONSE:

Error acknowledged.

RESOLUTION:

The above response will be incorporated into Section 4.3.2 of the Task 1 Report: Description of Current Situation.

COMMENT:

SECTION/FIGURE: Section 4.3.3 **PAGE:** 4-15

Confirms the need to explore levels for all radionuclides likely to have been released from the FMPC. Current data is adequate to describe off-site surface soil uranium contamination, and is not adequate to characterize on-site contamination of soils by radionuclides or hazardous chemicals.

RESPONSE:

The off-site soil sampling and analysis program conducted by IT in support of DOE's litigation included full scans for radionuclides and hazardous chemicals. This data, which has been transmitted to EPA, was only recently released for public distribution and can now be used to support the RI/FS (as anticipated when preparing the Work Plan). The data base is considered to be sufficient to demonstrate that uranium is the key parameter of concern at off-site locations. It is also important to note that the proposed on-site radiological and soil sampling programs will confirm if any on-site spatial trends indicate the potential for an off-site concern that is not adequately resolved by the existing data base.

RESOLUTION:

No change in text is required for this response.

COMMENT:

SECTION/FIGURE: Section 4.3.4 **PAGE:** 4-16
Should include the results of the surface water and sediment sampling. Overland flow should be included as part of the sampling plan.

The DOE report should describe the source of technetium that has been found at elevated locations at FMPC. The report should also describe the relative ability for plant and animal uptake of this element, its solubility and toxicity, compared to that of uranium. In addition, where DOE does not propose to analyze for this parameter, it should state the reason.

RESPONSE:
The surface water sampling results are detailed in Section 3.8.1, Task 1 Report: Description of Current Situation.

Overland flow is be included in section 4.2.1.5, Surface Water and Sediment Sampling Plan, of the Work Plan.

Technetium-99 is a fission by-product and is present in small quantities in FMPC recycle materials. The RI will include a risk assessment of the source, pathways, and dose from Technetium-99.

RESOLUTION:
No change in text is required for this response.

COMMENT:

SECTION/FIGURE: Section 5.1.6 **PAGE:** 5-5
Should confirm that until DOE makes the required analysis for the 44 other categories of potential RCRA waste, these wastes must be stored in compliance with RCRA.

RESPONSE:
The following statement will be added to Section 5.1.6, page 5-5:

> "Based on historical records and process knowledge, it is not believed that the 44 other catagories of stored materials are applicable to RCRA standards."

This concern is identical to a U. S. EPA comment on the revised deliverable submitted January 23, 1987 in response to CERCLA items A1 - A7 of the RCRA section, FFCA. The concern is addressed as part of the DOE response to the subject EPA comments.

209

RESOLUTION:
The above response will be incorporated into Section 5.1.6 of the Task 1 Report: Description of Current Situation.

COMMENT:

SECTION/FIGURE: Section 5.1.7 **PAGE:** 5-6
States that a "slightly elevated" amount of uranium-238 was detected in soils outside the site boundary. The detection limit for the aerial survey should be provided along with the soil sample results in order to interpret data.

RESPONSE:
The lower detectable limit of the aerial survey was 5 microroentgens per hour (μR/h) exposure rate. The corresponding value given for the lower detectable limit was 150 pCi/g of U-238, but in conjunction with the concurrent soil sampling effort, concentrations as low as 65 pCi/g of U-238 were detected.

RESOLUTION:
The above response will be incorporated into Section 5.1.7 of the Task 1 Report: Description of Current Situation.

COMMENT:

SECTION/FIGURE: Section 5.2.1 **PAGE:** 5-7
Should clarify that corrective actions taken at the K-65 silos are interim measures only.

RESPONSE:
The referenced measures taken at the K-65 silos are interim measures only. Section 5.2.1, fourth paragraph will be amended to clearly reflect this fact.

RESOLUTION:
The above response will be incorporated into Section 5.2.1 of the Task 1 Report: Description of Current Situation.

COMMENT:

SECTION/FIGURE: Section 5.2.2 **PAGE:** 5-8
States that a study is currently underway to determine whether Pit 4 classifies as a RCRA hazardous waste impoundment. This is contrary to our agreement. DOE has acknowledged that Pit 4 is a RCRA hazardous waste pit.

RESPONSE:

Historical records indicate that barium, an U.S. EPA hazardous substance, had been admitted into Pit 4. A closure plan has been developed and submitted to U. S. EPA for approval, recognizing Pit 4 as a RCRA hazardous waste facility.

RESOLUTION:

The above response will be incorporated into Section 5.2.2 of the Task 1 Report: Description of Current Situation.

COMMENT:

SECTION/FIGURE: Section 5.2.4 **PAGE:** 5-9

Should describe why a protective pumping scheme was initiated at the waste pit area. DOE should provide U. S. EPA with analytical results from groundwater samples obtained from the waste pit area in early 1960's

RESPONSE:

The shallow ground water pumping scheme was instigated to control high levels of nitrates, sulfates, and chlorides that were being found in the area downgradient of the Waste Pits. The pumping scheme was designed to lower the water table such that it was no longer in contact with the Waste Pits. Data has been presented to the U. S. EPA in the Aquifer Contamination Control Reports to the Manager, 1965 through 1985.

RESOLUTION:

No change in text is required for this response.

COMMENT:

SECTION/FIGURE: Section 6.0 **PAGE:** 6-1 through 6-7

Should state that the boundaries for the study area for the RI are preliminary boundaries only. The boundaries must extend outward, off-site, as contamination is found.

Throughout Section 6.0, DOE references numerous studies that it intends to rely upon to satisfy data requirements for the FS. We must be assured that we can accept that data before U. S. EPA agrees to the sampling plans proposed by DOE.

RESPONSE:

The preliminary boundaries for the RI/FS, as described in Section 6.0, were established on an environmental media-specific basis in response to the current extent of knowledge on physical limitations to contaminant transport,

209

available monitoring data, and the findings of previous studies. It is recognized, however, that the boundaries will have to be extended outward if the extent of contamination is found not to be defined by the proposed study boundaries.

The previous studies referenced in section 6.0 will be used to determine the scope of the RI. If at all possible, the data used in the RI will be generated by the RI.

RESOLUTION:

No change in text is required for this response.

U.S. DEPARTMENT OF ENERGY RESPONSES TO THE OHIO ENVIRONMENTAL PROTECTION AGENCY COMMENTS ON THE FMPC DESCRIPTION OF CURRENT SITUATION

OEPA COMMENTS TO THE
TASK 1 REPORT:
DESCRIPTION OF CURRENT SITUATION

COMMENT:

SECTION/FIGURE: Section 3.8.2.2 **PAGE:** 3-69
Discussion of the 41 site monitoring wells is meaningless without their locations being identified on a site map and include in this section. It is not clear which "off-site' and "on-site" wells make up the 41-well monitoring system.

RESPONSE:
The 41 wells are identified in Figure 3.8 and consist of 35 on-site wells and 6 off-site wells.

RESOLUTION:
The above response will be incorporated into Section 3.8.2.2 of the Task 1 Report: Description of Current Situation.

COMMENT:

SECTION/FIGURE: Table 3.17 **PAGE:** 3-70 and 3-71
Perchloroethylene (#18 on list "D") and tetrachloroethylene (#44 on list "D") are the same compound.

RESPONSE:
Perchloroethylene and tetrachloroethylene are the same compound. This is the list referenced from the Results of Round 1 Ground Water Sampling, FMPC, Fernald Ohio, Dames and Moore, 1986.

RESOLUTION:
No change in text is required for this response.

COMMENT:

SECTION/FIGURE: Table 3.18 **PAGE:** 3-72
Sampling points T1S, 1D are not shown in Figure 3.8. Why are the results of the remaining wells shown in Figure 3.8 not listed in Table 3.18. Footnote "b" does not make any sense.

RESPONSE:
Sampling point T1S should be labeled as 1S. It is combined with 1D as a cluster well. This well is located but not

labeled on Figure 3.8 (just east of pit 2). This will be corrected. The wells listed in Table 3.18 were sampled as part of the Environmental Monitoring program. The remaining wells shown on Figure 3.8 are part of the RCRA compliance program. These results have been supplied in Task 1 through 4 of the RCRA program, and submitted in 1986-1987. Footnote "b" should read "Concentration in air and water above natural background."

RESOLUTION:

The above response will be incorporated into Table 3.18 and Figure 3.8 of the Task 1 Report: Description of Current Situation.

COMMENT:

SECTION/FIGURE: Table 3.18 and Table 3.19 **PAGE:** 3-72 and 3-73

Should provide uranium concentration equivalents between pCi/l and mg/l.

RESPONSE:

The conversion factor used at the FMPC at the time this data was taken, for µg/l to pCi/l was 0.67 pCi/µg of uranium in natural equilibrium (Health Physics, Volume 48 No. 5, Pages 601-633, 1985).

RESOLUTION:

The above response will be incorporated into Table 3.18 of the Task 1 Report: Description of Current Situation.

COMMENT:

SECTION/FIGURE: Section 3.8.2.2 **PAGE:** 3-74

Second bullet item: The first sentence uses poor grammar and its meaning is unclear. In the fourth bullet item, what is meant by the "TP" designation after the well numbers?

RESPONSE:

The identified first bullet on page 3-74 is meant to state that no radionuclides above background levels have been detected. The "TP" designates "Test Pit", a 10 foot deep well, installed after the excavation of a test pit.

RESOLUTION:

The above response will be incorporated into Section 3.8.2.2 of the Task 1 Report: Description of Current Situation.

209

COMMENT:

SECTION/FIGURE: Table 3.20 **PAGE:** 3-81
Footnote:b: should indicate what calendar period constitutes a fiscal year.

RESPONSE:
The FMPC fiscal year (FY) extends from October 1 through September 30 of the following year. Prior to 1976, the fiscal year extended from July 1 to June 30 of the following year.

RESOLUTION:
The above response will be incorporated into Table 3.20 of the Task 1 Report: Description of Current Situation.

COMMENT:

SECTION/FIGURE: Section 3.8.4.1 **PAGE:** 3-93
Second paragraph: What is a quadrat?

RESPONSE:
As used in this context, a quadrat specifies a circular area in which the sample will be taken.

RESOLUTION:
No change in text is required for this response.

COMMENT:

SECTION/FIGURE: Section 3.8.4.1 **PAGE:** 3-93
First, third, and fifth paragraphs: References to figure 2.11 should be Figure 2.12.

RESPONSE:
Error acknowledged.

RESOLUTION:
The above response will be incorporated into Section 3.8.4.1 of the Task 1 Report: Description of Current Situation.

COMMENT:

SECTION/FIGURE: Section 3.8.4.2 **PAGE:** 3-93
Last paragraph: reference to Figure 2.9 should be Figure 2.12.

RESPONSE:
Error acknowledged.

RESOLUTION:
The above response will be incorporated into Section 3.8.4.1 of the Task 1 Report: Description of Current Situation.

COMMENT:

SECTION/FIGURE: Tables 3.28, 3.29, 3.30 **PAGE:** 3-95 to 3.31, 3.32, and 3.34 3-99
What is meant by Bq/g in the footnotes in these tables?

RESPONSE:
Bq/g stands for Becquerel per gram, a SI unit representing radioactivity per unit weight, being one (1) disintegration per second per gram.

RESOLUTION:
The above response will be incorporated into Table 3.28 of the Task 1 Report: Description of Current Situation.

COMMENT:

SECTION/FIGURE: Section 4.2.3.4 **PAGE:** 4-8
Second Paragraph: It should be stated what the contaminated private wells south of the FMPC are used for, if they are not currently used for a potable water supply and whether these contaminated wells are still accessible by the public for potable or other use.

RESPONSE:
The discontinued wells are detailed as follows:

Well OS-1	discontinued as a potable water supply in April 1985.
Well OS-2	discontinued in 1982-83.
Well OS-3	discontinued in 1974.

These Wells are still used for non potable water supply.

RESOLUTION:
The above response will be incorporated into Section 4.2.3.4 of the Task 1 Report: Description of Current Situation.

209

COMMENT:

SECTION/FIGURE: Section 4.2.4.3 **PAGE:** 4-9
The ingestion mode must consider potential health impacts as a result of ingestion of surface soils or stream sediments by children playing in Paddy's Run or the Great Miami River.

RESPONSE:
All exposure pathways to the public will be evaluated during the RI (Section 3.6 of the Work Plan), including direct contact.

RESOLUTION:
The above response will be incorporated into Section 4.2.4.3 of the Task 1 Report: Description of Current Situation.

COMMENT:

SECTION/FIGURE: Section 4.3.3 **PAGE:** 4-14
First paragraph: The text should provide the basis for which 35 pCi/g is used by FMPC as a reference point for "acceptance of decontaminated areas."

RESPONSE:
A reference level of 35.0 pCi/g for uranium-238 in soil is intended to be the soil concentration indicated by portable survey instrument measurements for which biased soil sampling is indicated. This reference level is not chosen as the remediation guideline, since such a level is determined after the environmental dose pathways analysis is completed as part of the RI/FS. The reference level is not a concentration corresponding to any "derived" soil concentration which gives a maximum allowable dose for the site.

Based on a review of the operating history and radionuclide emission inventories for the FMPC, it has been determined that uranium isotopes (uranium-238 and uranium-234) were the principle radionuclides released from the FMPC which would be present in surface soils in the vicinity of the FMPC. In-situ detection of these radionuclides in soil requires the use of portable radiation survey instruments which can detect gamma rays emitted by uranium-238 daughter radionuclides (thorium-234 and protactinium-234m).

Low-energy photons, such as 63 keV gamma rays emitted by thorium-234, are best detected with a Field Instrument for Detecting Low-Energy Radiations (FIDLER). Calibration of and use of the FIDLER are described in the radiation measurement procedures of the Sampling Plan. The estimated lower limit of detection (LLD) of the FIDLER is

approximately 35.0 pCi/g for uranium-238 in soil. This value is based on calculations, discussions with the manufacturer, and discussions with several organizations which have used FIDLERS to measure uranium-238 concentrations in soil. This value of the LLD for the FIDLER is the principal factor upon which the reference level is based.

Another factor which influences the choice of the reference level is the precedent at other sites which are being remediated for uranium-238 contamination. The lowest derived soil concentration identified for such a site (Colonie, New York) is 35.0 pCi/g for uranium-238 in soil. This concentration yields a calculated annual dose equivalent to a resident on the site of 100 mrem and was determined by a site specific environmental dose pathways analysis.

Although the reference level of 35.0 pCi/g will be used to guide the collection of biased soil samples, the choice of the level will not preclude collection of soil samples with concentrations of uranium-238 less than 35.0 pCi/g. In fact, random soil sampling will be performed throughout the site, including areas previously determined to have soil concentrations of uranium-238 less than 10 pCi/g.

Additionally, as part of the procedure to correlate portable survey instrument response with surface soil concentration, soil samples will be collected from locations ranging from known low concentrations (1-4 pCi/g) to known elevated concentrations (100 pCi/g). After radiochemical analysis of each soil sample at the off site laboratory, the measured concentration of uranium-238 will be correlated with the response of the portable survey instrument taken at the time of sample collection. A linear regression analysis will be performed on the data to determine the correlation between instrument response and soil concentration. This correlation will be performed at the beginning of the radiation measurement program and is described in detail in the radiation measurement procedures of the Sampling Plan.

Since the FMPC is an operating site with stored radioactive materials, there are areas with elevated radiation fields. These fields may hinder the use of the FIDLER for direct determination of soil concentrations. In these areas, FIDLER measurements will be performed and the correlation between instrument response and soil concentration (as determined by laboratory analysis) will be repeated.

Upon completion of radiation measurements on the site using the FIDLER, a map of the site will be prepared showing

isopleths of constant instrument readings. A separate map of the site will be prepared showing isopleths of constant soil concentrations of uranium-238 as determined by laboratory analysis and instrument response correlation. Since soil samples will be collected and analyzed in areas with low concentrations (1-4 pCi/g) of uranium-238, soil concentration isopleths will be generated for all measured concentrations above approximately 1 pCi/g.

Direct radiation measurement will also be made with large-volume scintillation detectors. These instruments are the most sensitive detectors for gamma rays with energies greater than approximately 100 keV. Each 100-foot grid will be surveyed with these detectors during a complete walkover survey with the detector at ground level. Additional measurements at grid points (both 100-foot grids and 1,000 foot grids) will be integrated readings with the detector held at one meter above the ground. A discussion of the rationale behind the selection of the sampling spacing is given in Section 4.2.1.2 of the Work Plan.

After completion of the walkover survey using large-volume scintillation detectors, a map of the site will be prepared showing isopleths of constant exposure rates. A separate map will be prepared using the results of the integrated measurements at one meter height above each grid point, showing isopleths of constant exposure.

Large-volume scintillation detectors will be field calibrated using a pressurized ionization chamber (PIC) at no fewer than 50 locations on the site. These locations will be chosen uniformly spaced throughout the site so that the range of exposure rates are measured. The PIC will be calibrated by the manufacturer with an NBS traceable calibration.

RESOLUTION:

No change in text is required for this response.

NOTE:

As of February, 1987, the Clear Well no longer received process discharges, only Waste Pit runoff. Sections 3.4.1, 3.4.2, and 3.4.3, Figures 3.5 and 3.6, and Section 5.2.6 of the Task 1 Report: Description of Current Situation will be changed to reflect the change of status of the Clear Well.

Figure 4.1 has been rearranged for clarity and will be incorporated into the Task 1 Report: Description of Current Situation.

Table 3.9 has been corrected, see the appropriate change page.

U.S. DEPARTMENT OF ENERGY CHANGE PAGES
TO THE FMPC DESCRIPTION OF CURRENT SITUATION

TASK 1 REPORT:
DESCRIPTION OF CURRENT SITUATION
USEPA CHANGE PAGES

EXISTING: Section 1.2

A total of 123.9 kg of slightly enriched uranium were lost to the atmosphere from Plant 9 operations over an approximate time period from September 1984 to December 1984. The excessive emissions caused no discernible impacts off site; an intensive in-vivo whole body count of Plant 9 workers indicated no significant incorporation of uranium in the lungs.

PROPOSED: A total of 123.9 kg of slightly enriched uranium was lost to the atmosphere from Plant 9 operations over an approximate time period from September 1984 to December 1984. Air monitoring stations, located at the FMPC perimeter did not show evidence of elevated uranium concentrations at the time of the incident. Various environmental monitoring studies performed after the release incident showed no discernible off-site environmental impacts. According to the investigation reports, the excessive emissions caused no discernible impacts off site, and an intensive in-vivo whole body count of Plant 9 workers indicated no significant incorporation of uranium in the lungs (Investigation of September-December 1984 Plant 9 Excessive Uranium Emissions, February 6, 1985, FMPC, DOE, ORO 0855.).

EXISTING: Section 1.2

o Uranium in Off-Site Wells

Laboratory analyses of NLO samples (collected since 1981) have indicated that the uranium concentration in the water of three off-site wells may be elevated with respect to wells upgradient from the FMPC. However, these concentrations are below DOE guidelines and the upper limit recommended by the U.S. Public Health Service.

PROPOSED: o Uranium in Off-Site Wells

Laboratory analyses of NLO samples (collected since 1981) have indicated that the uranium concentration in the water of three off-site wells

may be elevated with respect to wells upgradient from the FMPC. However, the maximum uranium levels observed in these wells is below the proposed DOE derived concentration standard as in DOE order 5480.XX of 0.81 mg/l total uranium in ground water, but above the proposed U. S. EPA drinking water standard of 0.1 mg/l total uranium.

EXISTING: Table 3.1

PROPOSED: (Replace with the attached Table 3.1)

EXISTING: Section 3.4.1

The General Sump flow design is shown in Figure 3.5. Pretreated liquids are collected at the General Sump where solids are allowed to settle prior to the waste water flowing to Pit 5 and then to the Clear Well for further solids removal. The Clear Well also receives runoff from the general site area.

Effluent from the Clearwell and noncontaminated supernatant from the General Sump are combined with the sewage treatment effluent and stormwater runoff and discharged to the Great Miami River through the main effluent line following sampling at the NPDES discharge point.

PROPOSED: The General Sump flow design is shown in Figure 3.5. Pretreated liquids are collected at the General Sump where solids are allowed to settle prior to the waste water flowing to the Bio Surge Lagoon (BSL), and then to the Biodenitrification Tower (BDT) where excess nitrates are removed. Prior to 1987 waste water flowed from the General Sump to Pit 5 and then to the Clear Well before combining with sewage treatment effluent and non contaminated supernatant from the General Sump and discharging to the Great Miami River through the main effluent line, following sampling at the NPDES discharge point. Flows from the BDT now flow through the sewage treatment plant prior to NPDES sampling and discharge through the main effluent line.

EXISTING: Figure 3.5

PROPOSED: (Replace with the attached Figure 3.5)

EXISTING: Figure 3.6

PROPOSED: (Replace with the attached Figure 3.6)

EXISTING: Section 3.4.2

The clear water overflows to the ultraviolet disinfection unit, then to Manhole 175, and discharges to the Great Miami River. A biodenitrification facility is contained in Section 5.2.6 of this document. The sewage plant effluent is analyzed for total suspended solids, volatile solids, pH, total fecal coliform bacteria, alkalinity, total settled solids, and biochemical oxygen demand.

PROPOSED: The clear water overflows to the ultraviolet disinfection unit, then to Manhole 175, and discharges to the Great Miami River. The sewage plant effluent is analyzed for total suspended solids, volatile solids, pH, total fecal coliform bacteria, alkalinity, total settled solids, and biochemical oxygen demand.

EXISTING: Section 3.4.3

The outfall ditch may be acting as a source and transportation mechanism for above background concentrations of radionuclides in the off-site ground water (H&R, 1986)

The storm sewer outfall now discharges into the newly constructed storm water retention basin. This retention basin is designed to accommodate a 2-year, 24-hour storm event

PROPOSED: The outfall ditch may be acting as a source and transportation mechanism for above background concentrations of radionuclides in the off-site ground water (H&R, 1986)

The Clear Well now only receives storm water runoff from the waste pit area. Previously, the Clear Well also received waste water from the General Sump prior to discharging to manhole 175. The Clear Well now discharges to the BSL.

The storm sewer outfall now discharges into the newly constructed storm water retention basin prior to discharging to manhole 175. This retention basin is designed to accommodate a 2-year, 24-hour storm event

EXISTING: Section 3.5

Four facilities--the Hexafluoride Reduction Plant (Plant 7), the solid waste incinerator at the east site boundary, the graphite burner, and the oil burner have

been completely deactivated. Plant 7, however, is still used for storage purposes.

PROPOSED: Four facilities--the Hexafluoride Reduction Plant, a solid waste incinerator at the FMPC Sewage Plant, a graphite burner and an oil burner adjacent to the Boiler Plant have been completely deactivated. Three other noteworthy facilities - a Kelley solid waste incinerator, a Trane oil burner and a classified materials incinerator have been placed on standby status.

EXISTING: Section 3.5.5 (New Section being added)

PROPOSED: **3.5.5 KELLEY SOLID WASTE INCINERATOR**

The Kelley solid waste incinerator, which is currently on standby status, is located adjacent to the FMPC Refinery (Plant 2/3). The Kelley incinerator was operated from 1980 to May of 1986 at which time operations were discontinued by DOE/WMCO. The Kelley solid waste incinerator was issued a Permit To Operate by the OEPA. Typical substances burned at the incinerator included combustible office refuse, burnable process litter and combustible cafeteria waste. The Kelley incinerator was a subject of the recent Air Program Action.

EXISTING: Section 3.5.6 (New Section being added)

PROPOSED: **3.5.6 TRANE OIL BURNER**

The Trane oil burner, which is currently on standby status, is located adjacent to the FMPC refinery (Plant 2/3). The Trane oil burner was operated from 1982 until May 1986, at which time operations were discontinued by DOE/WMCO. As defined in the OEPA Permit To Install application, waste oils containing minor quantities of degreasing solvents and other solvents were typically incinerated at the facility. The Trane oil burner was a subject of the recent Air Program action.

EXISTING: Section 3.5.6 (New Section being added)

PROPOSED: **3.5.6 CLASSIFIED MATERIALS INCINERATOR**

A classified material incinerator which was used exclusivly to burn classified paper waste is located adjacent ot the FMPC security offices. The incinerator which is on standby staus, was operated from the early

1950's until 1986. No hazardous materials are recorded as being burned at this facility.

EXISTING: Figure 2.2

PROPOSED: (Replace with the attached Figure 2.2)

EXISTING: Table 3.9

Oil and Organics

Contaminated Solvent (1,1,1 Trichloroethane) (North Solvent Storage Tank-AX)	2,200...
Contaminated Solvent (1,1,1 Trichloroethane) (South Solvent Storage Tank-CR)	2,200...
Contaminated Solvent (1,1,1 Trichloroethane) (T5)	10,000...

PROPOSED: Oil and Organics

Contaminated Solvents (1,1,1 Trichloroethane) (T5)	10,000...

EXISTING: Table 3.10

High Grade Residues (>30% Th.)	35.7...

PROPOSED:

High Grade Residues (>30% Th. Avg. 75%)	35.7...

EXISTING: Section 3.8.1.2

Sampling location W2 is the final access point prior to discharge to the Great Miami River. Samples are continuously collected in proportion to the flow and composited for a 24-hour period. These samples are analyzed for uranium content and radioactivity due to alpha and beta particles. Table 3.13 lists the average concentrations for 1985 compared to federal guidelines for uncontrolled areas. The highest percent of guideline for any of the radionuclides is that for total uranium (54.5 percent). Table 3.14 summarizes the average concentrations of radionuclides in surface water for the other ten monitoring locations. Although elevated uranium concentrations occur along the on-site location, radionuclides in surface water on the downgradient off-site locations are substantially reduced.

PROPOSED: Sampling location W2 is the final access point prior to discharge to the Great Miami River. Samples are continuously collected in proportion to the flow and composited for a 24-hour period. These samples are analyzed for uranium content and radioactivity due to alpha and beta particles. Table 3.13 lists the average concentrations for 1985 compared to federal guidelines for uncontrolled areas. The highest percent of guideline for any of the radionuclides is that for total uranium (54.5 percent). Table 3.14 summarizes the average concentrations of radionuclides in surface water for the other ten monitoring locations. Although elevated uranium concentrations occur along the on-site location, radionuclides in surface water on the downgradient off-site locations are substantially reduced. Sampling points W1 and W3, and W4 are on the Great Miami river. Sampling points W3 and W4 are approximately 10 and 16 miles downstream of Site W1 respectively. Sampling point W6 is on the storm water outfall ditch, about 2600 feet above the confluence with Paddy's Run. The distances of sampling points W7 through W11 are approximately 5000, 8000, 11000, 12000, and 17000 feet below sampling point W5, respectively (Figure 3.7).

EXISTING: Section 3.8.2.1

There are 41 ground water monitoring wells used to evaluate potential off-site migration of FMPC releases. The on-site wells are monitored quarterly and the off-site wells monthly. Locations of these wells are shown in Figure 3.8. In addition, water samples have been obtained from numerous other wells in the vicinity of the FMPC at various times (Figure 3.9). Quarterly samples from the on-site wells are analyzed for uranium and gross alpha and beta. Monthly samples from off-site wells are analyzed for uranium.

PROPOSED: There are 41 ground water monitoring wells used to evaluate potential off-site migration of FMPC releases. The on-site wells are monitored monthly for total uranium and quarterly for pH, Alpha, Beta, total uranium, chlorides, NO_3, NO_3-N and SO_4. These wells are shown in Figure 3.8. Off-site wells (Figure 3.9) are monitored monthly for total uranium and pH and annually for 17 different metals.

EXISTING: Section 3.8.2.2

Ground water quality measurements prior to the initiation of the 41-well monitoring program were

largely limited to determination of uranium concentrations.

PROPOSED: Ground water quality measurements prior to the initiation of the 41-well monitoring program (Figure 3.8) were largely limited to determination of uranium concentrations.

EXISTING: Section 3.8.2.2

No radionuclides above background have not been detected in well 12 (upgradient).

PROPOSED: No radionuclides above background have been detected in well 12 (upgradient).

EXISTING: Section 3.8.2.2

Wells 1s, 3, 4, 5, 10, 13s, 13d, 19s, 19d, 21s, and 22s have uranium levels above background (1.1 to 32 µg/l).

PROPOSED: Wells 1s, 3, 4, 5, 10, 13s, 13d, 19s, 19d, 21s, and 22s have uranium levels above background (0.74 to 21.44 pCi/l).

EXISTING: Section 3.8.3.1

Continuous air sampling is carried out at nine locations on or near the plant boundary as shown in Figure 3.10. There are also three additional locations off site with monitors currently in operation. One additional off-site station will be operation in 1987. These four off-site stations are shown in Figure 3.11.

PROPOSED: Continuous air sampling is carried out at nine locations on or near the plant boundary as shown in Figure 3.10.There are also five additional off-site monitoring stations located to the south, south-west, west, north-east, and east, as shown on Figure 3.10.

EXISTING: Figure 3.10

PROPOSED: (Replace with the attached Figure 3.10)

EXISTING: Figure 3.11

PROPOSED: (Remove from text, including Table of Contents)

EXISTING: Table 3.22

PROPOSED: (Replace with the attached Table 3.22)

EXISTING: Table 3.23

1980
Concentration ...
% of guideline ...

1982
Concentration ...
% of guideline ...

1983
Concentration ...
% of guideline ...

1984
Concentration ...
% of guideline ...

1985
Concentration ...
% of guideline ...

Ref: ...

a) Guideline was $2x10^{-3}$ pCi/l for 1973-1980, $4x10^{-3}$ pCi/l for 1982 and 1983, and $2x10^{-3}$ pCi/l for 1984 and 1985;1973-1980 guidelines from DOE manual, Chapter 0524, Appendix A, Table II: 1982-1985 guidelines from DOE Order 5480.1A, Attachment XI-1, Table II.

PROPOSED: 1980
Concentration ...
% of guideline (a) ...

1982
Concentration ...
% of guideline (b) ...

1983
Concentration ...
% of guideline (b) ...

1984
Concentration ...
% of guideline (c) ...

1985
Concentration ...
% of guideline (c) ...

Ref: ...

a) Guideline for 1973-1980 was $2x10^{-3}$ pCi/l. DOE manual, Chapter 0524, Appendix A, Table II.

b) Guideline for 1982-1983 was $4x10^{-3}$ pCi/l. DOE order 5480.1A, attachment XI-1, Table II.

b) Guideline for 1984-1985 was $2x10^{-3}$ pCi/l. DOE order 5480.1A, attachment XI-1, Table II.

EXISTING: Section 3.8.4.1

Fish were collected from three reaches of the Great Miami River (Figure 2.11) in September, 1985.

PROPOSED: Fish were collected from three reaches of the Great Miami River (Figure 2.12) in September, 1985.

EXISTING: Section 3.8.4.2

Peels from potatoes at sample station number one (Figure 2.9) contained greater uranium than potatoes sampled off-site in Indiana.

PROPOSED: Peels from potatoes at sample station number one (Figure 2.12) contained greater uranium than potatoes sampled off-site in Indiana.

EXISTING: Table 3.35

Blowouts occur relatively frequently, usually with release of smoke.
(both top and bottom)

PROPOSED: Blowouts occur relatively frequently, usually with release of smoke containing low levels of uranium bearing particulates.
(both top and bottom)

EXISTING: Figure 4.1

PROPOSED: (Replace with the attached Figure 4.1)

EXISTING: Section 4.2.3.4

Private wells to the south of the FMPC have been observed to have elevated levels of uranium. None of these wells are used as a potable water supply, however.

PROPOSED: Three private wells to the south of the FMPC have been observed to have elevated levels of uranium. However, these wells were discontinued as potable water supplies in 1974, 1982-83 and in 1985. These wells are still used for non potable water supply.

EXISTING: Section 4.2.4.2

Much of this determination may be based on existing data and the results of other completed and ongoing studies, as appropriate.

PROPOSED: Much of this determination may be based on existing data and the results of other completed and ongoing studies, such as the atmospheric dispersion study being performed by the Center for Disease Control.

EXISTING: Section 4.2.4.3

Potential health impacts associated with an ingestion exposure mode have five principal components.

PROPOSED: Potential health impacts associated with an ingestion exposure mode have six principal components.

- The ingestion of surface soil or stream sediments.

EXISTING: Section 4.3.1 (fourth paragraph)

Not only is the observed value close to background, but it is less than the value of 6.8 pCi/l considered as background in the nearby Great Miami river.

PROPOSED: Not only is the observed value close to background, but it is less than the value of 6.8 pCi/l considered as background for the nearby Great Miami river in the Final Interim Report - Air, Soil, Water and Health Risk Assessment in the Vicinity of the FMPC - Fernald, Ohio, IT, 1987.

EXISTING: Section 4.3.1

Previous sampling of existing wells indicates contamination in this aquifer in the area immediately downgradient of the waste pit area.

PROPOSED: Previous sampling of existing wells (Results of Round 1-4 Ground Water Sampling, Dames & Moore, 1985 - 1986) indicates contamination in this aquifer in the area immediately downgradient of the waste pit area.

EXISTING: Section 4.3.2 (fourth paragraph)

Wastes containing asbestos have been disposed in the sanitary landfill, in Pit 4 and in steel drums, as discussed in Section 3.0.

PROPOSED: Wastes containing asbestos have been disposed in the sanitary landfill, in Pit 4 and in steel drums, as discussed in Section 5.0.

EXISTING: Section 5.1.6

(New sentence being added at the end of the first paragraph)

PROPOSED: Based on historical records and process knowledge, it is not believed that the 44 other catagories of stored materials are applicable to RCRA standards.

EXISTING: Section 5.1.7

The levels were below the detection limits of the aerial systems, however.

PROPOSED: The levels were below the lower detection limit of 5 microroentgens per hour (μR/h) of the aerial systems, however.

EXISTING: Section 5.2.1

Various options were investigated as remedial actions for the silos.

PROPOSED: Various options were investigated as interim remedial actions for the silos.

EXISTING: Section 5.2.2

Pit 4 is known to have received and EPA toxic hazardous waste (barium) and is currently being studied to determine whether the site contains hazardous waste as defined by RCRA.

PROPOSED: Pit 4 is known to have received an EPA toxic hazardous waste (barium), and a closure plan for the pit has been submitted to the EPA.

EXISTING: Section 5.2.6

PROPOSED: (Delete entire section from text, including table of contents)

209

TASK 1 REPORT:
DESCRIPTIONS OF THE CURRENT SITUATION
OHIO EPA CHANGE PAGES

EXISTING: Section 3.8.2.2

Ground water quality measurements prior to the initiation of the 41-well monitoring program were largely limited to determination of uranium concentrations.

PROPOSED: Ground water quality measurements prior to the initiation of the 41-well monitoring program, shown on Figure 3.8, were largely limited to determination of uranium concentrations.

EXISTING: Table 3.18

P3	Ø.15 ..
T1S	6.89 ..
1D	Ø.19 ..

PROPOSED:

P3	Ø.15 ..
1S	6.89 ..
1D	Ø.19 ..

EXISTING: Table 3.18

Guidelines used by FMPC for uranium are more stringent than levels set by 10 CFR Part 20, appendix B, Concentration in A.2 and water above natural background.

PROPOSED: Guidelines used by FMPC for uranium are more stringent than levels set by 10 CFR Part 20, appendix B, Concentration in air and water above natural background.

EXISTING: Table 3.18

(New footnote being added after Footnote b)

PROPOSED: c) For uranium, 1 µg/l converts to Ø.67 pCi/l (Health Physics, 1985)

EXISTING: Figure 3.8

PROPOSED: (Replace with the attached Figure 3.8)

EXISTING: Section 3.8.2.2

No radionuclides above background have not been detected in well 12 (upgradient).

PROPOSED: No radionuclides above background have been detected in well 12 (upgradient).

EXISTING: Section 3.8.2.2

Elevated chloride (Well MW-19TP) and sulfate (Wells MW-19TP, MW-21TP, and MW-22TP may indicate contamination due to waste disposal activities.

PROPOSED: Elevated chloride (Well MW-19TP) and sulfate (Wells MW-19TP, MW-21TP, and MW-22TP may indicate contamination due to waste disposal activities. TP designates a well installed in a 10 foot deep test pit.

EXISTING: Table 3.20

b) Wet scrubber data based on fiscal year

PROPOSED: B) Wet scrubber data based on fiscal year, Oct. 1-Sep. 30, prior to 1976 fiscal year was July 1 - June 30

EXISTING: Section 3.8.4.1 (first, third and fifth paragraphs)

(Figure 2.11)

PROPOSED: (Figure 2.12)

EXISTING: Section 3.8.4.2 (second paragraph)

(Figure 2.9)

PROPOSED: (Figure 2.12)

EXISTING: Table 3.28

(4) Bq/g in parentheses.

PROPOSED: (4) Becquerels per gram (Bq/g) in parentheses.

EXISTING: Section 4.2.3.4

Private wells to the south of the FMPC have been observed to have elevated levels of uranium. None of these wells are used as a potable water supply, however.

U.S. DEPARTMENT OF ENERGY ATTACHMENTS TO CHANGE PAGES
TO THE FMPC DESCRIPTION OF CURRENT SITUATION

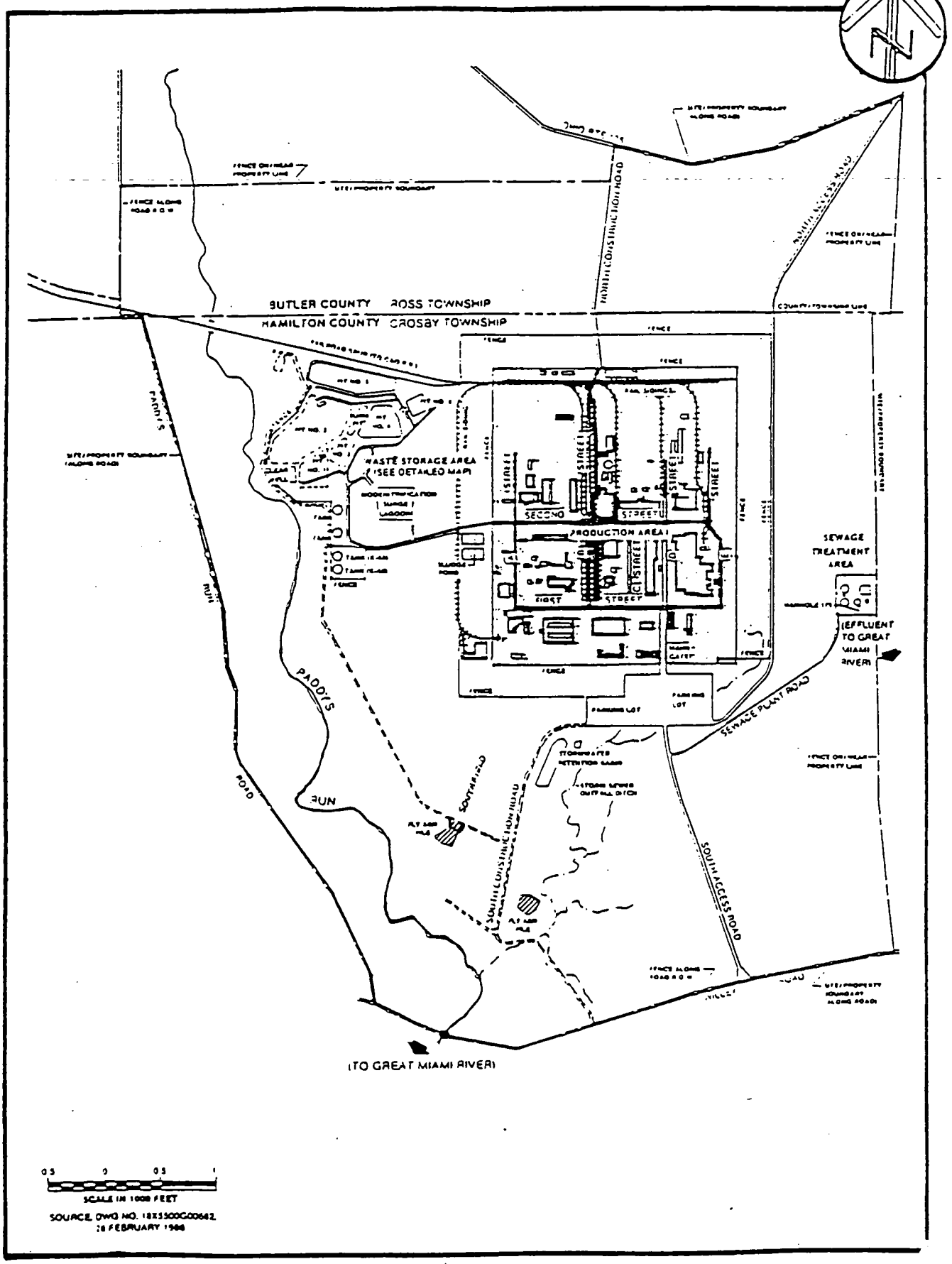

FIGURE 2.2

FEED MATERIALS PRODUCTION CENTER SITE, FERNALD, OHIO

TABLE 3.1

WASTE STREAMS AT THE FMPC

WASTE STREAM	WASTE STREAM DESCRIPTION	ORIGIN OF WASTE STREAM (Bldg. No.)	ANNUAL VOLUME (Metric Tons)	CURRENT DISPOSITION
Neutralized raffinate from general sump	An acidic mixture of magnesium and aluminum nitrates neutralized to pH 11.9 by the addition of caustic and lime filtered to a damp-dry sludge	2,3	620	Storage for off-site shipment to LLW disposal facility
Slag leach cake	Magnesium fluoride from the reduction operation, acid leached to remove uranium, neutralized with lime, filtered and washed	All Plants	1300	Storage for off-site shipment to LLW disposal facility
Magnesium oxide and magnesium zirconate from crucible clean-out	Dry powders resulting from the clean-out of graphite crucibles	5	12	Storage for off-site shipment to LLW disposal facility
High fluoride scrap salts and floor sweepings	Magnesium fluoride and uranium fluoride spillage, in dry powdered form	4, 5, 6	200	Storage for off-site shipment to LLW disposal facility
Low fluoride scrap salts and floor sweepings	Mixed salts and some oxide spillage, with little fluoride content, in dry powdered form	4, 5, 6, 9	3	Storage for off-site shipment to LLW disposal facility
Non-oily, non-halide wet sump filter cake	Salts and uranium oxides filtered out of the floor drainage system (damp-dry)	All Plants	300	Storage for off-site shipment to LLW disposal facility
Off-specification uranium tetrafluoride (UF_4)	Uranium fluoride, a green, dry homogenous, uniform particle powdered stat which does not meet product specifications	4	40	Storage for off-site shipment to LLW disposal facility
Sludges from RMI	Oily and non-oily sludges from extrusion	Off-site	90	Storage for off-site shipment to LLW disposal facility

WASTE STREAM	WASTE STREAM DESCRIPTION	ORIGIN OF WASTE STREAM (Bldg. No.)	ANNUAL VOLUME (Metric Tons)	CURRENT DISPOSITION
Contaminated oily Hilco cake	Hydrocarbon cutting oil from machining operations, containing uranium oxide, filtered to a deep-dry sludge; could contain some unoxidized uranium metal fines	5	2	Storage for off-site shipment to LLW disposal facility
Wet magnesium fluoride (MgF_2), drum residues from decontamination	Damp magnesium fluoride from drum washing operations	8	30	Storage for off-site shipment to LLW disposal facility
Oily sludges containing high free metal	Similar to FMPC 020 above but does contain unoxidized uranium metal	5, 6, 9	26	Storage for off-site shipment to LLW disposal facility
Non-oily sludges	Damp dry sludges from clean-up and floor drain sources, containing miscellaneous process salts and oxides	5, 6, 9	2	Storage for off-site shipment to LLW disposal facility
Non-oily sludge, containing high or low metal	Similar to FMPC 042 but containing unoxidized uranium metal	5, 6, 9	20	Storage for off-site shipment to LLW disposal facility
Uranium metal	Massive metal scrap	5	115	Storage for off-site shipment to LLW disposal facility
Dust collector residues containing high fluoride	Magnesium and uranium fluorides similar to FMPC 065	5	430	Storage for off-site shipment to LLW disposal facility
Dust collector residues containing high fluoride pyrophoric	Similar to waste number 15, but containing metallic magnesium and/or uranium fines	5	0.5	Storage for off-site shipment to LLW disposal facility
Dust collector residues-low fluoride	Uranium oxide fines not containing much uranium fluoride	5	100	Storage for off-site shipment to LLW disposal facility

WASTE STREAM	WASTE STREAM DESCRIPTION	ORIGIN OF WASTE STREAM (Bldg. No.)	ANNUAL VOLUME (Metric Tons)	CURRENT DISPOSITION
Non-briquettable chips and turnings	Metallic uranium chips and turnings too small to intermesh in the briquetting operation; may be oily	5, 6, 9	65	Storage for off-site shipment to LLW disposal facility
Wet crushed magnesium fluoride slag from pot blow-outs	Magnesium fluoride (damp) resulting from furnace failure; chunky material less than 1" in size (top failure)	5	2	Storage for off-site shipment to LLW disposal facility
Dry crushed magnesium fluoride slag from pot blow-outs	Same as FHPC 057 but the magnesium fluoride was not wetted by the cooling water system (bottom failure)	5	2	Storage for off-site shipment to LLW disposal facility
Unfired reduction charges and magnesium fluorides from liner cave-ins	A mixture of powdered magnesium fluoride, magnesium metal pellets, and uranium fluoride	5	4	Storage for off-site shipment to LLW disposal facility
Contaminated magnesium	Magnesium metal pellets separated from the mixture described in HIC 079	5, 32	2	Storage for off-site shipment to LLW disposal facility
Contaminated combustibles	Paper, wood, cloth, etc. contaminated with uranium	All Plants	2	Storage for off-site shipment to LLW disposal facility
Contaminated non-combustibles	Scrap sheet metal, broken tools, old wire, control instruments, gages, etc. contaminated with uranium	All Plants	3	Storage
Dust collector bags	Wool cloth bags lined with the process salts and uranium oxide fines	All Plants	>2	Storage for off-site shipment to LLW disposal facility
Rockwell cleanings and spills	Cleanings from an industrial furnace; uranium oxides, broken fire brick, etc.	5	30	Storage for off-site shipment to LLW disposal facility
Bad reduction - no derby formed	The malfunction of a reduction operation; like HIC 079, however, the reaction may have proceeded to produce some uranium metal	5	1	Storage for off-site shipment to LLW disposal facility

WASTE STREAM	WASTE STREAM DESCRIPTION	ORIGIN OF WASTE STREAM (Bldg. No.)	ANNUAL VOLUME (Metric Tons)	CURRENT DISPOSITION
Solid metal with imbedded steel (NOI)	Uranium metal with steel imbedded	Off-site	1	Storage for off-site shipment to LLW disposal facility
Dirty prill (+20 mesh) containing high uranium and magnesium fluoride	Steel pellets used in a cleaning method similar to sandblasting, contaminated with uranium oxide and magnesium fluoride larger than 20 mesh screen size	1, 5	25	Storage for off-site shipment to LLW disposal facility
Partially oxidized metals	Massive uranium metal so badly oxidized as to be unfit for recycle in metal fabrication	5, 6, 9	2	Storage for off-site shipment to LLW disposal facility
Contaminated soil, bricks, etc.	From plant process area spills, leaks, etc.	All Plants	2	Storage for off-site shipment to LLW disposal facility
Sludges, salt, and chloride	Dry sodium and potassium chlorides (soft powdery form) from molten salt baths (bottom portion) contaminated with uranium	6, 9	30	Storage for off-site shipment to LLW disposal facility
Furnace solidified chloride salt	Same salt material as FMPC 044 but solidified in a drum as one rock-like block; a minimum of sludge and uranium	6, 9	50	Storage for off-site shipment to LLW disposal facility
Furnace solidified non-chloride salt	Same as FMPC 060 but salt is sodium and lithium carbonate	9	10	Storage for off-site shipment to LLW disposal facility
Non-recoverable contaminated trash	Same as FMPC 025/028 but from a different plant area	All Plants	2	Storage for off-site shipment to LLW disposal facility
Sample bottles	Empty glass, plastic, and metal sample bottles which have been rinsed; they are still contaminated	15	5	Storage for off-site shipment to LLW disposal facility

WASTE STREAM	WASTE STREAM DESCRIPTION	ORIGIN OF WASTE STREAM (Bldg. No.)	ANNUAL VOLUME (Metric Tons)	CURRENT DISPOSITION
Contaminated graphite	Graphite (carbon) molds used in uranium melting and casting operations	All Plants	20	Storage for off-site shipment to LLW disposal facility
Existing incinerator ash (+20 mesh)	Ash resulting from the combustion of plant trash not contaminated with uranium, coarser than 20 mesh screen size	39	45	Storage for off-site shipment to LLW disposal facility
Existing incinerator ash (-20 mesh)	Same as FMPC 033, but finer than 20 mesh	39	Included with 033	Storage for off-site shipment to LLW disposal facility
Magnesium fluoride slag	Magnesium fluoride salt in chunky form resulting from the reduction operation, contaminated with uranium	55	4400	Storage for off-site shipment to LLW disposal facility
Waste uranium metal (splits)	Uranium metal resulting from melting operations	55	35	Storage for off-site shipment to LLW disposal facility
Scrap high temperature uranium oxide (U_3O_8)	Uranium (black) oxide too impure for process use	5	190	Storage for off-site shipment to LLW disposal facility
Dry cleaning sludges	Perchoroethyle from the plan laundry	11	2	Storage in RCRA facility for offsite shipment to K-1435 incinerator
Contaminated oil	Miscellaneous vacuum pump, lube, and hydraulic pump oils also contains water-soluble cutting oil	All Plants	1	Storage for offsite shipment to K-1435 incinerator
Contaminated TBP/Kerosene	The tributylphosphate/kerosene mixture used in the extraction of pure uranyl nitrate from aqueous feed streams	2, 3	<1	Storage

WASTE STREAM	WASTE STREAM DESCRIPTION	ORIGIN OF WASTE STREAM (Bldg. No.)	ANNUAL VOLUME (Metric Tons)	CURRENT DISPOSITION
Oil MgF_2	Magnesium fluoride which became oily from leaking hydraulic systems	5	<1	Storage for off-site shipment to LLW disposal facility
Misc. samples non-metallic	Laboratory samples of process materials no longer needed (oxides, fluorides, etc)	15	<1	Storage for off-site shipment to LLW disposal facility
Calcium fluoride	A salt resulting from the neutralization of a leak from an acid tank, using lime; this is a one-time waste stream	8	4	Storage for off-site shipment to LLW disposal facility
Partially oxidized metal with thorium	Oxidized uranium metal containing some thorium. This is a one-time waste stream from the pilot plant	13, 37, 54	<1	Storage for off-site shipment to LLW disposal facility
Partially oxidized metal with no thorium	Same as Waste FMPC 080 with no thorium	Pilot Plant, 54	<1	Storage for off-site shipment to LLW disposal facility
Alloyed uranium	One drum containing pieces of uranium alloyed with a very low concentration of titanium and iron	6	<1	Storage for off-site shipment to LLW disposal facility
U_3O_8 (Black uranium oxide)	Same material as FMPC 055, 056 except that the material is now fully oxidized; this practice is no longer in use	5, 9	55	Storage for off-site shipment to LLW disposal facility
Reject uranium oxide (UO_3)	Uranium oxide (orange powder) which does not meet process specifications	2, 3, 4	<1	Storage for off-site shipment to LLW disposal facility
Depleted declad solution	Sodium aluminate solution containing undissolved sludge	8	<1	Storage
General waste-process area (11 dumpsters/wk.)	Paper, cardboard, and other combustible material possibly contaminated due to its origin in the process area; in baled form	All Plants	327	Storage for off-site shipment to LLW disposal facility

WASTE STREAM	WASTE STREAM DESCRIPTION	ORIGIN OF WASTE STREAM (Bldg. No.)	ANNUAL VOLUME (Metric Tons)	CURRENT DISPOSITION
Wood	Old crates, pallets, skids, etc., possibly contaminated	N/A	218	Storage for off-site shipment to LLW disposal facility
Filters	High efficiency particulate air filters (HEPA); an anticipated waste stream not yet generated	All Plants	17	Storage for off-site shipment to LLW disposal facility
Non-process area general waste (blue area)	Non-contaminated general waste from the plant support areas such as office buildings and maintenance shops; includes waste packing materials	N/A	61	Offsite disposal at commercial sanitary landfill
Construction materials	Both demolition debris, possibly contaminated, and scraps of new construction materials	N/A	57	Storage
Cafeteria wastes	Paper plates, napkins, garbage, etc.	Cafeteria	38	Offsite disposal at commercial sanitary landfill
Rubbish "type I" currently assigned to sanitary landfill	Metal banding, other wire, scrap sheet metal and other non-contaminated non-combustibles	N/A	30	Offsite disposal at commercial sanitary landfill
Spent solvent (1,1,1-trichloroethane)	Dirty degreasing solvent arising from the plant maintenance activities	All Plants	1100 lbs	Storage in RCRA facility for offsite shipment to K-1435 incinerators
Spent Eutectic salts (BaCl, LCl, NaCl)	Waste salts from RHI	Off-site	50,000 lbs	Storage in RCRA facility
Spent Solvent (methylene chloride, and perchloroethylene) (from fall)	Toxic wastes received from an outside supplier (RHI) for disposal	Off-site	1300 lbs	Storage in RCRA facility for offsite shipment to K-1435 incinerator

WASTE STREAM	WASTE STREAM DESCRIPTION	ORIGIN OF WASTE STREAM (Bldg. No.)	ANNUAL VOLUME (Metric Tons)	CURRENT DISPOSITION
Oily sludges	Water soluble cutting oil, grade SUN #31	5, 6, 9		Storage

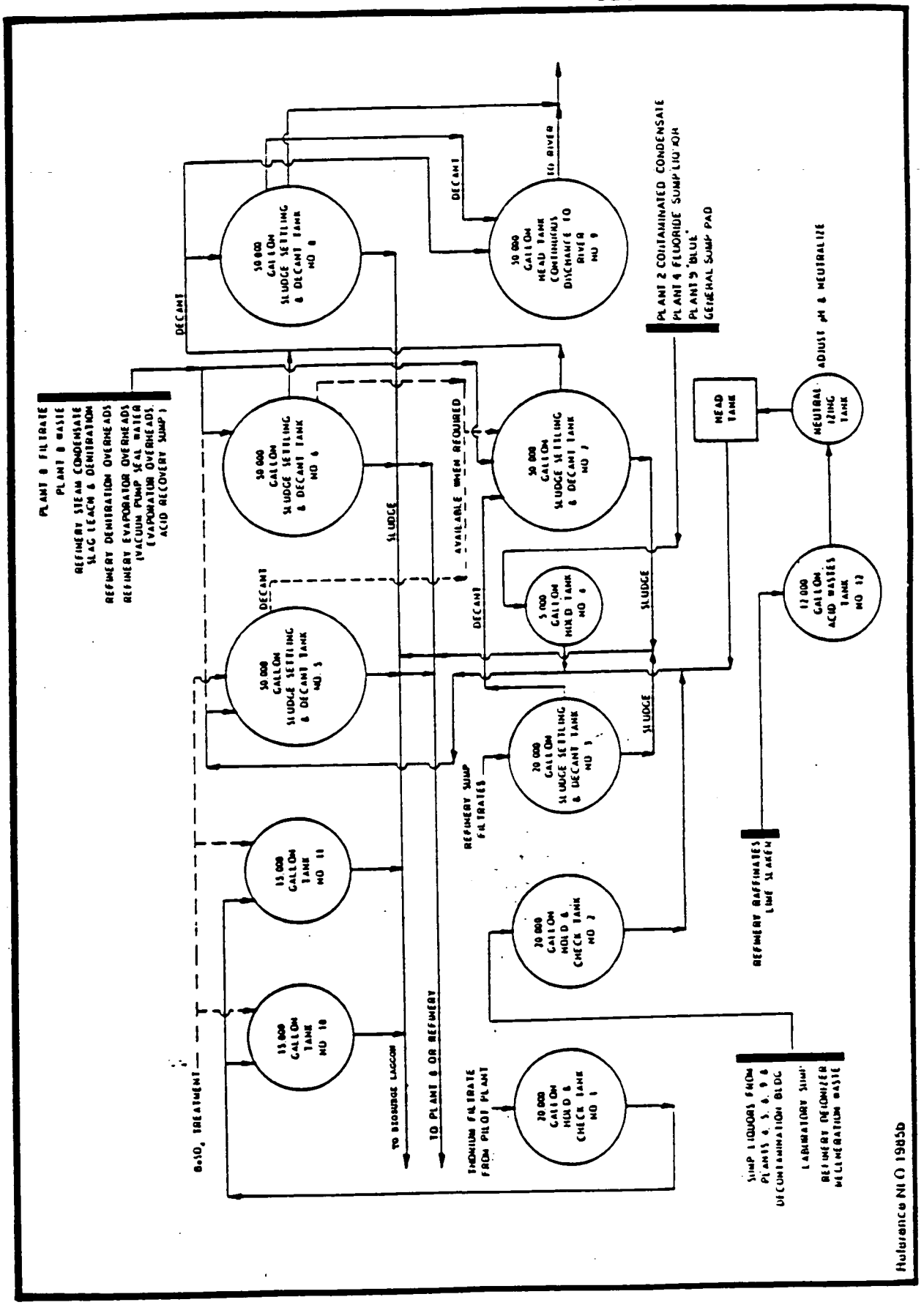
PLANT 8 FILTRATE
PLANT 8 WASTE
REFINERY STEAM CONDENSATE
SLAG LEACH & DENITRATION
REFINERY DENITRATION OVERHEADS
REFINERY EVAPORATOR OVERHEADS
(VACUUM PUMP SEAL WATER
EVAPORATOR OVERHEADS,
ACID RECOVERY SUMP)
DECANT
30 000 GALLON SLUDGE SETTLING & DECANT TANK NO 6
30 000 GALLON HEAD TANK (CONTINUOUS DISCHARGE TO RIVER) NO 9
TO RIVER
PLANT 2 CONTAMINATED CONDENSATE
PLANT 4 FLUORIDE SUMP LIQUOR
PLANT 5 'BLUE'
GENERAL SUMP PAD
SLUDGE
AVAILABLE WHEN REQUIRED
30 000 GALLON SLUDGE SETTLING & DECANT TANK NO 4
30 000 GALLON SLUDGE SETTLING & DECANT TANK NO 7
HEAD TANK
ADJUST pH & NEUTRALIZE
NEUTRALIZING TANK
5 000 GALLON MIXED TANK NO 8
30 000 GALLON SLUDGE SETTLING & DECANT TANK NO 5
12 000 GALLON ACID WASTES TANK NO 12
30 000 GALLON SLUDGE SETTLING & DECANT TANK NO 3
REFINERY SUMP FILTRATES
15 000 GALLON TANK NO 11
15 000 GALLON TANK NO 10
30 000 GALLON HOLD & CHECK TANK NO 2
REFINERY RAFFINATES LIME SLAKER
TO BIOSURGE LAGOON
TO PLANT 8 OR REFINERY
THORIUM FILTRATE FROM PILOT PLANT
30 000 GALLON HOLD & CHECK TANK NO 1
SUMP LIQUORS FROM PLANTS 4, 5, 8 & 8 DECONTAMINATION BLOC
LABORATORY SINK
REFINERY DEIONIZER REGENERATION WASTE
Reference NLO 1985b

FIGURE 3,5

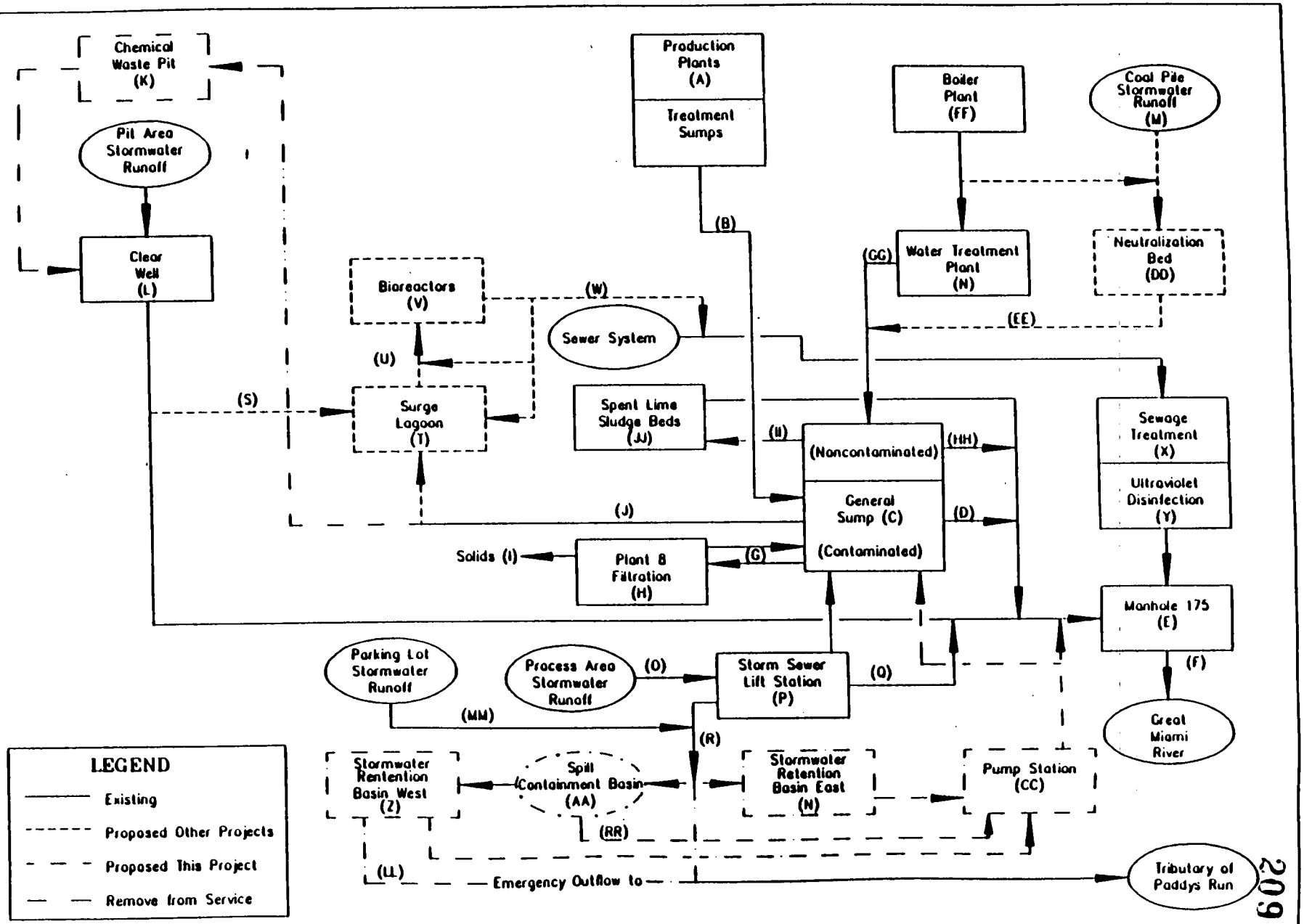

Figure 3.6 FMPC Waste Treatment Flow Diagram

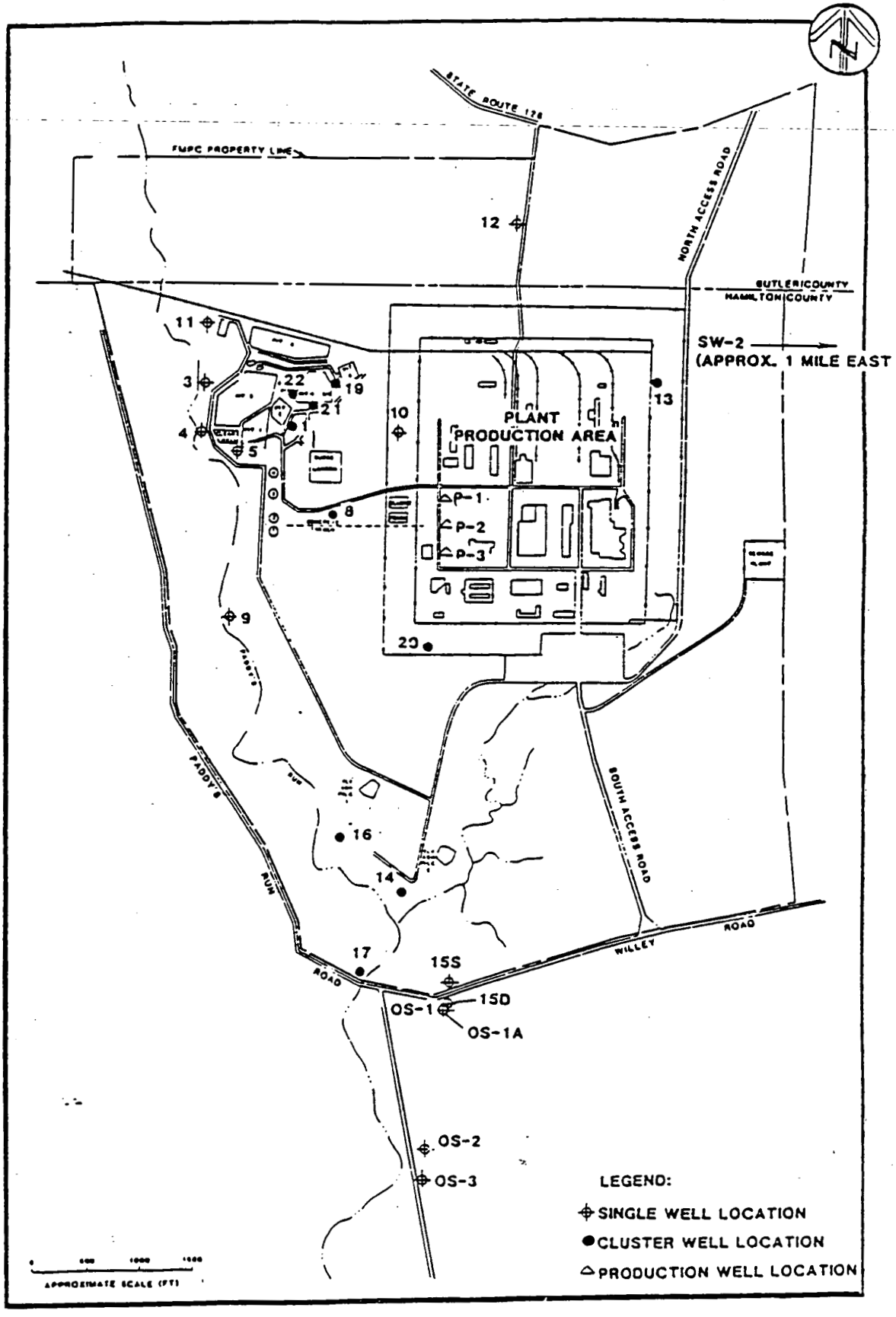

FIGURE 3.8
GROUND WATER MONITORING WELL LOCATIONS

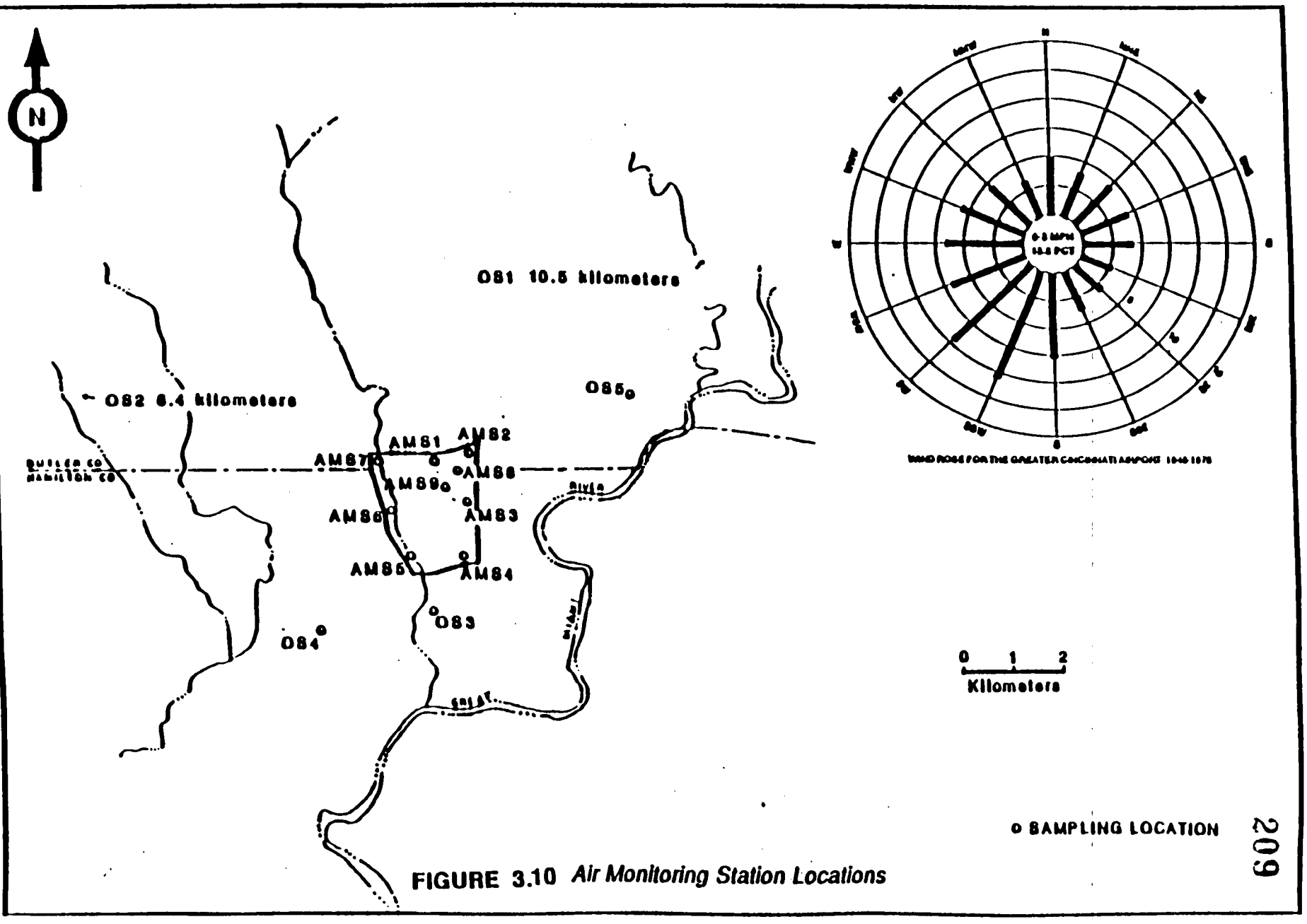

FIGURE 3.10 *Air Monitoring Station Locations*

TABLE 3.22
MAXIMUM AND MINIUM URANIUM CONCENTRATIONS
AT THE FMPC (pCi/l x 10 -5)

Year	Sampling Station	Maximum Concentration	Sampling Station	Minimum Concentrat
1973	AM6	4.58	AM3	0.01
1974	AM1	3.42	AM4	0.03
1975	AM3	5.77	AM4	0.02
1976	AM1	7.08	AM5	0.03
1977	AM1	3.40	AM4	0.02
1978	AM3	23.00	AM5	0.01
1979	AM3	2.30	AM4	0.02
1980	AM3	2.30	AM1	0.02
1981	AM2	6.10	AM7	0.01
1982	AM1	3.80	AM5	0.01
1983	AM5	10.00	AM2	0.02
1984	AM3	18.80	AM5	0.03
1985	AM1	3.10	AM7	0.01

Ref: NLO 1986; 1985a; 1983; 1982; 1981; 1980; 1979; 1978; 1977; 1976; 1975; 1974;

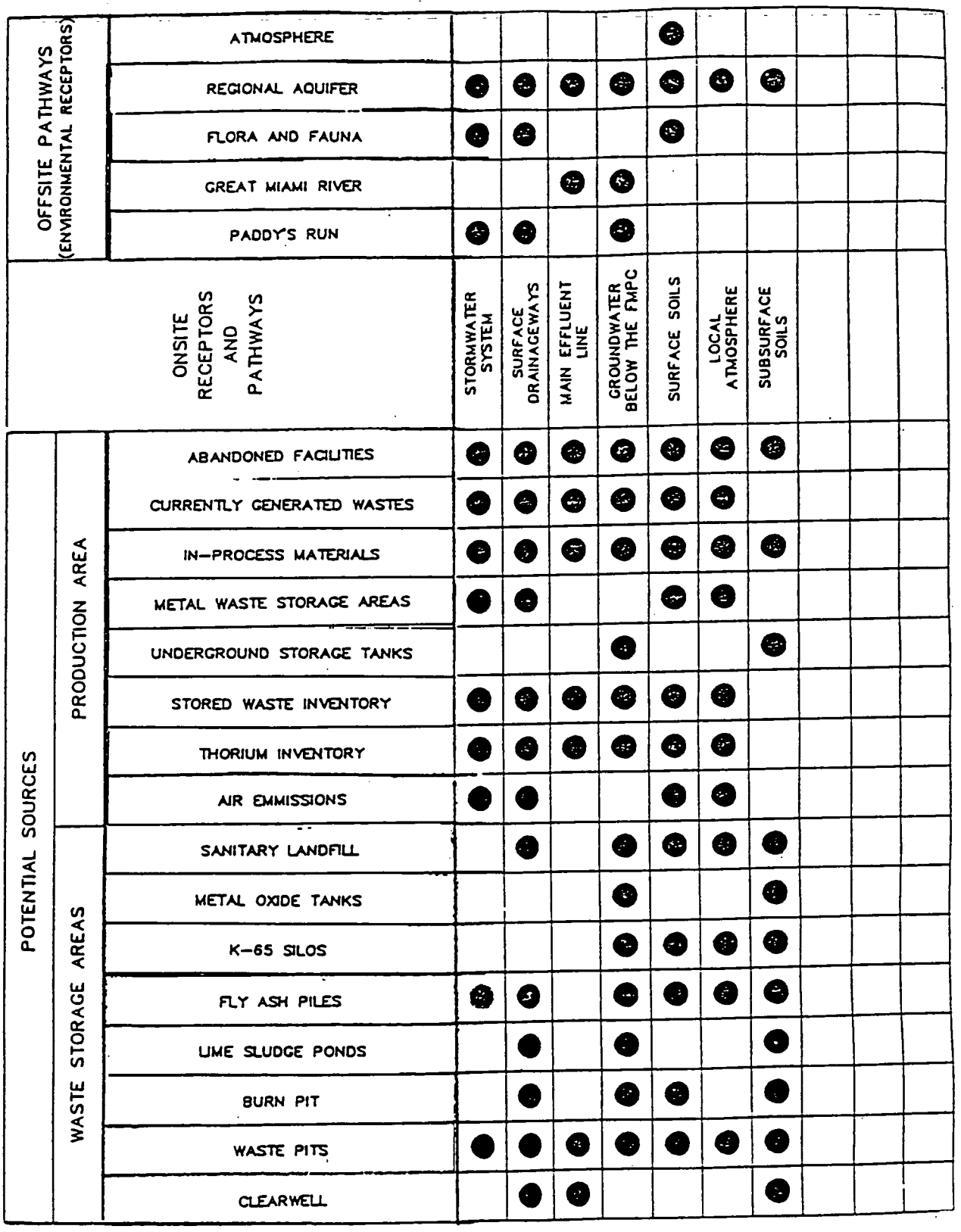

FIGURE 4.1
POTENTIAL EXPOSURE PATHWAYS TO OFFSITE ENVIRONMENTAL RECEPTORS