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**RI/FS OPERABLE UNIT 3 SCOPE OF WORK
REVISED FMPC APRIL 16, 1990**

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**FEED MATERIALS PRODUCTION CENTER
RI/FS OPERABLE UNIT 3
SCOPE OF WORK
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1.0 INTRODUCTION

This work scope provides a description of Operable Unit 3 (see Section 2.0) and the approach necessary to perform the Feasibility Study (FS) (see Section 4.0). This work is being performed as part of the Feed Materials Production Center (FMPC) Remedial Investigation/Feasibility Study (RI/FS) Work. It consists of nine tasks which comprise the FS Work Breakdown Structure (WBS) (see Section 3.0) and it is consistent with the applicable requirements contained in the following documents:

- FMPC RI/FS Work Plan, Revision 3, March 1988
- Work Plan - Feasibility Study - FMPC - August 1988
- Federal Facilities Agreement (FFA), April 1990
- Remedial Investigation (RI) Work Plan Addendum, Production and Additional Suspect Areas Work Plan - Revision 1, October 1989

2.0 DESCRIPTION

The basis for the work scope of Operable Unit 3 (OU3) is the fact that the FMPC is in a standby mode for initiation of production when required. The scope, therefore, does not include production area buildings since they are being maintained by Westinghouse Materials Company of Ohio (WMCO). In general, OU3 includes those facilities and suspect areas that are expected to involve localized clean-up actions using straightforward technologies. The methodology focuses on analytical results from the activities conducted under the RI Work Plan Addendum. This is basically a "ground down" approach targeting containment of contamination in an attempt to achieve a high level of protection now with future decontamination and decommissioning (D&D) triggering the long term remedial actions. In the absence of D&D, remedial actions will be implemented where feasible, e.g., scrap metal piles, junk piles, rubble mounds, perched groundwater, and soils not underlying buildings. The likely result of this process will be the identification of areas requiring removal actions, remedial actions for post-ROD implementation and other remedial actions which will be implemented in conjunction with D&D as follows:

- Address Facilities & Suspect Areas which represent a past, current, or future source of radionuclide or chemical releases to the environment. These areas will be selected through field analytical results which indicate the presence of surface and underground contaminated soils and/or perched groundwater. In addition, the metal scrap piles within the Production Area will also be addressed.
- Future sources will be addressed only in relation to their potential impact on underlying soils and perched groundwater. It is assumed that WMCO's spill prevention and control plan (SPCC) will address actions necessary to contain surface spills for specific facilities. Another assumption is that the facilities will be maintained in good condition to prevent deterioration until decommissioning. No

provision will be made for addressing new releases to the environment due to re-initiation of production.

- Facilities include the Production Area and Suspect Areas. The Production Area is defined as the area bounded by the security fence and the buffer zone. Suspect Areas include those areas outside the Production Area and within the FMPC property boundary not covered in other operable units.
- Suspect Areas include the following areas where releases to the environment may have occurred: fire training area, incinerator area, rubble mounds, K-65 slurry line, main effluent line, **line from clearwell to manhole 175**, area near flagpole, and other areas where elevated levels of uranium and/or other constituents exist in soil or perched groundwater **which can be attributed to a specific facility** within site areas. These include soils and perched water not accounted for in other operable units.

3.0 WORK BREAKDOWN STRUCTURE

As of this date, the FS is divided into nine primary tasks. All of these tasks will be completed for the Operable Unit 3 FS. These tasks which comprise the FS WBS are as follows:

4.5	Risk Assessment
5	Lab and Bench Scale Testing
6	Preparation of the RI Report
12	Initial Screening of Alternatives
13	Detailed Analysis of Alternatives
14	Selection of Preferred Alternatives
15	Preparation of Draft FS Report
16	Final FS Report
17	Preparation of the Proposed Plan and Record of Decision (ROD)

The following are brief descriptions of each task:

Risk Assessment (4.5) - This activity consists of three major phases:

- Baseline Risk Assessment: The baseline risk assessment is an analysis of the potential adverse health effects (current or future) caused by hazardous substances releases from a site in the absence of any actions to control or mitigate these releases.
- Refinements of Preliminary Remediation Goals: This is the development or modification of the required remediation goals in light of the results of the baseline risk assessment.
- Remedial Alternatives Risk Evaluation: This is an estimate of the effect of the various potential remedial actions on the reduction or increase of risk to human health of site workers and the general population.

Laboratory and Bench-Scale Testing (5) - These are specific studies needed to support and evaluate the effectiveness of remedial actions or to establish engineering criteria necessary for design and implementation. Typical examples of studies are the following:

- Compaction and permeability studies;
- Chemical compatibility and leachate studies;
- Determination of pore replacement volumes and treatability studies for flushing wastes or extracting contaminated water.

RI Report (6) - The RI Report will incorporate all necessary documentation to fulfill the requirements of the U.S.EPA's Guidance on Remedial Investigations Under CERCLA and the National Environmental Policy Act as applicable to RI/FS activities.

Initial Screening of Alternatives (12) - The purpose of the initial screening of alternatives is to produce a reduced list of alternatives for subsequent detailed analysis as part of the FS. The list of alternatives to be screened comes from the Development of Alternatives Report, Revision 1 dated December 1988. The actual alternatives screening will be accomplished by completing three specific activities:

- Refinement of alternatives definitions
- Preliminary evaluation of alternatives
- Screening of alternatives

The refinement of the definition and description of alternatives will be an expansion of the descriptions prepared as part of the previous development of alternatives. The preliminary evaluation will be the process in which the initial comparison of technical performance and costs is made among the alternatives. Alternative screening will be the process of deciding which alternatives are preferential, thereby reducing the number to be retained for detailed analysis. Streamlining provisions incorporated into the most recent U.S. EPA RI/FS guidance document, upon which this work plan is based, will be appropriately incorporated into the screening of alternatives.

The purpose of the initial screening is to reduce the number of alternatives that will be subjected to detailed analysis as part of the next task. While the alternative screening is more general than the subsequent detailed analysis, it will be sufficiently detailed to distinguish significant advantages and disadvantages among the alternatives.

The effectiveness of each alternative will be evaluated for both its short term and long term ability to protect human health and the environment; and to reduce the toxicity, mobility, or volume of the contaminants involved.

The implementability of each alternative will be evaluated on the basis of the following:

- Technical feasibility - Ability to construct, reliably operate, and meet technology-specific regulations until a remedial action is complete.

- Administrative feasibility - Ability to obtain regulatory approvals, availability of off-site treatment/disposal capacity, and availability of specific equipment and specialists, if necessary.

The cost evaluation will include consideration of both capital and operation and maintenance costs and will be based on generic unit costs, vendor information, typical cost curves, cost estimating guides, and other appropriate information. Cost estimates will be similar to those to be developed for the detailed analysis, but will be less detailed and for the purpose of relative comparisons of the various alternatives.

The initial screening of alternatives will be a comparison of the evaluation data among the alternatives and the identification for further consideration of those alternatives with the most favorable composite evaluations. Alternatives retained will represent, to the maximum extent appropriate, the range of treatment/containment technologies developed. The elimination of alternatives based on a screening level evaluation of costs will occur only if the costs of a given alternative are an order of magnitude greater than the costs of another alternative that provides similar effectiveness and protection. Alternatives with greater costs, but greater public health and environmental benefits, will not be eliminated on the basis of the higher costs alone.

Detailed Analysis of Alternatives (13.3) - Those alternatives that survive the initial screening activity will be considered as the preferred candidates for implementation. This activity will consist of specific detailed evaluations of each of these alternatives. The detailed analysis of alternatives will be accomplished by the completion of two specific activities, as follows:

- Refinement of the alternative definition
- Comparison of each alternative with established evaluation criteria

Definitions of alternatives will be refined to the extent necessary to complete their detailed analysis. Specifically, refinements to definitions will be made to allow for the consistent application of evaluation criteria and for the development of cost estimates with an accuracy of plus 50 percent to minus 30 percent. Information to be developed will include the following, as appropriate:

- Preliminary design calculations
- Process flow diagrams
- Sizing of key process components
- Preliminary site layouts
- Development of assumptions, limitations, and uncertainties

In accordance with the RI/FS guidance document, each alternative will be evaluated on the basis of the following nine criteria:

- Compliance with ARARs
- Protection of human health and the environment
- Short-term effectiveness
- Long-term effectiveness and performance
- Reduction of toxicity, mobility, and volume
- Implementability

- Cost
- State acceptance
- Community acceptance

The first two criteria relate to the statutory findings that must be included in the ROD for the site. These are threshold criteria which are evaluated for each alternative on the basis of whether or not the alternative meets the established criteria. The evaluation of the effectiveness of protection with respect to human health and the environment will be based on a composite of factors assessed under other criteria, particularly long-term effectiveness and performance, short-term effectiveness, and compliance with ARARs.

The next five criteria are the primary criteria for the comparative evaluation of alternatives. These criteria encompass the principal technical, cost, institutional, and risk concerns. In the evaluation of alternatives, these criteria will be considered as a group, even though evaluations will be developed individually for each criteria.

The last two criteria are regulatory agency and public concerns and apparent preferences for certain alternatives. During the performance of Task 13, alternatives may not be thoroughly evaluated with respect to the community acceptance criteria since available information is often limited until the time the FS report is issued for public comment. A separate, formal evaluation of state acceptance may not be necessary. The Ohio Environmental Protection Agency (OEPA) has been and remains an active participant in the review of RI/FS findings and reports. Consequently, the concerns of the State are being addressed as the project progresses.

The evaluation will also address, as appropriate, the requirements of NEPA to the extent they are not already addressed by the nine EPA-specified evaluation criteria.

Evaluation and Selection of Preferred Alternatives (14) - This task will consist of the comparative evaluation of alternatives based on the detailed evaluation of each alternative with respect to the nine specific EPA criteria and any additional, applicable NEPA requirements. The advantages and disadvantages of each alternative relative to other alternatives will be identified and summarized. The summary will include documentation of relative strengths and weaknesses of each alternative, effects of variations in key uncertainties, and key qualitative and/or quantitative differences among alternatives. This analysis will be used as a basis to evaluate the tradeoffs among alternatives. The results of this evaluation will be used to identify the "preferred alternative" for remedial action at Operable Unit 3, subject to the concurrence and approval of the U.S. EPA.

Draft FS Report (15) - A draft FS report presenting the methods and results of previous activities, including the identification of a "preferred remedial action alternative," will be prepared for Operable Unit 3. To the degree practical, the report will be prepared in a format similar to that outlined in the U.S. EPA's RI/FS guidance document, and will include the necessary documentation to fulfill applicable requirements of NEPA. The report will be provided to DOE for comment and approval prior to distribution to the U.S. EPA and the OEPA for their review and comment.

FS Report (16) - A final FS report will be prepared for Operable Unit 3 to incorporate the comments of the U.S. EPA and the OEPA, as well as comments received from the public under

NEPA. The final report will be provided for final agency review and approval, as well as public review and comment as part of the Administrative Record. The final FS report will include the necessary reference documentation to fulfill NEPA requirements as applicable to the RI/FS.

Preparation of Proposed Plan and Record of Decision (17) -Concurrent with development of the draft FS report, preparation of the proposed plan will be initiated. A draft proposed plan will be prepared for DOE review and approval, outlining the procedures and rationale leading to the selection of a preferred remedial alternative. Upon DOE approval the proposed plan will be submitted to the U.S. EPA and Ohio EPA for their review and comment. The plan will be revised accordingly and submitted with the final FS report for public comment. Included in this activity will be the preparation of a responsiveness summary to respond to all comments received from the general public. A draft and final ROD will be prepared after the public comment period and DOE review and approval of responses to those comments. The final ROD will be submitted to the U.S. and Ohio EPAs, consistent with the requirements of the EPA RI/FS guidance and the National Contingency Plan.

4.0 APPROACH

This section contains the approach which will be utilized during the performance of the FS work. A key decision relates to the timing of remedial action implementation. The following approach will be utilized to distinguish between normal (implemented within 3-years of the ROD date) and deferred (implemented more than 3-years after ROD date) remedial actions:

- Remedial actions will follow the normal FS process when one or more of the following conditions are present: they can be implemented without creating a significant disruption of site operations; they pose a public health risk; they pose a near-term threat to the aquifer.
- Remedial actions will be deferred until decontamination and decommissioning when the following conditions are present: they will require a significant disruption of site operations; they can be delayed without posing a public health risk; they pose no near-term threat to the aquifer.

In general, remedial actions involving the removal of contaminated groundwater can typically be implemented without major disruptions of the site operations. Implementing a groundwater control program has the added benefit of controlling the mobile component of a contaminated area, thus making it possible to delay soil removal to a later date. Remedial actions that are principally groundwater removals can include groundwater extraction with the option of treatment, soil removal, groundwater flow control through the installation of artificial barriers such as grout curtains or slurry walls, or the installation of surface seals to prevent recharge from rainfall.

The majority of the deferred actions will likely be soil removal actions where the soils are located under or within close proximity to buildings or structures. If the removal would pose a significant threat to the stability of the structure, then the removal would likely be deferred to a later date, especially if the threat to the environment can be acceptably reduced relatively quickly through groundwater control measures.

Except for the metal scrap piles, suspect area facilities, and junk piles, the evaluation of an area will be based on the risk assessment and the volume of contaminated soil or groundwater exceeding a pre-established clean-up level. Field analytical results will be the vehicle for identifying levels of contamination in soils and groundwater. The evaluation of the possible source of this contamination will be reviewed to assure that all operations overlying the impacted area are accounted for, with particular emphasis placed on the identification of specific continuing releases. The RI and the FS will thus be geographically oriented and there will not be a facility-by-facility evaluation of subsurface contamination.

Contaminated localized areas posing an immediate threat to Health and Safety (as determined by exceeding pre-determined target levels) will likely qualify for a relatively quick response through the Removal Action process. In fact, it is possible that the Operable Unit 3 FS will eventually result in a series of Removal Actions, rather than a formal Record of Decision. That is, once a localized problem is found, the site-specific conditions will be quickly addressed and an appropriate action will be implemented through the Removal Action process. The Scope of Work includes the identification of candidate areas for this process. However, it does not include the work related to the specific Removal Action(s) whether or not an Engineering Evaluation/Cost Analysis (EE/CA) is necessary.