

6437

G-000-900 .16

FERNALD SITE NATURAL RESOURCE TRUSTEE TELECONFERENCE

12/28/94

C:RP:(NRM):94-0016
FERMCO DOE-FN

~~45~~ 108
LETTER



Restoration Management Corporation

P.O. Box 398704 Cincinnati, Ohio 45239-8704 (513) 738-6200

December 28, 1994

U. S. Department of Energy
Fernald Environmental Management Project
Letter No. C:RP:(NRM):94-0016

Mr. Pete J. Yerace
U.S. Department of Energy
Fernald Field Office
P.O. Box 538705
Cincinnati, OH 45253-8705

Dear Mr. Yerace:

FERNALD SITE NATURAL RESOURCE TRUSTEE TELECONFERENCE

Enclosed for your review is the Draft Meeting Summary from the December 8, 1994 Fernald Site Natural Resource Trustee Teleconference.

Also enclosed, please find the following:

- The Fernald Citizens Task Force (FCTF) Interim Report, *Preliminary Recommendations on Future Use and Cleanup Levels for the Fernald Site*.
- The FCTF Meeting Minutes from the November 12, 1994 meeting.
- The FCTF Proposed 1995 Work Plan (dated December 12, 1994).
- A summary of, and the proposed rule that appeared in the *Federal Register* on December 8, 1994 regarding a proposal to amend the Natural Resource Damage Regulations regarding a discharge of oil into a navigable waters.
- A copy of an article that appeared in the *BNA Toxics Law Daily* on December 7, 1994 regarding a NRDA settlement.
- A revised address/telephone/facsimile list of Natural Resource Trustee representatives and participants.

000001



NRT TELECONFERENCE
Letter No. C:RP:(NRM):94-0016
Page 2

Please let me know if you have any questions or comments on any of the enclosures. I hope you have a festive holiday season.

Sincerely,

J.K. Mailander
Jennifer K. Mailander, Esq.

Environmental Compliance
Technical/Program Specialist III

JKM:jes
Attachments

- c: B. J. Bixby, FERMCO, MS65-2
- R. M. Eichhold, FERMCO, MS78
- S. S. Gibson, DOE-MTC
- R. V. Holmes, FERMCO, MS3
- J. J. Homer, FERMCO, MS65-2
- J. K. Mailander, FERMCO, MS65-2
- J. S. Oberjohn, FERMCO, MS52-5
- E. L. Osheim, DOE, MS45
- M. J. Strimbu, FERMCO, MS65-2
- A. C. Taylor, FERMCO, MS65-2
- W. E. Woods, FERMCO, MS65-2
- File Record Storage Copy 106.4.11.1

Without Attachments

- D. J. Abbot, FERMCO, MS65-2
- L. J. Foster, FERMCO, MS82-3
- T. D. Hagen, FERMCO, MS65-2
- J. E. Schomaker, FERMCO, MS65-2
- S. L. Snyder, FERMCO, MS82-3
- C. A. Straub, FERMCO, MS65-2
- T. W. Underwood, FERMCO, MS65-2
- T. J. Walsh, FERMCO, MS65-2
- K. Wilkerson, FERMCO, MS65-2

JUN 06 1994

U. S. DEPARTMENT OF ENERGY
 FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
 FERNALD, OHIO

FERMCO CONTRACT
 DE-AC05-92OR21972
 PAGE 1 OF 4

DRAFT MEETING SUMMARY

SUBJECT: NATURAL RESOURCE TRUSTEE TELECONFERENCE
 MEETING DATE: December 8, 1994
 LOCATION: FERMCO Fernald Office
 ISSUE DATE: December 27, 1994 File Record Storage Copy 104.5

DISTRIBUTION:	+ Attendees	++ Part-time	* Author of Notes
<u>DOE-FN</u>	<u>FERMCO</u>		<u>USFWS</u>
+Pete Yerace	+Becky Bixby		Bill Kurey
+Stephanie Bogart, OFO	+John Homer		
	+Jennifer Mailander		<u>DOI</u>
	+Steve Oberjohn		+Don Henne
<u>OEPA</u>	+Mike Strimbu		
+Jeff Hurdley	+Alicia Taylor		<u>USEPA</u>
+Tim Hull	Angie Weisgerber		+Barbara Mazur
+Tom Schneider	+Keith Wilkerson		
+Larry Sirnek	+Eric Woods		<u>BROWN & ROOT</u>
+Vanessa Steigerwald			Kathy Trapp
	<u>MTC</u>		
<u>OAG</u>	+Steve Gibson		
+Jack Van Clay			

1.0 Old business

1.1 Meeting Summary of October 26, 1994 teleconference was approved without comment.

Action: FERMCO to deliver Summary to Public Environmental Information Center (PEIC).

1.2 Reviewed action items from October 26, 1994 Teleconference.

1.2.1 FERMCO distributed the Eglin Air Force Base Natural Resources Management Plan (NRMP) on November 28, 1994. FERMCO reminded participants that Eglin Air Force Base was a large site that encompassed three counties so their NRMP may be more encompassing than the Fernald Environmental Management Project (FEMP) NRMP.

Action: Trustees representatives to review the Eglin NRMP.

1.2.2 FERMCO sent example MOU and MOU-type documents to Trustee representatives on December 7, 1994.

000003

MEETING SUMMARY - Continued

Action: Trustees representatives to review the documents and consider how the information may be used.

1.2.3 FERMCO asked Trustee representatives to send any comments on the Hanford Strategy Paper to Jennifer Mailander. Bill Kurey has already submitted comments.

Action: Trustees representatives to review the Hanford Strategy Paper and consider how the information may be used.

1.2.4 Don Henne contacted John Linsey [National Oceanic Atmospheric Administration (NOAA - Seattle)] in reference to NOAA's potential role in Trustee process. John stated that NOAA did not have reason to claim Trustee status at the FEMP.

Jennifer Mailander contacted Doug Shelton of the U.S. Army Corps of Engineers (ACOE) to see if ACOE would be interested in participating in Trustee activities as a non-trustee representative. Doug Shelton said the ACOE would not be interested in participating, and he would confirm this in writing.

Jennifer Mailander asked Ohio Environmental Protection Agency (OEPA) representatives if they were interested in having the Ohio Department of Natural Resources (ODNR) participate in the Trustee meetings. Tom Schneider stated that they would like to discuss this issue internally, but that DOE should continue its involvement with ODNR on other natural resource issues. Becky Bixby assured him that this involvement would continue.

Action: OEPA to discuss internally potential ODNR participation in FEMP Trustee meetings.

DOE will continue its involvement with ODNR on other natural resource issues.

1.2.5 Don Henne contacted the U.S. Geological Survey (USGS) to discuss any potential mineral resources at the FEMP. DOI did not feel there were mineral resources, such as oil or natural gas at the FEMP, but suggested that DOE needed to also examine the issue.

Action: Pete Yerace will talk with Stephanie Bogart about mineral resources at the FEMP site.

1.2.6 Becky Bixby gave updates on the status of threatened and endangered species surveys and lists. Becky Bixby reminded the teleconference participants that changes in the threatened

MEETING SUMMARY - Continued

and endangered species listing might not be applicable to the FEMP site if the species is/are not of concern at the site.

Action: Becky Bixby will copy Trustee representatives when sending survey letters to regulators and will continue verifying Federal Register lists of threatened and endangered species.

Becky Bixby will contact Keith Wilkerson in reference to recent revisions to the threatened and endangered species lists and computer capabilities for tracking status changes.

1.2.7 Jack Van Clay verified that he had received the Trustee information previously distributed to the other Trustee representatives and participants.

Action: No action.

2.0 Trustee discussions with representative legal counsels.

2.1 Trustee representatives and associated legal counsels agreed that proceeding with a MOU was an acceptable path forward.

Action: Don Henne will continue presenting more specifics to DOI legal counsel. FERMCO will send to Don Henne: 1) a copy of the complaint filed by the State of Ohio with the natural resource damage claim and, 2) the Consent Decree which stays or puts the claim on hold.

3.0 Trustee representatives objectives/goals for a MOU

3.1 Trustee representatives accepted FERMCO's offer to draft an MOU.

Action: FERMCO to fax MOU outline to Trustee representatives by January 4, 1995.

3.2 Pete Yerace suggested integrating the existing lawsuit into the MOU. Jack Van Clay was not sure how that integration would be completed, but agreed to allow FERMCO to draft language for his review. Jack Van Clay serves as legal counsel on the existing lawsuit.

Action: FERMCO to include lawsuit integration language in MOU.

4.0 Administration/Updates

4.1 FERMCO gave updates on other DOE sites involved in the Trustee process.

MEETING SUMMARY - Continued

4.1.1 John Homer presented information on the Savannah River site.

4.1.2 Becky Bixby gave information on the Hanford site.

4.1.3 Jennifer Mailander spoke on the Rocky Flats site.

Action: FERMCO representatives to continue contact with other DOE sites.

4.2 John Homer gave an update on the Fernald Citizens Task Force (FCTF).

Action: FERMCO to continue attendance at FCTF meetings. FERMCO to send Interim FCTF Report to participants.

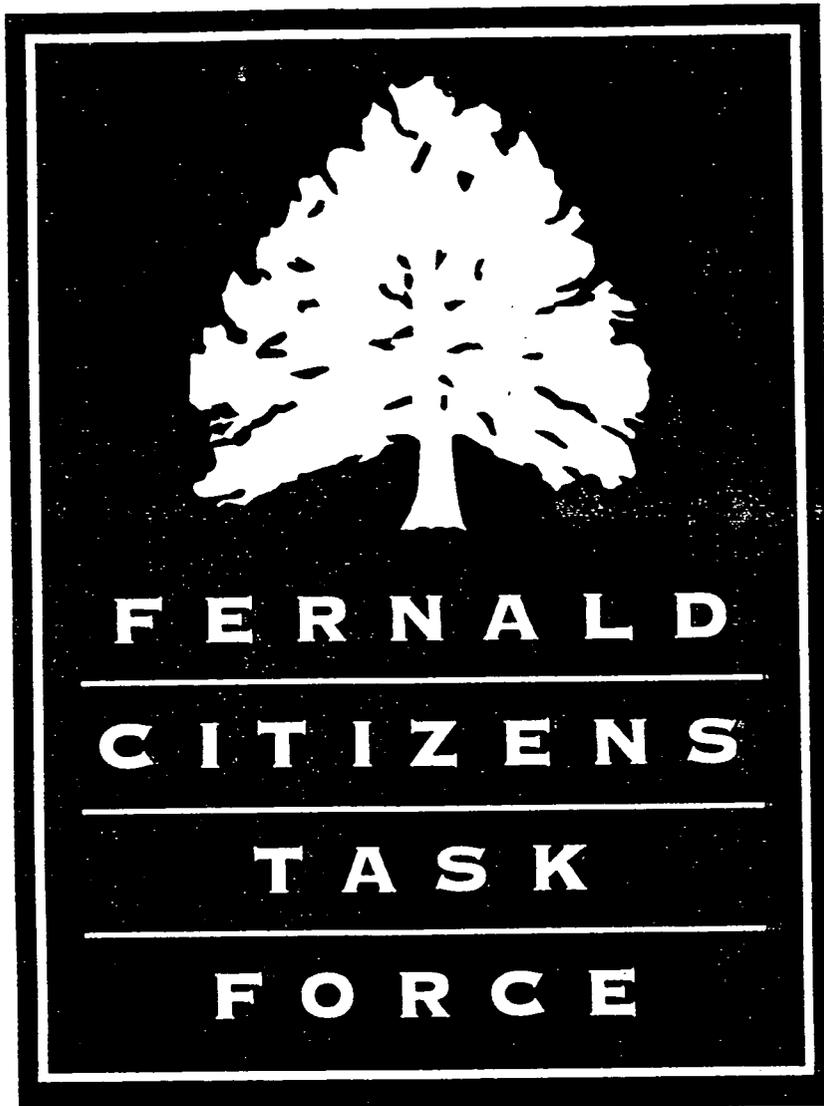
4.3 A Trustee representative meeting, not a teleconference, was scheduled for January 26, 1995 at 10:00 a.m. The focus of the meeting will be to discuss the MOU development.

Action: FERMCO to prepare for meeting and fax agenda. FERMCO will contact Don Henne to discuss potential telephone participation if he is unable to attend.

4.4 Jennifer Mailander discussed the NRDA Steering Committee and Bureau of National Affairs (BNA) article dealing with NRDA issues.

Action: FERMCO to distribute BNA article to Trustee representatives.

000000



INTERIM REPORT

PRELIMINARY RECOMMENDATIONS ON FUTURE USE AND
CLEANUP LEVELS FOR THE FERNALD SITE

NOVEMBER, 1994

000007

8/20/00

TABLE OF CONTENTS

	<u>Page</u>
I. Task Force Background	1
II. Approach	3
III. Fernald Citizens Task Force Consensus Values	7
IV. Preliminary Recommendations of The Task Force	10
Appendix A Task Force Charter	
Appendix B Task Force Member Profiles	
Appendix C Task Force Work Plan	
Appendix D Summary of Public Comments	
Appendix E Tool Box Table of Contents	
Appendix F Description of FutureSite Exercise	

I. TASK FORCE BACKGROUND

The Fernald Citizens Task Force was established in August 1993 to provide the U.S. Department of Energy (DOE) with stakeholder recommendations regarding remediation of the Fernald Environmental Management Project. The Task Force is the site specific advisory board for the Fernald facility.

The Fernald Citizens Task Force consists of fourteen stakeholders selected from communities in the vicinity of the Fernald facility to represent the broad spectrum of interests and backgrounds that are critical to the cleanup decisions at Fernald. In addition, there are three *ex officio* members representing DOE, the U.S. Environmental Protection Agency (EPA), and the Ohio Environmental Protection Agency (OEPA). The Task Force holds regular meetings on the second Saturday of each month and all of these meetings are open to the public. The Task Force Charter is provided in Appendix A and profiles of members are provided in Appendix B.

The Task Force was created in response to the Federal Facilities Environmental Restoration Dialogue Committee Interim Report of February 1993. The Task Force reports to the Assistant Secretary for Environmental Management for DOE, The Regional Administrator of EPA Region V, and the Director of the Ohio EPA. The Task Force was chartered to develop recommendations on the following issues: future use(s) of the Fernald property; cleanup levels; cleanup priorities; and waste management options.

Significance of This Report

This interim report has been developed to transmit the first phase of recommendations from the Fernald Citizens Task Force to DOE, EPA, and OEPA. It covers the first two of the four areas in which the Task Force will develop recommendations: future use of the Fernald property following cleanup and cleanup levels. As such, the report is focused on presenting the Task Force vision for the ultimate condition of the Fernald property: the level of contaminant remediation to be achieved and the best uses of land and natural resources.

This report presents the consensus recommendations of the Task Force. It is not meant to replace additional input from the general public surrounding the Fernald site; the Task Force recognizes that it does not and cannot replace a vigorous outreach program by DOE to the broadest possible public. Nevertheless, the Task Force has taken active measures to ensure that a broad cross-section of public opinion is heard in the Task Force process and is reflected in its recommendations. These measures are described in Section II and a summary of comments received from the broader public have been included as Appendix D. All recommendations presented in this report are preliminary and subject to change as new information

becomes available. This Interim Report is intended to stimulate additional interest and comment from the broader public. Such comments will be fully considered by the Task Force before issuing its final report.

Next Steps

Between December 1994 and July 1995, the Task Force will refine its recommendations for future use and will address the final two areas of its mission, cleanup priorities and waste management options. A final report will be issued in July 1995. The final report will include consideration of the full range of issues relating to on-site and off-site disposal of the waste materials and contaminated media presently at the site and that will be generated during cleanup activities. The Task Force will continue to work to achieve consensus in all of its recommendations. However, in accordance with its Charter, the final report will reflect all viewpoints where consensus could not be reached.

Report Organization

Section II provides an overview of the process taken by the Task Force in developing its recommendations. Section III presents consensus values developed by the Task Force in order to identify important considerations for all current and future activities at the site. Specific recommendations of the Task Force are presented in Section IV. These recommendations represent consensus positions of the Task Force regarding groundwater protection and cleanup, allowable risk, and future use of the Fernald property.

II. APPROACH

The Fernald Citizens Task Force's primary role is to create a vision of the appropriate future use of the property at Fernald. This includes the expected use or uses of the land and natural resources, and the level of residual contamination that those uses permit. In January 1994, the Task Force approved a work plan that identified important issues, a decisionmaking process, and milestones for developing recommendations on each of the issues. The process outlined in the Work Plan was followed in developing the recommendations identified in this report. The Task Force Work Plan is included in Appendix C.

In addition to the activities outlined in the Work Plan, the Task Force has emphasized the need to obtain broader public input. Specific activities conducted to ensure public understanding of and comment on the Task Force's process and recommendations have included:

- open monthly meetings with time set aside for public input and discussion,
- a June 9, 1994 public workshop on the FutureSite exercise,
- presentations at the February, June, and October DOE community meetings,
- a Task Force mailing address and message line for public comment,
- disseminating information through community channels,
- news releases,
- advertisement of all meetings in local papers.

As the summary of public comments in Appendix D shows, the interested public was aware of the Task Force's activities and provided input. Minutes of the Task Force meetings reflect comments at public meetings. Early on, members of the Task Force realized that decisionmaking could not proceed until some vision of the future use of the Fernald property was established. The work plan and the entire Task Force approach was built upon this understanding. Therefore, the future use of land and natural resources on and surrounding Fernald have been the first order of business for the Task Force. In essence, the Task Force began by identifying a broad range of plausible uses for the Fernald facility following cleanup, and then narrowed these options through application of known financial and technical constraints and through development of criteria relating to the concerns and needs identified by members as important. The criteria were later refined and now stand as the Consensus Values identified in Section III.

In trying to determine future use, it was determined that cleanup levels and risk are necessarily tied to land use and must be evaluated simultaneously by understanding the impact that each has on the other and the total impact on issues of importance to local communities. These issues emerged over the course of evaluation and as a result of developing the Consensus Values. We organized these

issues into the discrete evaluation criteria listed below, most of which are directly reflected in the Consensus Values.

Long-term Safety: effectiveness of available technologies over time, long-term monitoring, and ownership of the Fernald property are seen as crucial to the long-term acceptability of any cleanup scenario.

Short-term Risks: risks to workers and residents resulting from the cleanup activities themselves are of paramount concern.

On-Site Disposal Requirements: the volume of soil that will be excavated and the ultimate size of any on-site disposal facility will greatly determine the overall impact of the cleanup on local communities during and after construction.

Impact on Natural Resources: excavation of the large quantities of contaminated soil present at Fernald will have a significant impact on the flora, fauna, sensitive habitats, farmlands, and wetlands that comprise the Fernald site and surrounding properties.

Transportation and Off-Site Disposal Requirements: the Task Force is sensitive to the impacts on and potential risks to communities along transportation routes and at the ultimate disposal facility.

Community Impacts and Benefits: disruption of adjacent lands and the long-term economic, social, and aesthetic impacts on local communities and work force of the Fernald cleanup are likewise of significant importance.

Cost: as a taxpayer-funded project, the total cost of cleanup is important. While Task Force members repeatedly expressed their unwillingness to trade lives for dollars, the Task Force recognizes that DOE budget projections indicate real limitations on available resources in the future.

The constant weighing of the costs and benefits of available approaches against these criteria was the basis for narrowing options and ultimately reaching consensus. The Task Force did not use any formal quantitative models to conduct these analyses, and, other than short-term health and safety, no one criterion was clearly ranked as more important than another. Instead, a number of tools were developed to help create an overall understanding of the opportunities, constraints, costs, and benefits.

In order to understand baseline information and keep track of issues and their impacts on decisions, the Task Force relied on information presented as maps, graphs, and charts for their accessibility and completeness. These materials were

developed by Task Force staff and collected in an overall volume, referred to as the "Tool Box," which was organized by different topics for easy reference. In some cases, this information was readily available in existing site documents and modified for use by the Task Force. In other cases, Task Force staff worked directly with DOE and its contractor to develop the information required.

All of the information in the Tool Box is geared to providing the knowledge needed to understand the risk presented by the Fernald site and the various costs and benefits of different cleanup approaches and levels of cleanup. Key information in the Tool Box includes physical and chemical characteristics of Fernald and surrounding lands, current land and natural resource uses, information on risk and risk analysis, alternative cleanup levels, waste management options, and detailed descriptions of alternative future use scenarios. The future use descriptions are supplemented by charts and maps showing volume, cost, disposal cell size, and off-site transportation requirements for different options. Also included are color-coded maps that identify the scope and depth of excavation of soil required for each alternative. Figures and tables used in this report are typical of Tool Box contents and the table of contents for the Tool Box is included in Appendix E.

One important tool developed for use by the Task Force is a three-dimensional exercise called FutureSite. This exercise allowed participants to visualize the volume of contaminated soil requiring management in order to achieve alternative land uses and residual risks on the site, and to understand the physical differences of achieving different risk cleanup levels. FutureSite was instrumental in developing the future use alternatives which the Task Force ultimately evaluated. Appendix F provides a detailed description of the FutureSite exercise.

In working through scenarios, the Task Force also used a magnetic white board to picture different land use configurations and excavation impacts on the property. The board itself is a permanent map of the site that can be modified with wipe-off markers to reflect different scenarios for discussion and comparison. Other elements, such as scale-sized disposal cells, can be magnetically attached to the board and moved around to evaluate alternative locations and their impacts. The board can be modified for specific discussions with vinyl tape to identify temporary items of importance to that discussion. Like FutureSite, this visual aid has been instrumental in understanding the impacts of different alternatives on the issues that are most important to the different members of the Task Force.

Each Task Force meeting focuses on a specific set of issues as laid out in the Work Plan. Following Task Force administrative business, members spend time working through the information that has been prepared that month. This information is then placed directly in the Tool Box for reference. The second part of the meeting is generally used for discussion and decisionmaking. Public input is formally invited and there are frequent exchanges between Task Force members and members of the public. There is also regular dialogue between Task Force members,

DOE, and contractor staff members familiar with particular issues. An effort has been made to keep meetings informal and accessible, while maintaining focus on specific issues. Consensus is achieved by hearing direct motions from the group and unanimous vote.

III. FERNALD CITIZENS TASK FORCE CONSENSUS VALUES

The Task Force believes that the future use of the Fernald property should protect human health and the environment, affirmatively benefit the communities impacted while the site was operational, and eliminate the potential for activities similar to those which generated the current situation. In an effort to promote this vision, the Task Force identified a number of values that are important to the evaluation of alternative courses of action for the future of Fernald. These values are used by the Task Force in guiding our decisionmaking and are embodied in our recommendations. In addition, the Task Force hopes that future decisionmakers at the Fernald site will use these values. While we recognize that not every single value can be fully achieved, we hope that the overall intent of these values as a whole can be maintained.

Environmental Values

- Identify and preserve significant natural ecosystems with a special emphasis on naturally occurring wetlands, Paddys Run, and threatened and endangered species.
- Minimize impacts on the environment during remediation and maximize restoration of the environment after remediation.
- Ensure that any waste left on the site be controlled to prevent further contamination of the Great Miami Aquifer, air, and soils on- and off-site.
- Any future site use must be protective of the environment.

Economic Values

- Emphasis should be placed on future uses that provide some level of continuing employment for area residents, but not necessarily in categories that have traditionally been present at the site.
- Future uses and ownership should be structured so that local tax revenues or payments in lieu of taxes are provided.
- Where practical, infrastructure should be used to enhance the suitability of the property for future use subject to environmental and health values.
- The cleanup of the Fernald facility should be done in such a way as to reduce the stigma of past practices at the site and assist in the continuing use and development of surrounding properties.

Social and Human Values

Future uses must have a positive impact on the surrounding communities, including:

- Acceptable risks to the current and future residents and workers of the Fernald community, with a special emphasis on the effects on children and future generations.
- Input and involvement from the public at large.
- Compatible with current and projected off-site uses.
- Special emphasis on promoting history, research, and education.
- Demonstrating how a negative situation can be turned into a positive by not repeating the mistakes of the past which resulted in the current conditions at Fernald.

Long Term Management Values

- A long-term control mechanism for the site must be established to ensure the perpetual moral and financial responsibility of the Federal government for the continued management, monitoring, and emergency response capability regarding all wastes left on the facility.
- Long-term uses and institutional control mechanisms must be reconciled with local zoning and planning.
- All selected uses resulting in waste being left on site must have the built-in flexibility to provide for future changes in use and for more complete cleanup should financial, technical, or demographic changes warrant.
- A long-term mechanism must be established to ensure citizen involvement in the control, management, and future decisions at the site

General Use Values

- Any future use plan must recognize that a mixed use strategy may be the most effective for the long-term use of the site.
- Emphasis should be placed on reducing the physical barriers and physical evidence of the past use of the site and focus on ways that Fernald can be a better neighbor to the surrounding community
- Under no circumstances should a post-remediation future use be permitted at the facility which requires the importing of hazardous, radioactive, mixed or solid waste for any reason.
- All uses and cleanup plans for all waste, shipments, and treatments must explicitly recognize all political, safety and health impacts.
- Future uses of the site must be focused on non-hazardous activities.

IV. PRELIMINARY RECOMMENDATIONS OF THE TASK FORCE

The primary goal of the Task Force in making recommendations is to ensure a safe cleanup of the Fernald property. Minimizing both short and long-term risks to local residents, site workers, and residents of the distant communities that would be impacted by off-site transport and disposal of Fernald wastes is paramount in our minds. Secondly, we want to recommend an approach to cleanup that maximizes reduction in contamination while minimizing the disruption of remediation activities on the local community. In keeping with this overall approach and our Consensus Values, the Task Force has reached consensus recommendations in the areas of aquifer protection and cleanup, allowable risk and cleanup levels for soils, and future land uses. Specific recommendations and a discussion of the Task Force rationale for each of these issues is presented below.

Our focus throughout the process of developing these recommendations was on the uranium contamination found at the site, particularly in site soils and groundwater. We used uranium as a benchmark for our recommendations because it is by far the most significant contaminant in the soils and groundwater both by mass and hazard. The overall volume and risks represented by the uranium contamination dwarfs that presented by other contaminants of concern. Accordingly, with a few exceptions, it is appropriate to assume that the cleanup of soil and groundwater based on uranium concentrations will result in the removal of all other contaminants as well. Where this is not the case, the Task Force has been careful to present our recommendations so that safe levels of other contaminants can be clearly derived.

Specific Recommendations of the Task Force

- Past impacts of the Fernald site on the Great Miami Aquifer must be remediated and any future impacts controlled so that groundwater quality meets the standards of the Safe Drinking Water Act.
- The excess risk of contracting cancer posed by exposure to Fernald contamination under any use of land on and off the Fernald property shall never exceed one in ten thousand (1×10^{-4}). This recommendation is intended to establish a maximum level of allowable risk, not a target; recommendations of the Task Force regarding aquifer protection and hazard index must also be considered and the most stringent cleanup levels applied. Additionally, the Task Force recommends limiting land use even in cases where the concentrations achieved in the soil would allow for less restrictive uses, to provide for an additional margin of safety.

- All contaminated soils and other waste sources both on and off the Fernald property must be reduced to levels that will provide safety from non-cancer toxicological effects at a level equivalent to a hazard index of one.
- All contaminated soils and other waste sources both on and off the Fernald property must be reduced to levels that will prevent contaminants from reaching the aquifer at levels that would result in groundwater concentrations exceeding Safe Drinking Water Act levels.
- For the purpose of evaluating risks, all off-property land is to be considered at the resident farmer scenario to provide for the most stringent cleanup levels.
- The best use of the land on the Fernald property itself does not necessarily include agricultural or residential uses.
- There should be no new agricultural or residential uses on the Fernald property following remediation.

Discussion of Aquifer Protection and Cleanup Levels

- Past impacts of the Fernald site on the Great Miami Aquifer must be remediated and any future impacts controlled so that groundwater quality meets the standards of the Safe Drinking Water Act.

Because protection of the aquifer was one of the consensus values, The Task Force took an in-depth look at the options for dealing with groundwater contamination. We evaluated three distinct endpoints: cleaning to the 1×10^{-6} drinking water risk, which is 3 parts per billion (ppb) for uranium, cleaning to the EPA maximum contaminant level (MCL), which is proposed at 20 ppb for uranium (equivalent to a risk of 2×10^{-5}), and not cleaning at all but letting the aquifer flush itself over time.

In comparing these alternatives, the Task Force evaluated a wide range of issues as identified in Figure 1. Due to the prevailing groundwater flow through the Fernald site, all contamination would ultimately reach the Great Miami River where the volume of water would dilute the contamination to low levels. The primary threat of the contamination to drinking water sources has been largely checked by homeowners seeking alternate sources and a new water line currently being installed. On the surface, it appeared that dilution might be a viable approach to dealing with groundwater contamination. However, if left unchecked, as much as four thousand surface acres and 32 billion gallons of water would ultimately be

FIGURE 1. GROUNDWATER ISSUES CONSIDERED

ISSUE		Max. Contaminant Levels (20 ppb)	1×10^{-6} Risk (3 ppb)
Current Impact of Fernald on GMA	Gallons	1.7 billion	5.8 billion
	% of Total GMA	0.018 %	0.062%
Projected aquifer impact if source soils are removed but no groundwater treated	10 years	2.1 billion gallons	6.8 billion gallons
	25 years	2.5 billion gallons	8.1 billion gallons
	50 years	2.7 billion gallons	9.9 billion gallons
Projected aquifer impact if <u>no</u> source soils are removed and no groundwater treated	10 years	2.1 billion gallons	6.8 billion gallons
	25 years	2.6 billion gallons	8.1 billion gallons
	50 years	3.4 billion gallons	11 billion gallons
	1000 years	23 billion gallons	32 billion gallons
Current area impacted by contamination	acres	not available	1,500
	residential wells	not available	9
	industrial wells	not available	8
	total households	not available	19
	total businesses	not available	7
Projected maximum area impacted by contamination	acres	not available	4,200
	residential wells	not available	58
	industrial wells	not available	26
	total households	not available	403
	total businesses	not available	25
Time to reach cleanup levels if source soils are removed	Full pump & treat	35 years	70 years
	South plume wells	90 years	350 years
	No pumping	160 years	500 years
Time to reach cleanup levels if source soils are not removed		thousands of years	thousands of years
Time until contamination reaches the Great Miami river without pumping		140 years	40 years
Cost of Groundwater Cleanup (assumes source soils are removed)	Begin today	\$396 million	\$800 million
	Begin in 10 years	\$485 million	\$952 million
	Begin in 25 years	\$590 million	\$1.12 billion
	Begin in 50 years	\$644 million	\$1.4 billion
	Property purchase	\$750 million	\$750 million

impacted requiring widespread condemnation of the aquifer for many generations according to current projections. The Task Force views the social, environmental, and potential legal and administrative costs of such an approach as unacceptable.

The Task Force also evaluated measures to contain the contaminated groundwater within the site boundaries. The current pumping wells appear to have successfully stopped migration of the south plume. However, any such interim or containment measure would only result in the need for virtually perpetual action due to the long half-life of uranium. Thus, interim or containment measures would require repeated replacement of water treatment facilities at the end of their useful lives, approximately every thirty to forty years. With the constant risk of losing funding for new construction activities, the Task Force was not willing to take such an approach. Ultimately, such approaches would result in higher costs than for a total and rapid cleanup today. Decisive action now will be able to provide cleanup to MCLs within the life span of a single treatment plant.

The Task Force concluded that Fernald's impact on the Great Miami Aquifer is a significant concern and the only viable course of action is to seek a complete and rapid cleanup of the groundwater. The Task Force opted to recommend using MCLs as a cleanup goal. MCLs are widely accepted, protective of human health and the environment, and both technologically and practically achievable. The Task Force believes that attempts to clean up the aquifer to 1×10^{-6} levels would likely result in a great deal of expense to chase very little contamination, would require much longer periods of time to achieve results, and offer little ultimate benefit in the overall protection of human health and the environment.

000041

Discussion of Risk and Cleanup Levels for Soils

- The excess risk of contracting cancer posed by exposure to Fernald contamination under any use of land on and off the Fernald property shall never exceed one in ten thousand (1×10^{-4}). This recommendation is intended to establish a maximum level of allowable risk, not a target; recommendations of the Task Force regarding aquifer protection and hazard index must also be considered and the most stringent cleanup levels applied. Additionally, the Task Force recommends limiting land use even in cases where the concentrations achieved in the soil would allow for less restrictive uses, to provide for an additional margin of safety.
- All contaminated soils and other waste sources both on and off the Fernald property must be reduced to levels that will provide safety from non-cancer toxicological effects at a level equivalent to a hazard index of one.
- All contaminated soils and other waste sources both on and off the Fernald property must be reduced to levels that will prevent contaminants from reaching the aquifer at levels that would result in groundwater concentrations exceeding Safe Drinking Water Act levels.

The Task Force evaluated risks throughout the range of risks considered acceptable by EPA for Superfund cleanups of 1×10^{-4} (1 in 10,000) to 1×10^{-6} (1 in 1,000,000) excess chance of contracting cancer in a lifetime. We evaluated this range of risks across a broad spectrum of land uses in evaluating the overall level of cleanup that should be required at Fernald. A table showing the cleanup levels used in this evaluation is shown in Figure 2. These cleanup levels were provided to the Task Force by DOE and have been accepted by EPA and the Ohio EPA. However, the Task Force has not evaluated the underlying assumptions for these cleanup levels and plans to look closely at these assumptions over the coming months.

Evaluating the impacts of applying different risks across different land uses allowed the Task Force to compare numerous factors including total soil volumes requiring excavation; off-site disposal requirements; on-site disposal requirements and disposal cell size; total cost; environmental impacts; and technical, legal, economic, and social implementability. The most striking concern in making this decision was the volume of soil that would require excavation beyond the Fernald property boundary if a 1×10^{-6} risk for a residential scenario were chosen. At this risk level, a total of 5,200,000 cubic yards of soil would be removed from off property alone. Disposal of this amount of material combined with the on-site volumes would require a disposal cell of approximately 400 acres, or, if shipped off site, approximately 430,000 truckloads or 1,350 trainloads.

FIGURE 2. FUTURE USE SCENARIOS AND CLEANUP LEVELS*

FUTURE USE CATEGORY	EXPOSURE ASSUMPTIONS	SOIL LEVELS AT 10 ⁻⁴ RISK	SOIL LEVELS AT 10 ⁻⁵ RISK	SOIL LEVELS AT 10 ⁻⁶ RISK	SOIL LEVELS AT HI=1
Resident Farmer	Assumes full-time life-long resident growing crops for human consumption and grazing livestock.	130 ppm	15 ppm	5 ppm	50 ppm (Child)
Industrial	Assumes maximum exposure to on-site groundskeeper.	1200 ppm	125 ppm	15 ppm	250 ppm
Developed Park	Assumes free access recreational facility with developed sports, picnic, and rest room facilities.	3490 ppm	350 ppm	40 ppm	1080 ppm
Green Space	Assumes unlimited access to nature trails, but with no developed facilities.	8820 ppm	885 ppm	90 ppm	1470 ppm
Protection of Aquifer in Zone I: Production Area	Soil concentrations required to prevent contamination leaching into aquifer above MCLs. Higher solubility uranium in Zone I drives lower cleanup levels.	10 ⁻⁴ levels do not protect GMA to at least MCLs	20 ppm	5 ppm	--
Protection of Aquifer in Zone II: Site Border	Soil concentrations required to prevent contamination leaching into aquifer above MCLs. Zone II contains lower solubility uranium but also thinner clays. Most stringent level used for entire zone.	10 ⁻⁴ levels do not protect GMA to at least MCLs	100 ppm	10 ppm	--

* Cleanup levels were provided by DOE. Use of these levels for decisionmaking by the Task Force does not imply acceptance of all assumptions and procedures used in setting these levels.

000000

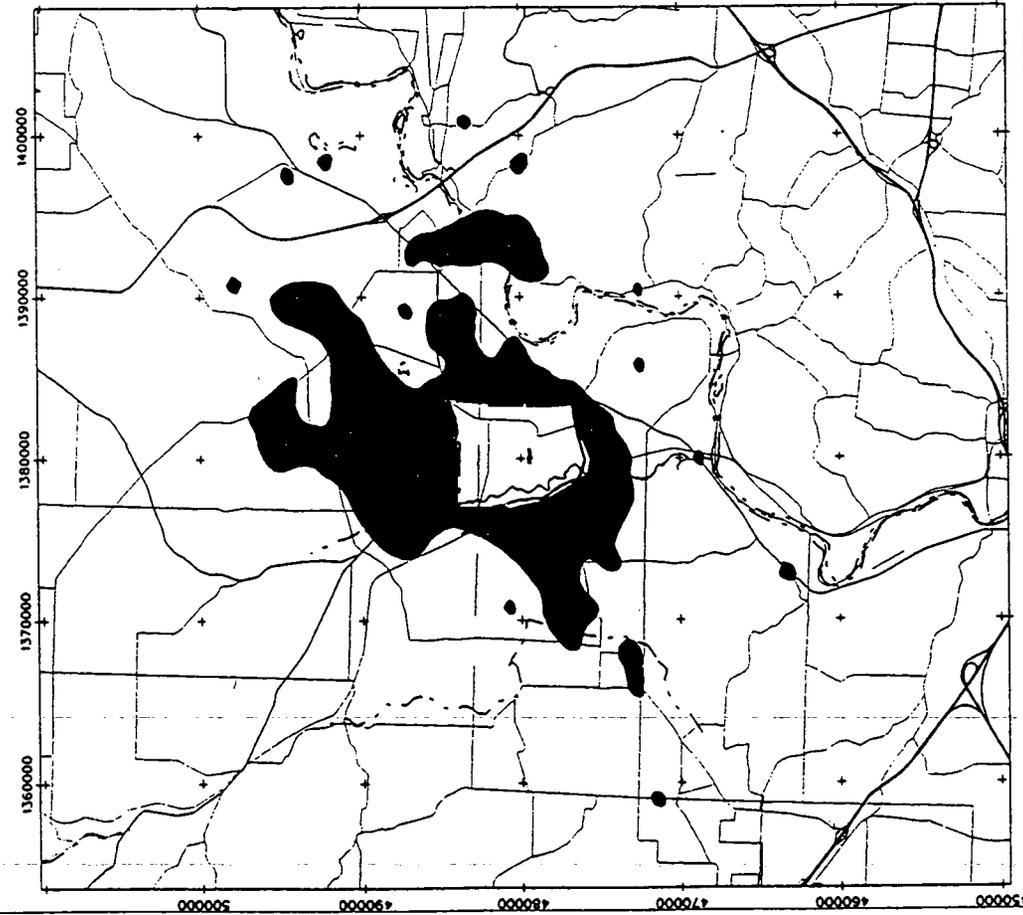
The Task Force is also concerned about the serious ecological damage that would occur from widespread excavation. At 1×10^{-6} cleanup levels, the required excavation would rob 11 square miles of surrounding homes and farmlands of vital top soil, mature trees, and vegetation and would cause enormous disruption to lives and livelihoods during construction. Though ultimately the top soil would be replaced and vegetation replanted, it would be generations before the ecosystems fully recovered. The short-term risks to current residents and workers due to disturbance and resuspension of contamination and construction accidents far outweigh the very small reductions in long-term risk that would be achieved. Moreover, because the cleanup level for resident farmer at 1×10^{-6} of 5 parts per million (ppm) is so close to background levels of uranium of 3.7 ppm, it would be difficult to even distinguish where this contamination occurs. Finally, it is important to the Task Force that risk criteria be consistently applied across the site and 1×10^{-6} was rejected as an option for groundwater cleanup.

The Task Force looked carefully at the levels of contamination that have actually been found off the Fernald property. Several interim cleanup (removal) actions and the tilling action of farming on much of the off property land has resulted in eliminating much of the detectable contamination. In all cases, the contamination is well below the cleanup requirements to protect for a resident farmer exposure at 1×10^{-4} (130 ppm), and only marginally above the resident farmer requirements at 1×10^{-5} (15 ppm). It is only as we approach background (3.7 ppm) that uncertainty would drive high volumes of soil removal. Figure 3 shows the excavation areas required off the Fernald property to achieve 1×10^{-5} and 1×10^{-6} risk levels. Taking into consideration the existing low levels of contamination found off the Fernald property and the desire to limit the disruption of off-site homes and farms, the Task Force decided on a maximum residual risk from Fernald soils of 1×10^{-4} .

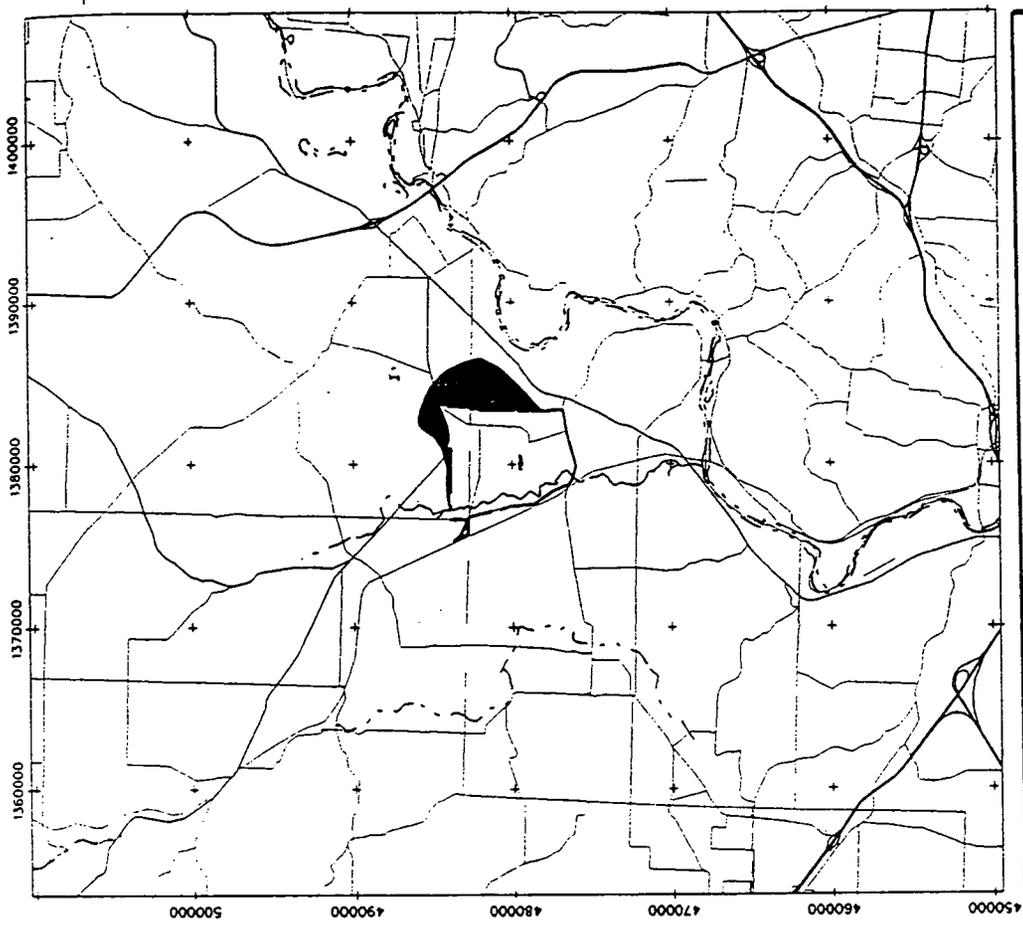
The Task Force selected the 1×10^{-4} risk, however, with the full understanding that uranium concentrations in soil necessary to meet the goal of fully protecting the aquifer to MCLs over the long term are even more stringent. Using current calculations, most locations both on and off the Fernald property must achieve a total uranium concentration of 100 ppm in soils to prevent groundwater concentrations from exceeding MCLs. This level is lower than the 130 ppm concentration necessary to support a resident farmer at a risk of 1×10^{-4} . The high solubility of uranium found in the former production and sewage treatment areas results in an even more stringent requirement of 20 ppm total uranium in order to protect the aquifer. In choosing to remediate soils to protect the aquifer, the Task Force has also deliberately provided a level of protection above the stated risk maximum for surface users.

Further, the Task Force's commitment to safe cleanup levels requires the consideration of toxicological impacts in addition to carcinogenic impacts. EPA evaluates toxicity against a numerical scale called a hazard index. The total toxicity

FIGURE 3. OFF-SITE EXCAVATION AT 1×10^{-5} AND 1×10^{-6} RISK



OFF-SITE SOILS REQUIRING REMEDIATION AT
 1×10^{-6} RISK



OFF-SITE SOILS REQUIRING REMEDIATION AT
 1×10^{-5} RISK



520000
000000

of a compound is determined from its toxic properties, concentration, and potential exposure. A hazard index of 1 is considered the threshold where health effects could potentially be observed. For total uranium in a resident farmer scenario, a cleanup level of 50 ppm is required in order not to exceed a hazard index of 1. This 50 ppm concentration would apply at all off-property locations, but not on the Fernald property as the Task Force does not recommend allowing such intensive uses of Fernald. However, sampling results to date indicate that there are actually few places outside the former production area where concentrations currently exceed 50 ppm.

As noted above, we understand that, for the most part, using total uranium as a benchmark will result in the excavation and safe disposal of all of the contaminants of concern found at the Fernald site. There will be exceptions, however, and for them our general clean-up criteria apply:

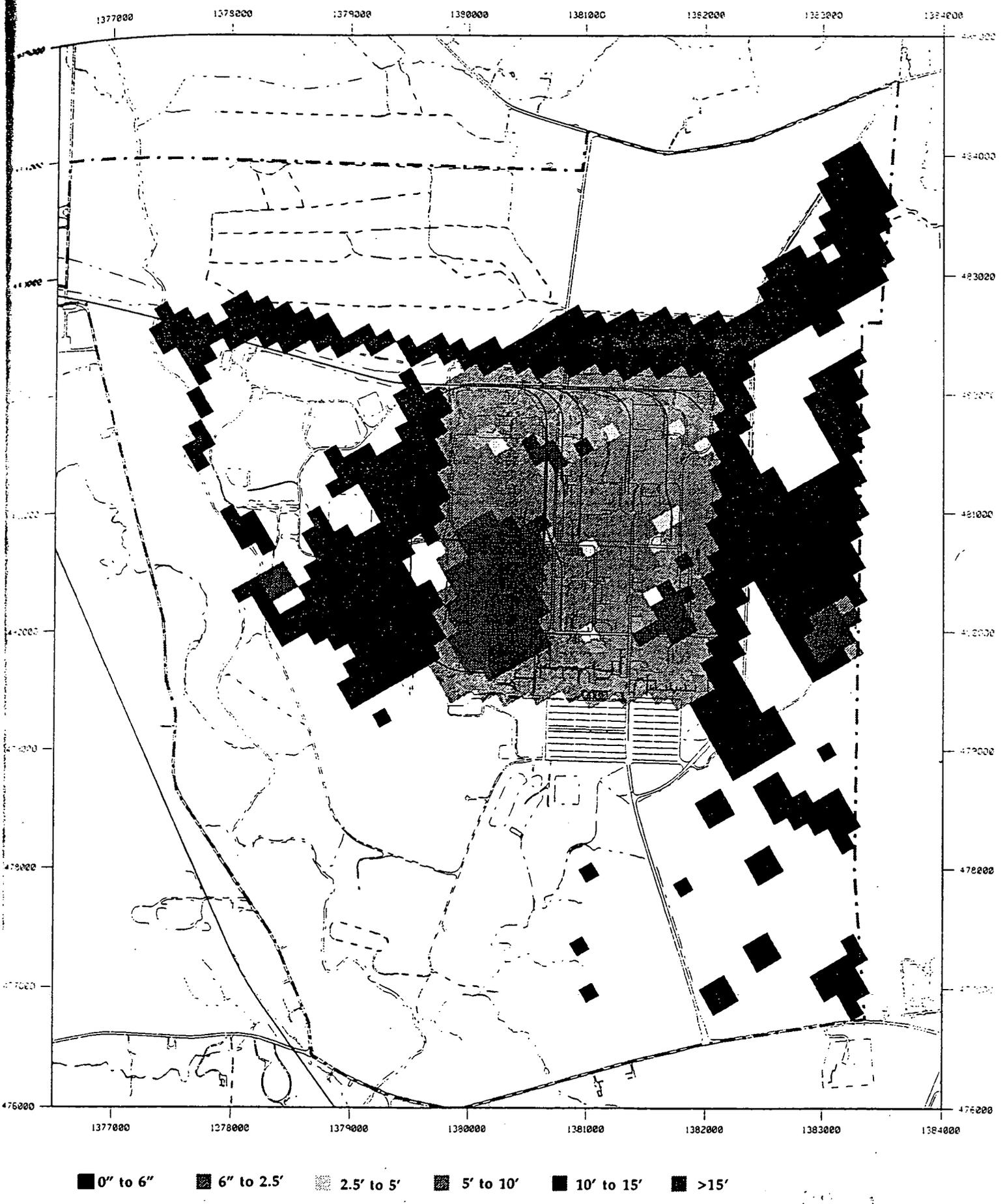
- cancer risks not to exceed 1×10^{-4} ,
- protection of aquifer to MCLs,
- non-cancer risks not to exceed a hazard index of 1.

The resulting cleanup levels for total uranium using these recommendations and currently available risk analyses are as follows:

- 20 ppm within the former production and sewage treatment areas,
- 100 ppm within all other points on the Fernald property,
- 50 ppm for all locations off the Fernald property.

Figure 4 identifies the location of these cleanup levels on the property. Using these cleanup levels, a total of 1,616,000 cubic yards of contaminated soil would have to be excavated from the Fernald property. Figure 5 identifies the projected extent and depth of this excavation.

FIGURE 5. EXCAVATION REQUIRED TO ACHIEVE PRELIMINARY CLEANUP LEVELS 6437



Discussion of Future Land Uses

- For the purpose of evaluating risks, all off-property land is to be considered at the resident farmer scenario to provide for the most stringent cleanup levels.
- The best use of the land on the Fernald property itself does not necessarily include agricultural or residential uses.
- There should be no new agricultural or residential uses on the Fernald property following remediation.

After safety, the Task Force is concerned with the ability of area residents to maintain their homes and livelihoods in a safe and continuous manner. The Task Force is seeking to minimize negative impacts on area residents from the cleanup activities and ultimate use of the Fernald property, while still protecting public health and the environment. In the opinion of the Task Force, on-site property is least suitable for residential or agricultural uses, even if residual levels of contamination are achieved which allow for such uses.

The Task Force has not yet determined the specific use or uses for which the site is best suited. We recognize that some use of the site is desirable. Local communities should see some ultimate benefit from the cleaned up site. However, the Task Force is also aware that DOE has recommended that some portion of the site be dedicated to the long-term disposal of the contaminated materials present at Fernald. The Task Force must first fully evaluate the viability of on-site waste disposal and develop our own recommendations with regard to waste disposition before coming to detailed conclusions regarding land uses. The proximity to a long-term disposal facility and the Task Force's desire for a margin of safety make it unlikely that we would recommend uses which allow for intensive activities at a high level of exposure.

Our goal is to develop recommendations as to the best overall use of the Fernald property following remediation. In doing this, we will look closely at the prospect of on-site waste disposal and a suitable location for such disposal, if any, within the site borders. In developing our final recommendations, we will also take into consideration the real and perceived dangers of residual wastes and disposed wastes on site, economic viability and potential for return, ecosystem protection, and overall impact on the community. Formal recommendations on waste disposition and land use will be presented in the final report scheduled for July 1995.

Appendix A

Task Force Charter

FERNALD CITIZENS TASK FORCE

A U.S. DEPARTMENT OF ENERGY SITE-SPECIFIC ADVISORY BOARD

TASK FORCE CHARTER

Citizens of Ohio have expressed an interest in providing a local viewpoint to guide the federal and state governments as critical decisions are made in the restoration and future uses of Fernald. The Department of Energy, U.S. Environmental Protection Agency, the Ohio Environmental Protection Agency are committed to the concept that a Citizens Advisory Task Force will serve the public interest and provide useful information and ideas. Because environmental restoration activities are at a pivotal juncture in the decision-making process, the Task Force's contributions are critical to the successful remediation of the Fernald site. There is a mutual understanding that stakeholders desire and deserve a role in the process that will influence their future for generations.

Scope

The focus of the Task Force is the future of the Fernald site. The Task Force will make recommendations regarding the potential uses of the Fernald site and the criteria for cleanup to ensure an environmental restoration that is appropriate for current and future generations. The Task Force recommendations will be made to the Assistant Secretary for Environmental Restoration and Waste Management (hereafter "Assistant Secretary"), the U.S. EPA Region 5 Administrator and the Director of Ohio EPA.

Membership

The Task Force is to be composed of no more than 15 Ohio residents, who are interested in the future of this site and who bring knowledge, views, technical expertise, and other skills to bear on a complicated technical and social problem: Fernald Cleanup. The members are appointed by the Assistant Secretary, with the concurrence of U.S. EPA Region 5 Administrator and the Director of Ohio EPA. Appointment of half of the original members of the Task Force shall be for 3-year terms and half for 2-year terms. Subsequent appointments will be for 2-year terms. No one is eligible for more than 2 terms. Two non-voting alternate members may be appointed and participate in the deliberations.

S. Applegate
B. Bierer
D. Clawson
Crawford
Dunn
Constance Fox
Guckenberger
Huff
Monahan
B. Rentschler
Tabor
E. Strunk
Wagner
Willeke
Beckner
Embry
Office:
Phillip Hamric
Thomas Mitchell
Seric

In the future, new members shall be appointed by the Assistant Secretary with the concurrence of U.S. EPA Region 5 Administrator and the Director of Ohio EPA, from a list of interested citizens that has been prepared by a subcommittee of the Task Force. Ex-officio members (non-voting) shall consist of one responsible person from each of the interested governmental agencies, U.S. DOE, U.S. EPA, and Ohio EPA. A quorum is 3/5ths of the voting members, and shall be required for decision-making.

Responsibilities Of The Chair

The Assistant Secretary with the concurrence of U.S. EPA Region 5 Administrator and the Director of Ohio EPA shall appoint one voting member of the Task Force to be its Chair. The Chair represents the Task Force in all official communications; presides at meetings; sets the times, places, and agenda for meeting; appoints committees; and retains consultants and is otherwise responsible for the administration of the Task Force.

Termination Of Task Force

The Task Force shall evaluate its work at 3 year intervals and decide whether to continue. The decision to discontinue must be agreed to by at least 2/3rds of the full voting membership of the Task Force.

Funding And Support

The Assistant Secretary shall provide adequate funding for administrative support (including staff), travel and other expenses of the members, and technical assistance (including research, honorarium and travel of experts) that the Task Force deems is necessary.

Work Product

The Task Force shall be guided by the deadlines under the Consent Agreement so that their advice is timely, and by the Interim Report of the Federal Facilities Environmental Restoration Dialogue Committee (February 1993). Recommendations from the Task Force to the agencies shall be in the form of written reports as deemed appropriate and shall respond to the following questions: 1) What should be the future use of the site? 2) Determinations of cleanup levels (How clean is clean?) 3) Where should radioactive and hazardous waste be disposed that is generated as a result of restoration activities? and 4) What should be the cleanup priorities?

Response to these questions depend on a set of conditions including but not limited to: 1) State of Ohio regulations and disposal criteria; 2) other state regulations regarding acceptance of waste; 3) available data on health effects and risks from the specific contaminants at the site; and 4) monies appropriated for cleanup. It is desirable that the Task Force set priorities for responding to questions and provide as much guidance as possible regarding their assessments.

Decision Making

The Task Force shall work toward consensus reports regarding recommendations on various issues, however, on certain issues a minority report may be necessary. In these rare instances it is necessary to articulate in writing both the areas of agreement and disagreement and the reasons why there continues to be differences. Remedies recommended should be consistent with CERCLA.

Agency Collaboration

The agencies participating as ex-officio members of the Task Force shall assist the Task Force by providing technical expertise and assuring that all information necessary for Task Force deliberations is made available in a timely manner.

Meetings

The Task Force shall have regular public meetings in addition to working group meetings which will be announced in advance with an agenda. Such meetings shall be open to the public and opportunities for public comment shall be designated. The Task Force may vote to meet in executive session and formally vote during these sessions. Minutes of these meetings shall be available.

Adopted October 14, 1993

Appendix B

Task Force Member Profiles

FERNALD CITIZENS TASK FORCE

MEMBERS

John Applegate	Professor of environmental law at the University of Cincinnati College of Law; he is the chair of the Task Force (1996).
James Bierer	seventh grade science teacher in the Ross School District (1995).
Marvin Clawson	long-time area resident and property owner (1995).
Lisa Crawford	President of Fernald Residents for Environmental Safety and Health (FRESH) (1996).
Pam Dunn	auditor with the state and Treasurer of FRESH (1996).
Dr. Constance Fox	physician and a member of Physicians for Social Responsibility (1995).
Guy Guckenberger	Hamilton County Commissioner (1995).
Darryl Huff	Vice Chairman of the Morgan Township Zoning Board (1996).
Jerry Monahan	Secretary/Treasurer of the Greater Cincinnati Building and Construction Trades Council (1996).
Tom Rentschler	member of the Miami Conservancy District and area businessman (1995).
Warren Strunk	Crosby Township Trustee (1995).
Robert Tabor	Safety Chairman, Fernald Atomic Trades and Labor Council (FATLC). He is representing President Robert Schwab (1996).
Thomas Wagner	Professor of community planning at the University of Cincinnati and an expert in dispute resolution (1995).
Gene Willeke	Professor, Institute of Environmental Sciences at Miami University (1996).

EX OFFICIO MEMBERS

Jim Saric	the remedial project manager for U.S. EPA Region 5.
Graham Mitchell	the project coordinator for Ohio EPA.
J. Phillip Hamric	DOE Site Manager.

ALTERNATE MEMBERS

Russell Beckner	area resident (1995).
Jackie Embry	public health nurse (1996).

(year in parentheses indicates end of term)

Appendix C
Task Force Work Plan

FERNALD CITIZENS TASK FORCE

A U.S. DEPARTMENT OF ENERGY SITE-SPECIFIC ADVISORY BOARD

Chair:
John S. Applegate

Members:
James Bierer
Marvin Clawson
Lisa Crawford
Pam Dunn
Dr. Constance Fox
Guy Guckenberger
Darryl Huff
Jerry Monahan
Tom B. Rentschler
Robert Tabor
Warren E. Strunk
Thomas Wagner
Dr. Gene Willeke

Alternates:
Russ Beckner
Jackie Embry

Ex Officio:
J. Phillip Hamric
Graham Mitchell
Jim Saric

ACTIVITIES AND PROCESS WORKPLAN February, 1994

OVERVIEW

It is proposed that the process for involvement of the Fernald Citizens Task Force in the cleanup of the Fernald facility will include five phases. The first two phases, Convening and Orientation and Approach, are complete. Phases III and IV of the process are designed to encompass the development of recommendations for the future use of the Fernald property, corresponding cleanup levels, and the prioritization of cleanup activities. This work will begin with an identification of the unconstrained future use options for the facility, i.e. asking the question "what would you like to see happen with this property?" This "wish list" of sorts will be pared down by then asking "what is likely to happen in this area in the future?" and "what is feasible given the problems at Fernald and current technological capabilities?" The Task Force will look at this smaller set of options in more detail to identify the corresponding cleanup levels, volumes of materials requiring treatment, likely cleanup technologies, and costs. Using this information, the Task Force will make recommendations as to the desired future uses of the Fernald facility and the corresponding cleanup levels. It is important to be clear that the cleanup of the Fernald facility will not create a specific future use, but rather clean up to a level that will provide for the development of some uses while restricting the ability to develop others. The Task Force recommendations will be developed to reflect this distinction. Phase V of the process will focus on monitoring progress of cleanup and will be developed in detail at a later date.

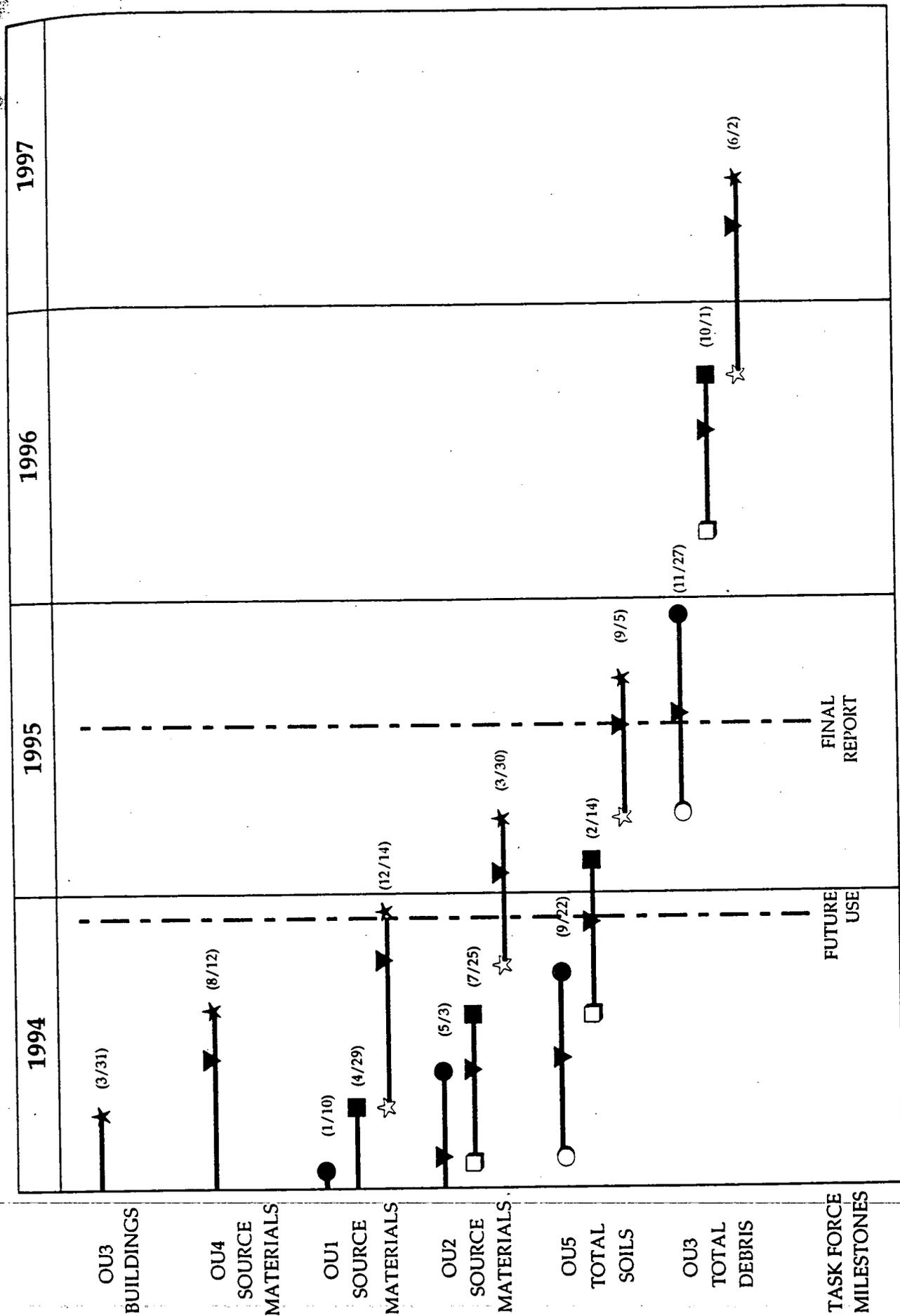
SCHEDULE

The Task Force schedule for phases III and IV have been designed to coincide with the current decision making activities of the Department of Energy and the Environmental Protection Agency. Key decisions with regard to the final disposition of all site soils will be made in conjunction with the final Record of Decision for Operable Unit 5. This Record of Decision is scheduled to be final in September of 1995. The Task Force Final Report is scheduled to be complete in July 1995 coincident with the draft Record of Decision from the Department of Energy, but in reality many of the most important recommendations of the Task Force will be available well before that time. An outline of the key activities of the Task Force with the corresponding timeframes is presented in Figure 1. Figure 2 shows how this process correlates to the activities at Fernald as currently planned.

**Figure 1.
ACTIVITY TIMELINE FOR THE FERNALD CITIZENS TASK FORCE**

<u>Key Activities</u>	<u>Meetings Covered</u>
PHASE I: CONVENING TASK FORCE (Completed)	<i>June - August 1993</i>
PHASE II: ORIENTATION AND APPROACH (Completed)	
SITE ORIENTATION	<i>September 1993</i>
DEFINE MISSION	<i>October 1993</i>
WASTE DISPOSAL AND LAND USE ORIENTATION	<i>November 1993</i>
DEVELOP FUTURE USE APPROACH	<i>December 1993</i>
PHASE III: CLEANUP PARAMETERS	
IDENTIFY OPTIONS FOR FUTURE USE	<i>January 1994</i>
UNDERSTAND SITE CONDITIONS	<i>February/March 1994</i>
TECHNOLOGY AND DEMOGRAPHIC SCREENING OF OPTIONS	<i>April/May 1994</i>
DESCRIPTIONS OF "REASONABLE" OPTIONS	<i>June 1994</i>
CLEANUP LEVELS ANALYSIS	<i>July/August 1994</i>
VOLUME AND COST COMPARISONS	<i>September 1994</i>
PREFERRED FUTURE USES AND CLEANUP LEVELS	<i>October/November 1994</i>
PHASE IV: IMPLEMENTATION AND PRIORITIES	
VISIONING 10, 25, 50 YEARS INTO FUTURE	<i>December 1994</i>
INSTITUTIONAL CONTROLS/USE AND OWNERSHIP CHANGES	<i>January/February 1995</i>
CLEANUP PRIORITIES AND TIMING	<i>March/April 1995</i>
TASK FORCE FINAL REPORT	<i>May/June /July 1995</i>
PHASE V: MONITORING PROGRESS	<i>To Be Determined</i>

Figure 2. SCHEDULE OF FERNALD DECISIONS AND KEY TASK FORCE MILESTONES



KEY: ○ Draft RI ● Final RI ☆ Draft ROD ▼ Draft to EPA
 □ Draft ROD ★ Final ROD

000039

DESCRIPTION OF ACTIVITIES

This section is designed to provide a brief description of the outcome, process, and input to each of the key activities of the Task Force Process. The prospective activities described for Phases III and IV are meant to describe only those activities that correspond to future use, cleanup levels, and cleanup priorities. In addition the Task Force will address ongoing issues of importance to the site and a portion of each meeting will be devoted to such activities. These items will include, but not be limited to, comments on proposed plans, local issues relevant to the Fernald site, and other activities within the Department of Energy cleanup program. Specific agendas and detailed plans will be developed and distributed prior to each meeting.

PHASE I: CONVENING TASK FORCE (Completed)

June - August 1993

The Department of Energy engaged Dr. Eula Bingham to select a representative group of stakeholders in the cleanup of the Fernald site to be members of the Task Force. Dr. Bingham also drafted, in consultation with the Department of Energy, the Environmental Protection Agency and the Ohio Environmental Protection Agency, a charter for the Task Force. This phase concluded with the official appointment of the Task Force Members and a Chairperson.

PHASE II: ORIENTATION AND APPROACH (Completed)

SITE ORIENTATION

September 1993

The Task Force met twice for a tour of the site and a day-long retreat. The retreat covered introduction of stakeholders and their interests, the context of the Task Force in the cleanup program, introductions of key individuals, the legal context of the decision making process, physical characteristics of the site, and risk assessment fundamentals.

DEFINE MISSION

October 1993

The Task Force approved its charter, approved ground rules regarding membership, and discussed other organizational issues. The Task Force determined its basic approach to making its recommendations regarding waste disposal, cleanup levels, and cleanup priorities in light of future use.

WASTE DISPOSAL AND LAND USE ORIENTATION

November 1993

The Task Force developed a process and criteria for selecting a coordinator to direct the group's work in Phase II and beyond. Presentations on land use planning and basic waste disposal techniques were made.

DEVELOP FUTURE USE APPROACH

December 1993

A Task Force Coordinator was selected by a selection subcommittee of the Task Force through a competitive bidding process. The Task Force Coordinator was introduced to the Task Force and presented the future use approach that will be pursued. The Task Force also considered the Department of Energy's Site Development Plan as a first step in applying stakeholder interests and goals to land use issues.

PHASE III: CLEANUP PARAMETERS

IDENTIFY OPTIONS FOR FUTURE USE

January 1994

Decisions/Outcome:

A full spectrum of future use options based on what the Task Force envisions would be productive and desirable uses of the property unconstrained by what is seen as feasible at this point in the process. These future use options set the stage for understanding and evaluating future use and cleanup levels for the facility. Keeping these potential future uses in mind, the Task Force will identify the items of information most needed in selecting the ultimate future use and cleanup levels for Fernald.

Process:

The Task Force will "brainstorm" all of the potential future uses of the site. Maps and aerial photographs will be used to help visualize both current and future land uses. Options for future use will be general in scope and may encompass the entire site or provide for different uses for different areas of the site. The cleanup of the facility will not actually create a specific use but will allow for a range of uses tied to the cleanup levels that are achieved. Highly detailed uses are therefore not necessary at this point. These general future use options will be used to set the stage for the information needs of the Task Force over the course of its decision making.

Information Provided to Task Force:

Physical and natural description of Fernald and surrounding areas.
Maps and photographs of Fernald and surrounding areas.
Current Land uses at Fernald and surrounding areas.

UNDERSTAND SITE CONDITIONS

February/March 1994

Decisions/Outcome:

Develop a working understanding of the physical, cultural, economic, demographic, and environmental characteristics of the Fernald facility and surrounding areas.
Develop a working understanding of the contamination of structures, soils, air, surface water, and groundwater and the associated risks both current and future.
Identify all applicable and emerging remediation technologies and associated costs and risks.

Process:

Through presentation and discussion, a complete conceptual model of the site will be established for the Task Force. Information will be developed by FERMCO and the Task Force coordinator and in light of the types of information the Task Force desires relevant to its specific concerns.

Information Provided to Task Force:

Contamination profile, 3D representations, and volumes
 Descriptions of significant risks from contamination over time
 Environmental profile of all significant receptors
 Demographic profile and trends for surrounding area
 Description, costs, and effectiveness of most applicable technologies

TECHNOLOGY AND DEMOGRAPHIC SCREENING OF OPTIONS

April/May 1994

Decisions/Outcome:

Identification of the future use options that are considered reasonable in light of the condition of the site and surrounding areas.

Process:

A screening of each of the possible options identified in the first step to determine which are most reasonable in light of the baseline information presented. The Task Force will discuss the potential benefits and limitations of pursuing each of the future use options and try to narrow the number of options that will be developed in detail. This evaluation will be conducted qualitatively and acceptable criteria for long-term solutions to Fernald will be developed by the Task Force to guide in this process.

Information Provided to Task Force:

Baseline information previously generated.

DESCRIPTIONS OF "REASONABLE" OPTIONS

June 1994

Decisions/Outcome:

Descriptions of each of the future use options in sufficient detail to allow for the development of corresponding exposure assumptions for the development of cleanup levels.

Process:

The Task Force will discuss each of the reasonable options identified in the previous step and will develop detailed assumptions regarding the future use scenarios of each so that relative cost comparisons can be developed. These assumptions will be developed in conjunction with risk assessment staff to ensure that sufficient information exists to develop cleanup levels for each option. At this time, all of the ramifications of each option will be explored including, but not limited to, the long-term effectiveness of the technologies employed, risks and concerns of implementation, off-site impacts and considerations, technical feasibility, and the economic, cultural, environmental, and social impacts of the cleanup process and the ultimate condition of the site. If desired by the Task Force, the assistance of outside planning professionals will be elicited.

Information Provided to Task Force:

Detailed information on the technologies associated with each option including long-term effectiveness and implementation parameters.

Description of the parameters that must be taken into consideration in conducting long-term land use planning.

CLEANUP LEVELS ANALYSIS

July/August 1994

Decisions/Outcome:

Develop an understanding of all the variables and processes that go into setting actual cleanup levels. Establish a preferred approach for setting cleanup levels and have calculations performed to identify cleanup levels associated with each future use option.

Process:

Through presentation and discussion, the Task Force will be given an overview of the risk assessment process and all relevant laws and regulations that impact the setting of cleanup levels at Fernald. The task will work directly with risk assessment staff to identify important criteria in conducting the risk assessments to set cleanup levels. If desired by the Task Force, the assistance of outside risk analysis professionals will be elicited.

Information Provided to Task Force:

Descriptions of the risk assessment and ARARs processes.

Identification of the cleanup levels generated according to the specifications of the Task Force.

VOLUME AND COST COMPARISONS

September 1994

Decisions/Outcome:

A summary of the volumes, costs, likely technologies, time frames, and ramifications of implementation of each future use option. At this point, different options may look sufficiently similar in the cleanup levels required that future use "ranges" might be created to encompass a variety of uses available under a given set of cleanup standards.

Process:

Using the risk information identified in the previous step, cost and volume estimates will be prepared by FERMCO in conjunction with the Task Force coordinator to identify the relative costs of each of the options. These costs will then be evaluated by the Task Force versus the expected benefits and other ramifications of each option.

Information Provided to Task Force:

Cost and volume estimates for each option.

Three dimensional representations of cleanup volumes and on-site disposal patterns for each of the options.

Visual representations of the Fernald site following remediation under the various options.

PREFERRED FUTURE USES AND CLEANUP LEVELS
October/November 1994

Decisions/Outcome:

Identification of preferred future uses of land and natural resources at Fernald and the corresponding cleanup levels. An interim report will be prepared at this time to present the recommendations and all corresponding assumptions and observations.

Process:

The Task Force will evaluate the costs and benefits of each future use option or range of options to identify the most acceptable scenario for Fernald.

Information Provided to Task Force:

Summaries of all information gathered to date.

PHASE II: IMPLEMENTATION AND PRIORITIES

VISIONING 10, 25, 50 YEARS INTO FUTURE
December 1994

Decisions/Outcome:

An understanding of how Fernald will change over time during and after remediation and how any future use of the property can be phased in as remediation is completed.

Process:

Presentation and discussion of the timing of the activities involved in achieving the ultimate remediation of Fernald.

Information Provided to Task Force:

Timelines of key activities.
Conceptual site models at 10, 25, and 50 years.

INSTITUTIONAL CONTROLS/USE AND OWNERSHIP CHANGES
January/February 1995

Decisions/Outcome:

Options for ensuring the long-term effectiveness of the remedy and responsibilities and contingencies for the long-term management of the property.

Process:

The Task Force will discuss all of the long-term ramifications of the site cleanup strategy and identify the long-term issues that must be planned for in the implementation and management of the remedy. These issues will include, but not be limited to, ownership of property, management of all long-term waste management units, remedy maintenance and replacement, and desires of future generations in changing land use.

Information Provided to Task Force:

Currently available options for long-term control of land uses.
Planned DOE ownership strategy.

CLEANUP PRIORITIES AND TIMING

March/April 1995

Decisions/Outcome:

Identification of the key concerns of the Task Force for prioritization in the cleanup process and an overall view of cleanup timing from the Task Force's perspective.

Process:

Discussion of the key areas of concern and feasibility of different scheduling approaches for remediation.

Information Provided to Task Force:

Key time and logistical constraints.

TASK FORCE FINAL REPORT

May/June/July 1995

Decisions/Outcome:

A final report of all Task Force observations and recommendations.

Process:

The Task Force will outline the key sections of the final report during the May meeting. The Task Force coordinator will then produce a draft report for review at the June meeting, which will be revised again for ultimate approval at the July meeting.

Information Provided to Task Force:

Draft reports.

PHASE V: MONITORING PROGRESS

The specific timing and activities of this phase will be determined at a later date.

Appendix D
Summary of Public Comments

FERNALD CITIZENS TASK FORCE

Summary of Public Comments

Introduction

The Fernald Citizens Task Force is committed to public involvement. To that end, it invites the public to comment on all of its activities. The public can comment by:

- Speaking at Task Force meetings, when time is set aside for public comment
- Mailing correspondence to the Task Force post office box
- Calling the Task Force message line

The Task Force staff monitors the post office box and message line, and forwards comments to the Task Force chair. Copies of transcribed messages and correspondence also are placed in the Task Force files.

Message Line Comments

Call(s) on September 7, 1994:

Unidentified Man -- I think Fernald should be a future wildlife sanctuary because there is about nine creeks and streams nearby, and it's right next to Miami Whitewater Park. There is Dry Fork Creek, Hard Creek, Lee Creek, Indian Creek, Great Miami River, and Paddys Run and they all empty into the Ohio. And also that CSX line, you could make a bike trail and connect it out at Oxford and then Heuston Woods Park. Because in the future, there is going to be more and more houses.

And that CSX line was all chopped up in the Cincinnati part. And the Fernald is beautiful. The deer and animals can cross over that farm in between. It can made an easement land. And Fernald should be a park, a future wildlife sanctuary, cleaned up. And the real bad stuff should go to Nevada.

Unidentified Man -- Fernald ought to be a hardwood preserve with trees and that because it sits right next to Miami Whitewater Forest. And the farm in between there should be made into easement that it will always be a farm or else it will revert to sanctuary land. Nine-tenths of Ohio used to be hardwood forest and southwestern Ohio by the Indiana border is beautiful and it should be preserved.

Unidentified Woman -- I won't be at the Task Force meeting, but believe that Fernald should be saved as a future wildlife sanctuary or a forest nature preserve. The farms between Fernald and Miami Whitewater Forest should be protected as farmland or eventually connected as a preserve. CSX right-a-way should be a future bike trail connected to Oxford and Hueston Woods and also Miami Whitewater Forest.

Unidentified Woman -- I won't be at the Task Force meeting, but believe that the farms between Fernald and Miami Whitewater Forest should be protected as farmland or eventually connected as a preserve. CSX right-a-way should be a future bike trail connected to Oxford and Hueston Woods and also Miami Whitewater Forest.

Unidentified Man -- I think they should keep those pine trees at the Fernald site and make them go all the way around the site and clean up the worst of the nuclear waste and ship it to Nevada and then use that new technology to make glass beads and try to contain the rest of the waste so it doesn't go in the aquifer and make the site a preserve. Then connect the CSX line to the north to Shaker Trace and make it a bike trail, and then maybe extend the bike trail to Hueston Woods and Oxford instead of cutting the line into little pieces like they did every where else.

The idea is that in 20, 30, 50, 100 years from now the population will grow and so many people will find this a beautiful preserve. I think that maybe Miami Whitewater is afraid of the uranium and stuff, so maybe the Fernald area should be a state sanctuary, but Fernald should be connected to Miami Whitewater Forest.

Call(s) on September 8, 1994:

Unidentified Man -- It would be a good idea to connect Fernald with Miami Whitewater Park and with Shaker Trace, would solidly the area as a wildlife area. Would keep the peace and keep the pace of life slow; that's the way it should be.

Call(s) on September 13, 1994:

Unidentified Man -- I have a question for Guy Guckenberger. After his plans of sewer lines and housing development around Fernald and the river bottom, lands and hillsides between Fernald and the [unintelligible; sounded like Oxboro], if he plans to retire out-of-state in a quiet area with less air pollution and read as a hobby about wildlife habitat and biodiversity.

Unidentified Man -- I have a question for Jerry Monahan Building trades representative. If after they build their last house by Fernald, if they next plan to build a corporate park on the south side of Rumpke dumps mountain off of Colerain Road.

Call(s) on September 14, 1994:

Unidentified Man -- Did you know that 124 species of neo-tropical migratory birds travel from Ohio to Guatemala every year? Having Fernald be turned into a sanctuary with trees would help these birds.

Call(s) on September 15, 1994:

Unidentified Man -- Trees and plants absorb noise pollution. Parks are 75% more quiet than urban areas. It takes 79 trees to produce enough fresh air for one person to breath in one day. It takes 250 trees to absorb emissions from one school bus during one day. It takes 25,000 trees to absorb emissions from one jet take off.

Each forest tree provides as much cooling power as five, 10,000 BTU air conditioners. Each park acre of forest has 50,000 spiders, which consumes 93,000 insects a day. Trees are beautiful. 124 species of neo-tropical migratory birds travel from Ohio to the Mio biosphere Reserve in Guatemala and back each year. Wildlife is hurt by forest fragmentation. Wildlife quarters are roads for animals. Bridges and overpasses over rivers and streams should be large enough to help animals to move along the river banks to travel. Animals have nerves just like humans; they need our help. Fernald should be a wildlife sanctuary.

Call(s) on November 6, 1994:

Unidentified man -- I've been listening to the news all weekend about this woman in South Carolina who drowned her two little boys. You know, maybe if she had a quiet place to go to and get rid of her stress she might not have done such a terrible thing. Miami Whitewater Park is one of the few quiet places left around here to go when you need to be quiet. If you turn Fernald into a wildlife preserve and connect it with Miami Whitewater Park, not only will the birds and animals have a place to go, but people will have a place to go when they need to think.

[The unidentified man who advocates making the site a wildlife sanctuary/nature preserve has called numerous times to repeat this message.]

Correspondence/Written Comments

Received at DOE's Community Meeting October 18, 1994:

Anonymous comment -- Turn the site into a nature preserve/songbird sanctuary; rest of comment summarized many of the message line comments.

Comment card -- Wildlife sanctuary; keep waste out of aquifer and rivers

1994 Community Assessment

DOE conducted a comprehensive community assessment in May 1994 to improve its understanding of community concerns, needs, and interests. A community assessment is a series of interviews with members of the public who are affected, or potentially affected, by activities at the Fernald site. The assessment involved 50 face-to-face interviews with community leaders, including members of the Fernald Citizens Task Force. To reach a broader cross-section of the public, the assessment also included 365 telephone interviews with residents within a 20-mile radius of the Fernald site.

The questions most relevant to Task Force activities and the responses from the assessment are summarized below.

- Do you think the Fernald site should be cleaned to a pristine condition, even if it means spending additional taxpayer money *than needed* to meet basic government cleanup regulations?

Yes = 51 percent of the respondents within the 20-mile radius; 28 percent of the 50 community leaders

No = 49 percent of the respondents within the 20-mile radius; 72 percent of the 50 community leaders

- If the decision were yours alone, what would you do with the Fernald site once cleanup is complete?

Nature/wildlife preserve = 30 percent of the 50 community leaders; 13 percent of general public respondents

Open/green space = 37 percent of general public respondents

Technology center/museum = 16 percent of the 50 community leaders

Other possibilities include commercial/light industrial, low-level radioactive waste repository, agricultural, recreational, residential, yard waste/recycling

- Where do you think wastes generated during cleanup of Fernald should be disposed?

Combination of on-site and off-site storage = 14 percent of the 50 community leaders

On-site disposal = 18 percent of the 50 community leaders; 9 percent of the general public respondents

Use existing government facilities in arid climate = 36 percent of the 50 community leaders; 95 percent of the general public respondents

Communications Audit

In addition to the community assessment, DOE commissioned a separate internal communications audit with Fernald employees. The audit was conducted by the University of Cincinnati in July 1994. The purpose of the audit was to monitor employees' information needs, but it included several cross-over questions on future use from the community assessment.

The questions most relevant to Task Force activities and the responses from the assessment are summarized below.

- Do you think the Fernald site should be cleaned to a pristine condition, even if it means spending additional taxpayer money *than needed* to meet basic government cleanup regulations?

Yes = 30 percent of employees

No = 70 percent of employees

- If the decision were yours alone, what would you do with the Fernald site once cleanup is complete?

Nature/wildlife preserve = 29 percent of employees

Isolate/secure the waste = 21 percent of employees

Industrial use = 14 percent of employees

- Where do you think wastes generated during cleanup of Fernald should be disposed?

Combination of on-site and off-site storage = 7 percent of employees

On-site disposal = 23 percent of employees

Use existing government facilities in arid climate = 47 percent of employees

Appendix E

Tool Box Table of Contents

TABLE OF CONTENTS

	<u>Page</u>
I. WORK PLAN	
II. FUTURE USE CRITERIA	
III. PHYSICAL SITE CHARACTERISTICS	
Fernald Site Map	III-1
Fernald Regional Geologic Cross-Section	III-2
Fernald Site Geologic Cross-Section Showing Example Waste Pit	III-3
General Ground Water Flow	III-4
Surface Water Infiltration to Great Miami Aquifer	III-5
Location of Existing Fernald Infrastructure	III-6
Description of Existing Fernald Infrastructure	III-7
Wind Rose for the Fernald Site	III-8
IV. FERNALD NATURAL RESOURCES	
Natural Resource Issues at Fernald	IV-1
Habitat Types Present at Fernald	IV-2
Threatened and Endangered Species at Fernald	IV-3
V. LAND USE	
Current Fernald Land Uses	V-1
Task Force Identified Future Uses for Fernald	V-2
Current Land Uses of Surrounding Property	V-3
Known Downgradient Groundwater Users	V-4
Major Water Users Within Five Mile Radius	V-5
Populations and Demographics of Surrounding Communities	V-6
Projected Remedial Schedule and Site Worker Populations	V-7
Description of New Water Supply	V-8
Location of New Water Supply System	V-9
VI. CONTAMINATION	
Major Areas of Contamination at Fernald	VI-1
Characteristics of Key Fernald Contaminants	VI-3
Total Uranium in Surface Soils (first six inches)	VI-4
Total Uranium in Subsurface Soils (3'-5')	VI-5
Total Uranium in Subsurface Soils (10'-15')	VI-6
Total Uranium in Off-Site Surface Soils (14)	VI-7
Total Uranium in Groundwater (Maximum Observed Concentrations)	VI-8
Total Uranium in Groundwater (1993)	VI-9
Other Hazardous Materials Stored at Fernald	VI-10
Total Uranium In Soils Surrounding Sewage Treatment Area	VI-11
Scatter Plots of Total Uranium	VI-12

TABLE OF CONTENTS (CONTINUED)

	<u>Page</u>
VII. RISK	
Risk Overview	VII-1
Introduction to Risk Assessment	VII-3
Significant Pathways and Receptors for Contamination at Fernald	VII-4
Potential Air Pathways for Contamination at Fernald	VII-5
Potential Water Pathways for Contamination at Fernald	VII-6
Short-term Risk Summary	VII-7
VIII. CLEANUP LEVELS AND VOLUMES	
Key Characteristics of Leading Remedial Alternatives	VIII-1
Comparison of Soil Cleanup Levels at 10^{-4} , 10^{-5} , 10^{-6} , and Aquifer Protection	VIII-2
Groundwater Protection Zones	VIII-3
Off-Site Soils Requiring Remediation at 10^{-5} and 10^{-6} Risk	VIII-4
IX. WASTE MANAGEMENT	
Overview of Waste Management Technologies	IX-1
Comparison of Waste Management Technologies	IX-5
X. FUTURE USE SCENARIOS	
Future Use Scenarios Developed for Evaluation	X-1
Evaluation Criteria for Future Use Scenarios	X-2
Comparison of Future Use Scenarios	X-3
Maps and Excavation Profiles of Selected Future Use Scenarios	X-10
Future Use Scenarios <i>vs.</i> Aquifer Protection	X-22
Maps and Excavation Profiles of Aquifer Protection Scenarios	X-23
Maps and Excavation Profiles Including Protection for HI=1	X-31
XI. GROUNDWATER	
Regional View of the Great Miami Aquifer	XI-1
Key Issues for Groundwater Remediation	XI-2
Current and Potential Impacts of Fernald on the GMA	XI-3
Impact on GMA Over Time at 3 ppb With Soil Cleanup	XI-4
Impact on GMA Over Time at 3 ppb Without Soil Cleanup	XI-5
Impact on GMA Over Time at 20 ppb With Soil Cleanup	XI-6
Impact on GMA Over Time at 20 ppb Without Soil Cleanup	XI-7
XII. RESOURCES	
Glossary	XII-1
Chart of Conversion Factors	XII-6
Task Force Members and Staff	XII-7
XIII. OVERLAYS	

Appendix F

Description of FutureSite Exercise

000055

000000

FUTURESITE

Overview and Instructions

Introduction

The Fernald Environmental Management Project (Fernald), formerly the Feed Materials Production Center, produced high-purity uranium metal from uranium ore for the U.S. Department of Energy's Nuclear Weapons Complex. During its years of operation from 1953 to 1989, it is estimated that 1,000,000 pounds of uranium were discharged to the environment, most of it in the form of airborne dust emissions, most of which settled on the soil around the plant. A large aquifer runs under the plant, and parts of it are severely contaminated with uranium from surface run-off and leachate from disposal pits and production processes. Other hazardous substances are present at Fernald, but uranium is by far the most significant; with a few exceptions, cleaning up the uranium will clean up everything else. Fernald is listed on the National Priorities List for Superfund cleanup, and an agreement is in place to accomplish it.

Citizens who live near Fernald have been actively encouraging cleanup since 1984, and in recent years the site management has increasingly sought the input of the public in cleanup decisionmaking. In 1993, the Department of Energy established a "site-specific advisory board" — the Fernald Citizens Task Force — comprising representatives of numerous stakeholder groups, to advise it on key cleanup decisions. *FutureSite* was developed to help members of the Task Force to visualize the complex and interrelated contamination issues at Fernald.

As is the case at many Superfund sites, cleanup at Fernald requires the removal and/or treatment and/or disposal of hazardous waste and of environmental media (soil and groundwater) contaminated by those wastes. There is little dispute over the need to remove and/or treat and/or dispose of the waste materials themselves—called source materials—though *how* to do it may generate considerable controversy. They present a clear danger unless neutralized or isolated. Rather, it is the cleanup of contaminated soil and water that presents a difficult problem because (A) there are large volumes of contaminated material, meaning high costs, (B) the risk presented by contaminated material is real but the harm is seldom imminent, (C) the technology for treating them is often imperfect and always costly, and (D) they must be disposed of somewhere and no one especially wants to host them.

FutureSite addresses the media contamination. At Fernald, the cleanup question can without undue distortion be simplified to: how much uranium-contaminated soil must be removed from the site to make it acceptably safe to persons on or near it? The answer to this question is, in turn, driven by two considerations: (1) protection of the groundwater under the site, and (2) risks to persons on the surface who are in contact with the soil.

- (1) The relationship of soil contamination to groundwater is not obvious, but is of critical importance. The uranium in the soil reaches the groundwater from surface run-off into streams that are in direct contact with the aquifer, and from the leaching of uranium down through the soil to the aquifer. The more soil is contaminated and the greater its degree of contamination, the greater the risk to the aquifer.

(2) The relationship of soil contamination to persons who use the surface of the land is more direct: the more contact one has with the soil and the more contaminated the soil is, the greater the risk. Two variables must be considered, however. (a) First, the risk to a person on the surface will vary considerably depending on what that person is doing. A farmer who lives on the site would have a great deal of contact with the soil, while an occasional hiker through a wildlife preserve would have very little. Hence one cannot assign a level of safety without asking, "Safe for what?" (b) Second, one must also decide what level of risk constitutes an adequate degree of safety.

This version of *FutureSite* concentrates on the questions arising from surface use; a version that addresses the level of soil cleanup needed to protect the aquifer is in development. If the players decide that groundwater protection is the first priority (the use of the Safe Drinking Water Act as an ARAR [Applicable or Relevant Appropriate Requirement] under CERCLA suggests this), then they would begin by removing chips to accomplish that goal. Of course, those chips must be treated and/or disposed of just like chips removed on account of surface use. On the other hand, because this is an exercise, players may wish to ignore or modify groundwater protection to explore other possible future scenarios.

Objective

FutureSite is a simulation that models the volumes of contaminated soil that must be remediated to use the Fernald property. The objective is to determine what future use (or uses) the Fernald site should have, by removing specific concentrations of contaminated material. The exercise ends when the players are satisfied that they have reached their desired level of cleanup to achieve their vision of Fernald's future use, and have accounted for all of the contaminated materials by either leaving them in place or disposing of them.

Components

Fernald Overview is an introduction to the site and its contamination.

Map of the Fernald facility divided into a grid of 1,000 foot chips. (Each square on the grid represents about 25 acres of land.) For each square, the volume of material that must be removed to achieve alternative future uses has been calculated and indicated on a "chip."

Chips representing soil contaminated with various concentrations of uranium. Each chip represents a specific volume of soil containing a specific range of contaminants allowed for various future use categories based on risk: Restricted Access (pink), Undeveloped Green Space (yellow), Developed Park (green), Commercial/Industrial (blue), and Residential/Agricultural (white). The purple chips represent all materials that must be removed to achieve even restricted use; salmon chips represent the volume of waste from Operable Unit 3 (former production area) and Operable Unit 2 (active and inactive flyash piles, lime sludge ponds, sanitary landfill). There are also chips representing non-soil materials that must be disposed of: flyash, demolition debris, waste pits, and production wastes. Three sets of chips are provided so the exercise can be played at the risk levels permitted by CERCLA, 10^{-6} , 10^{-5} , and 10^{-4} excess cancer risk.

Disposal Options are limited to either on-site disposal or off-site disposal. All "chips" removed must be placed into one of these disposal options.

Tally Sheet allows players to calculate the consequences of their decisions and to determine the volume of material involved in their cleanup, cost of the cleanup scenario, amount of space needed for the disposal facility, and transportation impact.

Set Up

Each grid square on the map is designated with a letter and number as indicated on the top and left side of the map (A-1, A-2, A-3, etc.). The color chips are stacked on the appropriate grid square indicated on each chip. The Aquifer Cards are inserted into the stacks as indicated on the cards. (BE SURE THAT ALL OF THE CHIPS AND CARDS ARE FROM THE SAME RISK SCENARIO: 10^{-4} , 10^{-5} , OR 10^{-6} . DO NOT MIX THEM.) The order of the colors is the same for each risk scenario (from bottom to top): white, blue, green, yellow, pink, purple, and salmon. Because the level of contamination varies across the site, not all of the chips will have all of the colors. Place the sheets representing the two disposal options (on-site and off-site) next to the board.

Running The Exercise

Each chip represents soil containing the range of contaminant concentrations allowable for the future use indicated on the chip. To achieve a future land use on a given square, players must remove all of the chips representing contamination at concentrations above that required for the selected use. For example, to achieve commercial/industrial use for a given square, all chips above the blue one on that square must be removed. Players can make a square "cleaner" than its intended future use to achieve a margin of safety. The level of clean determines your range of future use options.

The players first remove the chips down to the level of cleanup desired. To remove a chip, they must place it on one of the disposal option sheets, either on-site or off-site. There is a cost and impact associated with each option.

Off-Site Disposal - Material placed in off-site disposal is assumed to go to a long-term disposal facility in an arid part of the western United States, thus incurring substantial transportation and disposal costs. Due to its high degree of hazard, source Material from the silos and waste pits have already been placed in this category. The volume of off-site disposal is limited to 1,000,000 cubic yards in total.

On-Site Disposal - Contaminated material left on site for disposal will be disposed of in an engineered facility to isolate it from the ambient environment. It is assumed that each 13,000 cubic yards of contaminated material will require one acre of land for a disposal facility, including all ancillary operations and buffer space. Space on site must be reserved for placement of disposal facilities at the completion of the exercise. Because operation of a disposal facility is considered a commercial/industrial activity, the area selected for the on-site disposal cell must first be cleaned at least to a commercial/industrial use level.

Treatment - For technical reasons, soil treatment was not feasible at Fernald, so it is not part of this exercise.

FUTURE USES AND CHIP VALUES

FUTURE USE CATEGORY	CLEANUP LEVELS AND RANGES AT 10 ⁻⁴	CLEANUP LEVELS AND RANGES AT 10 ⁻⁵	CLEANUP LEVELS AND RANGES AT 10 ⁻⁶
Restricted Access (Pink)		1,739 ppm (>1,739 ppm=purple)	180 ppm (>180 ppm=purple)
Undeveloped Green Space (Yellow)	8,820 ppm	1,259 ppm (1,259-1,739 ppm)	132 ppm (132-180 ppm)
Developed Park (Green)	3,490 ppm (3,490-8,820 ppm)	390 ppm (390-1,259 ppm)	42 ppm (42-132 ppm)
Commercial/Industrial (Blue)	1,200 ppm (1,200-3,490 ppm)	138 ppm (138-390 ppm)	18 ppm (18-42 ppm)
Residential/Agricultural (White)	130 ppm (130-1,200 ppm)	21 ppm (21-138 ppm)	6 ppm (6-18 ppm)
Background (Board)	3.6 ppm	3.6 ppm	3.6 ppm

Finishing The Exercise

After the players have removed all the chips necessary to achieve their cleanup and future use goals, they can calculate the total volume of materials removed, dollar cost, transportation impact, and space needed (if any) for on-site disposal by adding up the appropriate values from all of the chips in each disposal option. They will also want to fix a location for on-site disposal (if any), taking the geography and infrastructure of the site into account.

Key Assumptions

Uncertainty in Volume and Cost Data - Soil volumes and cost data were developed using the best available data, but are only estimates of actual values. As the concentrations of soil contaminants get lower, it becomes harder to assure the accuracy of the measurement data; consequently, confidence in the precision of the soil volumes gets lower. Approaching "background" levels of cleanup, the volume of soil represented could be several times that currently generated by the model used to calculate these volumes.

Treatment and handling costs will vary based on the type of material, volume, technology, etc. The cost estimates for *FutureSite* are based on average costs for similar activities and simplified for the purpose of this exercise. Like soil volumes, cost data should be used for relative comparisons of solutions, not as actual cost estimates.

Risk and Cleanup Levels - EPA guidance provides for a range of acceptable risk of excess cancer of between one in ten thousand (10⁻⁴) and one in one million (10⁻⁶). Therefore, for the purposes of this exercise, volumes for one in ten thousand (10⁻⁴), one in one hundred thousand (10⁻⁵), and one in one million (10⁻⁶) have been developed to illustrate potential cleanup requirements. Cleanup levels were calculated based upon the risks to human health and do not include ecological risk. A table showing cleanup levels for uranium under each risk target is included.

Off-Site Disposal Limitations - An arbitrary limit of one million cubic yards has been placed on off-site disposal to reflect realistic logistical and political considerations. At present there are only two facilities able to accept large volumes of low-level radioactive waste from Fernald. Both face significant political pressures on accepting large amounts of out-of-state wastes and one has a limited capacity for new waste. Players may choose to exceed this limit for off-site disposal for this exercise, but the ability to dispose of greater than one million cubic yards is currently considered unlikely.

Source Material - A number of decisions regarding disposition of source material from various operable units have already been drafted and have been incorporated into the exercise according to the potential impact on future use. Source materials from the silos and the waste pits are assumed to be completely removed and disposed of off-site. Therefore, they will not affect the use of the site, but their volume is included in off-site disposal, limiting that option. Players, however, are free to move these volumes into on-site storage if they wish. Debris from site buildings has also been designated by salmon chips in the production area, and it can be disposed of on- or off-site.

Off-Site Contamination - In this exercise off-site contamination has been ignored. It is not anticipated that large volumes of off-site soil will need to be excavated.

FERNALD CITIZENS TASK FORCE

A U.S. DEPARTMENT OF ENERGY SITE-SPECIFIC ADVISORY BOARD

Chair:

John S. Applegate

Members:

James Bierer
Marvin Clawson
Lisa Crawford
Pam Dunn
Dr. Constance Fox
Guy Guckenberger
Darryl Huff
Jerry Monahan
Tom B. Rentschler
Robert Tabor
Warren E. Strunk
Thomas Wagner
Dr. Gene Willeke

Alternates:

Russ Beckner
Jackie Embry

Ex Officio:

J. Phillip Hamric
Graham Mitchell
Jim Saric

Minutes from November 12, 1994 Meeting

Members Present: John Applegate
Jim Bierer
Marvin Clawson
Lisa Crawford
Pam Dunn
Constance Fox
Guy Guckenberger
Darryl Huff
Gene Jablonowski, U.S. EPA
Graham Mitchell, Ohio EPA
Jerry Monahan
Tom Rentschler
Johnny Reising, DOE
Warren Strunk
Bob Tabor
Thomas Wagner
Gene Willeke

Task Force Staff: Doug Sarno, consultant
Sarah Snyder
Judy Armstrong

About 27 spectators, including members of the public and representatives from DOE, the Ohio Department of Health, the Agency for Toxic Substances and Disease Registry, FERMCO, and other state and federal agencies.

1. Approval of Minutes:

- The draft minutes of the October 8, 1994, meeting of the Task Force were approved without amendment.

2. Remarks:

Chair John Applegate said that the Task Force in October came to a number of decisions about risk levels. He said the Task Force still needed to address the issues left over from the

October meeting, including the future uses for the risk levels. Applegate said the Task Force would not talk about on-site disposal at the November meeting. The plan is to have the interim report address future uses and risk levels; the final report will address on site disposal and cleanup priorities.

Applegate said the main reason not to talk about on-site disposal is that the Task Force does not have all the information it needs yet, including the risks posed by transporting wastes, the disruption from transportation, protection of the aquifer, etc. He said that everyone recognizes that the proposed plan for Operable Unit 5 will probably recommend on-site disposal for some wastes. But this is not the issue before the Task Force now.

Gene Willeke said he would not like the Task Force to rule out a disposal cell as a possible future use, even if the Task Force did not make a recommendation on that issue. Applegate agreed that remained a possible future use.

3. Consortium for Environmental Risk Evaluation Project:

Applegate asked Pam Dunn to report on her trip to Phoenix to discuss the Consortium for Environmental Risk Evaluation (CERE). Dunn first noted that Jeff Smith, who is working on the project, was attending the Task Force meeting. The goal of the project, which is examining six DOE sites, is to eliminate some of the judgment problems associated with risk assessment. Tulane University is doing the risk assessment portion; Xavier University is doing the public involvement portion of the project.

Smith said the hope is to open up a more direct dialogue with the public, explaining that Congress asked for the report as a more comprehensive approach to thinking about risk assessment. Part of the project will involve talking to stakeholders about the public's concern with risk.

Johnny Reising said members of the CERE project staff have been to the site and talked to DOE. Dunn said she was glad to report that they have not had any problems getting information about Fernald.

Guy Guckenberger asked whether the CERE project were redundant. Smith said it was not supposed to be; the purpose is to get an independent evaluation of the risks at these sites. Guckenberger asked if

these evaluations hadn't been done "over and over again."

4. Process Discussion:

Applegate said he thought the last meeting had good parliamentary procedure with motions from floor and then the vote. He suggested that Task Force members continue with that procedure, if there were no objections. There were none.

Applegate then asked Doug Sarno to go over new information, specifically the information collected on the non-cancer risks posed by uranium and the non-uranium risks.

5. New Information:

Sarno discussed the maps that show the actual concentrations of uranium found on the site. Each dot represents a sampling point with the actual concentrations, corresponding to the cleanup levels the Task Force has been discussing.

Several "scatter plots" show the locations and levels of uranium contamination. Sarno pointed out that there are lots of "hits" in the production area, but not many in the grazing areas or off-property.

Sarno explained that these maps show a 50 parts per million (ppm) because the non-cancer health effects drives levels to 50 ppm, which is less than 100 ppm cleanup level agreed to by the Task Force at its October meeting. The 100 ppm level is necessary for protecting the aquifer, but when the non-cancer health effects are calculated, the cleanup level needs to be at 50 ppm. Sarno said the data show that the concentrations do not exceed 50 ppm off the Fernald property. He said that the Task Force might want to change its cleanup levels to protect against the non-cancer health effects and go to the 50 ppm.

Task Force members discussed the non-cancer health effects of uranium, including kidney disease.

Sarno said that the additional volume from moving from 100 ppm to 50 ppm is very little because there aren't many places where concentrations exceed the 50 ppm.

Before deciding about the 50 ppm level, the Task Force decided to

discuss the grazing issue.

6. Grazing:

Applegate said the actual monitoring data reveal no problem with the milk, but the Operable Unit 5 risk assessment shows a potential risk based on the current levels with certain assumptions that may or may not be accurate. He also said construction activities during remediation will have an impact on grazing; some areas also will need uranium-contaminated soil to be excavated to a depth of about six inches.

Two farms -- Knollman and Summe -- lease grazing land from DOE. These leases expire in February 1996.

Willeke said the reason the Task Force agreed to no new agricultural use of the site is because there is currently grazing. He said that for a degree of consistency, the Task Force might want to exclude this current use, adding that he sees no reason to continue grazing. Because this is not a major economic activity, let grazing end in February 1996 when the current leases expire. He added that perhaps the Task Force would want to consider recommending that there not be any renewal of leases for grazing.

Applegate reminded Task Force members that they are looking at a post-cleanup time frame.

Jerry Monahan asked if all the land were leased or owned. Sarno said the land on DOE property is leased for grazing, about 300 acres in all. Dunn asked if Summe, who grazes cows in the northern area of the site, was a dairy or beef operation. Sarno said both Knollman and Summe have dairy operations. He also reminded members that for future use, the land would be safe for grazing because it would be cleaned to a level that would permit such a use.

Guckenberger asked why the Task Force needed to consider a 50 ppm cleanup level if new agricultural and residential uses have been ruled out by the Task Force.

Applegate said that adopting a cleanup level of 50 ppm would be as a margin of safety, and not to have additional grazing. For example, the cleanup level developed on site would be appropriate for residential and agricultural at the 10^{-4} risk level, but the prohibition on new residential and agricultural uses would be for an extra margin of safety.

Tom Wagner said that thinking in terms of future use, if the Task Force wanted to have non-residential and non-agricultural uses, it would need to take a consistent stand and have no grazing on site.

Applegate pointed out that the current unremediated state of the site now has an intensive amount of use, like industrial and grazing. When the Task Force says these uses shouldn't continue, it needs to think about the consistency issue. What are we saying: Is it unsafe? Is it unacceptable?

Wagner said that the distinction is that with the exception of grazing, the current uses are for cleanup purposes. But grazing is a different activity; to a certain extent it is a discretionary activity. At some point the Task Force really needs to say that the site is going to be cleaned to levels which allow residential/agricultural use but not used for that purpose. He said he would argue that we press that issue.

Applegate said that what I'm hearing is to today think about it today as a future use in a post-cleanup time frame and reserve the current use of it for later?

Willeke said several responses need to be made. First, there is a difference between "okay now" and "not okay in the future." He said it is not likely that we would want to test milk ad infinitum. Second, there would not be the same contaminant concentrations as at present, so there would not be the degree of risk in the future.

Dunn asked about grazing during remediation. Is there a greater risk during actual remediation activities? Do we want cattle on that site when it is basically a construction and remediation site?

Lisa Crawford said she agreed with Dunn, adding that the Task Force is also talking about letting cows graze on a hazardous waste site. Obviously some of the remediation activities will affect grazing. Also, if -- and she emphasized the "if" -- there is a waste cell, there will be impact on the grazing areas. There will be a dust factor during remediation.

Crawford said she didn't think the environmental monitoring data on the cows is very good.

Willeke proposed splitting the decision in two parts: First, future use (post remediation) and then the 1996 time frame (at expiration of current leases, leading up to and during remediation).

Tom Rentschler asked, hazardous waste issue aside, what are the economic impacts of grazing.

Bill Knollman, of Knollman Dairy, answered some of the questions. He said leasing costs about \$10 an acre. Knollmans maintain the fences except the perimeter fences, which DOE maintains.

Knollman also said his family is going to discontinue the dairy operation about the 1st of April and exclusively graze beef cattle. He also said that no cows will be pastured on the leased areas after Thanksgiving of this year.

He said his family plans on using the pasture for the beef and expanding the grain operation.

Applegate asked what effect having a beef or dairy operation has on the amount of grass needed for the cattle. Knollman said that beef cattle are fed more grain. He explained that he grazes on the southeast corner of the Fernald property; about 75 percent of feed is from their property.

Willeke said he was prepared to make a motion to exclude grazing some time for future use.

Guckenberger asked Knollman how important grazing is to the Knollman operation. Knollman said it is important, adding that he would hate to see anything happen in the near term. Economically, in the near term, it would be an impact to Knollman operation. "I don't know of any group of cows that have been tested any more than ours have," he said, explaining that the cows are tested monthly by FERMCO, a federal group, and the State of Ohio. Additionally, DOE gets samples from off-site dairy and from slaughtered cows.

Darryl Huff said he felt the need to keep addressing this issue for Mr. Knollman: eliminating grazing will impact his operation.

Rentschler said that, at the risk of being uncivil, the Knollmans have been substantially compensated because of the class action suit.

Warren Strunk pointed out that the Knollmans were not compensated more than anyone else. He said that if the Task Force "takes" the land, the compensation should be substantially more.

Monahan said that as soon as DOE finds out that uranium affects milk

or beef, then DOE should do something. As soon as DOE has information that there is a problem, then the Task Force should act. It is important to always respect other people's rights. In fact, the Task Force should make sure it is safe.

Guckenberger asked how cows can graze there now and not in the future. He also said there shouldn't be a need to continue monitoring, once the site is cleaned up because we do not expect it to get worse.

Bob Tabor asked why the Task Force was worrying only about the cows. What about the deer, the squirrels, etc.? He said these animals travel off the property and people eat the deer.

Crawford said eating the meat and drinking the milk posed potentially twice the problem.

Constance Fox said she felt compelled to make a psychological comment. She said she feels a lot of intensity about this issue and said it probably is because deep within our neurological apparatus, we want to avoid being poisoned. We are dealing with this on a logical level, but there is an emotional level that must be acknowledged.

Jim Bierer added that public perception of this issue is important. The public has been told grazing is okay and the Task Force now is kind of saying that the grazing is not safe.

Applegate said there is a consistency issue. First, is the issue of cleanup and wanting to make the site really clean. The other issue is not wanting to disrupt current patterns. He suggested the Task Force first decide on the 50 ppm cleanup level and asked Sarno to summarize the non-cancer health effects discussion.

Sarno said the Task Force has focused on cancer effects, but there are non-carcinogenic effects of uranium that are calculated into risk assessments. Non-cancer risk is calculated differently and uses something called a Hazard Index, of which the calculation threshold is 1. In order to achieve a Hazard Index of 1 in the most stringent case, the Task Force needs to recommend cleanup at 50 ppm, which is more stringent than the levels required for the resident farmer at the 10^{-4} risk level or for the protection of the aquifer.

50 ppm is the concentration that corresponds to the Hazard Index of 1 for the residential farmer. 50 ppm also protects the aquifer in Zone II. 50 ppm also permits:

- Green space usage at 10^{-6} risk level
- Industrial usage at 10^{-5} risk level
- Any usage at 10^{-4} risk level

Sarno said that when you compare 50 ppm and 100 ppm, there is an increase in volume of about 5,000 cubic yards for off-property cleanup.

Wagner asked for a special session on the grazing issue.

- Bierer moved that the Task Force accept 50 ppm for off-property soil contaminated by uranium to achieve the Hazard Index of 1 for cleanup levels. Monahan seconded the motion. The motion passed unanimously.

The Task Force discussed whether grazing cattle constituted an agricultural use. Sarno explained that the farmer scenario is calculated to be the most exposed individual. If the risk assessment just calculated grazing, there would be a different number.

Strunk said the surrounding community is changing drastically with water service being extended to the area. He suggested that the community should decide at a later point what to do with the land.

Applegate said that letting the community decide at a later point what should be done with the land would be consistent with having a list of "acceptable" uses and a list of "unacceptable" uses. Monahan referred to the summary of community input that has come in on the phone line and through the mail. Applegate said most comments were advocating green space usage.

Guckenberger said he is reluctant to tell Knollman that he can never use the property in the future.

Dennis Carr, the FERMCO Operable Unit 5 manager, said the resident farmer scenario assumes that the farmer is a consumer of meat and milk for a period of 70 years for 350 days per year. The quantities assumed are a 1/2 quart of milk a day and 3.5 ounces of meat per day.

Dunn asked how much land would be lost if a disposal cell is put on site. Sarno said the cell size is estimated at about 1.6 million cubic yards and about 2000 by 2000 feet.

Rentschler asked if it were legitimate to ask what do we benefit by letting grazing continue. He said DOE picks up some money, but costs

might outweigh it. Perception is a big disadvantage, adding that it is not like grazing ground is the scarcest thing in the world. He argued that the tenant has been compensated for his other ground to a great degree.

Strunk asked whether DOE would have to pull the grazing leases during construction. Johnny Reising said, "During the construction stages, we (DOE) can't allow that kind of activity." Crawford asked why the leases shouldn't be allowed to lapse in 1996 and not be renewed.

Strunk asked why the Task Force members have to be "the bad guys?" He wondered why DOE does not stop the grazing.

- Willeke moved that the Task Force recommend that residential/agricultural usage not be the future use of the Fernald property and that agricultural usage be defined as not including grazing. Rentschler seconded the motion. The motion was amended after the following discussion.

Guckenberger said he planned to vote against that motion. He said grazing is allowed under the cleanup levels recommended by the Task Force, adding that the compensation argument is not a valid one. He said he would have no objection to excluding residential usage and not grazing usage. He said the Task Force shouldn't take an action that would further adversely affect the area.

Crawford said Task Force members need to look and evaluate the public perception; not everything can be based on scientific data. She said it doesn't look good to have cows grazing on a hazardous waste site, adding that if the Task Force lets grazing continue, it is sending a message that this use is okay.

Rentschler said what has happened in the past has been a problem and that removing the cattle is perceptively part of solving the problem. What was done in the past was not necessarily bad or good, but he said the Task Force should look at improving the perception.

Strunk said this motion resulted in actions affecting the people off-site, saying he had a problem with that.

Willeke pointed out that other people live off-site, too. The people near the site are as much a part of the community as the farmers. The other people living around the site are the people who ought to be in front of

the Task Force all the time. He said he is talking about the people in the wind rose along State Route 126.

Tabor asked how the Task Force intended to deal with the reality that on the south side of Willey Road, it is okay to have cows there, but it's not okay to have them graze on DOE property across the road. He asked how the Task Force would deal with the idea that once the land is clean, it is not okay to have the cows on the property, especially if the cleanup levels are the same for on- and off-property? Is there any difference in that line of demarcation?

Sarno asked if the Task Force wanted to recommend additional levels of safety by increasing buffer areas, perhaps to about 1000 feet? Crawford and Willeke said no.

Huff said the decision should be DOE's. Grazing is automatically going to be discontinued when the cleanup starts. The Task Force doesn't have to make that decision and shouldn't make that decision.

Applegate asked if the Task Force wanted to recommend a very substantial financial effort be made to return it to a particular use? Wagner said he is arguing that future use be limited, which is no new residential/agricultural use. He said he was going to vote in favor of Willeke's motion, adding that he doesn't want residential or agricultural use even though the site would be cleaned up to levels that will allow it. He said what is across the road is owned by private owners, but that DOE's Fernald property is a federal facility and the proposal is that it be restricted from residential and agricultural use. He said if the Task Force members make an exception to that and allow grazing, it would send a signal that the Task Force could allow other kinds of exceptions.

Wagner said he recognized that Strunk's point is valid that the area will be a very different community; nevertheless, the Task Force needs to make the decision now.

Marv Clawson said he thought the grazing issue should be left to DOE.

Strunk said there were no facts to support a decision to prohibit grazing; he said there is no information that grazing is going to have a negative impact.

Willeke said that was not necessarily the case. The ability of a group to make such fine distinctions all the time is the real obstacle to effective implementation of the decision. He said one of the ultimate symbols of

agriculture -- cows walking around eating grass -- sends a message to a large community. We just can't get that fine here.

Guckenberger asked how perception is improved by letting people hike on the site, work on the site. "I think I might feel better to see cows on that land and know that I don't have to worry about it."

Rentschler said the perception problem is exactly why the Task Force has devoted so much time to this discussion. Appearances are a large part of the issue.

Monahan said he was talking to someone in the audience who said a visitor from Russia was appalled to see cows on site.

A member of the public, who introduced herself as Chris Tickle with CLEAN, Inc., addressed the Task Force. She said she wanted to make an analogy about perceived risk. When a person invests money, that person has a sense of the risk. Everyone here has idea of what is acceptable risk after gauging the data. To me, that kind of explains why there is such a dialogue on the perception of risks on the site. It seems that you are going to have to find consensus somewhere in between. The land is a resource and it's our land. I would prefer, if the data is there, to allow the land to be used, if it can be used. A person will have information on the deed, if the land is sold. We aren't responsible for educating everyone who walks by and we can't help if they don't have all the information. We can't be responsible for everyone's uneducated level. I think the federal government will ultimately decide, but she wants to make the land available and let the people educate themselves.

Edwa Yocum also addressed the Task Force. "I'm sitting here and I am getting rather mad because I am thinking we have lost all respect for ourselves. Connie Fox talked about the emotional and psychological effects of watching the cattle graze. We let the cows graze and we eat the milk and the meat and we are slowly poisoning ourselves. The government will outlaw second-hand smoke and cholesterol, but we will let ourselves be poisoned. Don't allow grazing."

Strunk said if you show me the data that we are being poisoned, I would agreed. But we don't seem to have the data.

Yocum said to go back to the perception problem. There is always going to be a question about whether they are really doing their job.

Guckenberger asked whether the Task Force can amend the motion to reach consensus?

Dunn said this is the only DOE facility that allows grazing of cattle. She asked how many other Superfund sites allow grazing. Willeke said there was nothing really to compare it to because most Superfund sites are not vast reservations.

Sarno said the Task Force could find data on how different groups approach transition. Applegate also reminded members that they were talking about the site after it is cleaned up.

Yocum said she didn't think money should be the driver; that safety is paramount. Guckenberger said no one is suggesting that grazing be allowed if there is any evidence of a health risk. He asked if any use of this property is going to be acceptable to this community? Anything?

Yocum asked him if he would like to have his company next to a disposal cell.

Graham Mitchell said this was an important discussion. The Task Force really needs a goal here for the federal government to continue to fund the cleanup. If we pull up all the uses, Congress will not give us the money to clean up. He said the Task Force members need to make sure they march in that direction and keep the federal dollars coming in.

Applegate said the Task Force could recommend that any discontinued grazing not be started up again. He also asked if it is worth it to remediate this area for grazing purposes, which is going to be a very expensive proposition. Is it really appropriate to do this kind of use?

Wagner said he sensed that the Task Force really can't vote on this issue today. He asked, before making a motion to table Willeke's motion, what would be the impact of such a motion on the interim report.

Willeke said the compelling reason has expired now that the Task Force knows that the leases expire in February 1996. He also said grazing was a low value use.

Guckenberger asked what additional information might be needed. He said that in the meantime, why should land just sit there and not be used? It might be a generation before the site is cleaned up, adding that ~~no one is suggesting that any use be permitted that isn't safe.~~

Crawford said the Task Force was going nowhere, adding that members need more information. She said she thinks it's a given that DOE cannot have cows grazing during remediation.

Guckenberger said it would be a darned shame to not have property used for something it is cleaned up to. Why not let it be used for grazing until we get to green space or whatever use is recommended?

Applegate said what we are really saying is what the best use of the property is following remediation. Maybe we should address that question; I think we need to return to the question of interim use. We are making recommendations on future uses of the site; not making recommendations on what the site should be used for in the meantime.

Willeke said he would amend his motion to recommend that the Task Force eliminate from further consideration residential or agricultural use of the property.

Guckenberger said that the Task Force doesn't think the best use of the site is agricultural, which includes grazing.

- Substitute motion written on the flip chart: That the Task Force recommend that the best use of the property would not include residential and agricultural uses.

Applegate said Graham Mitchell's point was important; if we are driven too much by perception to not do anything (restrictive use), then Senator Glenn's comment about putting a fence around the site begins to make sense. We can't let fear dominate our thinking too much.

Willeke said the site is not a one-use property; nor should it be that. We can have an office building or other uses -- grazing cows doesn't get you anything.

Bierer said grazing is a land management practice. If we don't set our expectations high enough for land use, the money is not going to come, and we won't get the degree of cleanup we want.

Willeke asked whether Nevada and Utah would want to take waste into their states if there isn't going to be a future land use besides green space? Will those states want to take the waste if they don't see any benefit to the community here?

Strunk said the Task Force has asked for a level of cleanup that allows

for a wide range of future uses; let the community decide the use.

Fox said the Task Force seems to be hung up on grazing. She suggested it symbolized the trauma of the secrecy of the past practices and the hypocrisy. But the cow may symbolize the future, like the canary in the mine.

Applegate asked whether the motion language written on the flip chart were acceptable to everyone?

Strunk asked why act on the grazing issue if the Task Force is going to look at it down the line?

Wagner called for the question.

Rentschler said to clean up to this level in today's dollars it is \$1 million an acre -- reached by dividing \$1 billion by 1000 acres. Is it worth it?

- The Task Force unanimously approved the motion as written on the flip chart. The motion reads: That the best use of the property would not include agricultural or residential uses.

Monahan asked who is going to use the site if there is a waste cell?

Applegate said he felt like the Task Force did accomplish something, adding that he feels comfortable putting that recommendation in the interim report.

7. Interim Report:

Applegate said that for the December meeting, he proposes moving it from December 10 to December 8 and making it an evening meeting. The plan is to discuss the Task Force's path forward. He asked members to submit prior to the December meeting their ideas about topics for discussion between now and July. He asked that members list and prioritize what they think the Task Force needs to talk about. He said there would be an informal focus meeting on the grazing issue before the January meeting.

Monahan said it might be time to discuss the chair's role. He said that *Robert's Rules of Order* calls for the chair not to vote on issues, but he said that he thought it was fine for the chair to participate in the

discussions. Applegate said the December meeting certainly would be an appropriate time to discuss the chair's role. He said he has seen his primary role as not to take sides but to ensure that all points of view are heard.

Applegate said the interim report is not going to change much, except for incorporating the decisions made at the November meeting. He said he would get the interim report out for members' review by Friday, November 18 and asked Task Force members to try and have their comments back by Tuesday, November 22, prior to Thanksgiving.

Crawford announced that the last FRESH meeting of the year would be held on November 17. The topic will be Native American artifacts, burial grounds, and the water system. The meeting is open and everyone is welcome. After the presentation, there will be a celebration of FRESH's 10-year anniversary.

8. Opportunity for Public Participation:

There were no additional comments; public input was received during the discussion about grazing.

9. Materials Distributed at Meeting:

- New Tool Box pages and table of contents
- Operable Unit 1 draft Record of Decision
- Pam Dunn's memorandum on the CERE program
- Summary of public comments from the 1994 Community Assessment
- Brochure on Sole-Source Aquifers

10. Next Meeting:

The next meeting of the full Task Force is scheduled for 5:30 p.m. on December 8, 1994, at the Joint Information Center in Fairfield.

The meeting adjourned at 12:34 p.m.

Approved December 8, 1994

FERNALD CITIZENS TASK FORCE
 PROPOSED 1995 WORK PLAN
 12/1/94

1995 TOPICS

<i>Where should the waste go?</i>	<i>How should the clean site be used?</i>	<i>Timing and Priorities</i>	<i>How should cleanup proceed?</i>	<i>Report preparation</i>	<i>Task Force Future</i>			
January	February	March	April	May	June	July	August	September

1995 SCHEDULE

<i>January</i>	Waste Disposition Evaluation <i>Special Session: Risks from cattle grazing</i>
<i>February</i>	Waste Disposition Decision
<i>March</i>	Future Use and Institutional Controls
<i>April</i>	Cleanup Priorities and Transitional Use
<i>May</i>	Safety and General Cleanup Criteria
<i>June</i>	Final Report Development
<i>July</i>	Final Report Approval
<i>August</i>	Summer Break
<i>September</i>	Continuing Mission

1995 ACTIVITIES**WASTE DISPOSITION EVALUATION***January 1995***Purpose of Meeting:**

Evaluation of available information regarding on-site *vs.* off-site disposal of wastes and efficacy of treatment.

Information to be Provided:

Detailed descriptions of on site cell design and long-term safety issues.

Detailed descriptions of transportation requirements and risks.

Background on Waste Acceptance Criteria and impact on waste disposition.

Revisit of soil washing in light of selected cleanup levels and waste acceptance criteria.

Potential of receiving non-Fernald wastes.

Decisions:

Task Force will identify any additional information required to make decision.

WASTE DISPOSITION DECISION*February 1995***Purpose of Meeting:**

To continue evaluation of waste disposition options and make a decision regarding waste disposition and treatment.

Information to be Provided:

As defined by Task Force from January meeting.

Decisions:

Identification of desired waste disposition for each major waste component.

Identification of key Task Force issues, concerns, and criteria regarding an on-site disposal cell, if identified.

Identification of key Task Force issues, concerns, and criteria regarding off-site disposal, if identified.

Recommendations regarding use of soil washing.

Waste Acceptance Criteria suitability and disposal of potential "clean" fraction of soil washing residuals.

Identification of future design and construction activities that will require Task Force and/or public input.

Resolution on non-Fernald wastes.

FUTURE USE AND INSTITUTIONAL CONTROLS*March 1995***Purpose of Meeting:**

To finalize recommendations on the desired post-remediation uses of the site and the long-term measures required to ensure safe use of the site.

Information to be Provided:

Existing toolbox data.

Expected impacts of the waste disposition recommendation.

Potential native American cultural uses.

Options for ensuring the long-term effectiveness of the remedy and responsibilities and contingencies for the long-term management of the property.

Currently available options for long-term control of land uses.

Currently Planned DOE ownership strategy.

Decisions:

The desired uses of the Fernald property following remediation.

Recommended long-term controls for site.

Long-term ownership.

Identification of any portion of the property that might be released outside of Federal ownership.

Identification of design activities that will require Task Force/public input.

CLEANUP PRIORITIES AND TRANSITIONAL USE*April 1995***Purpose of Meeting:**

To identify priorities in pursuing cleanup of the Fernald property and to identify any transitional uses of the property that might be desirable or allowable before all cleanup activities are completed.

Information to be Provided:

Probable timelines of key construction activities.

Key time and logistical constraints for site cleanup.

Likely budget impacts on future cleanup activities.

Understanding of how Fernald will change over time during and after remediation.

Conceptual site models at 5, 10, 15, and 20 years, and at ultimate completion.

Decisions:

Identification of the key concerns of the Task Force for setting cleanup priorities.

Identify an overall view of cleanup timing from the Task Force's perspective.

Prioritization of wastes and materials for cleanup.

Identification of what uses, if any, should be allowed during cleanup.

SAFETY AND GENERAL CLEANUP CRITERIA*May 1995***Purpose of Meeting:**

Evaluation of risks and safety factors resulting from cleanup operations and identification of key Task Force criteria in conducting cleanup.

Information to be Provided:

Risks resulting from remediation and proposed mitigation measures.

Review of assumptions used in setting risk levels.

Review impacts of applying ALARA (as low as reasonably achievable) levels on and off site.

Expected levels of traffic.

Potential community disruptions due to construction activities.

Likely protocols for evaluating cleanup effectiveness and achievement of cleanup levels.

Potential for air pollution, and mitigation and monitoring.

Decisions:

Key community concerns to take into account in planning remediation activities.

Final recommendations on actual cleanup levels.

Recommendations on protocols for achievement of cleanup levels.

Identification of design activities that will require Task Force/public input.

FINAL REPORT DEVELOPMENT*June 1995***Purpose of Meeting:**

Develop the scope and language of the final report.

Information to be Provided:

Proposed report outline.

Summary of all key decisions.

Proposed language for key issues as prepared by staff.

Potential minority views to be included.

Decisions:

Proposed scope and language for final report.

000079

FINAL REPORT APPROVAL*July 1995***Purpose of Meeting:**

Review final draft of report and approve for publication.

Information to be Provided:

Draft final report.

Outline of outstanding issues.

Decisions:

A final report of all Task Force observations and recommendations.

CONTINUING MISSION*September 1995***Purpose of Meeting:**

Identify nature and extent of continuing mission for the Task Force.

Information to be Provided:

Key areas for future Task Force involvement.

Options for future Task Force organization.

Decisions:

Activities for the Task Force to focus on in the future.

Updated mission.

Schedule for future meetings.

Action on expiring terms for members.

Continued role of support staff.

SUMMARY: On March 21, 1994, EPA proposed a significant new use rule (SNUR) under section 5(a)(2) of the Toxic Substances Control Act (TSCA) which would require persons to notify EPA at least 90 days before commencing the manufacture, import, or processing of refractory ceramic fiber (RCF), as defined in the proposed rule, in any new product form or any new application of existing product forms. The comment period for this proposal closed on June 3, 1994. EPA has decided, based on comments received, to hold an informal hearing to obtain additional information that will help the Agency develop clear criteria for identifying significant new RCF product forms and applications.

-----No. 179 of 230-----

DEPARTMENT OF THE INTERIOR

12/08/94 Proposed rule

43 CFR 11

RIN 1090-AA23

Natural Resource Damage Assessments [L-S document 510376, 59 FR 63300,
2447 lines]

SUMMARY: The Department of the Interior is proposing to amend the regulations for assessing natural resource damages resulting from a discharge of oil into navigable waters under the Clean Water Act or a release of a hazardous substance under the Comprehensive Environmental Response, Compensation, and Liability Act. The regulations provide procedures that designated Federal, State, and Indian tribe natural resource trustees may use to obtain compensation from potentially responsible parties for injuries to natural resources. The regulations provide an administrative process for conducting assessments as well as two types of technical procedures for the actual determination of injuries and damages. "Type A" procedures are standard procedures for simplified assessments requiring minimal field observation in cases of minor discharges or releases in certain environments. "Type B" procedures are site-specific procedures for detailed assessments in other cases.

The Department of the Interior is proposing to revise the existing type A procedure for assessing natural resource damages in coastal and marine environments in compliance with a court order and a statutory biennial review requirement. The proposed procedure incorporates a computer model called the Natural Resource Damage Assessment Model for Coastal and Marine Environments (NRDAM/CME) Version 2.2, which would replace the NRDAM/CME Version 1.2 that is currently incorporated by reference into the regulations.

-----No. 180 of 230-----

DEPARTMENT OF TRANSPORTATION

Federal Highway Administration

12/08/94 Advance notice of proposed rulemaking

49 CFR 395

FHWA Docket No. MC-94-32; RIN 2125-AD44

Maximum Driving and On-Duty Time; Hours of Service for Farmers and Retail
Farm Suppliers [L-S document 510377, 59 FR 63322, 279 lines]

SUMMARY: This action is being taken in response to section 118 of the Hazardous Materials Transportation Authorization Act of 1994, which requires the Secretary of Transportation to initiate a rulemaking proceeding on whether the maximum driving and on duty time requirements of the Federal Motor Carrier Safety Regulations (FMCSRs) should be waived for farmers and retail farm suppliers transporting crops or farm supplies for agricultural purposes within a 50-mile radius of their distribution point or farm. The FHWA requests public comment from interested persons on this action and

M St., SW., Washington, DC 20460. Three copies of any request to participate in the informal hearing, identified with docket number OPPTS-50604 must be submitted to: TSCA Document Control Officer (7407), Office of Pollution Prevention and Toxics, Environmental Protection Agency, Rm. E-G99, 401 M St., SW., Washington, DC 20460.

FOR FURTHER INFORMATION CONTACT: For general information: Susan B. Hazen, Director, Environmental Assistance Division (7408), Office of Pollution Prevention and Toxics, Environmental Protection Agency, 401 M St., SW., Washington, DC 20460, Telephone: (202) 554-1404, TDD: (202) 554-0551. For technical questions: Jonathan Jacobson, Telephone: (202) 260-3779, Intern-

et:acobson.jonathan@epamail.epa.gov.

SUPPLEMENTARY INFORMATION: In the Federal Register of March 21, 1994 (59 FR 13294), EPA proposed a SNUR under section 5(a)(2) of TSCA which would require persons to notify EPA at least 90 days before commencing the manufacture, import, or processing of significant new uses of RCF. The Agency believes that any new product form or application of RCF and its related manufacture, import, or processing should be designated as a significant new use. EPA has determined, however, that it requires additional information and analysis to develop clear criteria for identifying new RCF product forms and applications. The Agency, therefore, has decided to hold this hearing to obtain information and input that will help EPA develop these criteria. EPA is particularly interested in hearing from persons engaged in the manufacture or processing of RCF used in consumer appliances.

Each person or organization desiring to participate in the informal hearing shall file a written request to participate with the OPPT Document Control Officer at the location listed under ADDRESSES. The request must be received by the Agency no later than January 3, 1995. The request shall include: (1) A brief statement of the interest of the person or organization in the proceeding; (2) a brief outline of the points to be addressed; (3) an estimate of the time required; and (4) if the request comes from an organization, a non-binding list of the persons to take part in the presentation. Organizations are requested to bring with them, to the extent possible, employees with individual expertise in and responsibility for each of the areas to be addressed.

Interested persons may submit comments on issues raised at the hearing. Comments must be received on or before February 9, 1995. Comments and a transcript of the hearing will be placed in the Nonconfidential Information Center as part of the rulemaking record for the proposed rule (docket number OPPTS-50604) and will be available for inspection and copying (see TSCA Docket Receipt Office listed under ADDRESSES). Any information claimed as Confidential Business Information (CBI) that is part of the record for this rulemaking is not available for public review. A public version of the record, from which information claimed as CBI has been excluded, is available for inspection.

List of Subjects in 40 CFR Part 721

Environmental protection, Chemicals, Reporting and recordkeeping requirements, Significant new uses.

Dated: December 1, 1994.

Joseph A. Carra,

Acting Director, Office of Pollution Prevention and Toxics.

[FR Doc. 94-30215 Filed 12-7-94; 8:45 am]

BILLING CODE 6560-50-F

DEPARTMENT OF THE INTERIOR

Office of the Secretary

43 CFR Part 11

RIN 1090-AA23

Natural Resource Damage Assessments

AGENCY: Department of the Interior.

ACTION: Proposed rule.

SUMMARY: The Department of the Interior is proposing to amend the regulations for assessing natural resource damages resulting from a discharge of oil into navigable waters under the Clean Water Act or a release of a hazardous substance under the Comprehensive Environmental Response, Compensation, and Liability Act. The regulations provide procedures that designated Federal, State, and Indian tribe natural resource trustees may use to obtain compensation from potentially responsible parties for injuries to natural resources. The regulations provide an administrative process for conducting assessments as well as two types of technical procedures for the actual determination of injuries and damages. "Type A" procedures are standard procedures for simplified assessments requiring minimal field observation in cases of

minor discharges or releases in certain environments. "Type B" procedures are site-specific procedures for detailed assessments in other cases.

The Department of the Interior is proposing to revise the existing type A procedure for assessing natural resource damages in coastal and marine environments in compliance with a court order and a statutory biennial review requirement. The proposed procedure incorporates a computer model called the Natural Resource Damage Assessment Model for Coastal and Marine Environments (NRDAM/CME) Version 2.2, which would replace the NRDAM/CME Version 1.2 that is currently incorporated by reference into the regulations.

DATES: Comments will be accepted through February 6, 1995.

ADDRESSES: Comments should be sent in duplicate to the Office of Environmental Policy and Compliance, ATTN: NRDA Rule-CME, Room 2340, Department of the Interior, 1849 C Street, NW, Washington, DC 20240, telephone: (202) 208-3301 (regular business hours 7:45 a.m. to 4:15 p.m., Monday through Friday). Computer diskettes containing the NRDAM/CME Version 2.2 can be obtained from the same office.

FOR FURTHER INFORMATION CONTACT: Stephen F. Specht at (202) 208-3301, or SSPECHT@IOS.DOI.GOV on Internet.

SUPPLEMENTARY INFORMATION: This preamble is organized as follows:

- I. Background
 - A. Statutory Provisions
 - B. Overview of the Department's Natural Resource Damage Assessment Regulations
 - C. History of this Rulemaking
 - D. Related Rulemakings
- II. Phases of an Assessment Incorporating a Type A Procedure
 - A. Preassessment Phase
 - B. Assessment Plan Phase
 - C. Assessment Phase
 - D. Post-Assessment Phase
- III. Nature of Type A Procedures
 - A. Use of Average Data
 - B. Regulatory Status of Type A Procedures
- IV. NRDAM/CME Version 2.2
 - A. Overview
 - B. User-Supplied Data Inputs
 - C. Geographic Information System
 - D. Submodels
- V. Conditions Regarding Use of the NRDAM/CME Version 2.2
 - A. Primary Conditions
 - B. Secondary Conditions
- VI. Response to Comments
 - A. General
 - B. Physical Fates
 - C. Biological Effects
 - D. Restoration
 - E. Economic Issues
 - F. Tribal Issues

I. Background

A. Statutory Provisions

The Department of the Interior (the Department) is proposing to amend the regulations for assessing natural resource damages under the Comprehensive Environmental Response, Compensation, and Liability Act, as amended (42 U.S.C. 9601 et seq.) (CERCLA) and the Clean Water Act, as amended (33 U.S.C. 1251 et seq.) (CWA). Under CERCLA, certain categories of potentially responsible parties (PRPs) are liable for natural resource damages resulting from a release of a hazardous substance. CERCLA sec. 107(a). Natural resource damages are monetary compensation for injury to, destruction of, or loss of natural resources. CERCLA sec. 107(a)(4)(C). CWA creates similar liability for natural resource damages resulting from discharges of oil into navigable waters. CWA sec. 311(f).

Only designated natural resource trustees may recover natural resource damages. CWA recognizes the authority of Federal and State officials to serve as natural resource trustees. CERCLA recognizes the authority of Federal and State officials as well as Indian tribes to act as natural resource trustees. CERCLA defines "State" to include:

The District of Columbia, the Commonwealth of Puerto Rico, Guam, American Samoa, the United States Virgin Islands, the Commonwealth of the Northern Mariana Islands, and any other territory or possession over which the United States has jurisdiction. CERCLA sec. 101(27).

Damages may be recovered for those natural resource injuries that are not fully remedied by response actions as well as public economic values lost from the date of the discharge or release until the resources have fully recovered. All sums recovered in compensation for natural resource injuries must be used to restore, rehabilitate, replace, or acquire the equivalent of the injured natural resources. CERCLA sec. 107(f)(1). Trustee officials may also recover the reasonable costs of assessing natural resource damages.

CERCLA requires the promulgation of regulations for the assessment of natural resource damages resulting either from a discharge of oil into navigable waters under CWA or from a release of a hazardous substance under CERCLA. CERCLA sec. 301(c). The regulations are to identify the "best available" procedures for assessing natural resource damages. CERCLA sec. 301(c)(2). CERCLA requires that the natural resource damage assessment regulations include two types of assessment procedures. "Type A"

procedures are "standard procedures for simplified assessments requiring minimal field observation." CERCLA sec. 301(c)(2)(A). "Type B" procedures are "alternative protocols for conducting assessments in individual cases." CERCLA sec. 301(c)(2)(B). Assessments performed by Federal and State trustee officials in accordance with these regulations receive a rebuttable presumption in court. CERCLA sec. 107(f)(2)(C). The regulations must be reviewed, and revised as appropriate, every two years. CERCLA sec. 301(c)(3). The promulgation of these regulations was delegated to the Department. E.O. 12316, as amended by E.O. 12580.

The natural resource damage provisions of CWA were amended by the Oil Pollution Act (33 U.S.C. 2701 et seq.) (OPA). The authority to sue for natural resource damages resulting from discharges of oil into navigable waters was extended to not only Federal and State natural resource trustees but also Indian tribe and foreign natural resource trustees. OPA also authorized the National Oceanic and Atmospheric Administration (NOAA) to develop new natural resource damage assessment regulations for discharges of oil into navigable waters. The Department is coordinating its rulemakings with NOAA to ensure, to the maximum extent appropriate, that consistent processes are established for assessing natural resource damages under CERCLA and OPA.

OPA provides that any rule in effect under a law replaced by OPA will continue in effect until superseded. OPA sec. 6001(b). In particular, Senate committee report language makes it clear that "[t]he existing Interior Department rules . . . may be used with a rebuttable presumption in the interim" until NOAA promulgates new regulations. S. Rep. No. 101-94, 101st Cong., 1st Sess. 15 (1990). Therefore, until NOAA promulgates its regulations, the Department's regulations may be used to obtain a rebuttable presumption for natural resource damage assessments under OPA.

B. Overview of the Department's Natural Resource Damage

Assessment Regulations

The Department has published various final rules for the assessment of natural resource damages: 51 FR 27674 (Aug. 1, 1986); 52 FR 9042 (March 20, 1987); 53 FR 5166 (Feb. 22, 1988); and 53 FR 9769 (March 25, 1988). These rulemakings are codified in the Code of Federal Regulations at 43 CFR part 11. The Department also recently published a final rule revising the administrative

process and the type B procedures that has not yet been codified in the Code of Federal Regulations. 59 FR 14261 (March 25, 1994).

The Department's natural resource damage assessment regulations provide an administrative process for conducting assessments as well as technical procedures for the actual determination of injuries and damages. Assessments performed under the Department's regulations consist of four phases: the Preassessment Phase, the Assessment Plan Phase, the Assessment Phase, and the Post-Assessment Phase. The Department's regulations cover the entire process that trustee officials need to follow if they file a lawsuit and expect to obtain a rebuttable presumption. However, trustee officials have the authority to settle their damage claims at any time during the administrative process.

The Preassessment Phase consists of the activities that precede the actual assessment. For example, upon detecting or receiving notification of a discharge or release, trustee officials decide, based on a number of criteria, whether further assessment actions are warranted. This decision is documented in the Preassessment Screen Determination. For more information on the Preassessment Phase, see subpart B of 43 CFR part 11.

The Assessment Plan Phase includes the preparation of a written Assessment Plan. The Assessment Plan, which is subject to public review and comment, assists the involvement of PRPs, other trustee officials, the general public, and any other interested parties. The Assessment Plan also helps ensure that assessments are performed at a reasonable cost. For more information on the Assessment Plan Phase, see subpart C of 43 CFR part 11, as amended by 59 FR 14281-83.

During the Assessment Phase, trustee officials conduct the work described in the Assessment Plan. The work consists of three steps: Injury Determination; Quantification; and Damage Determination. In Injury Determination, trustee officials determine whether any natural resources have been injured. If trustee officials determine that resources have been injured, they proceed to Quantification, in which they quantify the resulting change in baseline conditions. "Baseline" conditions are the conditions that would have existed had the discharge or release not occurred. Finally, in Damage Determination, trustee officials calculate the monetary compensation to be sought as damages for the natural resource injuries.

When a type A procedure is utilized, trustee officials perform Injury Determination, Quantification, and Damage Determination through the use of a standardized procedure involving minimal field work. The Department is developing different type A procedures for different environments in stages. Only one type A procedure has been included in the regulations to date. That type A procedure incorporates a computer model, called the Natural Resource Damage Assessment Model for Coastal and Marine Environments (NRDAM/CME) Version 1.2, to perform Injury Determination, Quantification, and Damage Determination for minor discharges or releases in coastal and marine environments. This proposed rule would revise the type A procedure for coastal and marine environments and replace the NRDAM/CME Version 1.2 with the NRDAM/CME Version 2.2. Until a final rule revising the type A procedure for coastal and marine environments is promulgated, the NRDAM/CME Version 1.2 remains the version incorporated by reference into the regulations. For more information on use of a type A procedure during the Assessment Phase, see subpart D of 43 CFR part 11. Also, the Department recently published a proposed rule that would establish an additional type A procedure for Great Lakes environments. 59 FR 40319 (Aug. 8, 1994).

When a type A procedure is not applicable, trustee officials use type B procedures instead of a type A procedure. In some cases, trustee officials may also use type B procedures to supplement damages calculated through use of an applicable type A procedure. When type B procedures are utilized, trustee officials perform Injury Determination, Quantification, and Damage Determination through the use of site-specific studies. The regulations provide a range of alternative type B scientific and economic methodologies from which trustee officials may choose. For more information on use of type B procedures during the Assessment Phase, see subpart E of 43 CFR part 11, as amended by 59 FR 14283-87.

During the Post-Assessment Phase, trustee officials prepare a Report of Assessment detailing the results of the Assessment Phase. Trustee officials present the Report of Assessment to the PRPs along with a demand for damages and assessment costs. If a PRP does not agree to pay within 60 days, the trustee officials may file suit. Federal and State trustee officials receive a rebuttable presumption of correctness for assessments performed in accordance with the Preassessment Phase,

Assessment Plan Phase, Assessment Phase, and Post-Assessment Phase. requirements set forth in the regulations. Once damages have been awarded or settlement has been reached, trustee officials establish an account for the recovered damages and prepare a Restoration Plan for use of the recovered damages. For more information on the Post-Assessment Phase, see subpart F of 43 CFR part 11, as amended by 59 FR 14287.

C. History of This Rulemaking

On March 20, 1987, the Department published a final rule establishing a type A procedure for coastal and marine environments that incorporated the NRDAM/CME Version 1.1. 52 FR 9041. On March 25, 1988, the Department published technical corrections to the NRDAM/CME Version 1.1, replacing it with NRDAM/CME Version 1.2. 53 FR 9769. On February 1, 1989, the Department published an advance notice of proposed rulemaking announcing the commencement of the statutorily required biennial review of the type A procedure for coastal and marine environments. 54 FR 5093. The advance notice solicited comment on whether and how the type A procedure should be revised to reflect experience with use of the NRDAM/CME Version 1.2.

On July 14, 1989, the U.S. Court of Appeals for the District of Columbia Circuit issued two decisions that affected the biennial review of the type A procedure for coastal and marine environments. *State of Ohio v. United States Department of the Interior (Ohio v. Interior)* dealt with a challenge to the administrative process and type B procedures. 880 F.2d 432 (D.C. Cir. 1989). The court upheld various aspects of the administrative process and type B procedures but ordered the Department to revise the type B procedures to reflect the statutory preference for using restoration costs as the measure of natural resource damages. The court used the term "restoration costs" to encompass the cost of restoring, rehabilitating, replacing, and/or acquiring the equivalent of the injured natural resources. The court also ordered the Department to revise the type B procedures to allow for the recovery of all reliably calculated economic values lost to the public as a result of the injury to natural resources.

State of Colorado v. United States Department of the Interior (Colorado v. Interior) dealt with a challenge to the type A procedure for coastal and marine environments. 880 F.2d 481 (D.C. Cir. 1989). *Colorado v. Interior* upheld the Department's sequential approach to

developing type A procedures but urged the Department to develop additional type A procedures to address as many different cases as possible. The court also remanded the NRDAM/CME Version 1.2, based on the reasoning in the *Ohio v. Interior* decision, to permit the Department to allow for the calculation of restoration costs. The NRDAM/CME Version 1.2 calculates damages based solely on lost public use of the injured resources.

On September 22, 1989, the Department published an advance notice of proposed rulemaking announcing its intent to revise the type A procedure for coastal and marine environments in compliance with *Ohio v. Interior* and *Colorado v. Interior* during the ongoing biennial review 54 FR 39013. The Department solicited comment on means of incorporating restoration costs and all reliably calculated lost public economic values into the revised NRDAM/CME. *Id.*

D. Related Rulemakings

There are several other ongoing natural resource damage assessment rulemakings.

1. CERCLA

On June 2, 1988, the Department published an advance notice of proposed rulemaking soliciting comment on the development of a type A procedure for Great Lakes environments. 53 FR 20143. On September 22, 1989, the Department announced its intent to modify the development of the type A procedure for Great Lakes environments to conform with *Ohio v. Interior* and *Colorado v. Interior*. 54 FR 39015. The Department published a notice of proposed rulemaking for the type A procedure for Great Lakes environments on August 8, 1994. 59 FR 40319. The proposed procedure incorporates a computer model called the Natural Resource Damage Assessment Model for Great Lakes Environments Version 1.31 (NRDAM/GLE). The same modelling approach used to develop the proposed NRDAM/GLE was used to develop the NRDAM/CME Version 2.2.

The August 8, 1994, Federal Register notice also contained two proposed amendments to the natural resource damage assessment regulations that would affect all type A procedures. The Department proposed to revise the conditions under which type A and type B procedures can both be used in the same assessment and to make explicit the scope of judicial review of assessments performed using type A procedures. The comment period on the August 8, 1994, proposed rule has been

extended through February 6, 1995. 59 FR 54877 (Nov. 2, 1994).

The Department plans to develop additional type A procedures, as appropriate, in future rulemakings. The Department intends to convene a public meeting no later than June 1, 1995, to discuss additional environments for which type A procedures may be feasible.

On March 25, 1994, the Department published a final rule revising the administrative process and the type B procedures in partial response to *Ohio v. Interior*. 59 FR 14261. The final rule addresses all aspects of the court remand other than the use of a particular economic methodology, known as contingent valuation (CV), to estimate lost nonuse values of injured resources. Nonuse values are those economic values that are not dependent on use of a resource and include the value of knowing that the resource exists and knowing that a resource will be available for future generations. On May 4, 1994, the Department published a notice of proposed rulemaking addressing CV as a type B procedure for estimating lost nonuse values. 59 FR 23097. The comment period on the notice closed on October 7, 1994. See 59 FR 32175 (June 22, 1994).

CERCLA mandates biennial review, and revision as appropriate, of the Department's natural resource damage assessment regulations. On October 19, 1994, the Department published an advance notice of proposed rulemaking to begin the biennial review of the administrative process and type B procedures. 59 FR 52749.

2. OPA

On January 7, 1994, NOAA published a proposed rule for assessing natural resource damages resulting from oil discharges into navigable waters under OPA. 59 FR 1062. The Department understands that NOAA is likely to allow for use of the revised NRDAM/CME under its OPA regulations after the Department publishes a final rule. 59 FR 1124-25.

II. Phases of an Assessment Incorporating a Type A Procedure

This proposed rule would not change the administrative process for performing a natural resource damage assessment already established under the Department's regulations. Under the proposed rule, an assessment incorporating use of the proposed NRDAM/CME Version 2.2 would entail the same four phases already provided for in 43 CFR part 11: The Preassessment Phase, the Assessment Plan Phase, the Assessment Phase, and

the Post-Assessment Phase. This proposed rule would simply revise one of the procedures available for use during the Assessment Phase. The proposed procedure would be available only for oil discharges or hazardous substance releases that occur in coastal or marine environments.

A. Preassessment Phase

During the Preassessment Phase of an assessment incorporating use of the proposed NRDAM/CME Version 2.2, trustee officials would conduct the activities already provided for in subpart B of 43 CFR part 11. These activities would include the preparation of a Preassessment Screen Determination documenting the trustee officials' decision that additional assessment work was warranted.

B. Assessment Plan Phase

Upon determining that additional assessment work was warranted, trustee officials would begin the Assessment Plan Phase. The Assessment Plan Phase of an assessment incorporating use of the proposed NRDAM/CME Version 2.2 would include the trustee coordination and PRP identification and involvement activities already provided for in subpart C of 43 CFR part 11, as amended by 59 FR 14281. Trustee officials would also prepare a written Assessment Plan documenting their decision to use the NRDAM/CME Version 2.2, as well as the incident-specific information they intend to use as data inputs to the NRDAM/CME Version 2.2. The Assessment Plan would then be made available for public review and comment as already provided in 43 CFR 11.32, as amended by 59 FR 14282.

1. Conditions Regarding Use of the NRDAM/CME Version 2.2

To assist trustee officials in deciding whether to use a type A procedure, type B procedures, or a combination, the Department is proposing several conditions regarding use of the NRDAM/CME Version 2.2. Under the proposed rule, whenever a discharge or release occurred in a coastal or marine environment, trustee officials would determine if the conditions were met. A coastal or marine environment is defined as any area represented by the geographic data contained in the NRDAM/CME Version 2.2. The geographic scope of the NRDAM/CME Version 2.2 is discussed in Section IV.C of this preamble. Trustee officials would include in the Assessment Plan their determinations of whether the conditions regarding use of the NRDAM/CME Version 2.2 were met.

The goal of the natural resource damage assessment process is to obtain as quickly and cost-effectively as possible the compensation due the public and needed to restore injured natural resources. Type B procedures can be considerably more expensive and time-consuming than type A procedures. Therefore, the Department believes that type A procedures should be used whenever applicable.

Under § 11.33(b) of the proposed rule, the conditions regarding use of the NRDAM/CME Version 2.2 fall into two categories: Primary conditions and secondary conditions. The absence of any primary condition indicates that use of the NRDAM/CME Version 2.2 is inappropriate. The absence of any secondary condition does not indicate that use of the NRDAM/CME Version 2.2 is inappropriate but does indicate that the NRDAM/CME Version 2.2 might not address all significant types of natural resource injuries and lost public economic values.

Under the proposed rule, if all primary and secondary conditions were met, trustee officials would be required to use the NRDAM/CME Version 2.2 to calculate all damages in order to get the rebuttable presumption. This approach would be consistent with the existing standards for use of the NRDAM/CME Version 1.2 provided at 43 CFR 11.33.

The proposed rule would further provide that if one or more primary conditions were not met, trustee officials would be required to use type B procedures to calculate all damages in order to obtain the rebuttable presumption. This approach differs from the existing standards for use of the NRDAM/CME Version 1.2, which do not specify particular conditions under which trustee officials must use type B procedures instead of the type A procedure.

Finally, the proposed rule would provide that if all primary conditions were met but one or more secondary conditions were not met, trustee officials could use the NRDAM/CME Version 2.2, type B procedures, or a combination, and obtain a rebuttable presumption. Use of combined type A and type B procedures would be subject to the limitations discussed in Section II.B.2 of this preamble. Trustee officials would decide which assessment procedures to use based on considerations of "cost effectiveness" and "reasonable cost," as those terms are defined in 43 CFR 11.14. Trustee officials would consider whether the benefits of the increased accuracy provided by type B procedures would offset the anticipated additional cost of using type B procedures, and whether

the anticipated damages would exceed the anticipated cost of using type B procedures. Trustee officials would document the determination whether to use the NRDAM/CME Version 2.2, type B procedures, or a combination in the Assessment Plan.

The proposed rule would also require trustee officials to use type B procedures, even if they determined that use of the NRDAM/CME Version 2.2 was appropriate, whenever a PRP submitted a written request for use of type B procedures and advanced all reasonable costs of using type B procedures within a timeframe acceptable to the trustee officials.

Section V of this preamble contains additional information on the conditions regarding use of the NRDAM/CME Version 2.2.

2. Use of Combined Type A and Type B Procedures

Existing 43 CFR 11.15(a)(1) provides that, in order to obtain a rebuttable presumption, trustee officials generally must use either a type A procedure or type B procedures but not both. Under the existing regulations, the only time that trustee officials can use both type A and type B procedures for the same discharge or release is when the procedures address different resources and do not result in double counting of damages.

In the August 8, 1994, Federal Register notice concerning the type A procedure for Great Lakes environments, the Department proposed to delete the existing restriction in 43 CFR 11.15(a)(1) concerning use of both type A and type B procedures during the Assessment Phase. 59 FR 40333. The August 8, 1994, Federal Register notice contained new proposed standards for determining when to use type B procedures to supplement damages calculated by the NRDAM/GLE. Today's proposed rule would establish similar standards for determining when to use type B procedures to supplement damages calculated by the NRDAM/CME Version 2.2.

If all primary conditions regarding use of the NRDAM/CME Version 2.2 were met but one or more secondary conditions were not met, then the NRDAM/CME Version 2.2 could still be used but might not address all significant types of natural resource injuries and lost public economic values. In such cases, trustee officials would have the discretion to use the NRDAM/CME Version 2.2 to calculate all damages. However, trustee officials would also have the option of using type B procedures to supplement the damages calculated by the NRDAM/

CME Version 2.2 and could obtain a rebuttable presumption for both portions of the assessment. Specifically, trustee officials could use type B procedures to calculate damages for types of natural resource injuries and lost public economic values that were not addressed by the NRDAM/CME Version 2.2 and use the NRDAM/CME Version 2.2 to calculate all other damages, provided there were no double recovery of damages.

Trustee officials who used type B procedures in addition to the NRDAM/CME Version 2.2 would obtain a rebuttable presumption only if the type B procedures were used to supplement the damages calculated by the NRDAM/CME Version 2.2. Trustee officials could not selectively substitute specific categories of damages calculated by the NRDAM/CME Version 2.2 with damages calculated through use of type B procedures and retain the rebuttable presumption. However, trustee officials could calculate all damages through use of type B procedures, and obtain a rebuttable presumption, provided that the type B procedures were cost effective and could be performed at a reasonable cost. A trustee official's decision whether to use the NRDAM/CME Version 2.2, type B procedures, or a combination during the Assessment Phase would be documented in the Assessment Plan.

For example, one of the proposed secondary conditions regarding use of the NRDAM/CME Version 2.2 is that the primary injuries to biological resources are one or more of the following: Direct mortality resulting from short-term exposure to the discharged oil or released hazardous substance; direct loss of production resulting from short-term exposure to the discharged oil or released hazardous substance; indirect mortality resulting from food web losses; and indirect loss of production resulting from food web losses. Under the proposed rule, if all primary conditions regarding use of the NRDAM/CME Version 2.2 were met but there were significant sublethal injuries, trustee officials would be allowed to use type B procedures to calculate damages for those sublethal injuries and use the NRDAM/CME Version 2.2 to calculate all other damages, provided there were no double recovery of damages.

Trustee officials who used both the NRDAM/CME Version 2.2 and type B procedures could prepare a single Assessment Plan, so long as it included all the necessary information about how they intended to use the NRDAM/CME Version 2.2, how they intended to apply the type B procedures, and how they intended to ensure no double recovery.

During the Assessment Phase, the NRDAM/CME Version 2.2 would be applied in compliance with § 11.41 of the proposed rule, while the type B procedures would be applied in accordance with subpart E of 43 CFR part 11, as amended by 59 FR 14283. After applying the NRDAM/CME Version 2.2 and completing the type B procedures, trustee officials could prepare a single Report of Assessment detailing the results of both the NRDAM/CME Version 2.2 and the type B procedures.

3. User-Supplied Data Inputs

If trustee officials decided to use the NRDAM/CME Version 2.2, the Assessment Plan would also document the incident-specific information that they intend to use as data inputs to the NRDAM/CME Version 2.2. Under the proposed rule, the NRDAM/CME Version 2.2 would supply most of the data used to determine injury and damages. However, the Department is proposing to require trustee officials to provide certain incident-specific information for use as data inputs to the NRDAM/CME Version 2.2.

Section IV.B of this preamble contains additional information on user-supplied data inputs to the NRDAM/CME Version 2.2.

C. Assessment Phase

After reviewing any comments received on the Assessment Plan, trustee officials would begin the Assessment Phase. The Assessment Phase of an assessment incorporating the NRDAM/CME Version 2.2, like the Assessment Phase of an assessment incorporating type B procedures, would entail three steps: Injury Determination, Quantification, and Damage Determination. Under the proposed rule, these steps would be performed by the NRDAM/CME Version 2.2.

The proposed NRDAM/CME Version 2.2 performs Injury Determination through the Physical Fates Submodel and the Biological Effects Submodel. The Physical Fates Submodel determines the pathway of contamination. Injury is determined through the interaction of the Physical Fates Submodel and the Biological Effects Submodel.

The proposed NRDAM/CME Version 2.2 performs Quantification through the Biological Effects Submodel. The NRDAM/CME Version 2.2 databases contain information about the baseline condition of natural resources in coastal and marine environments. The Biological Effects Submodel quantifies the change in baseline conditions as a result of the discharge or release.

The proposed NRDAM/CME Version 2.2 performs Damage Determination through the Restoration Submodel and the Compensable Value Submodel. The Restoration Submodel estimates appropriate restoration costs. The Compensable Value Submodel calculates the economic values lost to the public pending the reestablishment of baseline conditions. These lost economic values are referred to as compensable values. Consistent with the *Ohio v. Interior* and *Colorado v. Interior* decisions, the proposed NRDAM/CME Version 2.2 adds compensable values and restoration costs to produce a damage figure.

Section IV.D of this preamble contains additional information on how the NRDAM/CME Version 2.2 performs Injury Determination, Quantification, and Damage Determination.

D. Post-Assessment Phase

After using the NRDAM/CME Version 2.2, trustee officials would perform the post-assessment activities already provided for in subpart F of 43 CFR part 11, as amended by 59 FR 14287. These activities include preparation of a Report of Assessment. The proposed NRDAM/CME Version 2.2 provides a printed assessment report that summarizes the computations performed to derive the damage amount. The Report of Assessment would include: the Preassessment Screen Determination; the Assessment Plan, which includes documentation of the trustee officials' determination to use the NRDAM/CME Version 2.2 and documentation of the incident-specific data inputs to the NRDAM/CME Version 2.2; and the printed assessment report from the NRDAM/CME Version 2.2.

Trustee officials would present the Report of Assessment to the PRPs along with a demand for damages and assessment costs. Trustee officials may only recover their reasonable assessment costs. If trustee officials used the NRDAM/CME Version 2.2, reasonable assessment costs would include: the cost of performing the Preassessment Phase and Assessment Plan Phase activities required under subparts B and C of 43 CFR part 11; the cost of developing site-specific data inputs to the NRDAM/CME Version 2.2; and the cost of using the NRDAM/CME Version 2.2.

If a PRP did not agree to pay within 60 days, trustee officials could file suit. Federal and State trustee officials would receive a rebuttable presumption of correctness for their assessments, provided they complied with the proposed standards for use of the NRDAM/CME Version 2.2, as well as

the Preassessment Phase, Assessment Plan Phase, and Post-Assessment Phase requirements set forth in the regulations.

Once damages were awarded or a settlement reached, trustee officials would prepare a written Restoration Plan explaining how they intend to use the recovered damages to restore, rehabilitate, replace, and/or acquire the equivalent of the injured resources. The Restoration Plan would be made available for public comment and review.

Under the proposed rule, trustee officials would have the discretion to determine the appropriate site-specific use of damage recoveries to restore, rehabilitate, replace, and/or acquire the equivalent of the injured resources and would not be restricted to implementing the general restoration methods that were used by the NRDAM/CME Version 2.2 for the calculation of damages.

Type A procedures are designed to assess damages resulting from minor discharges or releases. Therefore, it may not always be practical to prepare a separate Restoration Plan for each award or settlement based on use of a type A procedure. Existing 43 CFR 11.93(d) provides that trustee officials may apply several type A awards to a single Restoration Plan, so long as the Plan is intended to address the same or similar injuries as those identified in each application of the type A procedure.

III. Nature of Type A Procedures

A. Use of Average Data

CERCLA mandates that the type A procedures constitute simplified procedures for conducting assessments with minimal field observation. CERCLA sec. 301(c)(2)(A). Standardized procedures for simplified assessments rely heavily on average rather than site-specific data. Therefore, a type A procedure may generate a damage figure that is less than, equal to, or greater than the damage figure that would have been calculated if type B procedures had been used for the same discharge or release. Nevertheless, Federal and State trustee officials who comply with the Department's regulations obtain a rebuttable presumption, regardless of whether they use type A or type B procedures. See CERCLA sec. 107(f)(2)(C).

B. Regulatory Status of Type A Procedures

Type A procedures are developed as regulations. Therefore, once a type A procedure is promulgated as a final rule, the procedure can be changed only through a rulemaking by the

Department. For example, the Department is proposing to have the NRDAM/CME Version 2.2 incorporated by reference into the natural resource damage assessment regulations. Thus, once a revised type A procedure for coastal and marine environments is promulgated as a final rule, trustee officials will have to use the exact version of the NRDAM/CME incorporated into the final rule, without any alteration of the submodels or databases, in order to obtain a rebuttable presumption for an assessment using the type A procedure for coastal and marine environments.

Moreover, CERCLA provides that any challenges to regulations promulgated under the statute must be made in the U.S. Court of Appeals for the District of Columbia Circuit within 90 days from the date of promulgation and cannot be made in any civil proceeding to obtain damages. CERCLA sec. 113(a). Therefore, once a type A procedure is promulgated as a final rule, any challenges to the workings, databases, or underlying structure of the procedure would have to be made within 90 days from the date of promulgation rather than in a particular natural resource damage case.

For example, once the revised type A procedure for coastal and marine environments is promulgated as a final rule, a PRP in a natural resource damage case where the revised NRDAM/CME is used in accordance with the Department's regulations will not be able to challenge the revised NRDAM/CME submodels or databases. A PRP will only be allowed to challenge the trustee officials' decision to use the revised NRDAM/CME and the trustee officials' incident-specific data inputs to the revised NRDAM/CME. Federal and State trustee officials who comply with the standards governing use of the revised NRDAM/CME, as well as the Preassessment Phase, Assessment Plan Phase, and Post-Assessment Phase requirements set forth in the regulations, will obtain a rebuttable presumption of correctness for their decision to use the revised NRDAM/CME and for their incident-specific data inputs. PRPs who wish to avoid being bound by the revised NRDAM/CME submodels and databases have the option of funding the performance of type B procedures.

In the August 8, 1994, notice of proposed rulemaking concerning the type A procedure for Great Lakes environments, the Department has proposed to make explicit in the regulations the statutory limitation on judicial review of assessments

incorporating type A procedures. 59 FR 40337

IV. NRDAM/CME Version 2.2

A. Overview

The proposed NRDAM/CME Version 2.2 consists of integrated submodels and databases that calculate natural resource damages based on certain types of estimated restoration costs and economic values lost to the public pending reestablishment of baseline conditions. The proposed NRDAM/CME Version 2.2 is a complex computer model; however, it is designed for use by relatively untrained individuals. The proposed NRDAM/CME Version 2.2 is available on diskettes and can be used on most IBM-compatible personal computers.

The proposed NRDAM/CME Version 2.2 was developed under contract to the Department by Applied Science Associates, Inc., Narragansett, Rhode Island, A.T. Kearney, Inc., Alexandria, Virginia, and HBRS, Inc., Madison, Wisconsin. Intensive efforts were made to ensure that the NRDAM/CME Version 2.2 incorporated the best available scientific and economic data and studies. The data and studies that were obtained were then carefully reviewed by a wide range of experts.

A detailed description of the proposed NRDAM/CME Version 2.2 can be found in the six-volume "CERCLA Type A Natural Resource Damage Assessment Model for Coastal and Marine Environments Technical Documentation," dated October 1994, prepared for the Department by Applied Science Associates, Inc., A.T. Kearney, Inc., and HBRS, Inc. (NRDAM/CME Version 2.2 technical document). Volume I of the NRDAM/CME Version 2.2 technical document discusses the content and derivation of the NRDAM/CME Version 2.2 submodels and databases. Volume II is a user's manual. Volume III is a compilation of the chemical and environmental databases

used by the proposed NRDAM/CME Version 2.2. Volume IV contains the biological databases on the life histories, abundances, and trophic level production rates used by the proposed NRDAM/CME Version 2.2. Volume V is a compilation of the compensable values and restoration costs used by the NRDAM/CME Version 2.2. Volume VI is a listing of the active source code for the proposed NRDAM/CME Version 2.2. Under the proposed rule, the NRDAM/CME Version 2.2 and the NRDAM/CME Version 2.2 technical document would be incorporated by reference into the regulations.

Computer diskettes containing the proposed NRDAM/CME Version 2.2 and the NRDAM/CME Version 2.2 technical document can be obtained for review and comment from the address given at the beginning of this notice. The proposed NRDAM/CME Version 2.2 is available only on 3.5 inch double-sided, high density diskettes. The model and databases are contained on four diskettes. Three companion location disks for the East Coast (including the Gulf of Mexico), West Coast, Alaska, Pacific Islands (including Hawaii), and the Caribbean provide the geographic data required by the NRDAM/CME Version 2.2. The NRDAM/CME Version 2.2 technical document is available on two 3.5 inch double-sided, high density diskettes formatted under WordPerfect 5.1. The Department solicits comment on all aspects of the proposed NRDAM/CME Version 2.2, the proposed NRDAM/CME Version 2.2 technical document, and the proposed rule language concerning use of the NRDAM/CME Version 2.2.

The proposed NRDAM/CME Version 2.2 is supplied with a menu-driven graphic display to assist users. The minimum computer configuration required to use the proposed NRDAM/CME Version 2.2 is:

- IBM-compatible personal computer using MS-DOS 3.1 or higher;

- 80386 processor or better with math co-processor;
- 1.44 megabyte 3.5 inch floppy disk drive;
- 640 kilobytes of RAM with 540 kilobytes available;
- Hard disk with 50 megabytes of available space;
- VGA monitor; and
- Microsoft-compatible mouse.

For further information on installation of the proposed NRDAM/CME Version 2.2, see the NRDAM/CME Version 2.2 technical document, Volume II, Section 2.

The Department has endeavored to assure that the proposed NRDAM/CME Version 2.2 is without software coding errors. Although extensive testing and validation efforts have been performed to date, the Department is continuing with additional efforts. The Department anticipates that reviewers may discover coding errors in either the user interface or the model's active code. Reviewers may also identify certain aspects of individual output computations that they consider atypical. In all instances, the Department requests to be informed of the technical circumstances that led to the error or perceived atypical output. In order for the Department to replicate the technical circumstances, the specific user inputs must be provided by the reviewer along with a brief statement describing the error or atypical output. Provision of such technical information need not await formal submission of public comment on the overall rulemaking.

To facilitate reviewers' technical submissions, the Department notes that the proposed NRDAM/CME Version 2.2 creates a series of individual internal files for each scenario that is developed. The Department encourages reviewers to electronically submit the pertinent files to the contact listed at the front of this notice. The files may be found in the directories:

\\NRDAMCME\LOC_DATA\..CASES*.DAT	(ASCII file)
\\NRDAMCME\LOC_DATA\..MODELOUT*.CLS	(ASCII file)
\\NRDAMCME\LOC_DATA\..CURRENTS*.DIR	(binary file)
\\NRDAMCME\LOC_DATA\..WINDS*.WND	(binary file)
\\NRDAMCME\LOC_DATA\..RESPONSE*.LRF	(ASCII file)

where "*" is the subdirectory location name corresponding to general geographic subdivision locations (e.g., E_COAST, W_COAST).

B. User-Supplied Data Inputs

Most of the data used by the proposed NRDAM/CME Version 2.2 to determine injury and damages are included in the model databases. However, the

proposed rule would require trustee officials to provide two categories of incident-specific data inputs to the proposed NRDAM/CME Version 2.2. One category of data inputs would include information that trustee officials would be required to provide in order to use the proposed NRDAM/CME Version 2.2. The other category would include additional information that

trustee officials would be allowed to provide under certain circumstances.

1. Required User-Supplied Data Inputs

The Department is proposing to require trustee officials to supply the following incident-specific data:

- Identity of the discharged oil or released hazardous substance;

000088

- Amount of the discharged oil or released hazardous substance that entered the water;
- Length of time over which the discharged oil or released hazardous substance entered the water;
- Date and time that the discharged oil or released hazardous substance began to enter the water;
- Latitude and longitude where the discharged oil or released hazardous substance entered the water;
- Wind velocity and direction during the 30-day period starting 24 hours before the discharged oil or released hazardous substance entered the water;
- Velocity and direction of background and tidal currents over the area affected by the discharge or release at the time the discharged oil or released hazardous substance entered the water;
- Time at which high tide occurred on the date that the discharged oil or released hazardous substance entered the water;
- Tidal range at the time and point where the discharged oil or released hazardous substance entered the water;
- Whether the tide in the area affected by the discharge or release is diurnal (i.e. completes one full cycle every day) or semi-diurnal (i.e. completes two full cycles every day);
- Amount of the discharged oil or released hazardous substance that was removed from the water surface and shoreline during response actions and the location and time frame of the removal;
- Closures of boating areas, Federal public beaches, State (including municipal) public beaches, fisheries, shellfish harvest areas, furbearer hunting or trapping areas, and waterfowl hunting areas due to the discharge or release; and
- Gross National Product Implicit Price Deflator (base year 1987) for the quarter in which the discharge or release occurred.

Also, for discharges or releases in Alaska, the Department is proposing to require trustee officials to determine whether the proposed NRDAM/CME Version 2.2 should consider the effects of ice cover. If trustee officials determine that ice cover effects should be considered, the proposed NRDAM/CME Version 2.2 supplies data on average ice cover for the relevant time period and geographical area. The Department solicits comment on whether the NRDAM/CME Version 2.2 should always consider the effects of ice cover in Alaska.

Trustee officials may have direct knowledge of some of the required incident-specific data inputs. Additional information may be available

from the On-Scene Coordinator (OSC), who is responsible for managing response actions following a discharge of oil or release of a hazardous substance. The U.S. Coast Guard will normally be the OSC for discharges and releases in coastal or marine environments.

The proposed rule provides that discharged oils and released hazardous substances must be identified by Chemical Abstract Service (CAS) Registry Number. Hazardous substances are assigned CAS numbers by the American Chemical Society, Chemical Abstract Service. The hazardous substances included in the NRDAM/CME Version 2.2, along with their CAS numbers, are listed in the NRDAM/CME Version 2.2 technical document, Volume III, Table III.2.1. Oils are divided into categories and each category is assigned a dummy CAS number. The oil categories are identified in the NRDAM/CME Version 2.2 technical document, Volume III, Table III.2.4. The Department solicits comment on whether trustee officials should be allowed to use the NRDAM/CME Version 2.2 for oils and hazardous substances not listed in Table III.2.1 or II.2.4 through selection of a proxy oil or hazardous substance. The Department further solicits comment on how appropriate proxies for oils and hazardous substances might be selected.

If a mixture has been discharged or released, trustee officials must select one oil or one hazardous substance in the mixture. The volume used as input to the NRDAM/CME Version 2.2 would then be the quantity of the selected oil or hazardous substance contained in the mixture, rather than the volume of the entire mixture.

The proposed NRDAM/CME Version 2.2 permits the user to supply data concerning the amount and duration of the discharge or release that identify two distinct stages of a spill event. When modelling such a spill event, the user specifies the amount of the oil or hazardous substance discharged or released during the first stage of the spill and specifies the length of time (in hours) over which the first stage occurs. The user also enters amount and duration data for the second stage of the spill. The model begins the duration period for the second stage of the spill upon completion of the first stage. Users may omit this staging feature by entering zeroes for the second stage of the spill event.

Under the proposed rule, trustee officials would be required to specify a currents grid upon which background and tidal currents are characterized. The currents grid is defined by the northern-

and southern-most latitude, and the eastern- and western-most longitude encompassing the area affected by the discharge or release. The proposed NRDAM/CME Version 2.2 subsequently establishes a grid of 100 grid cells per side within the defined boundaries.

The proposed rule would require trustee officials to enter at least one set of data for both the background and tidal currents that suitably represents conditions existing in the defined gridded area affected by the discharge or release. Background currents of significance are those represented by the Gulf Stream, California current, Florida current, and Alaska current. Major rivers such as the Hudson River and Mississippi River are also sources of significant background current. After the user enters data on background and tidal currents for one or more grid cells, the proposed NRDAM/CME Version 2.2 determines the data values for the remaining grid cells.

The proposed NRDAM/CME Version 2.2 user interface and the computer mouse allow for simplified entry of the currents grid and background and tidal currents. The proposed NRDAM/CME Version 2.2 technical document, Volume II, Section 4 explains how to enter data on currents and how to view the data once entered. Volume II also describes types of currents and lists various sources of data on currents. Sources of data include: The National Ocean Service, Department of Commerce, Riverdale, MD, (301) 436-6990, which publishes tidal tables, tidal current tables, regional tide and tidal current tables, tidal circulations and water levels forecast tables, tidal current charts, and tidal current diagrams; and, Eldridge Tide and Pilot Book, Robert Eldridge White, Publisher, 39 Commercial Wharf, Boston, MA 02110 (617) 742-3045. The NRDAM/CME Version 2.2 technical document, Volume II provides additional sources of data for background and tidal currents.

Information on wind conditions may be available from local sources or from the National Climatic Data Center, Asheville, NC, (704) 271-4800.

When specifying data on the volume of the discharged oil or released hazardous substance removed during response actions, trustee officials must indicate the location and time frame of the removal. Situations may arise in which response actions were actually taken at a particular location over a particular time frame; however, according to the proposed NRDAM/CME Version 2.2, the discharged oil or released hazardous substance had not yet reached that location at that time. In

such situations, if the user entered the actual location and timing of the response actions, the proposed NRDAM/CME Version 2.2 would nonetheless fail to subtract from its calculations the volume of discharged oil or released hazardous substance removed during response. The Department solicits comment on ways of addressing this issue. Moreover, the Department notes that when entering data on the volume of the discharged oil or released hazardous substance removed, trustee officials should be careful to specify the volume of the actual discharged oil or released hazardous substance removed rather than the total volume of contaminated water or sand removed.

The Gross National Product Implicit Price Deflator is published in the Survey of Current Business, which is available from the U.S. Department of Commerce/Bureau of Economic Analysis, 1441 L Street, NW, Washington, DC, 20230, (202) 606-9900. The proposed NRDAM/CME Version 2.2 uses the Gross National Product Implicit Price Deflator for base year 1987 to calculate damages in current dollars. Due to a recent change in the way the Gross National Product Implicit Price Deflator is calculated, values for base year 1987 are available only back to 1987. Therefore, trustee officials who wish to calculate current damages for years prior to 1987 will need to manually adjust the model output using the appropriate Implicit Price Deflator series. Furthermore, the Department solicits comment on whether the rule should require trustee officials to supply the Gross Domestic Product Implicit Price Deflator instead of the Gross National Product Implicit Price Deflator. The Gross Domestic Product Implicit Price Deflator is also available from the U.S. Department of Commerce/Bureau of Economic Analysis.

Under the proposed rule, trustee officials would document in the Assessment Plan the required incident-specific information they intend to use as data inputs to the NRDAM/CME Version 2.2 and the form in which they intend to enter the information into the NRDAM/CME Version 2.2.

For further information on the proposed required incident-specific data inputs, see the NRDAM/CME Version 2.2 technical document, Volume II, Section 4.

2. Additional User-Supplied Data Inputs

The Department is proposing to allow trustee officials, under certain circumstances, to supply incident-specific data inputs in addition to the required data inputs. Under the

proposed rule, trustee officials could supply the following data inputs if they estimate that conditions at the point where the discharged oil or released hazardous substance entered the water differed significantly from the typical values for that season, as built into the proposed NRDAM/CME Version 2.2, and if the data can be collected consistent with the requirements of reasonable cost and cost effectiveness:

- Water temperature at the time and point where the discharged oil or released hazardous substance entered the water;
- Total suspended sediment concentration at the time and point where the discharged oil or released hazardous substance entered the water;
- Mean settling velocity of suspended solids at the time and point where the discharged oil or released hazardous substance entered the water; and
- Air temperature at the time and point where the discharged oil or released hazardous substance entered the water.

Under the proposed rule, if trustee officials decided to develop incident-specific values for these parameters, they would be required to document their decision in the Assessment Plan. If trustee officials do not supply incident-specific values, the proposed NRDAM/CME Version 2.2 supplies default values.

For further information on the proposed additional incident-specific data inputs, see the NRDAM/CME Version 2.2 technical document, Volume II, Section 4.

C. Geographic Information System

The proposed NRDAM/CME Version 2.2 is supported by a geographic information system (GIS) that supplies geographically distributed information to the submodels. The submodels divide space into series of rectangular grids. Each grid contains 2,500 cells. The size of the overall grid and, therefore, the interior cells, varies based on the physical geometry and the availability of natural resource information within each area. For example, smaller grids are used for nearshore areas than are used for offshore areas. Once a submodel selects a grid, the GIS draws the necessary environmental and biotic data from the appropriate databases. Conditions are assumed uniform throughout a particular grid cell. For further information about the proposed GIS and grid system, see the NRDAM/CME Version 2.2 technical document, Volume I, Section 2.

The proposed NRDAM/CME Version 2.2 is intended to cover all coastal and marine waters of the United States,

including those of the territories and possessions. The precise boundaries of the proposed NRDAM/CME Version 2.2 are affected by the availability of data and the manner in which geographic data are handled by the model. However, the following general criteria were used to determine the geographic scope of the proposed NRDAM/CME Version 2.2: open water out to the seaward boundary of the Exclusive Economic Zone; estuarine waters with an average salinity above 0.5 parts per thousand; and intertidal portions of shorelines of those water bodies. The Department solicits comment on whether the proposed NRDAM/CME Version 2.2 does cover all the geographic areas that meet these criteria and whether any of the areas that are covered by the proposed model do not satisfy these criteria. The Department further solicits comment on whether different or additional criteria should be used to determine the geographic scope or use of the model.

Under the proposed rule, trustee officials would be allowed to use the NRDAM/CME Version 2.2 to obtain a rebuttable presumption only for those discharges and releases that occurred within the area covered by the model. If a discharge or release originated outside the area covered by the proposed NRDAM/CME Version 2.2 but migrated into that area, an assessment performed using the model would not be granted a rebuttable presumption. The Department solicits comment on whether trustee officials should be allowed to use the NRDAM/CME Version 2.2 and obtain a rebuttable presumption for assessments involving discharges and releases that occur outside but migrate into the area covered by the model. The Department further solicits comment on how the user-supplied data inputs should be adjusted in such cases.

The proposed NRDAM/CME Version 2.2 assigns a habitat type to each grid cell. The Department wants to ensure that the model reflects the most accurate information available. The Department encourages commenters to review the proposed habitat designations and provide information about possible revisions that should be made in the final version of the model. In particular, the Department requests resource management agencies to review the habitat designations in the locations for which they have expert knowledge.

To facilitate thorough review of the proposed NRDAM/CME Version 2.2 in cases where commenters believe the proposed habitat designations to be incorrect, the Department has included a habitat editing feature in the model

that allows commenters to override the model's habitat designations for particular grid cells. Commenters who believe that particular grid cells have been assigned incorrect habitat designations may use this feature to indicate the specific grid cells that should be corrected and provide that information to the Department. The Department requests that commenters submit their edited habitat designations in computer binary form copied onto a diskette. Commenters should also provide appropriate technical documentation supporting their edited habitat designations. The habitat editing feature enables commenters to run the model using corrected habitat designations for particular grid cells. For further information on this feature, see the NRDAM/CME Version 2.2 technical document, Volume II, Appendix D.

The habitat editing feature was developed as a temporary tool to facilitate review during the public comment period. Under today's proposed rule, trustee officials would not be allowed to override the habitat designations in the final version of the model if they intended to obtain a rebuttable presumption. However, the Department is soliciting comment on whether the habitat editing feature should be incorporated into the final version of the model and whether the rule should be modified to allow trustee officials to override the habitat designations for particular grid cells and still obtain a rebuttable presumption.

Allowing trustee officials to override the model's habitat designations might enable fine-tuning of the model to better reflect site-specific conditions. On the other hand, type A procedures are designed to simplify assessments, minimize fieldwork requirements, and narrow the potential areas of dispute. Providing an option to override the habitat designations could undermine these goals. Therefore, the Department solicits comment on whether the final rule should allow trustee officials to override the habitat designations and, if so, under what conditions.

D. Submodels

The proposed NRDAM/CME Version 2.2 includes four linked submodels: the Physical Fates Submodel, the Biological Effects Submodel, the Restoration Submodel, and the Compensable Value Submodel. Under the proposed rule, these submodels would use data from the NRDAM/CME Version 2.2 databases and the incident-specific data inputs supplied by trustee officials to perform Injury Determination, Quantification, and Damage Determination.

1. Physical Fates Submodel

The proposed Physical Fates Submodel estimates the distribution of the discharged oil or released hazardous substance on the water surface, along shorelines, in the water column, and in sediments over time. The proposed Submodel uses an array of particles to represent the discharged oil or released hazardous substance. A variable fraction of the contaminant mass is associated with each particle. The distribution of the particles is tracked in both time and space as they move across a gridded environment. Wind, background currents, and tidal currents affect the movement of the particles on the water surface and in the water column.

Under the proposed rule, the Physical Fates Submodel simulates: Spreading of surface slicks; evaporation from surface slicks; beaching; entrainment and dissolution in the water column; volatilization from the surface and water column; degradation; removal as a result of response activities; adsorption onto and desorption from particulate matter in the water column; deposition from the water column to bottom sediments; dissolution from sediments to the water column; and removal from the shoreline to the water column or surface. When simulating these processes, the proposed Submodel draws specific data about the physical and chemical properties of the discharged oil or released hazardous substance from the Chemical and Toxicological Database.

The proposed NRDAM/CME Version 2.2 continues the simulations until all environmental exposure levels are below acute toxicity thresholds. The proposed Chemical and Toxicological Database includes acute toxicity values for each oil and hazardous substance covered by the proposed NRDAM/CME Version 2.2. The proposed Submodel creates a time series file of surface slick coverage, shoreline coverage, and substance concentration levels in the water column and in bottom sediments. This file is used by the proposed Biological Effects Submodel.

For further information on the proposed Physical Fates Submodel, see the NRDAM/CME Version 2.2 technical document, Volume I, Section 3. For further information on the proposed Chemical and Toxicological Database, see the NRDAM/CME Version 2.2 technical document, Volume I, Section 7; and Volume III, Section 2.

2. Biological Effects Submodel

The proposed Biological Effects Submodel determines whether certain types of natural resource injuries have resulted from the discharge or release

and, if so, quantifies those injuries. The proposed Biological Effects Submodel determines and quantifies the following types of injury: (1) Direct mortality resulting from short-term exposure to the discharged oil or released hazardous substance; (2) direct loss of production resulting from short-term exposure to the discharged oil or released hazardous substance; (3) indirect mortality resulting from food web losses; and (4) indirect loss of production resulting from food web losses.

The proposed Biological Effects Submodel determines direct mortality of fish and wildlife and direct loss of production for plants and invertebrates by calculating exposure of different species to the discharged oil or released hazardous substance. When performing these calculations, the proposed Biological Effects Submodel uses the time series data generated by the Physical Fates Submodel concerning the distribution and concentration of the discharged oil or released hazardous substance.

The proposed Biological Effects Submodel determines direct mortality of fish through use of an array of particles to represent fish populations potentially exposed to the discharge or release. Each particle represents a variable number of fish present at the time of the discharge or release. The particles move at random within an ecosystem during a single season. Each contiguous grouping of grid cells of the same habitat type represents a separate ecosystem. Each time a particle enters an area with dissolved water or sediment concentrations above an acute toxicity threshold, the proposed Submodel calculates the percentage mortality of the fish represented by the particle. These calculations continue until concentrations of the discharged oil or released hazardous substance have fallen below acute toxicity thresholds.

The proposed Biological Effects Submodel uses similar calculation procedures to determine direct mortality of birds and mammals. However, under the proposed rule, the Submodel only determines direct mortality of birds and mammals when the discharged oil or released hazardous substance forms a surface slick.

The proposed Biological Effects Submodel determines direct mortality of fish eggs and larvae through use of particle arrays that move with the currents. For plants and invertebrates, the proposed Submodel determines direct loss of production based on the assumption that such biota are uniformly distributed throughout a

particular ecosystem rather than through use of particle arrays.

Once direct mortality and direct loss of production have been determined, the proposed Biological Effects Submodel determines indirect mortality and indirect loss of production for fish and wildlife resulting from reductions in food resources. The proposed Submodel uses a food web model to determine the effect that direct mortality and direct loss of production of plants, invertebrates, and noncommercial fish and mammals have on higher trophic-level fish and wildlife.

After determining injuries from both direct exposure and food web losses, the proposed Biological Effects Submodel quantifies those injuries both in terms of lost populations over time and, in the case of fish and wildlife, fishing and hunting losses. The proposed Submodel also computes fishing and hunting losses resulting from closures of fisheries, shellfish harvest areas, waterfowl hunting areas, and furbearer hunting or trapping areas, as specified by trustee officials. This information is used by the Compensable Value Submodel.

Data on habitat type and species biomass are supplied to the proposed Biological Effects Submodel by the Biological Database. Commenters with additional data on coastal and marine habitats and species biomass are encouraged to provide the data to the Department. Reviewers of the proposed NRDAM/CME Version 2.2 can identify grid cells and habitat designations through the graphic user interface. Reviewers may use the F5 function key on their computer keyboard to identify the latitude and longitude for specific grid cells displayed by the graphic user interface. Biological abundance figures contained in the proposed Biological Database are provided in the text output of a model application.

For further information on the proposed Biological Effects Submodel, see the NRDAM/CME Version 2.2 technical document, Volume I, Section 4. For further information on the proposed Biological Database, see the NRDAM/CME Version 2.2 technical document, Volume I, Section 6. The actual database values and their respective reference sources are presented in the NRDAM/CME Version 2.2 technical document, Volume IV

3. Restoration Submodel

The proposed Restoration Submodel estimates the cost of restoring the injured resources. Under the proposed rule, the Submodel determines if various restoration actions are warranted and, if so, calculates the cost

of those actions. The proposed Restoration Submodel evaluates three types of restoration actions: habitat restoration, restoration of assimilative capacity, and restocking fish and wildlife. The restoration costs computed by the Restoration Submodel comprise one component of the damage figure; the other component, compensable value, is calculated by the separate Compensable Value Submodel.

The first type of restoration action evaluated by the proposed Restoration Submodel is habitat restoration. For each affected habitat, the proposed Submodel evaluates whether a particular restoration action is warranted. When shallow water sediments are affected, the proposed Submodel evaluates dredging of sediments and refilling with clean material. When deep water sediments are affected, the proposed Submodel evaluates capping of the sediment. When wetlands are affected, the proposed Submodel evaluates removal of the contaminated substrate, replacement with clean material, and replanting. When shorelines are affected, the proposed Submodel evaluates washing of sand and gravel, replacement of mud, and cleaning of rocks and artificial structures. When mangrove swamps, macroalgal beds, or seagrass beds are affected, the proposed Submodel evaluates replanting. When mollusk reefs are affected, the proposed Submodel evaluates reseeding using spat. When coral reefs are affected, the proposed Submodel evaluates transplanting of coral colonies.

For each relevant habitat restoration action, the proposed Restoration Submodel compares the total injury that would result if the action were performed with the total injury that would result if the action were not performed and natural recovery were relied upon instead. Injury is quantified in terms of lost public use of injured resources (i.e. compensable value) within the relevant habitat. Data on compensable values are supplied to the Restoration Submodel by the Compensable Value Submodel.

Under the proposed rule, if the relevant habitat restoration action would result in a lower total injury than reliance upon natural recovery, then the Restoration Submodel assumes that the habitat restoration action will be performed. The proposed Restoration Submodel then computes the cost of the habitat restoration action. Cost data are supplied by the Restoration Cost Database.

If the relevant habitat restoration action would not result in a lower total injury than reliance upon natural

recovery, then the proposed Restoration Submodel does not compute any habitat restoration costs. Instead, the proposed Submodel computes the cost of restoring the assimilative capacity of coastal and marine environments to baseline.

Assimilative capacity is the ability of a natural resource, such as water, to absorb pollutants. When using type B procedures, trustee officials are allowed to consider lost assimilative capacity when determining the necessary level of restoration, rehabilitation, replacement, and/or acquisition of equivalent resources. See 51 FR 27687, 27716 (Aug. 1, 1986); and 59 FR 14273 (March 25, 1994). The proposed Restoration Submodel calculates damages associated with restoring baseline assimilative capacity of coastal and marine environments in cases where habitat restoration action is not warranted.

When habitat restoration actions are not warranted, the proposed NRDAM/CME Version 2.2 computes the time it will take until environmental exposure levels are below acute toxicity thresholds. However, some non-acutely toxic chemical mass will remain dispersed in the coastal and marine environments. The continued presence of this chemical mass reduces the overall assimilative capacity of the coastal and marine environments. It is not technically feasible to directly remove the remaining dispersed chemical mass. Therefore, the proposed Restoration Submodel assumes that a contaminant mass with toxicity equivalent to the remaining dispersed mass of the discharged oil or released hazardous substance will be removed elsewhere from the coastal and marine environments. Specifically, the proposed Submodel assumes that an equivalent mass of contaminated sediment will be removed from one of 247 harbors, bays, or river mouths that have been identified as National Status and Trends sites by NOAA. The proposed Restoration Submodel then computes the cost of removing the contaminated sediment. Cost data are provided by the Restoration Cost Database.

The Department solicits comment on whether alternative methods of restoring lost assimilative capacity, such as controlling discharges from publicly owned treatment works or other point sources, would be more cost effective than the removal of contaminated sediment from the National Status and Trends sites. The Department further solicits comment on whether there are sufficient technical data concerning such methods to allow for their

incorporation into the NRDAM/CME and, if so, where such data are located.

The proposed Restoration Submodel also computes the cost of restocking fish and wildlife. The proposed Submodel assumes that once the habitat has recovered, either through natural recovery or through implementation of a habitat restoration action, injured fish and wildlife species will be restocked if stocks are available. Data on the availability and cost of stocks are provided by the Restoration Cost Database.

Under the proposed rule, the Restoration Submodel sums the costs of habitat restoration, assimilative capacity restoration, and restocking, as relevant, to calculate the restoration cost. This figure is added to the compensable value figure computed by the Compensable Value Submodel to form the damage claim.

For further information on the proposed Restoration Submodel, see the NRDAM/CME Version 2.2 technical document, Volume I, Section 5. For further information on the proposed Restoration Cost Database, see the NRDAM/CME Version 2.2 technical document, Volume I, Sections 5, 12, and 13; and Volume V, Sections 5-7.

4. Compensable Value Submodel

The proposed Compensable Value Submodel calculates compensable value. Compensable value, as computed by the proposed Compensable Value Submodel, is the sum of certain economic values lost to the public pending the reestablishment of baseline conditions through natural recovery or restoration, as determined by the Restoration Submodel. Only public losses are included in compensable value.

The proposed Compensable Value Submodel computes two types of compensable values: (1) Lost consumptive use values; and (2) lost nonconsumptive use values. Consumptive use values are derived from harvesting activities, such as recreational or commercial fishing or hunting, that remove a natural resource from the environment. Nonconsumptive use values are derived from activities, such as birdwatching or beach visitation, that do not remove any resources from the environment.

Under the proposed rule, the Compensable Value Submodel does not estimate lost nonuse values. Nonuse values are those values that are not dependent on use of the resource, such as the value of knowing that a resource exists. Virtually no empirical studies have been found that address nonuse values for resources in coastal and

marine environments that are in a form that can be used in the NRDAM/CME, i.e. that allow the calculation of marginal values appropriate for relatively small losses in the stock of natural resources.

Under the proposed rule, lost consumptive use values are calculated for lost harvests of: (1) Certain commercially exploited fish species; (2) certain commercially exploited shellfish species; (3) certain commercially exploited furbearer species; (4) certain recreationally harvested fish species; (5) certain recreationally harvested shellfish species; and (6) certain recreationally harvested waterfowl species.

Trustee officials may recover natural resource damages only for lost public values and are not authorized to seek compensation for private commercial losses. However, commercially exploited species are public resources until harvested and trustee officials are authorized to recover damages for the public loss in value of those resources due to the discharge or release. The compensable value for lost harvests of commercially exploited fish, shellfish, and furbearers is the reduction in the in-situ value of the species as a result of the lost harvests. Under the proposed rule, the Compensable Value Submodel assumes that: (1) The marginal productivity of harvest effort recovers completely; (2) the level of harvest effort remains unchanged; and (3) markets for the harvested resources are sufficiently competitive and losses are sufficiently small such that resource prices are not affected. The proposed Compensable Value Submodel computes the reduction in the in-situ value of commercially exploited fish, shellfish, and furbearers by multiplying the total lost harvest of such species, as computed by the Biological Effects Submodel, by the commercial price per unit of harvest, as supplied by the Compensable Value Database.

The compensable value for lost harvests of recreationally harvested fish, shellfish, and waterfowl is the reduction in the associated value of recreational fishing and hunting trips. Under the proposed rule, the Compensable Value Submodel assumes that: (1) The marginal yield of recreational effort recovers completely; and (2) the level and geographic distribution of recreational effort remain unchanged. The proposed Compensable Value Submodel computes the reduction in value of recreational fishing and hunting trips by multiplying the total lost recreational harvest of fish, shellfish, and waterfowl species, as computed by the Biological Effects

Submodel, by the marginal value of harvesting an additional animal, as supplied by the Compensable Value Database.

Under the proposed rule, lost nonconsumptive use values are calculated for: (1) Lost beach visitation due to closure; (2) lost boating due to closure; and (3) lost wildlife viewing for trips originating within the immediate area. The proposed Compensable Value Submodel computes compensable value for lost beach visitation and boating only if trustee officials specify that there has been a closure of a beach or a boating area. If a closure is specified, the proposed Compensable Value Submodel calculates compensable value by multiplying the geographical area closed per day and the number of days closed, as supplied by trustee officials, by the per day value of trips to the closed area. Data on the per unit value of lost nonconsumptive uses are supplied by the Compensable Value Database.

The Department is concerned about the proposed methodology for calculating compensable value for lost wildlife viewing and solicits comment on all aspects of the methodology. The proposed Compensable Value Submodel calculates compensable value for lost wildlife viewing only for trips originating within the immediate area. The proposed Compensable Value Submodel first estimates the number of recreational trips affected by the discharge or release, and then estimates a per animal local viewing value. In cases where there have been significant wildlife viewing losses for trips originating outside the immediate area, trustee officials could use type B procedures to estimate such losses and use the NRDAM/CME Version 2.2 to calculate other damages. Due to a lack of empirical data, the proposed Compensable Value Submodel does not estimate compensable value for lost recreational opportunities occurring in other locations due to lost migration of the affected wildlife population.

The estimated per animal local viewing value varies with the size of the affected wildlife population and the estimated number of affected local recreational trips. These estimated values are derived by disaggregating average nonconsumptive use values by species and species population. The proposed Compensable Value Submodel estimates a relatively low per animal local viewing value for species that are abundant and areas that have few affected local recreational trips. Alternatively, the proposed Compensable Value Submodel estimates a higher per animal local viewing value for species that are less abundant and

areas that have more affected local recreational trips.

The Department recognizes that this methodology can produce anomalous results. For example, the proposed Compensable Value Submodel estimates that the value for local viewing of a sea otter in Alaska is \$0.00304 per animal per year, due to the relatively high number of otters and relatively low number of local viewers in that area. On the other hand, the proposed Compensable Value Submodel estimates that the value for local viewing of an oystercatcher in a particular region in Florida is \$257,956.30 per bird per year, because there are very few oystercatchers and many local viewers in that area. Furthermore, the proposed NRDAM/CME Version 2.2 performs its calculations based on probabilities. The total local viewing value of an oystercatcher would be lost only if there was a 100 percent certainty of killing the oystercatcher, which would imply contamination covering a large portion of the Florida coast.

Such a scenario would constitute a major discharge or release, rendering use of the proposed NRDAM/CME Version 2.2 inappropriate. For minor discharges and releases, the proposed Compensable Value Submodel would calculate lost local viewing value for the Florida oystercatcher based on a small percentage of the total local viewing value of a single bird, thereby providing a value considerably less than \$257,956.30.

A detailed explanation of the methodology for calculating compensable value for lost local wildlife viewing is provided in the NRDAM/CME Version 2.2 technical document, Volume I, Section 8.4. The specific per animal local viewing values incorporated in the proposed NRDAM/CME Version 2.2 are listed in the NRDAM/CME Version 2.2 technical document, Volume V, Tables V.1.3 through V.1.12. The Department wishes to emphasize that the per animal local viewing values do not represent the total "value" of the animals nor do they encompass restoration costs, which are calculated separately, as discussed in Section IV.D.3 of this preamble.

The Department solicits comments on the reliability of the proposed methodology for computing compensable value for lost wildlife viewing. The Department also solicits comment on ways of improving the reliability of the proposed methodology. Specifically, comments are solicited relating to the applicability of this methodology to different types of wildlife (e.g., mammals, birds, and reptiles) and different locations.

Comments are solicited regarding the use of disaggregated average nonconsumptive use values to represent the marginal contribution by one wildlife individual to total local viewing value. The Department also requests comment on criteria for excluding extremely small and large values for a particular species from the NRDAM/CME and the conditions under which such criteria should be applied. Further, commenters with additional valuation data or alternative valuation methodologies concerning wildlife viewing in coastal and marine environments are encouraged to provide the data and methodologies to the Department.

One alternative under consideration is the deletion of nonconsumptive values from the NRDAM/CME Version 2.2 for those species that have consumptive value. Another alternative under consideration is the deletion of all nonconsumptive wildlife values from the NRDAM/CME Version 2.2. Many species, such as bald eagles, have little or no consumptive use. Therefore, if nonconsumptive wildlife values were deleted from the NRDAM/CME Version 2.2, then the compensable value figure calculated by the model would not reflect any lost economic values associated with such species. In order to obtain compensation for such lost values, trustee officials would have to conduct site-specific type B procedures. The Department solicits comment on whether reliance on type B procedures to capture lost nonconsumptive wildlife values would be feasible for minor discharges and releases in coastal and marine environments. Based on the comments received, the Department will decide whether to retain the proposed compensable values for lost local wildlife viewing, modify those values, exclude extremely large and small values for particular species, or delete all lost wildlife viewing values from the final version of the NRDAM/CME.

The per unit values in the proposed Compensable Value Database are stated in 1991 dollars. The proposed Compensable Value Submodel uses the Gross National Product Implicit Price Deflator, as supplied by trustee officials, to adjust per unit values to current dollars. As noted above, the Department solicits comment on whether the Compensable Value Submodel should use the Gross Domestic Product Implicit Price Deflator, rather than the Gross National Product Implicit Price Deflator.

The proposed Compensable Value Submodel discounts the value of future consumptive and nonconsumptive losses using a seven percent discount rate. The current version of Office of

Management and Budget Circular A-94 (OMB Circular A-94), dated October 29, 1992, does not establish a specific discount rate for natural resource damages. However, OMB Circular A-94 does specify a seven percent discount rate for public investments.

The Department is soliciting comment on whether the NRDAM/CME Version 2.2 should include a fixed discount rate based on the OMB Circular A-94 discount rate for public investments or whether trustee officials should be allowed to specify a different discount rate. A possible alternative discount rate for future public losses of natural resources is the consumer rate of time preference, which is the rate of interest at which an individual would be indifferent between consuming goods now and postponing consumption to a later date. Interest rates on investments with little or no default risk, such as U.S. Treasury bonds, provide an estimate of the consumer rate of time preference. The Department solicits comment on whether trustee officials should be allowed to supply a discount rate based on the U.S. Treasury borrowing rate on marketable securities with maturities comparable to the period over which future consumptive and nonconsumptive losses will occur. Information on U.S. Treasury borrowing rates on marketable securities is provided in Appendix C of OMB Circular A-94. OMB Circular A-94 is available from the OMB Publications Office (202-395-7332).

If the U.S. Treasury borrowing rate on marketable securities is used as the discount rate, the Department solicits comment on whether trustee officials should be allowed to determine the appropriate maturity or whether the rule should establish a single maturity that must be used for all cases. For example, because the proposed NRDAM/CME Version 2.2 is designed for minor discharges and releases, it might be reasonable to assume that consumptive and nonconsumptive losses will not extend more than three years into the future. Therefore, trustee officials could be required to use as a discount rate the U.S. Treasury borrowing rate on marketable securities with three-year maturities.

After the Gross National Product Implicit Price Deflator and the discount rate have been applied, the proposed Compensable Value Submodel sums all lost consumptive values and all lost nonconsumptive values to calculate the compensable value. This figure is added to the restoration costs computed by the Restoration Submodel for a damage figure.

For further information on the proposed Compensable Value Submodel, see the NRDAM/CME Version 2.2 technical document, Volume I, Section 8. For further information on the proposed Compensable Value Database, see the NRDAM/CME Version 2.2 technical document, Volume I, Sections 9-11; and Volume V, Sections 1-4.

V. Conditions Regarding Use of the NRDAM/CME Version 2.2

The proposed rule provides several conditions regarding use of the NRDAM/CME Version 2.2. Under the proposed rule, if the discharged oil or released hazardous substance occurred in a coastal or marine environment, trustee officials would be required to determine if the conditions regarding use of the NRDAM/CME Version 2.2 were met. The conditions regarding use of the NRDAM/CME Version 2.2 fall into two categories: Primary conditions and secondary conditions.

If all of the conditions, both primary and secondary, were met, trustee officials would be required to use the NRDAM/CME Version 2.2 to calculate all damages in order to get the rebuttable presumption. If trustee officials determined that one or more primary conditions were not met, they would be required to use type B procedures to calculate all damages in order to obtain the rebuttable presumption. If trustee officials determined that all primary conditions were met but one or more secondary conditions were not met, they could use the NRDAM/CME Version 2.2, type B procedures, or a combination, and obtain a rebuttable presumption. Use of combined type A and type B procedures is subject to the limitations discussed in Section II.B.2 of this preamble. Trustee officials would decide which assessment procedures to use based on considerations of "cost effectiveness" and "reasonable cost," as defined in 43 CFR 11.14. The proposed conditions are discussed below.

A. Primary Conditions

1. Oil Discharged or Hazardous Substance Released

In order to use the proposed NRDAM/CME Version 2.2, trustee officials must select one of the oils or hazardous substances included in the Chemical Database. The Chemical Database includes 469 oils and hazardous substances. The hazardous substances included in the Chemical Database are listed in the NRDAM/CME Version 2.2 technical document, Volume III, Table III.2.1. Oils are divided into categories

as specified in the NRDAM/CME Version 2.2 technical document, Volume III, Table III.2.4. The Department solicits comment on whether trustee officials should be allowed to use the NRDAM/CME Version 2.2 for oils and hazardous substances that are not listed in Tables III.2.1 or III.2.4 through use of a proxy oil or hazardous substance. The Department further solicits comment on how appropriate proxies for oils and hazardous substances might be selected.

2. Magnitude of Discharge or Release

The proposed NRDAM/CME Version 2.2 is designed to calculate damages resulting from minor discharges or releases. The proposed NRDAM/CME Version 2.2 uses discrete particles to represent and track the distribution of a discharged oil or a released hazardous substance on the water surface and in the water column. There are a limited number of particles available for computations. Long-term or large discharges or releases that result in widespread distributions of discharged oil or released hazardous substances are beyond the capacity of the proposed NRDAM/CME Version 2.2.

Also, the proposed NRDAM/CME Version 2.2 assumes that injuries to biological resources are small enough that the ecosystem structure is not significantly changed. For example, the proposed NRDAM/CME Version 2.2 does not address changes in predator-prey relationships or reproductive rates. Moreover, the proposed NRDAM/CME Version 2.2 assumes that injuries to resources that are used by humans are small enough that the marginal values of those resources are not significantly affected. For example, the proposed NRDAM/CME Version 2.2 assumes that the price of commercial harvest does not change as a result of the discharge or release.

Therefore, if there has been a major discharge or release, type B procedures should be used. The effect of a discharge or release will depend on not only the quantity of oil or hazardous substance discharged or released but also the characteristics of the discharged oil or released hazardous substance and the nature of the area in which the discharge or release occurred. For example, the discharge of a very large quantity of oil, under certain circumstances, could constitute a "minor" discharge for purposes of using the NRDAM/CME Version 2.2. On the other hand, the release of a very small quantity of a highly toxic substance, under certain circumstances, could warrant the use of type B procedures instead of the NRDAM/CME Version

2.2. Therefore, the Department has not proposed any "bright line" standard for what constitutes a minor discharge or release. Under the proposed rule, trustee officials would decide on a case-by-case basis whether a discharge or release was minor.

3. Entry into Water

The proposed NRDAM/CME Version 2.2 models the fate of discharged oils and released hazardous substances only upon their entry into the water. Further, the proposed NRDAM/CME Version 2.2 does not model the fate of discharges or releases that occur deep underwater. Therefore, if the discharged oil or released hazardous substance did not enter water at or near the surface, type B procedures should be used.

4. Distribution of Biological Resources

Any model is, by its nature, a simplification of real-world phenomena. The proposed NRDAM/CME Version 2.2 is built upon thousands of grid cells each representing a discrete geographic area. Collectively these cells constitute the coastal and marine environments. To enable modelling of complex environmental variables and relationships, each of these cells is assigned an "average" for features such as habitat type and associated values such as biological abundance. These data are intended to be representative of the area covered by the cell. Individual grid cells are the most detailed level to which resource data are assigned.

Several features of the proposed NRDAM/CME Version 2.2 are included to more accurately represent the natural environment. For example, different cell sizes have been used to account for varying conditions and levels of available natural resource information. Cell sizes in nearshore areas are generally much smaller than those in offshore areas. This enables the model to provide more detailed and accurate data for nearshore areas that exhibit greater complexity, variation, and abundance of biological resources. Similarly, data are included to vary biological abundance by season.

Provision of spatial and temporal variation is limited, however, in that resources are uniformly distributed within cells and among contiguous cells with the same habitat designations, and biological abundance is assumed to be uniform and constant within a season. This may not always constitute an adequate representation of the affected environment. Some small but important environments, such as biologically productive wetlands, might be beyond the level of spatial detail provided in the proposed NRDAM/CME Version 2.2.

Similarly, if a discharge or release is expected to affect a population with a short-term increase in density that is significantly different than the seasonal average, type B procedures should be used.

The Department wants to ensure that the NRDAM/CME Version 2.2 reflects the most accurate information available and encourages resource management agencies to review the values associated with cells for which they have expert knowledge. If, within the existing framework of the NRDAM/CME Version 2.2, data are available that more accurately represent environmental features such as highly productive biological areas, the Department solicits such data. Reviewers of the proposed NRDAM/CME Version 2.2 can identify grid cells and habitat designations through the graphic user interface. Reviewers may use the F5 function key on their computer keyboard to identify the latitude and longitude for specific grid cells displayed by the graphic user interface. Biological abundance figures contained in the proposed Biological Database are provided in the text output of a model application.

5. Nature of Currents

The proposed NRDAM/CME Version 2.2 uses two-dimensional, vertically averaged values for background and tidal currents. Three-dimensional effects, such as reverse flows at depth, upwelling, downwelling, and vertical changes in background and tidal current velocities are not considered. Therefore, if subsurface currents are expected to significantly affect the fate of the discharged oil or released hazardous substance and the subsurface currents are not reasonably uniform with depth, type B procedures should be used.

B Secondary Conditions

1 Presence of Other Discharges or Releases

The proposed NRDAM/CME Version 2.2 treats each discharge or release as a discrete incident. Therefore, if trustee officials are dealing with the cumulative effects of multiple discharges or releases, use of type B procedures instead of or in addition to use of the NRDAM/CME Version 2.2 may be warranted.

2. Effect of Response Actions

Under the proposed rule, trustee officials would be required to supply information on the volume of the discharged oil or released hazardous substance that was removed during response actions. The proposed NRDAM/CME Version 2.2 takes this

information into consideration when determining injury. However, the proposed NRDAM/CME Version 2.2 does not consider any potential injury to natural resources caused by response actions, such as use of chemical dispersants. The existing regulations provide that natural resource damages include compensation for injuries caused by reasonably unavoidable response actions. 43 CFR 11.15(a)(1). Therefore, if response actions resulted in significant injury to natural resources, use of type B procedures instead of or in addition to use of the NRDAM/CME Version 2.2 may be warranted.

3. Types of Natural Resources Injured

The proposed NRDAM/CME Version 2.2 performs Injury Determination only for biological resources. Therefore, if there have been significant injuries to surface water, groundwater, air, or geologic resources, use of type B procedures instead of or in addition to use of the NRDAM/CME Version 2.2 may be warranted.

4. Pathway of Contamination

The proposed NRDAM/CME Version 2.2 calculates exposure of biological resources to the discharged oil or released hazardous substance only through surface water pathways. Therefore, if there has been significant exposure of biological resources through air, groundwater, biological, or geologic pathways, use of type B procedures instead of or in addition to use of the NRDAM/CME Version 2.2 may be warranted.

5. Type of Biological Injuries

The proposed NRDAM/CME Version 2.2 determines and quantifies the following injuries to biological resources: (1) Direct mortality resulting from short-term exposure to the discharged oil or released hazardous substance; (2) direct loss of production resulting from short-term exposure to the discharged oil or released hazardous substance; (3) indirect mortality resulting from food web losses; and (4) indirect loss of production resulting from food web losses. Therefore, if there have been other significant injuries to biological resources, use of type B procedures instead of or in addition to use of the NRDAM/CME Version 2.2 may be warranted.

6. Nature of Compensable Values

The proposed NRDAM/CME Version 2.2 calculates compensable values for: (1) Lost harvests of commercially exploited fish species; (2) lost harvests of commercially exploited shellfish

species; (3) lost harvests of commercially exploited furbearer species; (4) lost harvests of recreationally harvested fish species; (5) lost harvests of recreationally harvested shellfish species; (6) lost harvests of recreationally harvested waterfowl species; (7) lost wildlife viewing for trips originating within the immediate area; (8) lost beach visitation due to closure; and (9) lost boating due to closure. Therefore, if the public has lost other significant economic values as a result of the discharge or release, use of type B procedures instead of or in addition to use of the NRDAM/CME Version 2.2 may be warranted.

VI. Response to Comments

The Department received several comments in response to its previous advance notices of proposed rulemaking. The Department appreciates the time and effort expended by the commenters.

A. General

Comment: Many of the commenters provided or cited reference material for use in the construction of the revised NRDAM/CME and/or its databases.

Response: The materials provided and cited by the commenters were reviewed and, where appropriate, combined with the materials located by the Department's contractors through extensive literature searches. In some instances the materials provided formed the basis for model assumptions and algorithms.

Comment: One commenter provided a list of assumptions upon which the NRDAM/CME Version 1.2 was constructed and indicated that the assumptions needed to be substantiated. Another commenter suggested that the revised NRDAM/CME be subjected to a comprehensive, independent review to verify its algorithms and coding.

Response: The Department acknowledges that the proposed NRDAM/CME Version 2.2 has been built upon various assumptions. The Department notes that the NRDAM/CME Version 2.2 technical document is being made available to the public so that all assumptions, data, and computer coding can receive independent review.

Comment: Several commenters generally endorsed the approach to the development of type A procedures but thought that the NRDAM/CME Version 1.2 was too simplistic. These commenters stated that the applicability of the model to discharges and releases in certain geographic areas was questionable.

Response: The proposed NRDAM/CME Version 2.2 incorporates

extensively revised biological and economic databases. The proposed NRDAM/CME Version 2.2 considers multiple habitats within a single application of the model and includes a broader range of habitat types than was included in the NRDAM/CME Version 1.2. Further, the variability of sea floor depths has been included in the model.

Comment: One commenter stated that the databases included in the NRDAM/CME Version 1.2 are inadequate. The commenter suggested that the Department conduct new studies to fill in these perceived deficiencies.

Response: CERCLA provides that the natural resource damage assessment regulations are to incorporate the "best available" procedures. CERCLA sec. 301(c)(2). The statute did not authorize, nor has funding been made available for, extensive technology development or generation of original data. The Department has endeavored to include all appropriate information in formulation of the proposed NRDAM/CME Version 2.2. The databases have been developed based on information that was not available at the time the NRDAM/CME Version 1.2 was developed. For example, whereas the biological database in the NRDAM/CME Version 1.2 contained approximately 130 species, the proposed NRDAM/CME Version 2.2 contains approximately 1,000 species. The Department solicits information on sources of data or information on modelling technology that would be useful in improving the model.

Comment: One commenter stated that a model designed to quantify damages for injured resources must predict zero damages for some de minimis amounts of oil.

Response: The Department notes that many minor discharges and releases will, and in fact do, result in zero "damages" (i.e. monetary recoveries) in that they are undetected, unreported, or not effectively measurable, or it simply is not cost effective to pursue damages even with simplified procedures such as the NRDAM/CME Version 2.2. However, the Department also notes that CERCLA does not identify a lower limit below which no damages may be recovered nor suggest that such a limit exists.

A natural resource damage assessment must generate a damage claim figure that is based upon the estimated injury to natural resources. The NRDAM/CME Version 2.2 damage figures are scaled to the level of injury that the model estimates to have occurred. Damages are commensurate with the size of the discharge or release as affected by other variables such as the characteristics of the oil or hazardous substance

discharged or released, the duration of the discharge or release event, the prevailing weather conditions, and the nature of the affected environment. Damages can range from zero or near zero for the smallest discharges and releases to millions of dollars for larger discharges or releases of highly toxic substances in more sensitive environments. This reflects a compensatory rather than punitive framework as mandated by CERCLA.

Comment: Several commenters addressed the model documentation provided for the NRDAM/CME Version 1.2. One commenter suggested that the Department include an on-line explanation of the limits to the model's applicability. The commenter thought that such an explanation would contribute to greater understanding of the model and its limitations than is possible when information is buried in several hundred pages of technical documentation. Further, the commenter recommended placing the instructions for use of the model in a separate book rather than in an appendix and further recommended that the documentation provide greater specificity on the user-supplied data inputs.

Response: The Department acknowledges the extensiveness of the technical documentation accompanying the proposed NRDAM/CME Version 2.2. The extensive documentation has been provided to ensure, to the maximum extent possible, that all of the underlying assumptions contained in the model, its algorithms, and its databases have been explained and made available for public review and comment. The Department acknowledges the possibility that certain technical factors and model limitations might not be readily apparent due to the comprehensiveness of the technical documentation. For this reason, this preamble has, where appropriate, identified sections of the NRDAM/CME Version 2.2 technical document where pertinent technical explanations can be found. The user interface contained in the proposed NRDAM/CME Version 2.2 also provides an on-line help screen and explanation of the model's user interface. Volume II of the NRDAM/CME Version 2.2 technical document contains a user's manual.

Comment: One commenter suggested that the model output indicate the total area covered by a slick and the dollar value used per unit of loss to calculate damages in the spill year.

Response: The Department notes that the printed output of the proposed NRDAM/CME Version 2.2 does indicate the total area covered by a slick. The

Department has not identified in the printed output a single dollar value per unit of loss, because the model calculates damages based on a number of different components of injuries and losses.

Comment: One commenter questioned whether the natural resource damage assessment regulations allow for adequate participation by PRPs.

Response: The overall administrative process for conducting an assessment, including the opportunity for PRP involvement, is being examined in the ongoing biennial review and is beyond the scope of this rulemaking. Nonetheless, the Department notes that the regulations currently require trustee officials to provide PRPs with a Notice of Intent to Perform an Assessment before beginning an assessment and invite the participation of the PRPs. Trustee officials are also required to make the Assessment Plan available to PRPs for review and comment. Finally, trustee officials are authorized to allow PRPs to perform assessment work. See 43 CFR § 11.32, as amended by 59 FR 14282.

B. Physical Fates

Comment: One commenter stated that the revised NRDAM/CME should not treat bioturbation as a process for removing contaminant from the area of concern.

Response: The proposed NRDAM/CME Version 2.2 calculates the distribution of contaminant concentrations at the surface, in the upper and lower water columns, and in the sediments. The sediment concentration used for calculating toxicity to benthic species is the dissolved interstitial water concentration within the sediment. The Department acknowledges that bioturbation is not a contaminant removal process but instead functions as an exchange mechanism to distribute the contaminant concentrations between the lower water column and the upper ten centimeters of the sediments. In this manner, the resultant contaminant concentrations in the interstitial waters of the sediments and resultant toxicity to benthic organisms are determined by the proposed Physical Fates Submodel.

Comment: One commenter questioned whether use of the NRDAM/CME Version 1.2 was appropriate in Alaska when ice cover is present. Another commenter questioned whether the NRDAM/CME Version 1.2 adequately modelled surface slicks that split into numerous slicks.

Response: The proposed NRDAM/CME Version 2.2, unlike the NRDAM/CME Version 1.2, specifically addresses

ice cover in Alaska. The proposed NRDAM/CME Version 2.2 also uses different calculations to compute surface spreading of the contaminant plume. The proposed NRDAM/CME Version 2.2 employs individual "Lagrangian" particles to simulate the movement of a surface slick. Thus, the proposed model can simulate the splitting of a single surface slick into numerous slicks. The Department specifically requests comments on both of these aspects of the proposed NRDAM/CME Version 2.2.

Comment: Another commenter thought that the treatment of degradation rates in the NRDAM/CME Version 1.2 was inadequate, because sediment and water column degradation rates were not the same.

Response: The Department notes that hydrolysis, photolysis, and biodegradation are the three major chemical transformation processes contributing to the degradation of an oil or hazardous substance in both water and sediment. Scientific efforts to measure the respective transformation rate constants have not been highly successful. Laboratory experiments often lack reproducibility. Moreover, there are apparent inconsistencies between laboratory results and actual field data. Thus, most estimation methods on the degradation of pollutants in water and sediments are based on the structural features of the chemical. The specifics of the estimation methodology used by the proposed NRDAM/CME Version 2.2 are explained in the NRDAM/CME Version 2.2 technical document, Volume I, Section 7.6.

C. Biological Effects

Comment: One commenter stated that the treatment and documentation of the mortality rates of birds coming in contact with a surface slick were inadequately addressed in the NRDAM/CME Version 1.2.

Response: The Department acknowledges that extensive new information and data have become available on this issue since the development of the NRDAM/CME Version 1.2. The proposed NRDAM/CME Version 2.2 incorporates this new information and data and allows for the differences in extent of exposure that sea birds and waterfowl experience in a spill event. Further, the proposed NRDAM/CME Version 2.2, unlike the NRDAM/CME Version 1.2, addresses the mortality of sea birds and waterfowl based on an exposure volume rather than only a terminal thickness of surface slick. For further information, see the

NRDAM/CME Version 2.2 technical document, Volume I, Section 4.2.

Comment: One commenter asserted that there is a natural tendency of many marine organisms to avoid spilled materials and suggested that the NRDAM/CME Version 1.2 be revised to reflect this.

Response: Evidence for avoidance to toxic materials has been recorded in marine organisms for certain released substances (e.g., chlorine), but a lack of such avoidance has been indicated for others (e.g., fish, invertebrates and marine mammals do not generally avoid oils.) Due to the large number of substances included in the NRDAM/CME Version 2.2 databases, data sufficient for incorporating such actions in the model have not been shown to be available. Should commenters have knowledge of additional data available on such an avoidance phenomena, the Department would appreciate such information.

Comment: Several comments were provided on the common and scientific names contained in the database of the NRDAM/CME Version 1.2. The commenters indicated that there were numerous other species of fish and mammals not included in the database that have commercially and recreationally important values. The commenters further suggested that adult and larval populations and seasonal primary productivity rates be revised to more closely reflect actual conditions in specific areas.

Response: The Department appreciates the commenters' technical review. The Department notes that the Biological Database contained in the proposed NRDAM/CME Version 2.2 includes a broader number of species and seasonal biomass densities for biota that have commercially and recreationally important values. The proposed Biological Database also provides greater specificity of the habitat types. The Department is requesting specific review of the proposed Biological Database.

Comment: One commenter stated that the Department had identified the source of information used for the construction of the toxicity database of the NRDAM/CME Version 1.2 but had failed to document why it chose one value over another. The commenter thought that in certain instances, the injury threshold values contained in the NRDAM/CME Version 1.2 were lower than the no-observable-effects level (NOEL) contained in the water quality criteria developed by the United States Environmental Protection Agency (EPA). Therefore, according to this commenter, the NRDAM/CME Version

1.2 may overestimate toxic effects. Another commenter stated that the Department should not employ injury thresholds that are lower than those required in preventative type programs like the CWA.

Response: The Department notes that the values contained in the NRDAM/CME Version 1.2 chemical toxicity database were derived from published databases. Volume I, Section 4.1 of the NRDAM/CME Version 1.2 technical document explained that one specific toxicological value was not chosen over another as suggested by the commenter. Instead, the technical document explained the quality control procedures and the methodology used to derive specific mean toxicity values. Similarly, Volume I, Section 7.9 of the NRDAM/CME Version 2.2 technical document explains the development of the toxicity data set and the quality control procedures used to incorporate recently available technical data. The NRDAM/CME Version 2.2 technical document further describes the manner in which the selected data were calibrated to specified standard conditions prior to the computation of mean toxicity values for each oil or hazardous substance. The NRDAM/CME Version 2.2 technical document, Volume III, Table III.2.1 lists mean 96-hour LC50 values (the lethal concentration at which 50% of test organisms die within 96 hours) and mean EC50 values (effective concentration at which the growth rate is 50% of control values) for each of the 469 oils and hazardous substances contained in the proposed NRDAM/CME Version 2.2.

The toxicity threshold values listed in the NRDAM/CME Version 2.2 technical document, Volume III, Table III.2.1 are used to control the termination of calculations performed by the Physical Fates Submodel. The Physical Fates Submodel ceases its calculations of the distribution of the discharged oil or released hazardous substance at the point where the water concentrations fall below the specified threshold value. Since the toxicity threshold values serve as switches to turn off the calculations of the Physical Fates Submodel, they could have been set at any level. Instead, individual values were determined for each oil and hazardous substance contained in the Chemical and Toxicological Database using the toxicity algorithms described in Volume I, Section 4.2.1 of the NRDAM/CME Version 2.2 technical document. Thus, comparisons of the threshold values used in the proposed NRDAM/CME Version 2.2 and the NOEL values used in preventative programs are inapposite.

D. Restoration

Comment: Several commenters requested that the NRDAM/CME Version 1.2 be revised to calculate the full costs of restoring injured natural resources. Other commenters thought there was no appropriate way to determine restoration costs for inclusion in the model.

Response: In compliance with Ohio v. Interior and Colorado v. Interior, the proposed NRDAM/CME Version 2.2 has been developed to include consideration of restoration costs in the calculation of damages. The Department invites comment on the appropriateness of the specific costs included. For further information on the derivation of restoration costs, see Section IV.D.3 of this preamble; and the NRDAM/CME Version 2.2 technical document, Volume I, Section 5; and Volume V, Sections 5-7.

Comment: One commenter suggested that the NRDAM/CME Version 1.2 be revised to include the cost for restocking certain types of fish and shellfish.

Response: The proposed NRDAM/CME Version 2.2 includes the cost for restocking certain types of fish and shellfish. The restocking costs have been determined based on regional costs and availabilities of the fish and shellfish.

Comment: One commenter addressed bird cleaning and rehabilitation actions as a potential cost that should be included in the model. The commenter suggested letting the model calculate cleaning costs based on the number of birds the model indicated were exposed to the spill.

Response: The Department has not included bird cleaning and rehabilitation efforts into the calculations performed by the proposed NRDAM/CME Version 2.2. The Department considers that such costs usually would be part of the costs incurred for cleanup of spills rather than natural resource restoration.

Comment: One commenter suggested that costs of replacement of resources is not an appropriate measure of damages if restoration is not going to actually be carried out.

Response: CERCLA requires that all sums recovered in compensation for natural resource injuries must be used to restore, rehabilitate, replace, or acquire the equivalent of the injured natural resources. CERCLA sec. 107(f)(1). Restoration includes actions taken to promote and monitor natural recovery. Therefore, trustee officials must always undertake some form of restoration, rehabilitation, replacement, and/or acquisition of equivalent

resources when they recover natural resource damages.

Comment: One set of commenters suggested that the regulations provide that trustee officials simply be reimbursed for the actual expenses associated with restoration actions, thereby eliminating the need for a procedure to project restoration costs.

Response: Requiring trustee agencies to fund restoration and seek reimbursement later would place a substantial and unwarranted burden upon those agencies. Further, even if such a system were instituted, trustee officials would still need a procedure for determining injuries and appropriate restoration. For this purpose, the type A procedures provide standard methodologies for conducting simplified assessments, and the type B procedures are available for more complex cases.

Comment: One commenter noted that the model should reflect a greater likelihood of need for restoration in instances where oil comes ashore and affects beaches or coastal wetlands.

Response: The proposed NRDAM/CME Version 2.2 does evaluate restoration actions in instances where oil comes ashore. Comment is invited on the appropriateness of the modelling techniques and data used in this evaluation.

Comment: One commenter asserted that the choice of appropriate restoration actions available in the marine environment may be very limited.

Response: The proposed NRDAM/CME Version 2.2 evaluates a range of restoration actions. Comment is solicited on the appropriateness of the actions proposed for inclusion.

Comment: One commenter asserted that in the case of most discharges and releases in marine systems, natural recovery renders restoration efforts unnecessary.

Response: The proposed NRDAM/CME Version 2.2 recognizes the potential for natural recovery in the determination of the most cost-effective restoration activities. As discussed in Section IV.D.3 of this preamble and in the NRDAM/CME Version 2.2 technical document, Volume I, Section 5, the anticipated rate of natural recovery has a direct bearing on the determination of a damage figure.

Comment: One commenter advised against the use of fish and wildlife cost-per-organism tables in determining restoration costs.

Response: The proposed NRDAM/CME Version 2.2 does not consider restoration costs based on cost-per-organism tables. However, the model

does include regional restocking costs for certain commercially available species, when appropriate, as part of the restoration costs.

Comment: One commenter noted that the Department's natural resource damage assessment regulations should include a mechanism that allows the value of PRP-financed remedial activities to be compared to or deducted from the value of the calculated natural resource damages. In addition, one commenter noted that the regulations should clarify whether restoration includes the results of clean-up or "treatment" of affected areas.

Response: The regulations already provide that natural resource damages are to be calculated "based on injuries occurring from the onset of the discharge or release through the recovery period, less any mitigation of those injuries by response actions taken or anticipated . . ." See 43 CFR 11.15(a)(1). The proposed type A procedure for coastal and marine environments would require trustee officials to supply data on the volume of the discharged oil or released hazardous substance cleaned up from the water and shore.

E. Economic Issues

Comment: One commenter thought that the revised NRDAM/CME should incorporate lost nonuse values. This commenter indicated that the absence of such values in the model would introduce significant downward bias in the calculus. One commenter suggested that the Department include estimates of lost nonuse values based on a comparison with lost use values. The commenter suggested a relationship on the order of 0.5 to 1 times the value of the lost use values.

Response: The Department has not, at this time, included the loss of nonuse values in the proposed NRDAM/CME Version 2.2. Virtually no empirical studies have been found that address nonuse values for resources in coastal and marine environments that are in a form that can be used in the NRDAM/CME, i.e. that allow the calculation of marginal values appropriate for relatively small losses in the stock of natural resources. Also, the Department does not believe there is adequate empirical evidence to support the calculation of nonuse values based on a ratio to use values. In cases where significant nonuse losses are anticipated, trustee officials may consider using type B procedures instead of or in addition to a type A procedure. The calculation of lost nonuse values using type B procedures is the subject of a separate rulemaking

being conducted by the Department. See 59 FR 23097.

Comment: One commenter thought that the economic values contained in the NRDAM/CME Version 1.2 for the Arctic region should be expanded.

Response: The Department notes that the Compensable Value Database contained in the proposed NRDAM/CME Version 2.2 is considerably more extensive than the economics database in the NRDAM/CME Version 1.2.

F. Tribal Issues

Comment: Several commenters requested that the NRDAM/CME Version 1.2 be revised to address tribal cultural or spiritual values and values of resources for subsistence and medicinal uses.

Response: CERCLA specifically requires the development of type A procedures for the performance of simplified assessments using minimal field observations. CERCLA sec. 301(c)(2)(A). The statute also requires that the type A procedures incorporate the best available procedures. CERCLA sec. 301(c)(2). These statutory requirements and the limitations of available data necessitate an approach limited in scope. The decisions on which values would be included in the proposed NRDAM/CME Version 2.2 were made based on the availability of data in a form that could be used in the model. During future biennial reviews, as more data become available, the Department may consider the inclusion of additional values. Meanwhile, discharges or releases that affect natural resource values that are not adequately reflected in the proposed NRDAM/CME Version 2.2 can be addressed through the use of type B procedures.

Comment: Several commenters expressed concern about 43 CFR 11.84(b)(2), which provides that only "committed uses" of injured resources may be included in the estimation of compensable values. These commenters stated that due to the beliefs of Indian people and their commercial and subsistence reliance on natural resources, in general, Indian tribes have "committed uses" for all tribal resources. Therefore, these commenters thought that the assessment of compensable values should be allowed for all tribal resources.

Response: The committed use provision of 43 CFR 11.84(b)(2) applies only to the use of type B procedures. The type B procedures are being examined in the ongoing biennial review and are beyond the scope of this rulemaking. However, the Department notes that the committed use concept

was upheld in *Ohio v. Interior*, 880 F.2d at 461-62.

Furthermore, the concept does not restrict the resources for which trustee officials may assess damages, it simply defines the types of damages that may be assessed for those resources pursuant to CERCLA. Whenever a resource is injured, trustee officials may assess damages for the cost of restoring, rehabilitating, replacing, and/or acquiring the equivalent of the injured resource, regardless of whether it has a committed use. The committed use requirement does, however, limit the assessment of damages for interim lost public uses of an injured resource to non-speculative lost uses.

Comment: Several commenters stated that Indian tribes should be allowed to assert claims for injured natural resources owned by tribal members where such resources are subject to a trust restriction on alienation, and that Indian tribal governments should also be allowed to bring claims for damages to natural resources belonging to, managed by, held in trust by, appertaining to, or otherwise controlled by an Indian tribe. These commenters asserted that the natural resource damage assessment regulations should expressly provide that Indian tribes may assert natural resource damage claims for both tribal natural resources and those trust resources owned by tribal members.

Response: The scope of resources covered by the natural resource damage assessment regulations is determined by section 101(16) of CERCLA, which defines "natural resources" as:

[L]and, fish, wildlife, biota, air, water, ground water, drinking water supplies, and other such resources belonging to, managed by, held in trust by, appertaining to, or otherwise controlled by the United States . . . , any State or local government, any foreign government, any Indian tribe, or, if such resources are subject to a trust restriction on alienation, any member of an Indian tribe.

Clarification of this definition, which is incorporated into 43 CFR 11.14(z), is beyond the scope of this rulemaking.

Authorship

The primary authors of this rule are Mary C. Morton, David R. Rosenberger, James F. Bennett, and Stephen F. Specht.

National Environmental Policy Act, Regulatory Flexibility Act, Paperwork Reduction Act, and Executive Orders 12866, 12630, 12778, and 12612

The Department has determined that this rule does not constitute a major Federal action significantly affecting the

quality of the human environment. Therefore, no further analysis pursuant to section 102(2)(C) of the National Environmental Policy Act (43 U.S.C. 4332(2)(C)) has been prepared.

The Department certifies that this rule will not have a significant economic effect on a substantial number of small entities under the Regulatory Flexibility Act (5 U.S.C. 601 et seq.). The rule provides technical procedural guidance for the assessment of damages to natural resources. It does not directly impose any additional cost. As the rule applies to natural resource trustees, it is not expected to have an effect on a substantial number of small entities.

It has been determined that this rule does not contain information collection requirements that require approval by the Office of Management and Budget under the Paperwork Reduction Act (44 U.S.C. 3501 et seq.).

This rule has been reviewed under Executive Order 12866. It has been determined that this rule does not have takings implications under Executive Order 12630. The Department has certified to the Office of Management and Budget that this rule meets the applicable standards provided in Sections 2(a) and 2(b)(2) of Executive Order 12778. It has been determined that this rule does not have federalism implications under Executive Order 12612.

List of Subjects in 43 CFR Part 11

Coastal zone, Environmental protection, Fish, Hazardous substances, Incorporation by reference, Indian lands, Marine resources, National forests, National parks, Natural resources, Oil pollution, Public lands, Recreation areas, Sea shores, Wildlife, Wildlife refuges.

For the reasons set out in the preamble, Title 43, Subtitle A of the Code of Federal Regulations is proposed to be amended as follows:

PART 11—NATURAL RESOURCE DAMAGE ASSESSMENTS

1. The authority citation for Part 11 continues to read as follows:

Authority: 42 U.S.C. 9651(c), as amended.

Subpart A—Introduction

2. Section 11.18 is amended by revising paragraph (a)(4) to read as follows:

§ 11.18 Incorporation by reference

(a) * * *

(4) "CERCLA Type A Natural Resource Damage Assessment Model for Coastal and Marine Environments Technical Documentation," Volumes 1-

VI, dated October 1994, prepared for the U.S. Department of the Interior by Applied Science Associates, Inc., Narragansett, Rhode Island, A.T. Kearney, Inc., Alexandria, Virginia, and HBRS, Inc., Madison, Wisconsin, available from the Office of Environmental Policy and Compliance, Room 2340, Department of the Interior, 1849 C Street, NW, Washington, DC 20240, telephone: (202) 208-3301. Reference is made to this publication in §§ 11.33(b)(1)(i)(A) and 11.41(a), (b), and (c)(2) of this part.

§ 11.19 [Removed and Reserved]

3. Section 11.19 is removed and reserved.

Subpart C—Assessment Plan Phase

4. Section 11.33 is amended by revising the heading of the section and paragraph (b) to read as follows:

§ 11.33 Assessment Plan—deciding whether to use a type A procedure, type B procedures, or a combination.

(b) *Coastal and marine environments.*
(1) When a discharge or release occurs in a coastal or marine environment, as defined in § 11.41(b) of this part, the authorized official shall determine whether the following conditions are met:

(i) *Primary conditions*—(A) The discharged oil or released hazardous substance is identified in Table III.2.4 or Table III.2.1 of Volume III of "CERCLA Type A Natural Resource Damage Assessment Model for Coastal and Marine Environments Technical Documentation," dated October 1994, U.S. Department of the Interior (incorporated by reference, see § 11.18);

(B) The discharge or release was minor;

(C) The discharged oil or released hazardous substance entered water at or near the surface;

(D) The spatial and temporal distribution of biological resources in the area affected by the discharge or release is reasonably represented by the data contained in the NRDAM/CME, as defined in § 11.41(b) of this part; and

(E) Subsurface currents are either: not expected to significantly affect the fate of the discharged oil or released hazardous substance; or reasonably uniform with depth over the water column in the area affected by the discharge or release.

(ii) *Secondary conditions*—(A) The discharge or release was a single event;

(B) Response actions have not caused significant injury to natural resources;

(C) The primary natural resources of concern affected by the discharge or release are biological resources;

(D) Exposure of biological resources to the discharged oil or released hazardous substance results primarily through surface water pathways, as opposed to air, groundwater, biological, or geologic pathways;

(E) The primary injuries to biological resources are one or more of the following: direct mortality resulting from short-term exposure to the discharged oil or released hazardous substance; direct loss of production resulting from short-term exposure to the discharged oil or released hazardous substance; indirect mortality resulting from food web losses; and indirect loss of production resulting from food web losses; and

(F) All significant compensable values, as defined in § 11.83(c)(1) of this part, result from one or more of the following: lost harvests of commercially exploited fish species; lost harvests of commercially exploited shellfish species; lost harvests of commercially exploited furbearer species; lost harvests of recreationally harvested fish species; lost harvests of recreationally harvested shellfish species; lost harvests of recreationally harvested waterfowl species; lost wildlife viewing for trips originating within the immediate area; lost beach visitation due to closure; and lost boating due to closure.

(2) If the discharged oil or released hazardous substance occurs in a coastal or marine environment, as defined in § 11.41(b) of this part, and the authorized official determines that all of the conditions listed in paragraphs (b)(1)(i) and (b)(1)(ii) of this section are met, the authorized official shall use the type A procedure provided for in § 11.41 of this part to calculate all damages.

(3) If the discharged oil or released hazardous substance occurs in a coastal or marine environment, as defined in § 11.41(b) of this part, and the authorized official determines that all of the conditions listed in paragraph (b)(1)(i) of this section are met and that one or more of the conditions listed in paragraph (b)(1)(ii) of this section are not met, the authorized official shall make a determination whether to use the type A procedure provided for in § 11.41 of this part, the type B procedures provided for in subpart E of this part, or a combination. This determination shall be based on considerations of reasonable cost and cost effectiveness, as defined in § 11.14 of this part. The authorized official may use both type A and type B procedures only if: The type B procedures are used

to calculate damages for types of natural resource injuries and compensable values, as defined in §§ 11.62 and 11.83(c)(1) respectively of this part, that are not addressed by the type A procedure; the type A procedure is used to calculate all other damages; and the authorized official does not double count or the authorized official uses techniques that allow any double counting to be estimated and eliminated in the final damage calculation.

(4) If the discharged oil or released hazardous substance occurs in a coastal or marine environment, as defined in § 11.41(b) of this part, and the authorized official determines that one or more of the conditions listed in paragraph (b)(1)(i) of this section are not met, the authorized official shall use type B procedures to calculate all damages.

(5) Notwithstanding paragraphs (b)(2) and (b)(3) of this section, the authorized official shall use type B procedures rather than a type A procedure whenever a potentially responsible party submits a written request for use of type B procedures and advances all reasonable costs of using type B procedures within a time frame acceptable to the authorized official.

5. The heading of subpart D is revised to read as follows:

Subpart D—Type A Procedures

6. Section 11.41 is revised to read as follows:

§ 11.41 Coastal and marine environments.

(a) *General.* The type A procedure for coastal and marine environments shall be performed in accordance with this section. The procedure requires the use of the Natural Resource Damage Assessment Model for Coastal and Marine Environments Version 2.2 (NRDAM/CME), which is included and explained in "CERCLA Type A Natural Resource Damage Assessment Model for Coastal and Marine Environments Technical Documentation," Volumes I-VI, dated October 1994, U.S. Department of the Interior (incorporated by reference, see § 11.18). The NRDAM/CME performs Injury Determination, Quantification, and Damage Determination using the incident-specific data collected by the authorized official pursuant to paragraphs (c) and (d) of this section.

(b) *Definitions.* As used in this section the phrase:

Background (mean) current means the net long-term current flow (i.e. one direction only), attributable to forces such as winds, river flow, water density, and tides, that remains when all the

oscillatory (tidal) components have been removed either mathematically or by measurement techniques.

CAS number means the Chemical Abstract Service Registry Number assigned to a hazardous substance by the American Chemical Society, Chemical Abstract Service, or the number assigned to an oil as specified in Table III.2.1 and Table III.2.4 of Volume III of "CERCLA Type A Natural Resource Damage Assessment Model for Coastal and Marine Environments Technical Documentation," dated October 1994, U.S. Department of the Interior (incorporated by reference, see § 11.18).

Closure of a boating area means the prohibition by an appropriate agency of recreational boating in a specified area due to a discharge of oil or a release of a hazardous substance.

Closure of a Federal beach means the prohibition by an appropriate agency of recreational or other public uses in a specified length of a Federally managed public beach due to a discharge of oil or a release of a hazardous substance.

Closure of a fishery means the prohibition by an appropriate agency of commercial and recreational fishing in a specified area due to a discharge of oil or a release of a hazardous substance.

Closure of a furbearer hunting or trapping area means the prohibition by an appropriate agency of commercial and recreational hunting or trapping of furbearers in a specified area due to a discharge of oil or a release of a hazardous substance.

Closure of a shellfish harvest area means the prohibition by an appropriate agency of commercial and recreational harvesting of shellfish in a specified area due to a discharge of oil or a release of a hazardous substance.

Closure of a State beach means the prohibition by an appropriate agency of recreational or other public uses in a specified length of a State or municipally managed public beach due to a discharge of oil or a release of a hazardous substance.

Closure of a waterfowl hunting area means the prohibition by an appropriate agency of recreational hunting for waterfowl in a specified area due to a discharge of oil or a release of a hazardous substance.

Coastal or marine environment means any area represented by the geographic data contained in the NRDAM/CME, as defined in paragraph (b) this section.

Implicit Price Deflator means the quarterly implicit price deflator for the Gross National Product (base year 1987) as provided in the Survey of Current Business, published by the U.S. Department of Commerce/Bureau of

Economic Analysis, 1441 L Street, NW, Washington, D.C., 20230, (202) 606-9900.

Landward fishery or landward shellfish harvest area means a fishery or shellfish harvest area in a body of water that is enclosed by land and does not contain vegetation (e.g., wetland, seagrass, or kelp) or invertebrate reef (e.g., coral reef).

NRDAM/CME means the Natural Resource Damage Assessment Model for Coastal and Marine Environments Version 2.2 (NRDAM/CME), which is included and explained in "CERCLA Type A Natural Resource Damage Assessment Model for Coastal and Marine Environments Technical Documentation," Volumes I-VI, dated October 1994, U.S. Department of the Interior (incorporated by reference, see § 11.18). The NRDAM/CME is a computer model consisting of integrated physical fates, biological effects, restoration, and economic valuation submodels and databases.

Province means one of the geographic areas delineated in Table 6.1 of Volume I of "CERCLA Type A Natural Resource Damage Assessment Model for Coastal and Marine Environments Technical Documentation," dated October 1994, U.S. Department of the Interior (incorporated by reference, see § 11.18).

Seaward fishery or seaward shellfish harvest area means a fishery or a shellfish harvest area in a body of water that is not enclosed by land and does not contain vegetation (e.g., wetlands, seagrass, or kelp) or invertebrate reef (e.g., coral reef).

Structured fishery or structured shellfish harvest area means a fishery or a shellfish harvest area that contains vegetation (e.g., wetlands, seagrass, or kelp) or invertebrate reef (e.g., coral reef).

Tidal current means the alternating rise and fall of the sea level caused by the gravitational forces between the earth, moon, and sun.

Tidal range means the difference between the highest and lowest height of the tide.

(c) **Required user-supplied data.** (1) The authorized official shall supply the incident-specific information described in paragraphs (c)(2) through (c)(15) of this section for use as inputs to the NRDAM/CME. The authorized official shall document the information in the Assessment Plan.

(2) The authorized official shall specify the CAS number of the discharged oil or released hazardous substance provided in Table III.2.4 or Table III.2.1 of Volume III of "CERCLA Type A Natural Resource Damage Assessment Model for Coastal and

Marine Environments Technical Documentation," dated October 1994, U.S. Department of the Interior (incorporated by reference, see § 11.18). For incidents involving the simultaneous discharge or release of two or more oils or hazardous substances, or when a mixture of one or more oils or hazardous substances has been discharged or released in a single incident, the authorized official shall select one of the oils or hazardous substances present in the simultaneous discharge or release, or in the mixture.

(3) The authorized official shall specify the estimated total mass of discharged oil or released hazardous substance that entered the water stated in tonnes, barrels, gallons, liters, pounds, or kilograms. For incidents involving the simultaneous discharge or release of two or more oils or hazardous substances, or when a mixture of one or more oils or hazardous substances has been discharged or released in a single incident, the authorized official shall specify only the mass of the oil or hazardous substance selected under paragraph (c)(2) of this section.

(4) The authorized official shall specify the estimated length of time over which the discharged oil or released hazardous substance entered the water stated in hours.

(5) The authorized official shall specify the year, month, day, and estimated hour when the discharged oil or released hazardous substance first entered the water.

(6) The authorized official shall specify the latitude and longitude where the discharged oil or released hazardous substance entered the water.

(7) The authorized official shall specify the estimated wind velocity and direction at the point where the discharged oil or released hazardous substance entered the water during the 30-day period beginning 24 hours before the discharged oil or released hazardous substance entered the water. The authorized official shall specify at least one wind velocity stated in knots and the corresponding wind direction stated in the degree angle of the wind's origin.

(8) The authorized official shall specify the following information concerning currents at the time the discharged oil or released hazardous substance entered the water:

(i) The authorized official shall specify a rectangular geographic area encompassing the area affected by the discharge or release stated in terms of the northern- and southern-most latitude, and the eastern- and western-most longitude.

(ii) The authorized official shall specify at least one set of data

concerning the background (mean) current for the area specified pursuant to paragraph (c)(8)(i) of this section. Each set of data shall consist of: an east-west (U) velocity stated in centimeters per second or knots; a north-south (V) velocity stated in centimeters per second or knots; and the latitude and longitude of the origin of the U and V velocity components within the area specified pursuant to paragraph (c)(8)(i) of this section.

(iii) The authorized official shall specify at least one set of data concerning the tidal current at the time of high tide (flood stage) for the area specified pursuant to paragraph (c)(8)(i) of this section. Each set of data shall consist of: An east-west (U) velocity stated in centimeters per second or knots; a north-south (V) velocity stated in centimeters per second or knots; and the latitude and longitude of the origin of the U and V velocity components within the area specified pursuant to paragraph (c)(8)(i) of this section.

(9) The authorized official shall specify the time at which high tide occurred on the date that the discharged oil or released hazardous substance entered the water.

(10) The authorized official shall specify the tidal range at the time and point where the discharged oil or released hazardous substance entered the water stated in meters.

(11) The authorized official shall specify whether the tide in the area affected by the discharge or release is diurnal (i.e. completes one full cycle every day) or semi-diurnal (i.e. completes two full cycles every day).

(12) The authorized official shall specify whether response actions were taken to remove the discharged oil or released hazardous substance from the water surface or the shoreline. If response actions were taken to remove the discharged oil or released hazardous substance, the authorized official shall specify the following information:

(i) For response actions taken to remove the discharged oil or released hazardous substance from the water surface, the authorized official shall specify:

(A) One or more rectangular geographic areas encompassing the area(s) in which such response actions were taken stated in terms of the northern- and southern-most latitude, and the eastern- and western-most longitude;

(B) For each area specified pursuant to paragraph (c)(12)(i)(A) of this section, one or more time frames for such response actions stated in terms of the number of days after the discharged oil or released hazardous substance entered

the water that the removal began and ended; and

(C) For each time frame specified pursuant to paragraph (c)(12)(i)(B) of this section, the volume of the discharged oil or released hazardous substance that was removed from the water surface as a result of the response actions stated in barrels, gallons, or cubic meters.

(ii) For response actions taken to remove the discharged oil or released hazardous substance from the shoreline, the authorized official shall specify:

(A) One or more rectangular geographic areas encompassing the area(s) in which such response actions were taken stated in terms of the northern- and southern-most latitude, and the eastern- and western-most longitude;

(B) For each area specified pursuant to paragraph (c)(12)(ii)(A) of this section, one or more time frames for such response actions stated in terms of the number of days after the discharged oil or released hazardous substance entered the water that the removal began and ended; and

(C) For each time frame specified pursuant to paragraph (c)(12)(ii)(B) of this section, the volume of the discharged oil or released hazardous substance that was removed from the shoreline as a result of the response actions stated in barrels, gallons, or cubic meters.

(13) The authorized official shall specify whether there were any closures of boating areas, Federal beaches, State beaches, fisheries, shellfish harvest areas, furbearer hunting or trapping areas, or waterfowl hunting areas. If there were any closures and damages for such closures are to be calculated, the authorized official shall establish the following information and shall include in the Assessment Plan documentation that the closure resulted from the discharge or release being investigated:

(i) For closure of a boating area, the authorized official shall specify: The province in which the closure occurred; the number of boats affected by the closure per day; and the number of days of closure.

(ii) For closure of a Federal beach, the authorized official shall specify: The province in which the closure occurred; the length closed stated in kilometers; and the number of days of closure stated by calendar month.

(iii) For closure of a State beach, the authorized official shall specify: The province in which the closure occurred; the length closed stated in kilometers; and the number of days of closure stated by calendar month.

(iv) For closure of a fishery, the authorized official shall specify: The province in which the closure occurred; the area closed stated in square kilometers; the number of days of closure; and whether the area closed was a seaward fishery, a landward fishery, or a structured fishery.

(v) For closure of a shellfish harvest area, the authorized official shall specify: The province in which the closure occurred; the area closed stated in square kilometers; the number of days of closure; and whether the area closed was a seaward shellfish harvest area, a landward shellfish harvest area, or a structured shellfish harvest area.

(vi) For closure of a furbearer hunting or trapping area, the authorized official shall specify: The province in which the closure occurred; the area closed stated in square kilometers; and the number of days of closure.

(vii) For closure of a waterfowl hunting area, the authorized official shall specify: The province in which the closure occurred; the area closed stated in square kilometers; and the number of days of closure.

(14) The authorized official shall specify the Implicit Price Deflator for the quarter during which the discharged oil or released hazardous substance entered the water.

(15) For discharges or releases in Alaska, the authorized official shall specify whether the NRDAM/CME should account for the effects of ice cover.

(d) *Additional user-supplied data.* (1) The authorized official may collect any of the additional incident-specific information described in paragraphs (d)(2) through (d)(5) of this section for use as inputs to the NRDAM/CME if: The authorized official estimates that conditions where the discharged oil or released hazardous substance entered the water varied significantly from the typical conditions for the time of year in which the discharge or release entered the water; and the incident-specific information can be collected consistent with the requirements of reasonable cost and cost effectiveness, as defined in § 11.14 of this part. If the authorized official makes a determination to collect any of the incident-specific information described in paragraphs (d)(2) through (d)(5) of this section, the rationale for the determination and the information collected shall be documented in the Assessment Plan. If the information is not collected, the NRDAM/CME will supply default parameters.

(2) Subject to paragraph (d)(1) of this section, the authorized official may specify the estimated water temperature stated in degrees Celsius at the time and

point where the discharged oil or released hazardous substance entered the water.

(3) Subject to paragraph (d)(1) of this section, the authorized official may specify the estimated total suspended sediment concentration stated in milligrams per liter at the time and point where the discharged oil or released hazardous substance entered the water.

(4) Subject to paragraph (d)(1) of this section, the authorized official may specify the estimated mean settling velocity of suspended solids stated in meters per day at the time and point where the discharged oil or released hazardous substance entered the water.

(5) Subject to paragraph (d)(1) of this section, the authorized official may specify the estimated air temperature stated in degrees Celsius at the time and point where the discharged oil or released hazardous substance entered the water.

(e) *Applying the NRDAM/CME.* The authorized official shall apply the NRDAM/CME using the incident-specific data supplied pursuant to paragraphs (c) and (d) of this section.

(f) *Report of Assessment.* After applying the NRDAM/CME, the authorized official shall prepare a Report of Assessment, as described in § 11.90 of this part.

Dated: December 2, 1994.

Bonnie R. Cohen,

Assistant Secretary—Policy, Management, and Budget.

[FR Doc. 94-30108 Filed 12-7-94; 8:45 am]

BILLING CODE 4310-RG-P

DEPARTMENT OF TRANSPORTATION

Federal Highway Administration

49 CFR Part 395

[FHWA Docket No. MC-94-32]

RIN 2125-AD44

Maximum Driving and On-Duty Time; Hours of Service for Farmers and Retail Farm Suppliers

AGENCY: Federal Highway Administration (FHWA), DOT

ACTION: Advance notice of proposed rulemaking (ANPRM).

SUMMARY: This action is being taken in response to section 118 of the Hazardous Materials Transportation Authorization Act of 1994, which requires the Secretary of Transportation to initiate a rulemaking proceeding on whether the maximum driving and on duty time requirements of the Federal

Motor Carrier Safety Regulations (FMCSRs) should be waived for farmers and retail farm suppliers transporting crops or farm supplies for agricultural purposes within a 50-mile radius of their distribution point or farm. The FHWA requests public comment from interested persons on this action and specifically the questions set forth below.

DATES: Comments must be received on or before February 6, 1995.

ADDRESSES: All signed, written comments should refer to the docket number that appears at the top of this document and must be submitted to HCC-10, Room 4232, Office of the Chief Counsel, Federal Highway Administration, 400 Seventh Street, SW., Washington DC 20590. All comments received will be available for examination at the above address from 8:30 a.m. to 3:30 p.m., e.t., Monday through Friday, except Federal holidays. Those desiring notification of receipt of comments must include a self-addressed stamped postcard or envelope.

FOR FURTHER INFORMATION CONTACT: Mr. Larry G. Slade, Office of Motor Carrier Standards, (202) 366-5721, or Mr. Charles Medalen, Office of the Chief Counsel, (202) 366-1354, Federal Highway Administration, Department of Transportation, 400 Seventh Street, SW., Washington, DC 20590. Office hours are from 7:45 a.m. to 4:15 p.m., e.t., Monday through Friday, except Federal holidays.

SUPPLEMENTARY INFORMATION:

The Congressional Mandate

The FHWA is initiating this rulemaking in response to a Congressional mandate contained in section 118 of the Hazardous Materials Transportation Authorization Act of 1994, (Pub. L. 103-311, 108 Stat. 1673, August 26, 1994). The Act requires the agency to "determine whether or not the requirements of § 395.3 of title 49, Code of Federal Regulations, relating to hours of service, may be waived for farmers and retail farm suppliers when such farmers and retail farm suppliers are transporting crops or farm supplies for agricultural purposes within a 50-mile radius of their distribution point or farm."

Section 206 of the Motor Carrier Safety Act of 1984 (49 U.S.C. 31136(e)), authorizes the Secretary of Transportation to waive, in whole or in part, any or all of the provisions of the FMCSRs if it is determined that such waiver is consistent with the public interest and the safe operation of commercial motor vehicles. The questions provided later in this notice

are designed to solicit substantive data to assist the agency in determining whether or not an hours of service waiver for farmers and retail farm suppliers meets the statutory two-prong test for the granting of waivers.

The Hours of Service Requirements

The regulations governing maximum driving and on-duty time (49 CFR 395.3) apply to drivers of commercial motor vehicles (as defined in § 390.5 of the FMCSRs) that operate in interstate commerce. These regulations specify that no motor carrier shall permit or require any driver used by it to drive, nor shall any such driver drive:

(1) More than 10 hours following 8 consecutive hours off duty; or

(2) For any period after having been on duty 15 hours following 8 consecutive hours off duty; or

(3) For any period after having been on duty 60 hours in any 7 consecutive days if the employing motor carrier does not operate every day of the week; or

(4) For any period after having been on duty 70 hours in any period of 8 consecutive days if the employing motor carrier operates motor vehicles every day of the week.

Very limited exceptions to hours of service requirements are contained in §§ 395.1(b) through 395.1(k). These sections allow certain drivers additional hours of driving time under some circumstances. None of these exemptions, however, is applicable to farmers and retail farm suppliers.

Public Reaction to Exemptions From Regulations

In late 1992 and early 1993, the FHWA held a series of public hearings at eleven sites across the country as part of its zero base review of the FMCSRs (see 57 FR 37392, August 18, 1992). The concept of the zero base review is to take a completely fresh look at the safety regulations governing the interstate motor carrier industry. The objective of this project is to adopt revised regulations that: (1) Will enhance safety and further reduce accidents; (2) are more easily understood by the industry; (3) have a greater performance orientation; and (4) are easier to interpret and enforce. During the zero base hearings, the FHWA obtained information, views, and opinions from representatives of the motor carrier industry, State and local enforcement officials, insurance company representatives, college and university professors, and other interested persons (see 57 FR 53089, November 6, 1994). An analysis of the hearings revealed that the elimination of regulatory exemptions was an issue of major

David M. Jones and Jerry Fitzgerald English of New York, Cooper & Lybrand of New York, and Davis & Garvin of Summit, N.J. represented the plaintiff policyholders. The Canadian insurers were represented by John R. Casolaro of Carter, Ledyard & Milburn in New York City. John A. Yeager of Haggerty, Donohue & Monaghan in Michigan represented Auto Owners Ins. Co. Wellington Ins. Co. was represented by Eric Proshansky of Tenzer, Greenblatt & Zunz in New York.

6437

-----No. 34 of 36-----

Wednesday, December 7, 1994 -- BNA Toxics Law Daily
Copyright (c) 1994 The Bureau of National Affairs, Inc.
(Article No. 13412105)

Civil Penalties

U.S. TO RECEIVE \$9 MILLION FOR DAMAGE FROM OIL SPILLED BY CHINESE, JAPANESE SHIPS

WASHINGTON (BNA) -- Six Chinese and Japanese ship operators and their insurers agreed to pay \$9 million in civil penalties, cleanup costs, and natural resource claims for a 1991 oil spill off the Olympic Peninsula, according to a complaint and consent decree filed by the Department of Justice (U.S. v. Maruha Corp., DC WWash, No. 94-1537 WD, 10/14/94).

On July 22, 1991, some 450,000 gallons of oil spilled from the Japanese fishing vessel Tenyo Maru, which sank after colliding with the Chinese freighter M/V Tuo Hai. About 355,000 gallons of fuel oil and 98,000 gallons of diesel fuel spilled into Canadian waters 25 miles northwest of Cape Flattery, creating an oil slick that spread more than several hundred square miles into the economic zone and territorial waters of the Washington state coast. The contaminated area included the Olympic National Park and the Olympic National Marine Sanctuary and 25 miles of coast land that belongs to the Makah Indian Tribe.

The spill fouled beaches on the Olympic Peninsula, damaged wildlife in coastal areas, and killed thousands of seabirds, including marbled murrets, a threatened specie in Washington state.

Distribution Of Funds

Of the \$9 million, \$5.2 million will be distributed to federal, state, and tribal trustees for restoration projects. Another \$3 million will go the Coast Guard National Pollution Fund for cleanup costs. The Coast Guard also will recover a \$500,000 civil penalty. The balance of the money will go to federal and state agencies, and the Makah Indian Tribe. The parties previously paid more than \$2.4 million for related cleanup costs.

The complaint was brought by the Coast Guard, the National Pollution Funds Center, the National Oceanic and Atmospheric Administration, the Department of the Interior, the Washington state departments of Ecology, Natural Resources, and Wildlife, and the Makah Indian Tribe.

The claims were filed under the Oil Pollution Act of 1990, the Clean Water Act, maritime law, and various state laws.

The defendants are the owners and operators of the vessels and their pollution underwriters. They are Maruha Corp.; Japan Ship Owner's Mutual Protection & Indemnity Associations; Tianjin Ocean Shipping Company; China Ocean Shipping Company; United Kingdom Mutual Steam Ship Assurance Association (Bermuda) Ltd.; and the M/V Tuo Hai.

The case was also handled by DOJ's civil division. "The resolution of this case is an example of what can be achieved through the cooperative efforts of ship owners and state and federal government," Frank Hunger, assistant attorney general for the civil division, said.

000105

**FERNALD SITE NATURAL RESOURCE
TRUSTEE REPRESENTATIVES AND PARTICIPANTS**

Ms. Stephanie Bogart
U.S. Department of Energy
Ohio Field Office
P.O. Box 3020
Miamisburg, OH 45343
office (513) 865-4471
fax (513) 865-4397

Mr. Don Henne
U.S. Department of Interior
Office of Environmental Policy and Compliance
U.S. Custom House
Room 217
200 Chestnut Street
Philadelphia, PA 19106
office (215) 597-5378
fax (215) 597-9845

Mr. Tim Hull
Ohio Environmental Protection Agency
Southwest District Office
401 East Fifth Street
Dayton, OH 45402-2911
office (513) 285-6075
fax (513) 285-6249

Mr. Jeff Hurdley, Esq.
Ohio Environmental Protection Agency
Legal Division
1800 Watermark Drive
P.O. Box 163669
Columbus, Ohio 43216-3669
office (614) 644-3037
fax (614) 644-2329

Mr. Bill Kurey
U.S. Fish & Wildlife Service
6950 American Parkway
Suite H
Reynoldsburg, OH 43068-4132
office (614) 469-6923
fax (614) 469-6919

Ms. Barbara Huss Mazur*
Waste Management Division
U.S. EPA, Region V-5HRE-8J
77 W. Jackson Boulevard
Chicago, IL 60604 -3590
office (312) 886-1478
fax (312) 353-4788

Mr. Tom Schneider
Ohio Environmental Protection Agency
Office of Federal Facilities Oversight
Southwest District Office
401 East Fifth Street
Dayton, OH 45402-2911
office (513) 285-6466
fax (513) 285-6404

Mr. Larry Sirnek
Ohio Environmental Protection Agency
Division of Emergency & Remedial Response
1800 Watermark Drive
Columbus, OH 43215-1099
office (614) 644-2323
fax (614) 644-3146

Dr. Vanessa Steigerwald
Ohio Environmental Protection Agency
Division of Emergency & Remedial Response
1800 Watermark Drive
Columbus, OH 43215-1099
office (614) 644-2902
fax (614) 644-3146

Mr. Jack Van Clay, Esq.
Ohio Attorney General's Office
The Environmental Enforcement Section
30 East Broad Street 25th Floor
Columbus, Ohio 43215-3428
office (614) 466-2766
fax (614) 752-2441

Mr. Pete J. Yerace
U.S. Department of Energy
Fernald Area Office
P.O. Box 538705
Cincinnati, OH 45253-8705
office (513) 648-3161
fax (513) 648-3076

* denotes non-trustee participants

FERMCO Contacts

Rebecca J. Bixby*
office (513) 738-9305
fax (513) 738-8937

John J. Homer*
office (513) 738-6279
fax (513) 738-8937

Jennifer K. Mailander*
office (513) 738-9363
fax (513)738-9150

Michael J. Strimbu*
office (513) 738-9489
fax (513) 738-9524

Alicia Taylor*
office (513) 738-6600
fax (513) 738-8937

W. Eric Woods*
office (513) 738-8661
fax (513) 738-9213

* denotes non-trustee participants

000108