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FERNALD CITIZENS ADVISORY BOARD

FCAB UPDATE

Week of April 5, 1999

(Last Briefing was Dated March 1, 1999)

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MEETINGS

FERNALD MONTHLY PROGRESS BRIEFING **Services Building Conference Room**
Tuesday, April 13, 1999 • 6:30 p.m.

STEWARDSHIP COMMITTEE **No Meeting**
Meeting cancelled for Future of Fernald Workshop

FUTURE OF FERNALD WORKSHOP **Crosby Elementary School**
Tuesday, April 20, 1999 • 6:00 p.m.

REMEDIATION COMMITTEE **Large Laboratory Conference Room**
Wednesday, April 21, 1999 • 6:30 p.m.
NOTE: This meeting was rescheduled.

ATTACHMENTS

- Recommendations #99-1, #99-2, #99-3
- Letter to Gary Stegner from Jim Bierer
- Memo to the Board about Nye County's request for equipment
- Memo to the Board from Doug Sarno about Draft Site Risk Profiles
- Future of Fernald Workshop Flyer
- Schedule and example of Fact Sheet for Transportation Workshop
- Revised Minutes from the January 16, 1999, Board Meeting
- Press Release regarding the award of the subcontract for the silos project
- News Clippings

NEWS and ANNOUNCEMENTS

- The **Stewardship Committee meeting** scheduled for April 14, 1999, has been canceled due to the Future of Fernald Workshop scheduled for the following week.
- The **Remediation Committee meeting** has been rescheduled to April 21, 1999.
- A Future of Fernald Workshop will be sponsored by the FCAB on April 20, 1999.

FOR FURTHER INFORMATION

Please contact Doug Sarno or Gwen Doddy, Phoenix Environmental Corporation
Phone: 513-648-6478 or 703-971-0058 Fax: 513-648-3629 or 703-971-0006
E-Mail: PhnxEnvir@aol.com or [redacted]

FERNALD CITIZENS ADVISORY BOARD

RECOMMENDATION #99-1

Recommendation to Provide Emergency Response Assistance to Nye County, NV

March 16, 1999

Presented to: Jack Craig, DOE Fernald

Source of Recommendation:
- ■ Full Board
- ☐ Remediation Committee
- ☐ Stewardship Committee
- ☐ Steering Committee

Type of Recommendation:
- ■ Initial
- ☐ Follow-on to Recommendation

Response Requested by: April 15, 1999

Recently, representatives of Nye County Nevada requested support from the Department of Energy to bolster its capacity to respond to transportation incidents involving vehicles carrying nuclear materials. The Fernald Citizens Advisory Board has strongly endorsed the use of inter-modal shipping for Fernald materials being sent to NTS. The likely truck route from the preferred rail transfer station in Caliente, NV to NTS is largely through Nye County. Because the majority of roadways to be traveled are remote, a transportation incident requiring local response would leave the population centers of Nye County without adequate response capability.

While we do not have enough information to definitively support every detail of the Nye County request, we believe it is within DOE's ability to support their request to some degree.

Making surplus and excess equipment available to local responders and supporting emergency response training are some of the most important ways that DOE can ensure that a ready and capable response community is available on its transportation routes. We support the action Fernald has already taken on this request and encourage the Nevada Operations Office, Headquarters, and the National Transportation Program to join in this response. Transportation to NTS is a complex-wide issue and all sites and programs should be aware of Nye County's request and participate in responding.

The Fernald Citizens Advisory Board would like to be kept apprised of DOE's response to Nye County's request and the progress made by Nye County in upgrading its emergency response capabilities as a result.

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RECOMMENDATION #99-2

Recommendation to Provide Special Funding to the Fernald Environmental Management Project for Disposition of Remaining Nuclear Materials

March 16, 1999

Presented to: DOE Secretary, Ohio Congressional Delegation

Source of Recommendation:
- ■ Full Board
- ☐ Remediation Committee
- ☐ Stewardship Committee
- ☐ Steering Committee Response

Type of Recommendation:
- ■ Initial
- ☐ Follow-on to Recommendation

Requested by: April 15, 1999

The Fernald Citizens Advisory Board has long been an advocate for the rapid removal of the nuclear materials still being stored at the Fernald site from its days as an operating nuclear metals plant. As a Defense Closure site, Fernald is committed to complete the total remediation of the site by 2006. Fernald no longer has a mission that is compatible with the safe stewardship of nuclear materials. Every day these materials continue to be present at the site increases the duration and cost of remediation and the risk to site workers and nearby residents.

Since our first recommendation to expedite removal of this material in 1995, a significant portion of the Nuclear Materials on site have been disposed through sale. At long last, a disposition path has been identified for all of the remaining materials. Recently, 938 metric tons of non-usable materials have been declared waste, clearing the way for its ultimate disposal. The remaining 3,800 metric tons of Uranium at Fernald is now under consideration for receipt by the Oak Ridge Operations Office for storage until final disposition can be achieved. Removing these materials from the Fernald site is one of the highest priority issues with local citizens and crucial to the success of site remediation.

The total cost of the disposition of this 4,738 metric tons of Uranium is likely to be in excess of $60 million. This is money that was not included in the site's baseline budget because these materials were not considered part of the Environmental Management program at the site.

At this time, the FCAB is requesting that the U.S. Department of Energy and the U.S. Congress work together to identify this additional funding so that Fernald can make its Defense Closure commitments. If these additional funds are not made available beginning with the FY2000 budget, Fernald will be forced to shift this money from other remediation operations and the ability to achieve site closure by 2006 will certainly be compromised.

RECOMMENDATION #99-3

Comments on the Environmental Assessment for the U.S. Department of Energy, Oak Ridge Operations Receipt and Storage of Uranium Materials from the Fernald Environmental Management Project

March 16, 1999

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Presented to: Oak Ridge Operations Office

Source of Recommendation:
- ■ Full Board
- ☐ Remediation Committee
- ☐ Stewardship Committee
- ☐ Steering Committee

Type of Recommendation:
- ■ Initial
- ☐ Follow-on to Recommendation

Response Requested by: No response requested

The Fernald Citizens Advisory Board has carefully reviewed the EA for the Storage of Uranium Materials from the Fernald Environmental Management Project. It is our conclusion that any of the alternatives other than the no action alternative in the EA could safely store these materials until final disposition is secured. The Fernald site is no longer a suitable location for storage of these materials. As a Defense Closure site, Fernald is committed to complete the total remediation of the site by 2006. In 1995, Fernald stakeholders helped to design a cleanup program that leaves over 80% of materials in an on site disposal facility. As part of this agreement, a waste acceptance criteria was developed to ensure that materials left on-site would still be protective of the sole-source aquifer underlying Fernald.

There is no consideration in the site remediation program for the storage of non-waste Uranium materials such as those under consideration by the EA. We are rapidly approaching closure at Fernald, but this requires that nuclear materials and material that does not meet Fernald's waste acceptance criteria be disposed off-site. These Uranium materials are located in a central area of the site in the path of remediation activities. Transfer of these materials is inevitable and every day these materials remain on site increases the cost of remediation and delays site closure. These materials need to be safely managed at a facility with the long-term mission and staff for this type of operation and we strongly encourage DOE to take swift action in making this transfer.

While the FCAB does not have a specific recommendation as to which of the four alternatives is most suitable for the storage of the Fernald Uranium Materials, we would like for the DOE to consider the following criteria in making its final decision:

- Stakeholder input at the receiving site must be actively sought and considered;
- The receiving facility should have a long-term mission that is compatible with the storage of Uranium materials;
- The receiving building or structure must be capable of safely managing these materials for considerably longer than the period of time currently expected before the final disposition of these materials is determined;
- The speed with which the facility can be made available should be a primary consideration.

FERNALD CITIZENS ADVISORY BOARD

March 19, 1999

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Gary Stegner
Fernald Environmental Management Project
U.S. Department of Energy
P.O. Box 538705
Cincinnati, OH 45253

Dear Mr. Stegner:

This letter is to confirm the recent changes made to the Fernald Citizens Advisory Board.

The following members have resigned from the Board:
Dan McElroy
Ray Wurzelbacher

The following member has been added to complete the term vacated by Mr. McElroy:
Louis E. Doll, Jr.

With your concurrence, we would like to make these changes official.

Sincerely,

James C. Bierer

James Bierer
Chair

cc: Martha Crosland, EM-22
Jack Craig, DOE
Leah Dever, Ohio DOE

Staff Support
Pheonix Environmental
Douglas J. Sarno
Gwen Doddy
703-971-0030
703-971-0006 Fax
PhnxEnvir@aol.com

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Date: March 19, 1999
To: FCAB Members
From: Jim Bierer
Re: Recommendation Regarding Nye County's request

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Representatives of Nye County, Nevada, requested support from the Department of Energy (DOE) to bolster the County's capacity to respond to transportation incidents involving vehicles carrying nuclear materials. At the last full CAB meeting, the Board approved Recommendation #99-1 supporting Nye County's request for equipment. While the Fernald Citizens Advisory Board does not have enough information to definitively support every detail of the Nye County request, we believe it is within DOE's ability to support their request to some degree. The FCAB supports the action Fernald has already taken on this request (see attached list). The FCAB requested to be kept apprised of DOE's response to Nye County's request and the progress made by Nye County in upgrading its emergency response capabilities as a result.

Nye County's lack of equipment could have jeopardized the intermodal transportation of nuclear materials to Nevada Test Site. The equipment DOE Fernald has given to Nye County will not impact the equipment DOE Fernald hopes to excess to local governments in the future, because it is not the same type of equipment. DOE Fernald gave Nye County small-scale personal protective equipment, such as gloves and boots. DOE Fernald hopes to eventually give local governments large-scale equipment such as fire trucks and ambulances.

Nye County's situation is extremely unusual. The county covers a very large area, requiring its volunteer emergency personnel to travel considerable distances in order to respond to any incident. Additionally, there are long stretches of highway within the county (including part of the route our low-level waste would be taking) that are completely without radio contact due to lack of up-to-date communications equipment. Finally, only 7% of Nye County is privately owned land. The rest of the county is public land owned by the federal government creating a tax base that leaves Nye County with very little revenue, if any, for the normal expenses of a county government.

For these reasons, the FCAB strongly supports any efforts on the part of DOE to assist Nye County, the actual receiving county of our waste, to be adequately prepared to handle radiological emergencies.

Hazmat Equipment Already Sent to Nye County by Fernald Environmental Management Project

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Description	Quantity
M-835-N Anti-C Coveralls	10 each
S-218 Oil Absorbent Sheets (100 Sheets per bail-$.29 per sheet=$29.00)	2 Bails
B-1433 Shovels	2 Each
M-831 Spill Kit	1 Each
S-292 Workhorse Absorbent Rags	1 Box
M-542 Nitrile Gloves	20 Pairs
M-5 Large Rubber Boots	5 Pairs
E-503 Flashlights	10 Each
M-536 Acid Gloves	10 Pairs
Beta/Gamma Friskers	3 Each
Alpha Friskers	2 Each
Tri Pod Shore Hoist System	1 Each
Level A Hazmat PPE Suits	4 Each
30 Minute Self Contained Breathing Apparatus Units with 2 Spare Bottles	4 Each
CGM Multi-Gas Meter for Combustibles (Owners Manual Available to Send With This Unit)	1 Each
Multi Purpose Fire Extinguishers	4 Each
5 Minute ELSA (Emergency Life Support Apparatus, 3 Minute Air Bottle With Hood)	10 Each
Trailer, T-44 Hazmat, Wells Cargo	1
8-passenger Van (Dodge 1991)	1

To: FCAB

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From: Doug Sarno

Re: Draft Site Risk Profiles

Date: March 30, 1999

At the February meeting of the SSAB Chairs, Al Young of DOE's Center for Risk Excellence briefed the Chairs on a project that was underway to develop risk profiles for each DOE site. The Chairs raised concerns that the public involvement component of that effort was not being done. After returning from that meeting, we made repeated efforts to obtain the risk profiles for Fernald from the Ohio Field Office, but were unsuccessful.

We have finally receive a copy of the draft risk profiles as a result of my involvement with the Environmental Management Advisory Board, and I am including those pages that relate to Fernald. On March 22, Acting Assistant Secretary Owendoff sent a letter to all SSAB Chairs asking for their comment on this document. While his request is open-ended, the report indicates comments are due by April 30. My sense of this document is that it will remain a work in progress for some time, and its ultimate usefulness is still in question.

We will set aside some time at the April 21 Remediation Committee meeting to determine what, if any, action we might want to take. If you are not going to attend that meeting but would like to comment, please give me a call or send an e-mail and I will be sure to pass your thoughts along to those assembled. I do have one copy of the full document. Thanks.

Department of Energy

Washington, DC 20585

March 22, 1999

Mr. James Bierer
Chair, Fernald Citizens Advisory Board
3371 Hamilton-Cleves road
Hamilton, OH 45013

Dear Mr. Bierer,

In response to a December 1997 memorandum from former Assistant Secretary for Environmental Management (EM)Al Alm, EM Field Offices have been working with the Department's Chicago-based Center for Risk Excellence (CRE) to prepare draft *Site Risk Profiles*. These profiles are intended to communicate an overview of the risk concerns with respect to critical path activities at ten EM sites, and provide information regarding progress in risk management at these sites. When finalized, these profiles will be incorporated into EM's updated *Accelerated Cleanup: Paths to Closure* report. In a recent meeting of the Chairs of the local EM Site-Specific Advisory Boards (SSABs), concerns were expressed regarding both the degree of stakeholder participation in the Department's development of these Site Risk Profiles and how that information might be used.

It is the policy of the Department of Energy to actively involve stakeholders in the development of procedures and policies affecting their respective sites. Accordingly, I wish to assure you that DOE does not intend to finalize the Site Risk Profiles until they have been thoroughly reviewed by our stakeholders and their comments incorporated as appropriate. To correct any misimpressions, I have requested that the Manager of the Fernald Project Office share the current versions of the draft Site Risk Profiles with the Fernald Citizens Advisory Board, regulators, and other interested stakeholders as soon as practicable. Every effort will be made to encourage meaningful public involvement and to give careful consideration to comments from advisory board members, regulators and other stakeholders in the ongoing Site Risk Profile development and review process. In addition, I have requested that the Managers solicit input from stakeholders as to the most appropriate and effective use of the Site Risk Profiles, and keep me apprised of their progress on this very important process.

Mr. Gary Stegner, SSAB Federal Coordinator for the Fernald Citizens Advisory Board, will be contacting your local SSAB in the very near future to discuss specific opportunities for public involvement. In the interim, if you have questions concerning development of the Site Risk Profiles, please feel free to contact Gary directly at (513) 648-3153.

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Sincerely,

James M. Owendoff

James M. Owendoff
Acting Assistant Secretary for
Environmental Management

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RESULTS AND STATUS OF ENVIRONMENTAL MANAGEMENT SITE RISK PROFILES

PUBLIC HAZARD MANAGEMENT AT TEN DOE FIELD OFFICES

DRAFT

DO NOT CITE OR DUPLICATE

MARCH 22, 1999

PREPARED BY THE

CENTER FOR RISK EXCELLENCE

U.S. DEPARTMENT OF ENERGY

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Appendices

1.0 Introduction

In February 1997, the Assistant Secretary for Environmental Management (EM) signed a Memorandum of Agreement with the Chicago Operations Office creating the Center for Risk Excellence (CRE). The overall goal of the CRE is to help the U.S. Department of Energy (DOE) make credible risk-informed decisions. One of the initial charges to the CRE was to assist the sites in the development of "site risk profiles." These profiles were defined as relatively short summaries (periodically updated) that present a broad perspective on the major risk-related challenges that face the sites.

The profiles are intended to serve as a high-level communication tool for interested internal and external parties to enhance the understanding of these risk-related challenges and to support the development of metrics to communicate progress in site remediation and waste management. Risk as used in this document is limited to safety, health, and environmental risks. The broader suite of risks (e.g., technical risk, cost risk) are not included.

This document is the initial product of a collaborative effort by the CRE, the 10 DOE field offices, and the Office of Science and Risk Policy (EM-52) to characterize the risks of activities being conducted by the EM program. Figure 1 shows the office locations. EM activities in this report include primarily site remediation and waste management. This project document represents a significant departure from previous efforts to collect and communicate risk information. Significant differences include:

- Extensive site collaboration to gain access to additional site data and viewpoints outside the budget process.
- Description of public health risk based on the hazard that is currently present, will be present after EM activities, and how the hazards will change in response to completion of site EM activities milestones.
- Presentation of results at the site level.

In this document, hazard conditions are tracked to show how key aspects of risk change as the result of hazard management actions. However, the relationship between hazards and risks is not a one-to-one relationship.[1] In order for a hazard to pose a risk, there must be:

- Probability of exposure.
- Detrimental response (adverse consequence).

Key terms used in this report are:

- Hazard: A condition or material with the potential to cause illness, injury, or death to humans or damage to the environment.

[1] The Presidential/Congressional Commission on Risk Assessment and Risk Management states that "risk assessment is performed by considering intrinsic hazards, the extent of exposure to the hazards, and information about the relationship between exposures and responses."

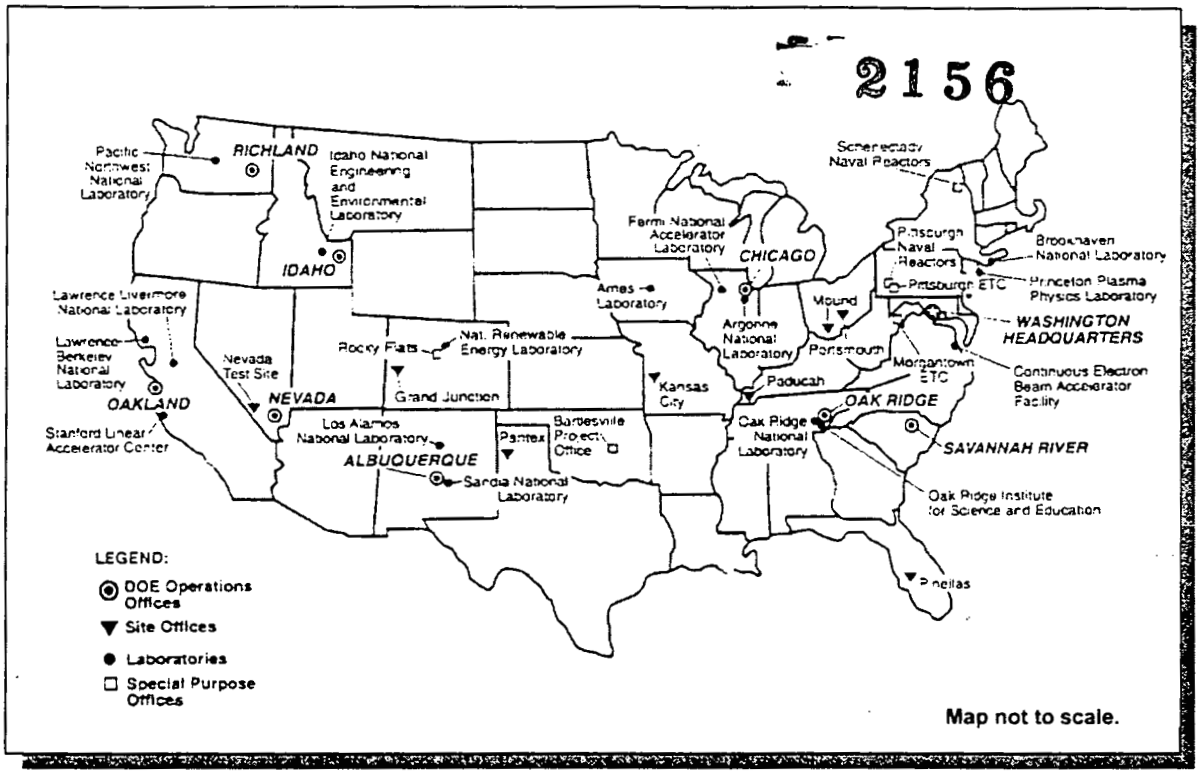

Figure 1. DOE Field Offices and Sites

- Risk: Probability of exposure multiplied by consequence.
- Hazard management: Management of the physical nature (e.g., quantity, toxicity, form, mobility) of a hazard.

Major accomplishments of the site risk profile process are:

- Enables DOE communication with stakeholders.
- Provides DOE an opportunity to examine the broader picture of risk at its sites.
- Provides risk information for program management.
- Shows we can effectively collaborate among DOE-Headquarters, sites, national laboratories, cooperative agreement institutions, and consultants.

Subsequent sections of this summary describe the status and scope of the profiles, the methodology and process used in their development, options for further development, a summary of results from the 10 field office reports, and the document review process. Current draft versions of the 10 field office reports are included in Appendices 1 through 10.

1.1 Objectives of Site Risk Profiles

The purpose of the risk profiles is to communicate the status, progress, and endpoints of site EM activities in terms of hazard and risk. They are intended to:

- Provide broad site-level risk information.
- Make effective use of existing data from the sites.
- Present clear information to a variety of audiences. Their primary application is for communication of EM activities benefits in support of the budget process and to respond to outside requests for summary risk information.
- Develop and follow an objective and repeatable evaluation of EM progress over time.
- Seek and incorporate extensive site and stakeholder input.

Risk profiles are not a detailed risk assessment of site risks, nor are they intended to replace more detailed assessments of specific projects conducted for regulatory compliance or to establish safety bases for specific facilities.

1.2 Background – A Comparison to Past Risk Information

The risk profiles are the latest in a series of annual efforts by the DOE Office of Environmental Management (EM) to summarize and communicate present, planned, and end-state risk information. The past collection and use of risk information for this purpose has had a variety of successes and some deficiencies. As in any analytical and data collection process, there are tradeoffs that must be considered based on the intended use of the information and available resources. This section summarizes these tradeoffs and the rationale for the purposes of the risk profiles stated in the previous section.

Past efforts in the collection of risk information were conducted by EM-52. These efforts relied primarily on the budget data call and site labor to summarize site risk information. A variety of risks, including public health, worker risk, ecological risk, mortgage reduction, risk perception, and regulatory compliance, were evaluated for the present time, during EM activities, and after EM activities. These evaluations were conducted at the individual project level. Site level and national summaries of this information were developed by adding the number of projects at the various risk levels and their corresponding budget.

In contrast, the technical approach taken in this first set of risk profiles is to consider public risk as indicated by attributes of current site hazards and their management. Public hazard was selected for the first measure because of the maturity of the data and the overwhelming importance of this measure to regulatory and stakeholder discussions. Public hazards are described in terms of their physical characteristics. Extensive references are made to detailed site risk and hazard publications. The profiles considered the control, storage, treatment, disposal, characterization, and other activities which DOE has taken, is taking, or will take to limit public exposure to site hazards.

As introduced previously, the two approaches have differing strengths and weaknesses. These are summarized in Table 1. In summary, the profiles have strived for increased clarity, objectivity, and efficient use of site resources. This has come at the cost of comprehensiveness and the ability to provide semi-quantitative information at the national level that past methods produced. It is expected that some of the limitations of current profiles can be overcome without sacrificing clarity by continuing to work in collaboration with sites to access additional data and expand the scope of the profiles in selected areas of interest to stakeholders and EM management.

1.3 Current Site Profiles

The risk profiles for each site have been designed to qualitatively present the following information:

- A physical overview of the site.
- Discussion on the historical mission.
- A statement of commitment from the site manager.
- A list of the site's top risk-related challenges.
- Tables that describe the current site hazards, hazard management strategy, and residual hazards. These tables include both quantitative and qualitative information and address only the "most serious risks" for the site.
- Graphic illustrations of site hazard and risk over time with major milestones.

Table 1. Comparison of Risk Profiles and Past Risk Information

Issue	Risk Profiles	Past Risk Information
Scope	Site level.	Project level.
Comprehensiveness	Only public hazards in FY98 – others coming.	A comprehensive list of risks.
Risk management communication	Graphical based on site milestones.	Roll-up based on the number of projects binned at three risk levels.
Roll up to site level	Described by hazard type.	Described in terms of projects at three risk levels.
Roll up to national level	Summary of site risk drivers.	Roll-up based on the number of projects binned at three risk levels.
Repeatability	CRE leads evaluations.	Site approaches inconsistent.
Objectivity	CRE not problem holder.	Site approach very subjective.
Site resources	CRE provides specialized labor.	All labor provided by site.
Tie risk to budget	Through major site milestones.	Done at the project level.
Communication to DOE management	Intended to be better. Under review. Milestone-based hazard reductions.	Roll-up obscures milestones.
Communication to outside groups	Intended to be better. Under review. Physical descriptions major focus.	Roll-up and subjective evaluations obscure risk story.

The graphic illustrations were included to show "what we are buying" – the proper focus of a risk management program. The graphics depict relative hazard reductions versus relative time as planned site EM activity milestones are achieved. Inclusion of these graphic illustrations presented the CRE with the challenge of how to fold this high-level qualitative risk information into a system to produce a quantitative result that would depict the relative change in hazard associated with each major risk management action, so it could be presented graphically.

The CRE believes that the tabular presentation of qualitative and quantitative hazard information is an approach to eventual development of semi-quantitative hazard management metrics. These metrics may be used in future versions of the *Accelerating Cleanup: Paths to Closure* document and other management processes to manage and report progress on risk during site EM activities. An overview of the technical approach used in the profiles is provided in Section 2.0.

1.4 Stakeholder Opportunities to Improve This Report and Individual Site Profiles

Stakeholders at individual sites have had limited informal opportunities to review the site profiles with the field offices. As the profiles have been adopted for providing support to the Paths to Closure document, additional opportunities for improving this and future risk information sources are available.[2] The goal of these opportunities is to encourage local and national stakeholders to review and comment on the draft risk profiles so that the CRE and individual field offices will be able to consider the views of all key players in completing the next round of the risk profiles. While all comments are welcome, specific sections of this summary document solicit specific recommendations for:

- Methodology improvements.
- Addition of new risks and suggested methods.
- Improvements in the presentation and communication of current and future information.

During the review, it is important to keep in mind that the purpose of these profiles is not to replace the detailed review of site-specific and decision-specific risk documents. The site profiles are summary documents that will support communication of risk information in the development of EM budgets, strategies and to a broader audience without specific site knowledge.

Comments will be accepted for the completion of this document through April 30, 1999. A final version of this report will completed in June 1999 to coincide with the completion of the Paths to Closure document. It is expected that the profiles will be updated annually on this schedule. For this reason, comments of a more general nature on the risk profiles are welcome at any time.

[2] *Draft Risk Profiles Public Involvement Plan.* The Center for Risk Excellence, Chicago Operations Office. Contact Mary-Jo Acke Ramicone. February 8, 1999.

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2.0 Rationale for the Site Profiles

The development of broad and clear risk information at the site level is a challenging activity. Key aspects of the approach used to develop the risk profiles are:

- Use of existing site data.
- Use of hazard evaluations as an indicator of public risk.
- Including only essential details.

These three factors were major constraints in the application of sophisticated risk assessment techniques in the development of the profiles. However, in many cases, large amounts of existing site data and reports were found to have not been used in past collections of risk information. This underutilized asset was accessed through the collaboration of site personnel and allowed the development of the profiles to proceed. How this information was used is the subject of this section.

2.1 Hazard as a Measure of Risk for EM Activities

The management of hazards is a crucial element of managing the risks at a site. This is because present regulations and the objectives of DOE's environmental management program are focused on containment and long-term disposal of radioactive and chemically hazardous materials. While there is this definite relationship between hazards and risks, it is not a one-to-one relationship. Simply stated, in order for a hazard to pose a risk, there must not only be the intrinsic hazard, but there is also an associated "likelihood of occurrence" (i.e., probability) that a release and transport mechanism is available, an "exposure situation" occurs, and a detrimental response results.

The EM program is currently responding to site risks in a variety of ways. First and foremost, the sites are currently actively managing the "likelihood of occurrence" and "exposure situations" and "releases" within definite site boundaries, monitoring, and active containment systems. Second, these risk management practices are strictly enforced by outside regulatory agencies at the state and federal level and in consultation with stakeholders. Finally, site EM activities are focused on reducing site hazards as a method of reducing risks.

The development of the site risk profiles was framed to differentiate between active site management to achieve safety and compliance goals and EM activities goals that achieve long-term site risk reductions. This differentiation supports the view that, at the site and national levels, active site management is part of the "overhead" of the EM program and not the primary product we are buying with site EM activities. With a focus on site EM activities as a long-term risk reduction process, it is reasonable to simplify the risk assessment process to focus on hazards in the risk profiles. Ongoing site risks are primarily managed by regulatory compliance and integrated safety management programs.

The management of hazards to manage risk may not be a reasonable assumption after completion of the planned EM program. At that point, active site management can no longer be assumed and current regulations allow for long-term releases that may need to be evaluated in terms of the full risk assessment process. The regulatory process also recognized this need in the development of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) regulations. While, these risks are currently outside the scope of the profiles, approaches to adding them are considered in Section 4.0.

2.2 Rationale for Hazard Management Over Time

The profiles presented in the individual site risk profiles consider the following elements for tracking hazard over time, as it is adjusted by projected site cleanup actions:

- Quantity of waste material (considers projected life-cycle wastes grouped by waste type).
- Fraction of quantity releasable to significant pathway(s) (considers form and configuration of waste material).
- Nature of the hazard (focusing on the major controlling constituent[s] in the waste material, considers location and configuration of waste materials and inherent toxicity and/or carcinogenicity of the major controlling constituent[s]).
- Potential routes of release and exposure.
- Hazard management actions (considers projected separation, treatment, reduction, and/or removal actions associated with the management/cleanup of the specified waste materials).

These factors were considered depending upon the level and extent of available input data from the respective site. Details of the qualitative to semi-quantitative[3] approach applied are discussed in a separate report.

In the development of the individual site risk profiles, each had to be treated differently in the evaluation of these factors. This was due to the wide range of cleanup challenges across the complex, the availability of data, other programs at the site, and the site view of the risk issue. Also, each site has a unique set of stakeholders and associated communication needs that needed to be considered during preparation of the individual site risk profiles. Therefore, each site was allowed to adjust the focus and detail of their profile to meet its unique communication needs.

2.3 Refinement of the Risk Profile Rationale for the Draft and Final Reports

A number of refinements have been identified that could be applied to the current risk profiles to strengthen their technical base, improve their communication value, and develop new messages. The refinements are seen as potentially small investments that could sharpen the public health messages in the current profiles.

2.3.1 Use of Consistent Terms and Formats

Allowing each site to adjust the focus and detail of its profile to meet its unique communication needs has some drawbacks when the profiles are compiled in this report. One of these drawbacks is the inconsistent use of risk and hazard terminology. This is not unique to the site profiles, as virtually all risk-related studies in the past have faced this issue. One refinement that is needed is to make terms and formats more consistent. This was not done in this draft due to the extensive review that the sites completed in getting support for the current drafts.

[3] *Relative Hazard Calculation Methodology* (PNNL-12008, Rev. 0). Pacific Northwest National Laboratory, Richland, Washington, January 1999.

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2.3.2 Improved Links to EM Program Management

To improve the links, better data on hazard management actions are needed. The current risk profile graphics use the concept of relative time and relative hazard/risk for each hazard type. The goal of this measure is to be able to communicate relative hazard changes for major project management constraints such as EM strategy, budget, and new technology. The use of "relative time and hazard" is, in part, an artifact of developing the profile template prior to use of the information in the Paths to Closure document. With this use now established, it is recommended that these linkages be added to the profiles.

Another issue is the treatment of intersite transfers of material and transportation. Current profiles do not fully address the risk transfer that occurs, although intersite transfers are discussed. To fully address intersite transfers, the methodology will need to be expanded to consider waste disposal at site outside those currently covered by the 10 field offices.

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3.0 Results for Fiscal Year 1998

This section summarizes major points from a review of the 10 site profiles. One of the strengths of the current profiles is their ability to summarize risk drivers in physical terms. This viewpoint is summarized in Section 3.1. A second viewpoint is how these hazards will be mitigated. This is the subject of Section 3.2. A final viewpoint is how do we communicate what we are buying in terms of hazard reduction as site remediation progresses. Profile information of this type is summarized in Section 3.3.

3.1 Top Site Hazards Summarized

One of the DOE Strategic Plan performance measures is "... to address the most serious risks first." Tables 2 and 3 summarize the current top site long-term public hazards from the profiles. Table 2 communicates the magnitude of the hazards managed by each field office in terms of contaminant categories. Table 3 is a summary of major risk-related challenges for each field office. Taken together, these tables indicate management challenges that range from large volumes of highly radioactive materials to large volumes of low-level radioactive and chemical waste and very large volumes of contaminated environmental media.

From a national perspective, the tables explain many of the apparent inconsistencies in hazard management discussions across the sites. For example, at Rocky Flats plutonium management is the dominant risk-related challenge, while at Hanford high-level waste is dominant. With a site focus on dominant hazards, this can lead to varying levels of discussion for similar hazards across sites. The tables also communicate how hazards have changed at the sites as the EM program progresses. The common theme is now on long-term hazard management as opposed to mitigation of immediate risks.

Finally, all sites rely to varying degrees on offsite shipment, storage, or disposal as part of their hazard management plans. In many cases, disposal facilities are not available. This issue is a barrier to the accomplishment of EM hazard management objectives.

Table 2. Summary of Current DOE Site Hazards Under EM Management[a]

Field Office	HLW ($1,000 m^3$)	LLW ($1,000 m^3$)	MLLW ($1,000 m^3$)	SNF	Uranium	TRU Waste (m^3)	Shutdown Reactors (No.)	Plutonium Metal and Oxides	Environmental Contamination[b] ($1,000 m^3$)	Chemical Wastes
Richland	221	780	46.5	2,140 MT	19,000 MT	17,500.0	9	3.727 MT 326 kg soil.	1,500,000 (groundwater)	Not stated
Savannah River	285	407 (liquid)	14.9	112 MT	8,022.0 m^3	23,128.0	5	47 m^3 2,800 pkgs.	150,000 (groundwater)	4 m^3 Hg 1,483 m^3b 67 m^3 Pb
Rocky Flats	------	65.4	39 solid 198 liquid	-------	6.67 MT enriched	8493.0	--------	13.024 MT	70.0 soil 300.0 (groundwater)	0.63 m^3 Be
Idaho	10.0	133	38.1	800 m^3	-------	69,000.0	Not stated	--------	3,540 4,700,000 (groundwater)	Not stated
Oak Ridge	-------	550	16	0.96 MT	20,000 MT 160,000 MT depleted 32,300 cylinders UF6	2,300	6	300 sources	19,150 env. media	51,000,000 TCE 29,000,000 kg metal 60 m^3 Na
Ohio	2.45	765	35.7	125 assemblies	Th 6.0 m^3	1,170.0	1	-------	47,670	-------
Nevada	-------	200	Not stated	-------	-------	Not stated	--------	--------	340 km^2	--------
Chicago	-------	149	627.2	? BNL	--------	80.6	2 BNL	--------	4,470 groundwater 151 soil	81,800 m^3 VOC groundwater 8,000 m^3 soil
Albuquerque	------ --	580	4.71	--------	--------	8580.0	--------	--------	5047.3	1,772 PCB
Oakland	--------	22.1	22.4	0.23	-------	358	--------	--------	72.0 groundwater 7.2 soil	39,100,000 VOC groundwater 213,000 PCB soil
Total	518	3,751	1,020	2,260 MT 800 m^3 125 assemblies	200,000 MT 6.0 m^3 Thorium 32,300 UF6 Cylinders 8022 m^3	130,000	23	16.75 MT 326 kg soil. 47 m^3 2,800 pkgs 300 sources	6,350,000 groundwater 74,000 soil + env. media 340 km^2 soil	90,200,000 m^3 groundwater TCE/VOC 29,200,000 kg PCB/metal

a. Currently onsite or expected to be received onsite in the future.
b. Soil, debris, and/or groundwater contamination.
Note: HLW = high-level waste; LLW = low-level radioactive waste; MLLW = mixed hazardous and radioactive low-level waste; SNF = spent nuclear fuel; TRU = transuranic; MT = metric tons.

Table 3. Major EM Risk-Related Challenges at DOE Sites

Albuquerque Operations Office	❑ Pantex, Sandia-New Mexico, and Los Alamos manage a total of 580,000 m^3 of LLW and MLLW. ❑ Sandia and Los Alamos have inventories of TRU waste totaling 8,580 m^3. ❑ Environmental restoration wastes in the form of contaminated soils, sediments, groundwater, and debris in the categories of TRU, low-level, mixed low-level hazardous and toxic waste.
Chicago Operations Office	❑ At Brookhaven National Laboratory, groundwater contaminated with volatile organic compounds (VOCs), tritium, and strontium. ❑ At Argonne National Laboratory, approximately 620,000 m^3 of soils, sediments, and landfill solids; contaminants include VOCs, polychlorinated biphenyls (PCBs), and radionuclides.
Idaho Operations Office	❑ 10,000 cubic meters of liquid HLW contained in 11 underground tanks. ❑ 640 cubic meters of SNF stored either dry or in wet storage pools onsite, with an additional 160 cubic meters expected from offsite sources through 2023. ❑ 133,000 cubic meters of LLW stored onsite, to be generated onsite, or to be accepted from offsite generators through 2035. ❑ 69,000 cubic meters of TRU waste either as inventory stored onsite or from ongoing generation or ER work. ❑ 34,900 cubic meters of MLLW stored onsite or to be generated onsite through 2035. ❑ 3,256 kilograms of nuclear materials stored onsite. ❑ 3,540,000 cubic meters of environmental restoration LLW, MLLW and TRU wastes are contained onsite at INEEL (with an additional 4.7 billion cubic meters of liquid LLW in a perched aquifer that will be treated onsite).
Nevada Operations Office	❑ Impact of regulatory decisions on technical work. ❑ Funding to support aggressive goals of the DOE EM initiatives under *Accelerating Cleanup: Paths to Closure.* ❑ Future departmental liability as the result of contamination in groundwater and subsurface soils averaging 300 meters (1,000 feet) below ground surface. ❑ Transportation routes and modes for shipments of low-level radioactive waste from offsite locations intended for disposal at the Nevada Test Site.

Table 3. Major EM Risk-Related Challenges at DOE Sites (continued)

Oak Ridge Operations Office	**Oak Ridge Reservation** ❑ 60 hectares (140 acres) of buried waste in water-rich environment. • 18 million kilograms (40 million pounds) of uranium. • 6 million curies of radioactivity. ❑ Current releases of radioactivity to the environment. • 160 kilometers (100 miles) of contaminated streams and rivers. ❑ Six shutdown reactors. ❑ 156 surplus facilities in deteriorating condition. **Paducah Gaseous Diffusion Plant** ❑ Trichloroethylene (TCE) plume impacting 38 billion liters (10 billion gallons) of groundwater offsite. **Portsmouth Gaseous Diffusion Plant** ❑ TCE-contaminated groundwater. **Weldon Spring Site** ❑ Contaminated groundwater plume 0.8 kilometer (0.5 mile) from well field serving 60,000 residents.
Oakland Operations Office	❑ Groundwater contaminated with tetrachloroethylene at Lawrence Livermore National Laboratory – both the Main Site and Site 300. ❑ Groundwater contaminated with several VOCs (such as benzene, carbon tetrachloride, and chloroform) at Lawrence Berkeley National Laboratory. ❑ Groundwater contaminated with VOCs (trichloroethylene and 1,1-dichloroethylene) at Stanford Linear Accelerator Center. ❑ Groundwater contaminated with VOCs (notably trichloroethylene) at Energy Technology Engineering Center. ❑ Groundwater contaminated with several chemicals and radionuclides (notably metals, chloroform, tritium, and carbon-14) at the Laboratory for Energy-Related Health Research. ❑ Decontamination and decommissioning of structures and facility equipment at the Separations Process Research Unit, General Electric Vallecitos Nuclear Center, and General Atomic.
Ohio Field Office	❑ Liquid HLW at West Valley. ❑ K-65 residues at Fernald. ❑ Process sludges in waste pits at Fernald. ❑ Radioactively contaminated facilities and tanks at all five sites. ❑ Contaminated soil, debris, and groundwater at all five sites.

Table 3. Major EM Risk-Related Challenges at DOE Sites (continued)

Richland Operations Office	❑ Approximately 221,000 cubic meters (289,000 cubic yards) of HLW contained in 149 single-shell tanks and 28 double-shell tanks. ❑ Long-term telease hazards through the vadose zone and groundwater pathway. ❑ Approximately 2,100 metric tons (2,300 Tons) of metallic uranium spent fuel and sludge stored underwater in deteriorating K-Basins and 30 metric tons (33 Tons) of non-defense spent nuclear fuel stored underwater in other fuel storage basins. ❑ Approximately 3,700 kilograms (8,160 pounds) of plutonium (various forms - does not include fuel forms) stored in aging facilities. ❑ Approximately 2,000 cesium/strontium capsules containing approximately 150 million curies of cesium and strontium maintained in underwater storage. ❑ Approximately 16,000 cubic meters (21,000 cubic yards) of transuranic and suspect transuranic drums and boxes and an additional 1,500 cubic meters (1,960 cubic yards) of anticipated TRU waste from environmental restoration operations. ❑ Transitioning of aging facilities and support infrastructure. ❑ Approximately 140,000 cubic meters (180,000 cubic yards) of LLW and 47,000 cubic meters (61,500 cubic yards) of MLLW to be managed. ❑ Address the above challenges while minimizing worker (industrial) and public risk.
Rocky Flats Field Office	❑ Safeguarding and managing 13 metric tons (14 tons) of plutonium–the number one priority at Rocky Flats. ❑ 27,000 containers of plutonium in forms such as metals, compounds, liquid mixtures, oxides, and wastes stored in bulk storage tanks, drums, and plastic bottles, most of which were not meant for long-term storage. ❑ 6 metric tons (6.6 tons) of enriched uranium to manage and dispose of offsite. ❑ Off-site disposition of 40 metric tons (44 tons) of excess beryllium left over from past weapons production operations. ❑ 100 metric tons (110 tons) of residues that contain 3 metric tons (3.3 tons) of plutonium to stabilize. ❑ 31,000 liters (8,200 gallons) of plutonium and 2,700 liters (700 gallons) of highly enriched uranium solutions in 100 tanks and 16 kilometers (10 miles) of pipes. ❑ Cleanup of trenches and dump sites (i.e., former waste burial sites) that contribute to onsite groundwater contamination, with groundwater discharges essentially limited to onsite surface seeps and springs (i.e., no pathway has been found that would allow this contamination to leave the site).

Table 3. Major EM Risk-Related Challenges at DOE Sites (concluded)

Savannah River Operations Office	❑ 75 million gallons (285,000 cubic meters) of HLW (liquid, salts, and sludge) in 49 underground storage tanks. ❑ 66 tons (60 metric tons) of heavy metal-contaminated SNF, with 0.09 ton (0.09 metric ton) of it rapidly deteriorating research reactor fuel. ❑ An additional 34.3 tons (31.1 metric tons) of heavy metal-contaminated SNF to be received between 1999 and the year 2035. ❑ 36,000 drums of depleted uranium (DU) oxide; 80,000 gallons (300,000 liters) of DU solution; and 60,000 gallons (228,000 liters) of highly enriched uranium (HEU). ❑ 2,800 packages of plutonium metal, solids, residues; 12,400 gallons (47,000 liters) of plutonium solutions; and 1,600 gallons (6,100 liters) of neptunium nitrate. ❑ 14,000 cubic yards (11,000 cubic meters) of transuranic (TRU) waste in drums and other containers, with another 14,000 cubic yards (11,000 cubic meters) of TRU waste expected as facilities are cleaned out. ❑ 88 cubic yards (67 cubic meters) of contaminated lead plus 177 cubic yards (135 cubic meters) of LLW contaminated with lead, 4,186 cubic yards (3,200 cubic meters) of debris and contaminated soil in MLLW inventory; 58,000 gallons (220 cubic meters) of aqueous and organic liquid MLLW; 2.5 million gallons (9,500 cubic meters) of MLLW and 0.5 million gallons (1,900 cubic meters) of liquid MLLW from decontaminating facilities.

3.2 Hazard Management Objectives

Tables in the site profiles describe current and post-EM hazards, the potential pathways, and potential receptors. The current methods of maintaining the hazards in a safe, "low-risk" state are also described. Next, to provide straightforward indicators of progress, the activities for addressing the hazards/risks as identified in project baselines are described. One of the more significant aspects of hazard management is a site commitment to this objective. Each site has made this commitment, as summarized in Table 4.

Table 4. Hazard Management Commitments

Albuquerque Operations Office	"Our goal is to achieve a restored environment...by proactive and aggressive management efforts to ensure effective cleanup and waste management operations of our facilities." --Bruce Twining
Chicago Operations Office	"The DOE is committed to completing all EM activities at these sites within the next several years in a cost-effective manner, to allow for continued use of the laboratories and facilities to support national research and development goals. We are committed to working closely with our stakeholders, including local citizens, national groups, and regulatory agencies, in completing these activities in accordance with existing agreements and regulatory requirements." --John Kennedy
Idaho Operations Office	"The mission of the EM program at [Idaho National Engineering and Environmental Laboratory] is to manage waste, and clean up contamination produced by past activities. The protection of the Snake River Plain Aquifer is a central concern governing INEEL site operations." --J.W. Wilcynski
Nevada Operations Office	"The DOE Nevada Operations Office is committed to managing risks from ongoing and past activities at the Nevada Test Site and offsite test locations in a manner which is protective of the public, workers and the environment." --Stephen A. Mellington
Oak Ridge Operations Office	"EM is committed to achieving compliance with laws, regulations, and agreements that protect human health and the environment and is focusing its resources on cleanup of inactive waste sites and facilities; conducting safe and effective waste management operations; minimizing risk to the public, the worker, and the environment; emphasizing waste minimization and pollution prevention; and coordinating applied technology development initiatives." --James Hall
Oakland Operations Office	"Consistent with this Administration's initiative to work smarter, we will continue to seek opportunities to complete our cleanup work as quickly and as efficiently as possible. We intend to accelerate the cleanup of our sites with emphasis on the protection of the worker, the public, and the environment. Finally, we are committed to maintaining compliance with applicable state and federal regulations and continuing to involve our communities in making the best environmental decisions consistent with our mission and available resources." --James Turner

Table 4. Hazard Management Commitments (concluded) 2156

Ohio Field Office	"The goal of the EM program at these five sites is to complete all activities as expeditiously as possible to allow for reuse of the facilities for future activities. All cleanup activities are conducted in accordance with approved plans to ensure the health and safety of workers and the general public. When completed, the EM program will have significantly reduced risks at these sites and all resultant wastes will have been managed in accordance with existing agreements with federal and state regulatory agencies." --Leah Dever
Richland Operations Office	"The U.S. Department of Energy Richland Operations Office is committed to cleaning up the Hanford Site in a manner that assures serious risk conditions are addressed first and in a timely manner. As noted in our ES&H policy our highest priority is to achieve daily excellence in protection of the worker and the public and in stewardship of the environment both on and off the Hanford Site." --John Wagoner
Rocky Flats Field Office	"The Department of Energy - Rocky Flats Field Office is committed to honoring the Government's obligation to clean up and close the Rocky Flats Environmental Technology Site; we all want the same thing – to reduce the risks, clean up the site and close the place down." --Jessie Robertson
Savannah River Operations Office	"The Department of Energy-Savannah River Site is committed to ensuring protection of health and safety of the public and our plant workers, while accomplishing the cleanup and closure of contaminated waste sites. Our goal is to clean up the waste left from the past 50 years of nuclear weapons production activities, restore the environment and improve long term management of nuclear materials and spent nuclear fuel." --Greg Rudy

From a technical perspective, EM activities seek to reduce hazards by activities that either:

- Reduce the hazard of the material itself–by decreasing the volume, toxicity, or mobility (form) of contaminated material at the site, or
- Reduce the potential for exposure to that material, and associate risk–by changing its accessibility or the potential for its release through institutional or engineering controls, and/or
- Shipment of material to another site for final disposal, treatment, or long-term storage. The availability of disposal facilities and transportation is important to EM hazard management.

3.3 Objectives of Hazard Management Profiles and Status

Each of the profiles contains graphical information on how the various site hazards change over time. Preliminary reviews of the profiles indicated that this is a desirable message. These graphs plot relative hazard against time. This is a strong tool for communication of hazard management in response to completion of major milestones. These graphs are a key aspect of future work to tie hazard management to site schedule, cost, and new technology.

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4.0 Future Profile Development

Future profile development should follow two paths: characterizing other types of risk, and including more explicit semi-quantitative or qualitative indicators of the various risks. This section is provided to solicit comments from both DOE staff and stakeholders to assist the CRE in decisions affecting future development of risk profiles. The intent is not to fully describe the potential methods for making these improvements, but to get a sense of the interest and types of information that may be most desirable.

4.1 Ecological Risk Profiles

Natural resource management, ecological risk management, and the protection and enhancement of environmental quality are critical aspects of site EM activities. Current ecological research tools are designed to answer questions about ecological risk to individual receptors from specific stressors at a given place and time, and have not proven useful for generating site-wide pictures of ecological risk and environmental quality.

4.2 Worker Risk Profiles

Worker hazards can be divided into the categories of (1) hazards associated with exposure to hazardous constituents and (2) physical hazards. Hazards associated with exposure to hazardous constituents are similar to the exposure to the public, except the exposure conditions are usually quite different. Workers often work inside of the protective barrier systems that are designed to prevent the release of hazardous constituent from reaching the public. Thus, their potential for becoming exposed is higher. Also, cleanup actions that are designed to reduce long-term public exposure to hazardous constituents often elevate the potential for workers to become exposed (e.g., digging up buried wastes to be treated and disposed of). Also, workers are subject to the physical hazards that are normally associated with their work. The risks from these physical hazards are usually considerably higher than the risks associated with exposure hazards (e.g., construction activities, such as digging up a buried waste site, have the normal construction risks associated with them).

4.3 Public Risk from Environmental Releases

Extensive information is published annually by each DOE site providing both measurements and estimates of offsite releases of various chemical and radiological species. These releases typically occur as a result of continuing site mission operations, or as a consequence of waste management or environmental operations intended to permanently limit releases from the site to acceptable levels. The release information published typically addresses whether such releases are within relevant regulatory limits (i.e., whether DOE is "in compliance").

4.4 Long-Term Site Risk

The profiles reveal that DOE sites range from those remediated to the point that the residual risk is so minimal as to allow use for commercial/industrial purposes (e.g., Energy Technology Engineering Center, Ashtabula Environment Management Project) to those that will require perpetual risk management of some form (e.g., disposal cells at Los Alamos, test shots at Nevada Test Site). Several sites (e.g., Hanford, Rocky Flats) have not yet determined future land uses, and several sites will feature a combination of uses (Los Alamos envisions a future end-use mix of industrial, unrestricted, and restricted uses on various parcels of the site). The profiles do not indicate what institutional controls or surveillance

and monitoring techniques will be used at sites with residual risk, but that information is beyond the intended scope of the profiles.

4.5 Cultural Risk

The potential for cultural or quality of life impacts resulting from DOE operations has become a prominent issue of critical importance to several sites within the complex. Most cultures can be characterized as consisting of two components. One is the material content of the culture, and the other is the culture's cosmological perspective, the world view, within which the symbolic content of nature takes on a greater significance than its visible material content.[4,5] For example, the Native American perspective is that "nature is intrinsically spiritual as sacredness is imbedded in all phenomena" (Hanes 1995:4). The cosmological component can be at risk even if the material content is not at risk. For example, the presence of residual contamination may have a negative cosmological impact even though the human health or ecological risk may be insignificant. Loss of access to a place may have a cosmological impact even though the place is not contaminated.

4.6 Programmatic Risk

Programmatic risks are issues both inside and outside of site management that have the potential to adversely affect the budget, schedule, or technical success of site remediation projects.[6] Current programmatic risk evaluations are conducted at the project level and do not adequately communicate the nature of the risk and/or the proposed resolutions to them. Second, there is no focus or analysis of the risks that exist at more than one site or any evaluation of potential risks to the national program that may not be identified by individual sites.

4.7 Science and Technology in Site Profiles

The Paths to Closure document identified site- and project-specific science and technology needs that would enable or improve cleanup, accelerate the schedule, or reduce cost of EM projects. Meeting many of these needs will have an effect on both the actual risk and the understanding of the risk as documented in the profiles. To meet the objective of effectively characterizing current and future changes in risk levels, the profiles must thus continue to be cognizant of the development and application of related science and technology. For example, meeting the identified science and technology needs can directly or indirectly affect the "Planned Risk Management Actions" and "End-State Disposition" as incorporated into the risk profile tables.

[4] Hanes, Richard C., 1995, *Treaties, Spirituality, and Ecosystems: American Indian Interests in the Northern Intermountain Region of Western North America, Social Assessment Report for the Interior Columbia Basin Ecosystem Management Project*, Final Report.

[5] Murdock, George P., 1980, *The Tenino Indians, Ethnology* 19:129-149.

[6] *Recommended Changes to the Guidance from a Field-Based Team*, U.S. Department Of Energy Center For Risk Excellence, August 1998, Version 4.1.

Fernald Environmental Management Project

Site Description

The FEMP is located at the former Feed Materials Production Center near Ross, Ohio, in an agricultural area about 27 kilometers (17 miles) northwest of Cincinnati in the southwest corner of Ohio (Figure 7-6). The entire site covers 420 hectares (1,050 acres), of which the former production facilities cover about 54 hectares (140 acres). The Great Miami River lies about 1.6 kilometers (1 mile) to the east, running to the south. The main drainage stream for the site is Paddy's Run, which lies along the western boundary and joins the river to the south. The site lies over the Great Miami Aquifer, a designated sole-source drinking water aquifer that serves the greater Cincinnati area.

The production center was built in 1952 and produced uranium metal products from raw and recycled materials for use at other DOE defense facilities. In the late 1980s, its mission was changed to environmental restoration with management of all associated waste. The site is listed on the National Priorities List, and remedial actions are being performed in five operable units (OUs) under CERCLA. OU1 comprises a series of six large pits west of the production area containing the bulk of by-product residues from the purification of uranium ore. OU2 contains a solid waste landfill (the Southfield), an active fly ash pile, and an inactive fly ash pile. OU3 represents the production facilities and associated structures. OU4 is made up of several silos containing process residues from special operations, including the K-65 residues. OU5 represents environmental media, including contaminated soil and groundwater.

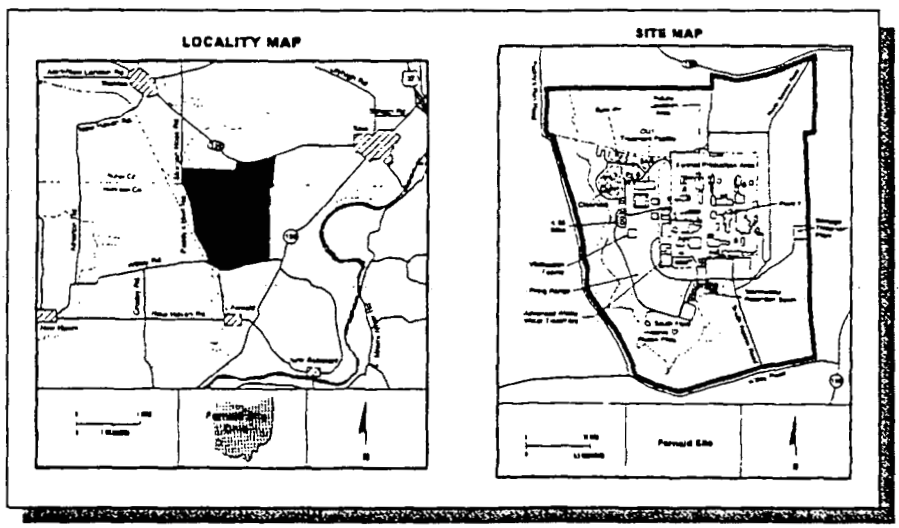

Figure 7-6. Location and Layout of the Fernald Environmental Management Project

Current Understanding of Hazards and Risks

The following discussion provides the current hazards and risks associated with FEMP in terms of the five CERCLA OUs being used to conduct remedial actions at the site.

OU1 - Approximately 360,000 cubic meters of residues (sludges) are stored in clay-lined pits located near Paddy's Run and overlying the Great Miami Aquifer. Uranium, thorium, heavy metal, and VOCs in the

materials threaten the aquifer. Current impacts, although suspected, are still relatively minor. However, because of the relatively thin layer of glacial till separating the pits from the underlying aquifer, eventual contamination of the aquifer would be expected, particularly if maintenance of the pits were halted.

OU2 - Waste units in this OU, the Southfield landfill and the active and inactive fly ash piles, are mainly of concern because of their proximity to Paddy's Run. The 13,000 cubic meters of sludges placed in these units are contaminated to varying degrees with uranium residues and cuttings from plant operations. Because they are upgradient and adjacent to Paddy's Run, there is concern for eventual contamination of the creek and potential environmental effects, primarily on ecological receptors.

OU3 - Plant facilities and associated infrastructure are contaminated from previous plant operations. Primary materials are concrete, masonry, steel, and transite sheeting, and the principal contaminants are uranium, thorium, technetium-99, and nonradioactive heavy metals. Current risks are primarily from releases of residual materials remaining in some equipment and piping, from direct radiation of imbedded radioactivity in construction materials, and from physical hazards from decaying structures that are well past design life. Current risks relate primarily to workers, but members of the general public could be subject to similar types of risks in the future, most of which would become more severe as structures degrade.

OU4 - The K-65 residues in Silos 1 and 2 and cold thorium oxides in Silo 3 are generally more radioactive than the residues that were placed in the OU1 pits. Also, the K-65 residues are rich in radium, which generates radon gas as part of its decay process. Radon is currently contained with a bentonite clay cap. In addition to risks to workers and future land users from radon, radionuclides could leach into nearby Paddy's Run should the silos and caps degrade.

OU5 - Radioactively contaminated soil and groundwater represent a very large volume of low-level contamination. Risks to members of the general public in the future are largely associated with chronic exposure to these media. Current risks from contaminated groundwater are controlled through the provision of an alternate water supply to affected members of the public and workers at the site and though access restrictions to site soil. Contaminated soil also presents a continuing threat to underlying groundwater, a sole-source drinking water resource for the region. The existing groundwater plume is being controlled hydraulically by well pumping.

Risk Reduction Activities and End-State Disposition

Site risks (Table 7-2) are being addressed by ongoing remedial actions in each of the OUs. Risk reduction activities at FEMP are illustrated in Figure 7-7. The site strategy for reducing risks involves removing contaminated materials, whether they be environmental media or construction materials, shipping the most highly contaminated materials offsite for treatment and/or disposal, and disposing of large-volume, low-activity wastes in an engineered On-Site Disposal Facility (OSDF). The former materials include wastes exceeding the waste acceptance criteria (WAC) for the OSDF, including a concentration limit of 1,030 parts per million for total uranium. Also slated for disposal offsite are the process residues in the OU1 pits, after appropriate drying and/or shredding, and the OU4 residues after treatment onsite.

Initial planning identified vitrification as the preferred treatment for OU4 residues. However, problems encountered during pilot plant tests on surrogate materials have halted progress on that technology, while evaluations of treatment options have been reopened. Materials slated for disposal in the OSDF include most soil from OU5 and most construction material from dismantled structures in OU3 and elsewhere. Also included is solid waste meeting the OSDF WAC from the Southfield landfill and fly ash piles in

Table 7-2. Summary Risk Profile for the Fernald Environmental Management Project

Material Category	Nature of Hazard	Nature of Potential Risk	Status of Current Risk Management	Future Risk Reduction Measures	Risk Reduction Progress	End-State Disposition and Risk
11 e(2) particulate/ sludges	Silos 1, 2 and 3 are earthen-bermed brick structures. Silos 1 and 2 contain about 15,000 m^3 of thorium and radium-rich, radon-bearing K-65 sludges. Radon is contained by a bentonite cap. Silo 3 contains about 3,200 m^3 of cold metal oxides rich in thorium-230.	Failure of the bentonite cap and/or silo structures could result in an initial puff release of radon followed by continuous radon emission. Rainwater could leach radium and associated radionuclides from the sludges into soils, groundwater, and a nearby stream, threatening human and ecological receptors.	Risks are currently controlled through access restrictions and through a continuous maintenance and monitoring program for the silos.	During the action, risks would be highest at first due to potential radon releases during waste removal and during startup of waste solidification operations. Subsequent risks would fall in proportion to the quantity of waste treated.	Treatment studies for Silos 1 and 2 and for Silo 3 are ongoing. Vitrification of all wastes was specified in the Record of Decision for OU4 covering the wastes in all three silos. A waste extraction and vitrification pilot plant study was halted in early 1997 after a leak developed in the melter. That study is on hold while other options are being studied for the various wastes.	Wastes would be removed from the silos, stabilized, and disposed of offsite at an approved facility. Silos would be dismantled and disposed of onsite. Risks from radon releases would be eliminated, as would risks of contamination of the surrounding environment from leaching of the wastes. External radiation and physical hazards associated with the silos would also be eliminated.
LLW particulate/ sludge solids	Six process sludge waste pits, a clear well, and a burn pit containing 360,000 m^3 of process wastes (the bulk of which are from former plant operations) lie above a major groundwater resource, the Great Miami Aquifer.	Leachate from some of the pits may be currently impacting groundwater. If wastes are left in place, impacts to groundwater, and potentially surface water, from radionuclides, heavy metals, and VOCs would eventually increase.	Risks are currently controlled through access restrictions and through a continuous maintenance and monitoring program for the waste pits, three of which are covered to reduce water infiltration.	Long-term risks to groundwater will generally fall in proportion to the volume of wastes removed; however, short-term risks would probably not fall significantly until most or all of the wastes and associated soils are removed.	Preparations are being made for the removal, shredding, and/or drying and shipping of waste by rail. A rail spur and a rail loading area on the north end of the site are under construction. The sludge excavation and drying process has been identified for privatization. Vendors are being sought.	All wastes would be removed, dried, and disposed of offsite in an approved facility. Future contamination of groundwater would be prevented. One of the largest sources of residual radioactivity at the site would be removed.

Table 7-2. Summary Risk Profile for the Fernald Environmental Management Project (continued)

Material Category	Nature of Hazard	Nature of Potential Risk	Status of Current Risk Management	Future Risk Reduction Measures	Risk Reduction Progress	End-State Disposition and Risk
I.I.W groundwater	A large uranium plume containing an estimated 46 million m^3 of contaminated groundwater lies under the site and extends beyond the southern boundary.	If the groundwater plume were allowed to grow, a large groundwater resource would be impacted. Future residents might be exposed to uranium-contaminated groundwater.	Current risks are controlled by plume containment and the provision of an alternate water supply. The plume is hydraulically contained through recovery wells. Recovered groundwater is treated and released. An alternate water supply main has been extended to serve impacted areas.	Offsite (off-property) risks would be reduced to acceptable levels, most likely at an exponentially decaying rate over as long as 27 years as the plume is treated. On-property risks will be controlled through continued water-use restrictions.	The plume is currently contained. An alternate water supply has been provided to a fairly small number of impacted former groundwater residential and industrial users in this rural area, and also at FEMP. No other wells are currently impacted.	The impacted Great Miami Aquifer would be restored to full beneficial use. Uranium levels within the current off-property plume would eventually be reduced to acceptable levels. On-property risks would be low and controlled through continued water-use restrictions.
I.I.W (and limited M.I.W) particulate/ sludge solids	About 1.4 million m^3 of soils over portions of the 420-hectare (1,050-acre) site and nearby offsite areas are surficially contaminated with low levels of uranium, thorium, and radium from atmospheric deposition of previous airborne plant emissions. Smaller pockets of soil are contaminated to some depth from waste storage and releases. About 20,000 m^3 of I.I.W materials exceed the WAC for the OSDF and an additional 7,000 m^3 of M.I.W waste soils have also been identified.	Contaminated soils at depth, such as in the production area and southern solid waste landfill units, may leach contaminants to the underlying drinking water aquifer over time. Contaminated surface soils may impact future industrial, agricultural or residential land users through exposure via dust, the food chain, or direct radiation. Ecological receptors may also be impacted.	Current risks are controlled by limiting site access and through the use of runoff controls.	Risks will fall in proportion to the removal of the source term. Large areas having low concentrations of contaminants will be excavated first, followed by landfills, and the most highly contaminated soils (i.e., those in the production area) last. Soils containing high concentrations of radionuclides or hazardous substances will generally be removed during the intermediate and late stages of the project.	Access to the site is controlled. Excavation of some low-impacted soils has been completed. The OSDF for soils and other low-contaminated materials is partially constructed. The first placement of wastes in the facility has taken place. Preparations for further soil excavation are under way.	Soils exceeding cleanup levels would be excavated and placed in the OSDF. Wastes exceeding the WAC for the OSDF would be disposed of offsite. Further impacts to groundwater would be greatly reduced. Much of the site would be returned to beneficial use. The OSDF containing low-activity wastes would prevent releases of radionuclides for perhaps hundreds of years.

Table 7-2. Summary Risk Profile for the Fernald Environmental Management Project (concluded)

Material Category	Nature of Hazard	Nature of Potential Risk	Status of Current Risk Management	Future Risk Reduction Measures	Risk Reduction Progress	End-State Disposition and Risk
LLW structure/ equipment solids; limited MLLW structure/ equipment, particulate/ sludges and liquids	The former production plant covered about 54 hectares (140 acres) and included over 200 buildings and other facilities. Building surfaces and process lines and equipment are contaminated with uranium, thorium, and radium to various degrees. Affected volumes include about 250,000 m^3 of low-activity structural materials; 6,000 m^3 of uranium and thorium residues; 3,000 m^3 of materials exceeding the OSDF WAC; 3,300 m^3 of MLLW debris, sludges, and liquids; and 29,000 m^3 of nuclear materials and LLW.	Plant facilities and equipment degrading from age and weather would release contaminants from materials and equipment to the environment. Direct radiation exposure from such materials could occur to workers or future site users. Structures pose significant physical hazards to workers, intruders, and future site users.	Current risks are controlled through access control and building maintenance.	Risks will fall somewhat more rapidly early in the program as the main production facilities are removed. However, reduction of risk from contaminated soil below facilities must await removal of most of the production plant.	Access to the production area is controlled. Worker exposure is controlled and monitored to safe levels. Shutdown activities involving the removal of residual materials in lines and equipment and the removal of asbestos are under way in many facilities. Some major plant structures have been dismantled and the debris segregated and placed into storage onsite.	The entire production plant would be dismantled. Low-activity debris wastes would be placed in the OSDF, while higher-activity wastes, uranium and thorium residues, and nuclear material would be shipped offsite. MLLW will be treated and disposed of at approved offsite facilities; 3,900 m^3 of structural steel will be recycled and some equipment reused. Contaminant releases and direct radiation exposures would be greatly reduced. Physical hazards would be eliminated.

OU2. Groundwater will be remediated to full beneficial use after pumping and treating in an advanced wastewater treatment (AWWT) facility.

Final remediation will leave the site in a very low-risk condition. All waste units will have effectively been removed, leaving a contoured and vegetated surface. The OSDF will be fenced off to the general public and will occupy a substantial portion of the eastern portion of the site. It will contain over 1.5 million cubic meters of waste, rise gradually to up to 12 meters (40 feet) high and stretch to over 0.8 kilometer (0.5 mile) in length when completed. Leachate from the facility will be recovered and treated. A leak detection system will be in place to check the effectiveness of the capped and lined facility. Final remediation levels for soil on the FEMP property will be protective of a variety of future land uses, including recreational uses. Off-property soils will be remediated to levels protective of even more restrictive uses, including agricultural and residential.

Site remediation is planned for completion by 2006, with the possible exception of groundwater treatment, which may require several more years to reach completion. Remediation activities are currently under way or in final preparation phases for all OUs. The first of up to 10 cells of the OSDF is open, and initial waste placement has occurred. Remaining restoration work will proceed concurrently in all OUs but, under reduced budget scenarios, restoration of low-level contaminated soils and facilities might be delayed. Risk reduction benefits will reflect, to a large degree, progress in waste removal. The greatest benefits, however, will be accrued in the late phases of the action, when wastes and contaminated media at pit bottoms and under plant facilities lying closest to the underlying aquifer are removed. Plant facilities lying over contaminated soils will have to be removed before the soils can be excavated. Groundwater remediation progress will probably follow an exponential decay curve with diminishing benefits with time. Such remediation progress is the most difficult to predict. Progress toward cleanup goals will be monitored, while the effectiveness of the program will be continuously evaluated.

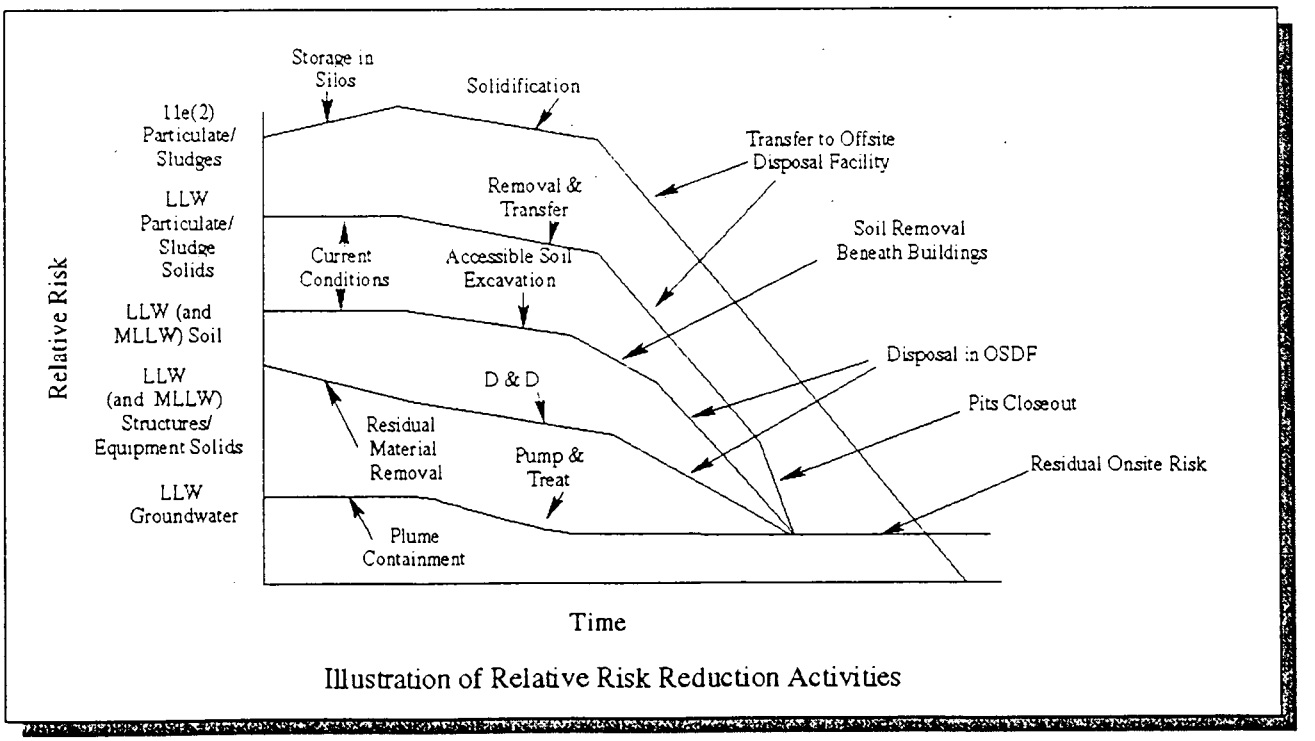

Figure 7-7. Risk Reduction Activities at the Fernald Environmental Management Project

YOU CAN HELP

decide the future of the Fernald site, by coming to the Fernald Citizens Advisory Board's *Future of Fernald Workshop!*

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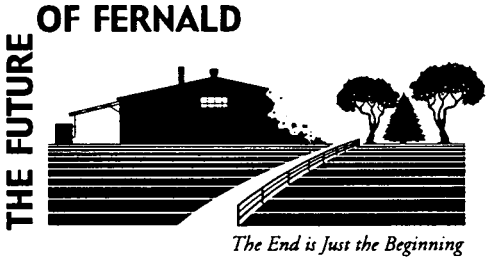
FERNALD CITIZENS ADVISORY BOARD

STEWARDSHIP COMMITTEE



Did you know that the Fernald site is well on its way to being cleaned up? Plans are already underway for the future and the time for your input is now:

- Would you like to see biking and walking trails?
- How about a cultural and education center?
- How would you like to see local history preserved?

Presentations and discussion will be conducted on the many activities that are currently being planned to make the Fernald site a resource for the entire region:

Creating Public Access Parks	Environmental restoration at Fernald has already begun —a Habitat Area has been built just off Paddys Run Road featuring two overlooks from which the public can view a variety of native habitats and wildlife.
Preserving Native American History	Native Americans have requested the use of the Federally Protected Land at Fernald for the reburial of their ancestor's remains. These remains have been found throughout the Ohio countryside and their reburial at Fernald presents the opportunity for additional Native American historical preservation at the site.
Preserving Local History	The Fernald Living History Project (FLHP) is working to record and preserve the personal memories of workers, past and present, and of neighborhood residents, who wish to share their stories of how the Fernald DOE site influenced their lives.
Restoring the Environment	As part of the settlement with the State of Ohio, over 80% of the Fernald site will be set aside for natural resource restoration. Both public access and educational use of the proposed ecological preserves are now being considered.

When:
April 20, 1999
6:00 p.m.-9:00 p.m.

Where:
Crosby Elementary School, New Haven Road, Crosby Township

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FERNALD CITIZENS ADVISORY BOARD

TRANSPORTATION WORKSHOP PROCESS AND SCHEDULE

As of 3/18/99

March 23, 3:00 PM Chairs Call
Process and Schedule
Core Topics

April 1, 4:00 PM Facilitators Call
Status of Fact Sheets, identify issues or problems
Discuss First Drafts of Part A Fact Sheets
Go over redraft of Agenda (Doug and Wendy will prepare agenda prior to call)

April 6, 3:00 PM Chairs Call
Review and approve agenda

April 9, Final text of sites' Part A due to Phoenix Environmental

April 12, Drafts of Parts B and C sent to sites for review

April 15, 4:00 PM Facilitators Call
Status of fact sheets
Identification of presenters
Process for breakouts

April 20, 3:00 PM Chairs Call
Review and approve presenters and process for breakouts

April 23, ALL registrations due in full

April 26, Site comments on Parts A and B due to Phoenix Environmental

April 29, hotel registration deadline

May 10, Participant Notebooks distributed

May 20, Facilitators meeting beginning at noon (tentative)

This schedule is tentative and additional facilitator calls will be planned as needed.

TRANSPORTATION WORKSHOP
SITE-SPECIFIC FACT SHEETS
Overview
3/18/99

Site-specific fact sheets will be prepared to identify key transportation issues at each of the sites represented at the workshop. These fact sheets will be coordinated among sites so that participants are able to get access to information easily. The following components are anticipated:

A. Overview information (all sites)
--one to two pages
- Brief description of disposition and transportation issues at site.
- Key SSAB transportation recommendations to date.
- Description of any significant transportation issues or challenges at site.

This first section will be prepared by each site to describe key issues, challenges and background of transportation at your site. Could include photographs, quotes from transportation recommendations, and other information.

B. Expected Disposition and Transportation of Site Waste (all sites)
--one to two pages
- Total material requiring disposition by waste stream.
- Disposition path by waste stream (on-site, off-site, recycling).
- Disposal volumes and shipments over time.
- Disposal locations to be used, type of transportation and likely routes.

It is anticipated that much of this data will be extracted from the "Paths to Closure" document. Fernald can work with DOE to gather this information then run it by the individual sites to see if it matches their expectations. Where information is unknown, best estimates will be made and properly notated as unknown.

C. Expected Receipts of Materials for Storage and Disposal (receiving sites)
--one to two pages
- Known waste imports by waste stream over time.
- Material sources and likely transportation routes.

FERNALD CITIZENS ADVISORY BOARD

TRANSPORTATION WORKSHOP
CORE TOPICS AND GENERAL FACT SHEETS
3/18/99

Core Topics (subject to change)
Routing, Mode, and cost
Packaging, Safety, and risk
Stakeholder involvement and communication
Notification and Emergency Response

General Fact Sheets Anticipated
General fact sheets will be prepared by Fernald in cooperation with DOE and other sources to describe basic topics of discussion at the workshop in support of the core topics, including but not limited to:

- Transportation requirements and risks of different waste streams .
- Who's who in transportation regulation (federal, state, local) and how they work together.
- The Radtran (tracking) program and how it works (hope to have working example).
- DOE's National Transportation Program and its interaction with site-specific activity.
- Shipping route selection—who and how.
- Shipping packages—what are the rules, what is past practice, plans for coordination.
- The cost of transportation—dollars, human health, and environmental damage.
- Communications during shipping—what's available, what's used, who decides.
- Emergency Response—who is responsible, training activities, levels of preparedness.
- List of available sources of transportation information.

FERNALD CITIZENS ADVISORY BOARD

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Staff Support
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Minutes from the January 16, 1999 Meeting

The Fernald Citizens Advisory Board met from 8:40 a.m. until 12:15 p.m. on Saturday, January 16, 1999, at the Large Laboratory Conference Room on the Fernald site. The meeting was advertised in local papers and was open to the public.

Members Present:	French Bell Jim Bierer Sandy Butterfield Marvin Clawson Jack Craig Gene Jablonowski Mike Keyes Ken Moore Graham Mitchell Robert Tabor Fawn Thompson Thomas Wagner Gene Willeke
Members Absent:	Lisa Crawford (excused) Pam Dunn (excused) Jane Harper Darryl Huff Dan McElroy Ray Wurzelbacher
Designated Federal Official:	Gary Stegner
Phoenix Environmental Staff:	Douglas Sarno Gwen Doddy
FDF Staff:	Tisha Patton Sue Walpole

Approximately 10 spectators also attended the meeting, including members of the public and representatives from DOE, Fluor Daniel Fernald, and the University of Cincinnati.

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1. Call to Order

Chair Jim Bierer called the meeting to order at 8:40 a.m.

2. Announcements and New Business

Doug Sarno announced that he and Gene Willeke plan to attend the Transportation External Coordination Working Group Meeting on January 20–22, 1999. The DOE is hosting the meeting of a wide spectrum of groups which are impacted by DOE transportation, including non-profits, local governments, and emergency responders.

Jim Bierer announced that Nye County officials and NTS CAB members will visit Fernald on February 9, 1999. Several CAB members and local government officials will tour the site and review waste packaging and transportation programs. FCAB members are scheduled to dine with the visitors at 4:30 p.m.

The Silo 3 contract, estimated at $16 million, was awarded to Rocky Mountain Remediation Services. Rocky Mountain Remediation will chemically stabilize the waste and form bricks which will be placed on pallets, put in metal boxes, and shipped to the Nevada Test Site (NTS).

On December 28, 1998, the DOE HQ approved the waste declaration for 938 Metric Tons of Uranium at Fernald, which includes low-enriched residues such as incinerator ash, and depleted feed and product material.

3. FCAB Reorganization

The Steering Committee proposed a new organization for the FCAB, consisting of three committees: Remediation, Stewardship, and Steering. The Remediation Committee will be chaired by Gene Willeke and will cover the following issues: transportation, silos, waste pits, OSDF, D&D, and Nuclear Materials Disposition. The Stewardship Committee will be chaired by Pam Dunn and will cover the following issues: Fernald Living History Project, Native American issues, Historic Preservation, site archiving, Museum/Cultural Center, ecological restoration issues, stewardship planning and funding, and coordination with the "Natural Resources Working Group". The Remediation Committee will meet on Wednesday nights, the Stewardship Committee on Thursday nights. The Steering Committee will retain the same members and will meet occasionally to chart the direction of the FCAB. The Steering Committees members are: Jim Bierer, Lisa Crawford, Pam Dunn, Bob Tabor, Tom Wagner, and Gene Willeke.

Sarno suggested an annual evaluation of the structure of the FCAB. With two committees, workload and membership can be more evenly divided, and one meeting night established per month for each committee will allow members to know when meetings are scheduled throughout the year. The full board will oversee more issues, including overall progress monitoring, review of monitoring results, budget review, and advocate for Defense Closure funding. This will allow all members to stay informed. The Committees will be responsible for all issues within their scope to determine whether the full board or the committee should focus on a specific topic.

Jack Craig suggested that the Stewardship Committee work with the Natural Resource Trustees as the Trustees are now thinking about the future land use at Fernald.

The members of the Remediation Committee are Sandy Butterfield, Lisa Crawford, Darryl Huff, Dan McElroy, Fawn Thompson, Tom Wagner, Gene Willike, and Ray Wurzelbacher. The members of the Stewardship Committee are: Jim Bierer, Marvin Clawson, Mike Keyes, Ken Moore, and Bob Tabor.

Sarno emphasized the importance of attending all meetings; the attendance policy of the full board will apply to the committees. If a member cannot attend meetings he/she must call the office to let them know.

Bierer encouraged all the CAB members and the public to attend the DOE monthly progress briefings, which are held the second Tuesday of the month. Everyone is also welcome to attend both Committee meetings.

Sarno reviewed the 1999 Key Fernald Activities sheet which will be used to develop a work plan. This list is not an exhaustive list and individuals were encouraged to add items. Gene Willeke indicated that Silo 1 needs to be added to June's list.

Sarno also reviewed the new recommendation procedures. A new form will be used to better assist the tracking of recommendations. A standard recommendation form, with the recommendation number, date, type, and response requested date, will be attached to a letter from the Chair. The recommendations will continue to be summarized in chart format.

4. Fernald Waste Transportation Update

Craig updated the Board regarding transportation issues. The DOE Fernald is awaiting DOE HQ approval to restart shipment of waste. The Ohio Congressional Representatives and other elected officials are meeting with the DOE during the week of the 25th to discuss the progress of the site, specifically waste shipment. Craig had a conference call with the Nevada DOE (DOE-NV) concerning the truck route. The DOE-NV has told the DOE Fernald that they prefer that trucks discontinue driving through downtown Las Vegas. The DOE Fernald will select an alternate route, one which avoids Las Vegas, and will get bids from the carriers reflecting this new route. The most preferable route is through California; however, the stakeholders would need further involvement. The DOE Fernald expects the first shipment by the end of February.

The DOE will become more aggressive regarding intermodal transportation. DOE-NV prefers intermodal transportation because it avoids Las Vegas and Hoover Dam; a final decision is expected in October. Craig is encouraging the staff at Fernald to complete all necessary steps to start intermodal transportation by then if it is the selected mode.

5. Draft Transportation Workshop Agenda

Sarno announced that the Off-Site Committee discussed the core topics and agenda for the SSAB Transportation Workshop. The core topics include; 1) routing and mode (rail, truck, and intermodal); 2) packaging, safety, and risk assessment; 3) stakeholder involvement and risk communication; 4) notification and emergency response. Stakeholder involvement and risk communication's subtopic is public perception about the risk and presentation of information to the community. The FCAB is more informed regarding transportation issues than those SSABs who have not yet dealt with transportation issues. Through this workshop, the SSABs have the opportunity to raise awareness, and exchange ideas and views with other SSABs. Also from this workshop,

joint recommendations can be written regarding transportation, and these recommendations will be more powerful as they represent multiple SSABs.

The original workshop dates were Thursday, May 13 – Sunday May 16, 1999. Due to difficulties finding a hotel, additional dates are being evaluated. The workshop will likely be held at the Vernon Manor, located near downtown Cincinnati. The draft agenda is as follows:

Thursday 7:00 – 9:00 pm	Reception
Friday 8:00 – 12:00 noon	Tour of the Fernald site
Friday 1:00 – 6:00 pm	Welcome and overview Discussion of workshop goals Site introductions Panel presentations and Q&A on core topics Discuss conference approach and plan for breakouts
Saturday 8:00 – 10:00 am	Plenary discussion on core topics - Identify key stakeholder concerns on core topics
Saturday 10:00 – 12:00 noon	Breakout groups on core topics • Develop draft workshop statements on concerns • Identify one possible joint SSAB recommendation
Saturday Lunch	Luncheon speaker (to be determined)
Saturday 1:30 – 3:00 pm	Reconvene breakout groups
Saturday 3:15 – 5:00 pm	Preliminary results of breakout groups presented • discuss statements of stakeholder concern • discuss possible joint SSAB recommendations
Saturday 6:30 – 8:00 pm	Breakout groups to revise statements as necessary
Sunday 8:00 – 12:00 noon	Statements finalized Recommendation language reworked as time permits Next steps and followon activities identified

Fluor Daniel Fernald will pay for Thursday's reception. The Friday morning Fernald Site tour will emphasize transportation issues, and the Saturday morning plenary discussion will consist of brain-storming on the core topics. Attendees will form breakout groups, with one member from each SSAB in each of the topic groups and the other SSABs' facilitators will help facilitate the groups. The breakout groups will try to identify one or two possible joint recommendations

The FCAB will develop templates of various fact sheets concerning transportation, to aid each site to create its own. Each site will receive both the fact sheets from the other sites and a compilation fact sheet.

Bierer would like to review the fact sheets prior to the conference. Sarno replied that he plans to get the information to attendees before the conference, and by February, a registration packet will be sent. Willeke suggested developing a fact sheet on each receiving site, in addition to each SSAB site. Ken Moore asked about future workshop

topics and locations. Sarno replied Oak Ridge will host the next workshop which will be on Stewardship.

Wagner stated that the SSABs usually tour the site at the meeting location and it has become an important ingredient of the workshop. He emphasized the importance of the CAB members to help plan and run the event.

6. Fernald Future Use Planning

Bierer announced the Fernald Habitat Area is now complete and open from dawn to dusk. He also asked if the FCAB should write a letter of recommendation to the DOE HQ for funding the disposal of the 938 Metric Tons of waste Uranium. Craig stated the DOE Fernald's request to HQ for more money for this project was denied due to lack of funds. By the end of March an Environmental Assessment (EA) will be completed, relaying details about the process. The FCAB will wait to comment until the EA is released.

Next, Joe Schomaker presented an update on the Fernald Cultural Resources Management Program. The basic topics of the Fernald Cultural Resources Management Program are 1) cultural resource investigations, 2) preserving "Cold War" properties and artifacts 3) Native American reburial, and 4) Museum/education facility.

Schomaker announced that the entire Fernald site has been declared a historical site. This means a data recovery must be done on all buildings and areas which are currently slated to be destroyed. All the buildings on the site have been documented and 128 historical sites have been found at Fernald. The Cultural Resource Management Project is working with several Native American Tribes regarding Native American Indian Reburial. These groups include: the Miami Tribe of Oklahoma, Shawnee Tribe of Missouri (Eastern Shawnee), the Shawnee Tribe of Oklahoma (Absentee), Delaware Tribe of Oklahoma, Wyandot Tribe of Oklahoma, Seneca Indians, NY, Potwatomi, Kickapoo, and the Chipewa. Additional stakeholders in historic preservation include: the Department of Interior, NAGPRA – Review Committee, State Historic Preservation Office (Ohio), Advisory Council on Historic Preservation, Department of Energy (offices in Washington, Ohio Field Office, and Fernald), FRESH, FCAB, CRO, and Crosby Township Historical Society. The Cultural Resources Management has written a letter to the DOE HQ and the Department of the Interior for support to rebury the Culturally Unidentifiable Native American Indian remains on the Fernald Site. New technologies are available to manage the areas without the need to have a guard on site and it can be both protected and accessible to the public.

Wagner asked Schomaker how much land would be necessary for the reburial site. Schomaker replied possibly eight to ten areas although there is still uncertainty as the U.S. Government and various tribes have yet to discuss the issue. Bierer thanked Schomaker for his presentation.

Wagner stated the future land use issue is an important focus of the Stewardship Committee and needs to be properly emphasized. Craig added that the question of funding the future site also needs to be addressed. Bierer stated the FCAB wants to form a working group of stakeholders in order to help determine the path of stewardship. Craig said it would be helpful to decide what type facility or center is planned in order to integrate it into the clean-up process. Graham Mitchell added it will be less expensive, for example, to add trails in conjunction with the clean-up process.

Willeke asked Craig if the DOE Fernald has a ten-year access plan, because the access of the site will change over the years. There is none. Willeke suggested a plan might be helpful to determine the future of the site.

7. Public Comment

Bierer opened the floor to public comment.
There was no public comment.

8. Adjournment

Jim Bierer adjourned the meeting at 11:45 p.m.

I certify that these minutes are an accurate account of the January 16, 1999, meeting of the Fernald Citizens Advisory Board.

James Bierer, Chair — Date 3/10/99
Fernald Citizens Advisory Board

Gary Stegner — Date 3/12/99
Designated Federal Official

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Fernald Environmental Management Project
P. O. Box 538704
Cincinnati, Ohio 45253-8704
Fernald Web site: http://www.fernald.gov

FLUOR DANIEL FERNALD

FOR IMMEDIATE RELEASE
March 8, 1999

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FERNALD AWARDS SUBCONTRACT FOR SILOS PROJECT

CINCINNATI, Ohio -- The U. S. Department of Energy (DOE) announced today that Fluor Daniel Fernald has awarded a $50 million, four-year subcontract to Foster Wheeler Environmental Corporation, based in Livingston, NJ, for the Silos 1 and 2 Accelerated Waste Retrieval (AWR) Project at the Fernald Environmental Management Project. The subcontract was awarded on February 26, 1999.

Foster Wheeler will design, construct and operate a waste retrieval system and a transfer tank storage system. The objective of the AWR is to transfer the residues out of Silos 1 and 2 prior to treatment of the materials. As part of the AWR project, a Radon Control System will be designed, constructed and operated to reduce the radon concentration in the silo head space before, during and after retrieval of the material for worker and public protection.

The retrieval method is to remove the material into four 750,000 gallon steel tanks by using a hydraulic retrieval process. The wastewater generated from the waste retrieval process will be collected in to a 250,000 gallon decant/supernate tank for treatment prior to sending it to the Advanced Wastewater Treatment Facility for final treatment and disposal. The transfer tanks will be housed behind concrete walls for radiation shielding. The AWR project is scheduled to be complete by September, 2003.

In parallel with this effort, DOE and Fluor Daniel Fernald are continuing to work closely with regulators and stakeholders to determine the final cleanup approach for Silos 1 and 2. This effort is currently being carried out through development of the revised Feasibility Study/Proposed Plan and the Record of Decision Amendment process.

- more -

FERNALD AWARDS SUBCONTRACT FOR SILOS PROJECT (continued)

"The award of this contract is a significant step toward the final remediation of the Silo material," explains Nina Akgunduz, DOE-Fernald Silos Project Team Leader. "The AWR project will address the concerns with the radon in the silo head space, structural integrity of the concrete silos, and remove potential bottle-necks associated with the final remediation."

Foster Wheeler has extensive experience in environmental restoration projects and will utilize the services of COGEMA, Grey Pilgrim, Oceaneering, Battelle and XL Associates on the AWR project. The company will also utilize the skills and experience of current Fernald employees to operate and maintain the new facilities.

Silos 1 and 2 contain approximately 8,900 cubic yards of low-level uranium ore residues. There is also a third silo at Fernald, that contains about 5,100 cubic yards of cold metal oxides, and a fourth silo that is empty. The Silos Project is one of five major areas being remediated at the site.

Additional information about the Silos Project is available in the Public Environmental Information Center, 10995 Hamilton-Cleves Highway (Delta Building), or on Fernald's Web site at www.fernald.gov.

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