

**MARTIN MARIETTA**

ES/ER/TM-24

**ENVIRONMENTAL  
RESTORATION  
PROGRAM**

**Implementation of the Natural  
Resource Damage Assessment Rule**

**Workshop Summary  
Interim Notification Policy**

MANAGED BY  
MARTIN MARIETTA ENERGY SYSTEMS, INC.  
FOR THE UNITED STATES  
DEPARTMENT OF ENERGY  
UCN-17560 (6 7-91)

ENERGY SYSTEMS



**DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED**

This report has been reproduced directly from the best available copy.

Available to DOE and DOE contractors from the Office of Scientific and Technical Information, P.O. Box 62, Oak Ridge, TN 37831; prices available from 615-576-8401, FTS 626-8401.

Available to the public from the National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Rd., Springfield, VA 22161.

# Implementation of the Natural Resource Damage Assessment Rule

## Workshop Summary Interim Notification Policy

Environmental Restoration Division  
P.O. Box 2003  
Oak Ridge, Tennessee 37831-7298

Date Issued—November 1991

Compiled by  
Biomedical and Environmental Information Analysis Section  
Health and Safety Research Division  
Oak Ridge National Laboratory

Prepared for  
U.S. Department of Energy  
Office of Environmental Restoration and Waste Management  
under budget and reporting code EW 20

MARTIN MARIETTA ENERGY SYSTEMS, INC.  
managing the

Oak Ridge National Laboratory      Oak Ridge Y-12 Plant  
Oak Ridge K-25 Site                      Paducah Gaseous Diffusion Plant  
under contract DE-AC05-84OR21400

and the  
Portsmouth Gaseous Diffusion Plant  
under contract DE-AC05-76OR00001  
for the  
U.S. DEPARTMENT OF ENERGY

**MASTER**

## ***CONTENTS***

---

ACRONYMS .....	v
ABSTRACT .....	vii
1. INTRODUCTION .....	1
2. OVERVIEW OF NRDA REGULATIONS .....	3
2.1 PREASSESSMENT SCREEN .....	4
2.2 ASSESSMENT PLAN .....	4
2.3 TYPE B ASSESSMENT .....	4
2.3.1 Injury Determination .....	5
2.3.2 Quantification of Effects .....	5
2.3.3 Damage Determination .....	6
2.4 POSTASSESSMENT .....	6
2.5 REVISIONS TO PROPOSED PART B RULE .....	6
3. SUMMARY OF WORK GROUP DISCUSSIONS .....	7
3.1 ADMINISTRATIVE/LEGAL REQUIREMENTS WORK GROUP .....	7
3.1.1 Background .....	7
3.1.2 Goal 1: Develop Recommendations on When DOE Should Notify Other Natural Resource Trustees .....	7
3.1.3 Goal 2: Develop Recommendations on How DOE Should Coordinate NRDA Issues With Cotrustees .....	9
3.1.4 Goal 3: Develop Recommendations on Actions DOE Could Take to Avoid Citizen Suits and Damage Claims .....	10
3.1.5 Goal 4: Identify Current Plans or Agreements That May Need to be Modified to Reflect Natural Resource Damage Issues ...	11
3.1.6 Conclusions .....	12
3.2 ECOLOGICAL ASSESSMENT WORK GROUP .....	12
3.2.1 Background .....	12
3.2.2 Recommendations .....	14
3.2.3 Conclusions .....	14
3.3 NRDA/ECONOMIC EVALUATION WORK GROUP .....	15
3.3.1 Background .....	15
3.3.2 Recommendations/Comments .....	15
3.3.3 Conclusions .....	16
4. DOE-OR ER/WM INTERIM POLICY GUIDANCE .....	17
Appendix A. Scheduled Work Group Participants During March 1991 NRDA Workshop .....	19
Appendix B. Key Issues for the Work Groups .....	23

Appendix C. Natural Resource Trustees (as of September 1991) ..... 29

Appendix D. DOE Field Office, Oak Ridge, Office of the Assistant Manager  
for Environmental Restoration and Waste Management  
Interim Policy Guidance ..... 33

## ***ACRONYMS***

---

<b>BMAP</b>	biological monitoring and assessment program
<b>CAA</b>	Clean Air Act
<b>CERCLA</b>	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
<b>CFR</b>	Code of Federal Regulations
<b>CWA</b>	Clean Water Act
<b>DOD</b>	U.S. Department of Defense
<b>DOE</b>	U.S. Department of Energy
<b>DOE-OR</b>	DOE Field Office, Oak Ridge
<b>DOI</b>	U.S. Department of Interior
<b>ED</b>	Energy Division
<b>EPA</b>	U.S. Environmental Protection Agency
<b>EPD</b>	Environmental Protection Division
<b>ERPM</b>	Environmental Restoration Program manager
<b>ER/WM</b>	Office of Environmental Restoration and Waste Management
<b>ESD</b>	Environmental Sciences Division
<b>FR</b>	Federal Register
<b>FS</b>	feasibility study
<b>HASRD</b>	Health and Safety Research Division
<b>NCP</b>	National Contingency Plan
<b>NPL</b>	National Priorities List
<b>NRDA</b>	Natural Resource Damage Assessment
<b>NRDAM/CME</b>	NRDA Model for Coastal and Marine Environments
<b>ORNL</b>	Oak Ridge National Laboratory
<b>ORR</b>	Oak Ridge Reservation
<b>PSO</b>	Program Senior Official
<b>RCRA</b>	Resource Conservation and Recovery Act
<b>RFI</b>	RCRA facility investigation
<b>RI</b>	remedial investigation
<b>SDWA</b>	Safe Drinking Water Act

## *ABSTRACT*

---

Regulations have been promulgated by the Department of Interior (DOI) which provide an administrative process whereby natural resource trustees may establish the type and extent of injury and evaluate the damages to natural resources. These regulations provide an optional mechanism for Natural Resource Damage Assessments (NRDAs), with four major components. A workshop entitled "Implementation of the Natural Resource Damage Assessment Rule" was held in Oak Ridge, Tennessee, on March 13-14, 1991, under joint sponsorship of the DOE Field Office, Oak Ridge (DOE-OR) and the Martin Marietta Energy Systems, Inc., Environmental Restoration Division. The purpose of this workshop was to develop recommendations for DOE-OR regarding implementation of the DOI NRDA regulations at the Oak Ridge Reservation (ORR). The attendants were divided into three working groups to consider (1) administrative/legal requirements, (2) ecological assessments, and (3) the NRDA/economic evaluation process.

This report supplies an overview of the DOI NRDA regulations as well as summaries of the consensus of each of the three working groups. In addition, a DOE-OR Interim Policy Guidance for notification of natural resource trustees has been included as Appendix D to this report. The following general conclusions were reached by the working groups.

1. It is the intent of DOE-OR to comply fully with the NRDA regulations and to be proactive in outside implementation of a potentially adversarial process. To that end, prompt notification and coordination of NRDA-related activities at the ORR with the appropriate state and federal cotrustees are warranted.

2. The key element for an effective (and proactive) DOE response to the NRDA requirements is to conduct a well-planned, thorough, and credible ecological assessment during the remedial investigation/feasibility study or Resource Conservation and Recovery Act facility investigation/corrective measures study process. A technically excellent ecological characterization and assessment, conducted as part of the remedial investigation/Resource Conservation and Recovery Act facility investigation, will almost certainly exceed the requirements of an NRDA preassessment screening. Because remediation of large DOE sites may require decades, equally thorough ecological monitoring programs will be necessary to determine and track the effectiveness of remediation measures.

3. The scope of the economic issues discussed precluded the development of a suggested procedural framework for conducting the economic valuation portions of an NRDA at the ORR. Further consideration of the workability of the NRDA regulations as presented in the current NRDA framework may be warranted.

*Chapter 1*  
**INTRODUCTION**

---

The U.S. Departments of Energy (DOE), Interior (DOI), Commerce, and Defense (DOD) have been designated as federal natural resource trustees. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended, provides that, at CERCLA sites, in addition to cost recovery for response and cleanup actions, damages for injury to natural resources may be recovered by natural resource trustees. DOE has a unique role at its CERCLA Environmental Restoration sites in that it is both the prime federal natural resource trustee and the lead agency for CERCLA response. DOE has addressed this dual responsibility in a report compiled by the DOE Office of Environmental Guidance entitled *Natural Resource Trusteeship and Ecological Evaluation for Environmental Restoration at Department of Energy Facilities*, DOE/EH-0192, issued June 1991.

Regulations have been promulgated by the DOI which provide an administrative process whereby trustees may establish the type and extent of injury and evaluate the damages to natural resources. These regulations provide an optional mechanism for Natural Resource Damage Assessments (NRDAs) with four major components. They do not provide specific procedures for implementing the methodologies. A workshop entitled "Implementation of the Natural Resource Damage Assessment Rule" was held in Oak Ridge, Tennessee, on March 13-14, 1991, under joint sponsorship of the DOE Field Office, Oak Ridge (DOE-OR) and the Martin Marietta Energy Systems, Inc., Environmental Restoration Division. The purpose of this workshop was to develop recommendations for DOE-OR regarding implementation of the DOI NRDA regulations at the Oak Ridge Reservation (ORR). The attendants were divided into three working groups to consider (1) administrative/legal requirements, (2) ecological assessments, and (3) the NRDA/economic evaluation process.

Notification of state and federal natural resource trustees is an initial step that may trigger the NRDA process. In lieu of any federal guidance by the DOI regarding the notification process, the DOE-OR Office of Environmental Restoration and Waste Management (ER/WM) has issued an Interim Policy Guidance regarding the notification of natural resource trustees. Although developed prior to the NRDA workshop summarized here, the interim policy is included in this report.

Key issues addressed during the workshop and summaries of the discussions held in each of the three working groups are included in this document, along with an overview of the NRDA regulations. Included in appendixes are a list of workshop participants (Appendix A), the key issues for discussion originally identified by the workshop chairperson (Appendix B), a list of current federal- and state-designated trustees for the plants managed by DOE-OR (Appendix C), and the full text of the DOE-OR Interim Policy Guidance (Appendix D).

## Chapter 2

# OVERVIEW OF NRDA REGULATIONS

---

CERCLA provides that, in addition to cost recovery for response and cleanup actions, natural resource trustees may recover damages for injury to natural resources, including the reasonable costs of assessing such injury, plus any prejudgment interest [Sect. 107(a)(4)(c)]. Natural resources are defined by CERCLA to be land, fish, wildlife, biota, air, water, groundwater, drinking water supplies, and other such resources belonging to, managed by, held in trust by, appertaining to, or otherwise controlled by the United States, any state or local government, any foreign government, any Indian tribe, or, if such resources are subject to a trust restriction on alienation, any member of an Indian tribe. Damages are for the injury to, destruction of, or loss of natural resources resulting from a discharge of oil or a release of a hazardous substance. Compensation for damages under CERCLA may be sought only by those trustees for natural resources indicated in the above definition.

Section 301(c) of CERCLA requires the promulgation of regulations for use by trustees in establishing damages for injuries to natural resources for the purposes of CERCLA and Sect. 311(f)(4) and (5) of the Clean Water Act (CWA). CERCLA Sect. 301(c)(2) calls for the NRDA regulations in the following terms:

Such regulations shall specify: (A) standard procedures for simplified assessments requiring minimal field observation, including establishing measures of damages based on units of discharge or release or units of affected area, and (B) alternative protocols for conducting assessments in individual cases to determine the type and extent of short- and long-term injury, destruction, or loss. Such regulations shall identify the best available procedures to determine such damages, including both direct and indirect injury, destruction, or loss, and shall take into consideration factors, including, but not limited to, replacement value, use value, and ability of the ecosystem or resource to recover.

These regulations have been promulgated as type A and type B procedures, and are codified in the *Code of Federal Regulations*, Title 43, Part 11 (43 CFR 11). The use of these regulations is optional, but NRDA's performed by federal or state trustees in accordance with these regulations are provided the legal evidentiary status of a rebuttable presumption in an administrative or judicial proceeding.

In response to a court ruling, DOI proposed revisions to the NRDA regulations [in the *Federal Register*, Volume 56, page 19753 (56 FR 19753) April 29, 1991]. The majority of the original Part B rule was upheld in the court as valid. However, the issues remanded for revision included the measure of damages for injuries to natural resources and the economic valuations for determining use and nonuse values. Major components of the Part B final rule (51 FR 27674, August 1, 1986) are discussed below. The proposed changes to the rule are also briefly summarized.

## 2.1 PREASSESSMENT SCREEN

The Part B rule provides a process for NRDA's with four major components. The first component includes several steps prior to initiating an assessment. All NRDA's contain these same initial steps. These steps can begin with the notification of, or detection by, the natural resource trustee of a discharge or release, as set forth in the National Contingency Plan (NCP) [40 *CFR* 300.52(d) and 300.62(d)]. The trustee must perform a preassessment screen to determine that a CERCLA- or CWA-covered incident has occurred and that resources of the trustee may have been affected. A determination is required upon completion of the preassessment screen as to the appropriateness of further assessment actions. The decision to proceed beyond this screen must be based upon preliminary findings that (1) the discharge or release was covered by CERCLA, (2) it could have resulted in some injury to the resource, (3) the resource potentially injured and the extent of potential injury are of concern to the trustee, and (4) the trustee has reason to believe that the potential benefits outweigh the potential costs of performing an assessment.

## 2.2 ASSESSMENT PLAN

If the preassessment screen results in a determination that an NRDA is not appropriate, no further assessment actions are to be taken. However, if the preassessment screen results in a determination that an NRDA is appropriate, the next phase is to prepare an assessment plan.

The level of detail contained in the assessment plan should be consistent with the rule's requirement for reasonable cost. The trustee must also comply with the rule's requirements for coordination with cotrustees, identification and involvement of the potentially responsible party, and public involvement in the development of the assessment plan. Also, the trustee must decide whether to conduct a type A or type B assessment. All decisions on the selection of the methodologies, including but not limited to parameter values and other assumptions used to implement the type A or type B methodologies, must be documented. This documentation must be set out in the assessment plan. The assessment plan should ensure that only the reasonable costs of assessment will be incurred. The trustee should refer to the definitions stated in the final rule for "reasonable costs" and "cost-effectiveness" when preparing the assessment plan.

A confirmation of exposure must be conducted as part of the assessment plan phase of this process. The confirmation of exposure is the second screen in the assessment process. It is intended to ensure that the trustee has confirmed a pathway whereby the oil or hazardous substance has actually come into contact with the resource. If the trustee cannot confirm that the oil or hazardous substance has actually come into contact with the resource, no further assessment actions are taken.

## 2.3 TYPE B ASSESSMENT

In the third component, the trustee begins either the type A or type B assessment. Both the type A and type B procedures follow the same three steps. Each type of assessment requires an injury determination phase, a quantification phase, and a damage determination phase.

The type A procedure contained in the March 20, 1987, final rule (52 FR 9042) provides for simplified assessments of damages in coastal and marine environments. The rule uses a computer model referred to as the NRDA Model for Coastal and Marine Environments (NRDAM/CME). The specific data inputs required for the type A assessment plan provide the incident-specific data required to use the NRDAM/CME. If the assessment is to follow the Type B procedure, the same three steps are required, although in more detail. These steps, as they pertain to the Type B procedure, are summarized below.

### 2.3.1 Injury Determination

An injury determination must be made as the third screen of the NRDA process. To assert a natural resource damage claim, the trustee must establish that an injury occurred and must link that injury to the discharge or release. Otherwise, no further assessment actions are to be taken and no assessment costs will be recovered.

In addition to satisfying the injury determination, the pathway of the discharged or released substance from the source to the resource must be demonstrated. For example, biological resources can carry the substance away from the site by either direct physical contact or by exposing other organisms through the food chain. Oil or hazardous substances contained in groundwater resources may move to a lake or stream, thereby exposing biological resources. The use of transport and fate modeling in media such as air or water may be useful in many situations for demonstrating the pathway. In other situations, sampling may be required. The final rule provides guidance on selecting, testing, and sampling methodologies for injury and pathway determinations.

**Review of the Assessment Plan.** Upon completion of the injury determination phase, the trustee must review the methodologies selected in the assessment plan. This step allows the trustee to refine the restoration or replacement alternatives and cost estimates initially identified in the assessment plan phase so that a cost-effective, feasible restoration or replacement alternative for comparison with diminution of use can be selected. The distinction between restoration and replacement alternatives will, in most cases, depend on the nature of the lost or disrupted services previously provided by the resource.

**Termination of Assessment or Selection of Further Methods.** If an injury, as defined in the final rule, cannot be determined or confirmed or cannot be linked to the discharge or release, further assessment efforts should be terminated and the results of the injury determination phase documented in the assessment plan. If an injury determination has been made, methodologies for the next two steps must be selected which are consistent with the findings of the injury determination. If the decision was not previously made, the trustee must decide whether restoration or replacement costs or a diminution of use values will form the basis of the damage determination. The final rule provides that when significant modifications occur to the assessment plan, these modifications shall be made available for public review and comment.

### 2.3.2 Quantification of Effects

Having established that the resource was injured by the discharge or release, the next step in the NRDA process is to quantify the effects on the injured resource. Because the purpose of the NRDA is to determine compensation for injuries rather than a decision on the level of cleanup, this step requires ascertaining the baseline level of the services provided by the resource prior to the discharge or release. The baseline level of services is then

compared with the existing level of services, or with the anticipated level of services upon the completion of any response actions, to determine the residual change resulting from the discharge or release. Services include such ecological services as flood and erosion control, habitat, and food chains as well as such human uses as recreation.

### 2.3.3 Damage Determination

The next step of the process is to apply the method of estimating the damages, using the costs of restoration/replacement or the diminution of use values that were determined in the assessment plan. It is important to distinguish "damages" from "injuries" in the NRDA process. Injuries are situations of harm to natural resources; damages are financial compensations made to the trustees of these natural resources for such harm. The final rule provides guidance on applying these methods.

At the conclusion of a Type B assessment, the trustee must document the results of the process in a Report of Assessment. This documentation includes the Preassessment Screen Determination and the assessment plan, with all comments and responses. This document must be filed as the Report of Assessment with a court or an administrative body in case further legal action is necessary.

## 2.4 POSTASSESSMENT

The final step of the NRDA process involves the establishment of an account into which all monies awarded pursuant to Sect. 107 of CERCLA for compensation for injuries must be placed. CERCLA requires that funds recovered for injuries must be retained by the trustee only for restoration, rehabilitation, replacement, or the acquisition of the equivalent of the injured resource.

## 2.5 REVISIONS TO PROPOSED PART B RULE

The revisions propose amending the "Type B procedures" to require the trustee's measure of damages to be calculated on the estimated cost to restore, replace, rehabilitate, or acquire the equivalent natural resources that were injured, destroyed, or lost because of the hazardous-substance release or oil spill. The trustees also would be allowed to recover the lost compensable values such as the economic value of lost uses and nonuses of the injured resources pending their restoration to prerelease conditions. Trustees would be allowed to choose among the various valuation methodologies listed in the regulations for calculating the lost compensable values. Existing regulations contain a hierarchy of methodologies to be used.

The proposed revisions also would clarify that the rule is applicable to all natural resources defined by CERCLA that belong to, are managed by, held in trust by, or otherwise controlled by the United States, any state or local government, or Indian tribe. The proposed regulation would require that the trustees specify their natural resource trustee authorities for their claim.

The regulations proposed for amendment are codified at 43 *CFR* 11. Promulgation of the final rule is expected by January 1, 1992.

*Chapter 3*

**SUMMARY OF WORK GROUP DISCUSSIONS**

---

**3.1 ADMINISTRATIVE/LEGAL REQUIREMENTS WORK GROUP**

*Chairperson:* M. B. Hyder [DOE Headquarters (HQ), Office of Secretary]

*Members:* T. K. Cothron (Martin Marietta Energy Systems, Inc.), S. P. Riddle (DOE-OR), F. E. Sharples [Oak Ridge National Laboratory (ORNL), Environmental Sciences Division (ESD)], N. L. Carnes (DOE-OR), Dean Monroe (DOE, Office of General Counsel), E. L. Etnier [ORNL, Health and Safety Research Division (HASRD)]

**3.1.1 Background**

The administrative/legal requirements working group was composed of regulatory specialists and counsel from Energy Systems and DOE. The dual responsibility of DOE as a CERCLA lead agency and as a primary federal natural resource trustee presents some unique problems. In addition, compliance with the NRDA regulations involves a multitude of administrative and legal requirements. In an attempt to formulate a policy for DOE to follow, the group addressed four primary goals, which are summarized below.

The discussion summarizes the legal requirements and background applicable to these goals and the recommendations developed by the working group.

**3.1.2 Goal 1: Develop Recommendations on When DOE Should Notify Other Natural Resource Trustees**

**Legal Requirements.** Section 104(b)(2) of CERCLA requires the President to promptly notify federal and state natural resource trustees of potential injury to natural resources resulting from releases of hazardous substances, pollutants, or contaminants into the environment. "Natural resources" are defined as "land, fish, wildlife, biota, air, water, groundwater, drinking water supplies, and other such resources belonging to, managed by, held in trust by, appertaining to, or otherwise controlled by the United States, any state or local government, any foreign government, any Indian tribe, or if such resources are subject to a trust restriction on alienation, any member of an Indian tribe" [CERCLA Sect. 101(16)].

Under Executive Order 12580 (52 *FR* 2923, Jan. 29, 1987), the President has delegated the responsibility of notifying trustees to Executive Branch agencies when they are the lead agency in a CERCLA response action. DOE is the lead agency for releases from any facility or vessel under the jurisdiction, custody, or control of DOE.

As stated in the National Oil and Hazardous Substances Pollution Contingency Plan (40 *CFR* 300), the on-scene coordinator/remedial project manager must notify natural resource trustees of discharges or releases that are injuring or may injure their trust resources. The Environmental Restoration Program manager in the DOE system is the equivalent of the

CERCLA Remedial Project manager. Federal, state, and Indian tribe trustees are designated in Subpart G of the National Contingency Plan (40 *CFR* 300.600 et seq.).

Identifying "injury" and particularly "potential injury," the thresholds that trigger notification, may not be straightforward. Accordingly, some guidance on when DOE should notify trustees is appropriate.

**Recommendations.** The following recommendations resulted from the discussions of the administrative/legal requirements work group.

1. As a general rule, DOE should notify trustees whenever obvious injury has occurred or when the release is above a reportable quantity as defined under CERCLA and the Clean Water Act (CWA) (40 *CFR* 112 and 302). When there is a question of whether injury or potential injury has occurred or may occur, DOE should err on the side of notifying the trustees.

2. For releases of less than a reportable quantity, DOE should notify trustees only if an obvious injury has occurred. The working group concluded that there may be a *de minimis* release for which the potential for injury is so slight that no notification would be warranted. A rule of reason should apply.

3. DOE should not notify trustees of injuries that result from federally permitted releases. "Federally permitted releases" are releases or discharges in compliance with a permit, such as those issued under the CWA, Clean Air Act (CAA), Safe Drinking Water Act (SDWA), Resource Conservation and Recovery Act (RCRA) [see CERCLA Sect. 101(10)], or a DOE order. Under CERCLA Sect. 107(j), damages resulting from federally permitted releases are recoverable under existing law in lieu of CERCLA. DOE should notify the Environmental Protection Agency (EPA) or state regulatory authority in accordance with the requirements in the applicable permit.

4. DOE should seek to coordinate notifications of permit noncompliances with notification to state trustees of potential natural resource injuries. Almost all permits require the permittee to notify the regulator of permit excursions. Permit excursions are not federally permitted releases, and DOE would be liable for any resulting injury. In the case of state regulators, the regulator is also often the state natural resource trustee. DOE should gain approval from state regulators to use one correspondence to notify them of permit excursions and the potential for injury. Any injury notifications made to the state trustees should also be made to any affected federal and Indian tribal trustees.

5. DOE should also seek to coordinate reporting the results of whole effluent toxicity tests or biological monitoring and assessment programs (BMAPs) with notification of potential injury. Under some CWA permits, DOE is required to perform whole effluent toxicity tests or BMAPs and report the results to the state. Again, the state regulator is often the state trustee. When monitoring or test results indicate that injuries have occurred or may occur, DOE should notify federal and state trustees. DOE should gain approval from state regulators to use one correspondence to both report the test results and notify the state of potential injury.

6. DOE should seek approval of a plan for notifying trustees of injuries resulting from continuous releases. A "continuous release" is a release that occurs without interruption or

abatement (e.g., from environmental restoration units) or that is routine, anticipated, and intermittent and incidental to normal operations. DOE could notify trustees initially of potential injury from a continuous release and agree to notify of any changes in the nature of the release that could result in additional or different injury. This would be consistent with the reporting of continuous releases to the National Response Center as required under CERCLA (see 55 *FR* 30166).

7. DOE should notify trustees of potential injury from releases that may have occurred wholly before the enactment of CERCLA unless DOE has proof that the release *and* the resulting injuries ended before that date. Under CERCLA Sect.107(f)(1), parties are not liable for damages where damages and the release from which the damages resulted occurred wholly before the enactment of CERCLA (Dec. 11, 1980).

### 3.1.3 Goal 2: Develop Recommendations on How DOE Should Coordinate NRDA Issues With Cotrustees

**Legal Requirements.** Under Executive Order 12580, the Secretary of Energy has been designated as the primary federal natural resource trustee for land controlled by DOE. DOE is not the only trustee, however. Other federal trustees (such as the DOI) and states or Indian tribes may also have trust resources located within a DOE facility. Within the facility boundary, DOE has the dual role of both lead agency and natural resource trustee. Beyond the facility boundary, DOE is the lead agency for responding to the release but is not a trustee.

CERCLA Sect.104(b)(2) states that the lead agency shall seek to coordinate all response activities with the natural resource trustees. "Coordination" with other trustees may be taken to generally include notification and sharing of information about the nature of the discharge or release, the status of actions planned or taken to investigate and remediate the release, and plans for restoring, replacing, or acquiring the equivalent of the injured natural resources.

**Recommendations.** The working group discussed how DOE could coordinate with other trustees, both when DOE itself is a trustee and when it is acting as lead agency only.

1. For on-site activities when DOE is a cotrustee, DOE should enter into a Memorandum of Understanding with other federal and state trustees to define roles, responsibilities, and authorities. Trustees will need to identify and resolve such issues as (1) which natural resources should be investigated, (2) how injuries should be measured, (3) which trustee will perform investigations, (4) which cost estimating and valuation methodologies should be employed to assess damage, and (5) which restoration alternatives should be implemented.

2. For off-site activities, DOE is not a trustee. However, as the lead agency, DOE will be conducting investigations that are the equivalent of the preassessment screen and injury determination phases of an NRDA. Again, DOE should enter into a Memorandum of Understanding with the natural resource trustees to define roles and responsibilities.

3. As DOE is conducting NRDA-related investigations, it should document that natural resource trustees have concurred on methodologies and reports. Such documentation may prove useful if a trustee files a claim against DOE. To document that other trustees have reviewed and concurred on NRDA-related documents, these documents should have a concurrence block for trustees. NRDA-related documents include any remediation work

plans; the remedial investigation/feasibility study (RI/FS) report, RCRA Facility Investigation report, or similar report required under a state CERCLA-type law; and any natural resource restoration plans and reports.

4. NRDA-related documents should be filed in an administrative record. The Memorandum of Understanding among the trustees should indicate which trustee has the responsibility to do so. The working group recommended that NRDA-related documents be placed in the same administrative record created to comply with CERCLA community relations requirements. A separate index should be created to identify which documents in the administrative record are NRDA documents.

5. Other federal or state trustees may need access to DOE facilities to perform NRDA assessments or conduct restoration work. The Memorandum of Understanding should establish procedures for site access which account for national security, safety, and health concerns. Such procedures are already outlined in many of the agreements in principle being signed by DOE and the states.

#### **3.1.4 Goal 3: Develop Recommendations on Actions DOE Could Take to Avoid Citizen Suits and Damage Claims**

**Legal Requirements.** Under CERCLA Sect. 107(a)(4)(C), the owner and operator of a vessel or facility may be liable for damages for injury to, destruction of, or loss of natural resources, including the reasonable costs of assessing such injury. The liability is to the United States, a state, or an Indian tribe. The natural resource trustees act on behalf of the public to file a claim against the potentially responsible party(ies) to recover damages. Any sums recovered can be used only to restore, replace, or acquire the equivalent of the injured resources.

In its role as a trustee, DOE would not file a claim against itself as a potentially responsible party. Based on the unitary executive theory and Department of Justice policy, DOI may not bring suit against DOE as a sister federal agency. States or Indian tribes, however, could file a natural resource damage claim against DOE.

Under CERCLA Sect. 122(j) and Executive Order 12580, trustees are empowered to issue a release from natural resource liability (i.e., a "covenant not to sue") to a potentially responsible party. To obtain such a release, DOE would probably need to commit to taking actions above and beyond those that would be required by EPA for CERCLA remedial actions or the states under RCRA corrective action or state CERCLA-type laws. Obtaining a covenant should be attempted just prior to the signing of the record of decision. At that point, DOE will have identified what remedial actions will be taken at the site and what residual damages may remain.

In addition to suits brought by trustees, CERCLA Sect. 310(a) allows any citizen to sue any person, including any state and the United States government or any of its officers, for failure to adequately execute natural resource trustee duties. Citizen suits against DOE could result in DOE being required to implement unplanned remedial or corrective actions or provide additional monies for restoration or replacements of injured natural resources. If a citizen sued a state or Indian tribe, then the state or Indian tribe might be compelled to file a damage claim against DOE, which could result in the same outcomes.

**Recommendations.** The following recommendations are offered.

1. By entering into a cooperative relationship with other federal and state trustees from the beginning, DOE may be able to minimize the possibility of later being sued by these trustees. A Memorandum of Understanding is a first step. If the states and Indian tribes have had an active role in the NRDA process and have been concurring on NRDA-related documents, DOE may then be able to obtain a covenant from these trustees.

2. DOE may want to assist state and Indian tribal trustees in learning about their natural resource trustee responsibilities to enable those trustees to protect themselves from citizen suits over a failure to execute natural resource trustee duties. States and Indian tribes may be able to use the Memorandum of Understanding and concurrence blocks on NRDA-related documents to prove that they are executing these duties.

### 3.1.5 Goal 4: Identify Current Plans or Agreements That May Need to be Modified to Reflect Natural Resource Damage Issues

**Legal Requirements.** Many DOE facilities have already completed or are currently developing plans or negotiating agreements addressing CERCLA remedial actions or RCRA corrective actions. Examples include federal facility agreements and agreements in principle, which identify roles and responsibilities between DOE and EPA and/or the state. Community relations plans are another example. Most of these plans and agreements fail to address natural resource damage issues. Accordingly, the administrative/legal working group identified types of plans and agreements that may need to account for natural resource issues. Some existing plans and agreements may need to be revisited and modified.

In addition to these, documents required under other laws may need to address natural resource damage issues. Under CERCLA Sect. 107(f)(1), no liability can be imposed where the party sought to be charged has (1) demonstrated that the damages to natural resources complained of were specifically identified as an irreversible and irretrievable commitment of natural resources in an environmental impact statement or other comparable environmental analysis, and (2) the decision to grant a permit or license authorizes such commitment of natural resources, and (3) the facility or project was otherwise operating within the terms of its permit or license.

**Recommendations.** The following recommendations are offered.

1. Federal facility agreements that are negotiated in the future may need to recognize that natural resource damage issues may impact remediation schedules. For example, investigating natural resource injury may require a longer time frame for conducting the RI.

2. Consider the possibility of DOE grants to states or Indian tribes to help defray the costs of reviews of NRDA-related documents and other natural resource trustee activities associated with DOE facilities.

3. Community relations plans prepared to comply with CERCLA may need to be modified or have an appendix added to them to address community relations needs specific to natural resource damage issues. Communication with the public on natural resource injury determinations and plans for restoration may decrease the potential for citizen suits.

4. Future environmental impact statements prepared under the National Environmental Policy Act may need to more explicitly identify any irreversible and irretrievable commitment of natural resources which would occur if a proposed action were taken. If any natural resource injuries occurred as a result of the action, DOE would then be protected from liability under CERCLA for damages.

### 3.1.6 Conclusions

It is the intent of DOE-OR to comply fully with the NRDA regulations and to be proactive in its implementation outside of a potentially adversarial process. To that end, prompt notification and coordination of NRDA-related activities at the ORR with the appropriate state and federal cotrustees are warranted.

## 3.2 ECOLOGICAL ASSESSMENT WORK GROUP

*Chairperson:* B. L. Kimmel

*Members:* S. M. Adams, (ORNL, ESD), L. W. Barnthouse (ORNL, ESD), S. M. Bartell (ORNL, ESD), D. I. DeAngelis (ORNL, ESD), M. S. Greeley (ORNL, ESD), M. A. Huston (ORNL, ESD), R. B. McLean [ORNL, Energy Division (ED)], R. H. Ross (ORNL, HASRD), L. R. Shugart (ORNL, ESD), G. W. Suter (ORNL, ESD), S. S. Talmage (ORNL, HASRD)

### 3.2.1 Background

The implementation of the NRDA rule will necessitate major advances in the general area of ecological assessment. The primary objectives of the ecological assessment work group were to (1) understand the requirements of the NRDA rule and (2) identify the most effective approaches for meeting these requirements.

For purposes of initiating and focusing the work group discussions, the following questions were posed for consideration. Answers/responses were derived from the ensuing discussions. Throughout the discussions, thoughts and comments overlapped among investigation-specific issues (e.g., related to the Clinch River-Watts Bar Reservoir RI), site-specific issues (e.g., related to the Oak Ridge, Savannah River, or Hanford reservations), and nationwide issues (e.g., generic issues related to all DOE or DOD remediation sites).

1. **Ecologically speaking, what constitutes injury to a natural resource (e.g., to water quality or to a fishery)?**

Injury to various natural resources is defined rather specifically for five categories of natural resources (surface water, groundwater air, soil, and biological resources) in the NRDA rule. For biological resources (fish, wildlife, and other biota), the guidance strongly reflects a fishery/waterfowl biologist influence. Members of the ecological assessment work group questioned the ecological relevance of some of the suggested indicators of biological resources injury. It was suggested that the development of methods for linking injury observed for individual organisms to population-, community-, and ecosystem-level injury is necessary for a valid assessment of injury to a biological resource.

2. **Do estimates of human-health risk provide an adequate assessment of risk of injury to other organisms or to natural resources?**

Substances that are not of human-health concern can be of considerable ecological concern, and vice-versa, substances of high human-health concern (e.g., polychlorinated biphenyls) may not have a severe ecological effect at equivalent concentrations.

3. **The NRDA rule and the DOE NRDA guidance document assume that natural resource damage/injury can be measured. Again, ecologically, can injury to a natural resource be directly measured, and if so, how?**

Ecologically meaningful measurements may have to be made at scales (e.g., nutrient cycling, productivity, carbon flow, etc.) different from those indicated in the guidance. For biological resources, we can make organism-specific measurements that can be related to injury; however, the extrapolation of organism-specific injury to the level of the resource (i.e., to the population and/or community levels) is required to assess resource injury. A critical component of assessing injury to a natural resource is the availability of data from reference sites.

4. **Can organism-specific measurements (e.g., contaminant body burdens, bioindicators, biomarkers, reproductive success, etc.) be translated into estimates of injury that are relevant to the resource?**

Resource-level injury can be estimated by linking ecological risk analyses, measurements indicative of contaminant exposure and effects (tissue concentrations, biomarkers and bioindicators, reproductive success), and individually based population models. However, it will be necessary to link this ecological assessment to an estimate of the economic value of the natural resource.

5. **Can the complementary areas of ecological risk assessment, biomarkers-bioindicator measurements, reproductive potential assessment, and population modeling be linked for application to ecological/ecological risk/NRDA assessment purposes?**

Successfully establishing these linkages is absolutely critical for successfully assessing resource-level injury to biological resources.

6. **What needs to be done to meet the requirements of an NRDA preassessment within the framework of an RI (e.g., for the Clinch River-Watts Bar Reservoir)?**

Implementation of the NRDA rule will significantly increase the importance and the scope of the ecological assessment originally required by the RCRA/CERCLA process. Fortunately, many of the elements necessary for meeting the requirements of the NRDA preassessment screening were already included in planning the Clinch River-Watts Bar RI. Establishing the linkages between ecological risk analysis, biomarker-bioindicator assessments, reproductive effects, and population modeling to estimate resource-level injury to biological resources will be key to the success of the Clinch River-Watts Bar Reservoir ecological assessment.

### 3.2.2 Recommendations

Based on work group discussions and interactions with members of the other work groups, the following recommendations for meeting the technical challenges presented by the implementation of the NRDA rule are offered.

1. Identify potential NRDA problems early to allow (1) timely notification of trustees and (2) planning for the collection of data relevant to NRDA preassessment requirements as a component of the RI ecological assessment.

2. Early notification of and communication with NRDA trustees/cotrustees is absolutely essential.

3. A critical element is to include considerations of NRDA-preassessment screening methodologies and measurements in the CERCLA/RCRA RI/RCRA facility investigation (RFI) ecological assessment process at an early stage. Ensure that RI/FS and RFI planning includes both the ecological risk assessment (as required by CERCLA) and other information (ecological characterization/assessment data) relevant to meeting NRDA requirements (e.g., the preassessment screening determination-of-injury evaluation).

4. Establish reference/background/control sites, ensure that good background/reference data are obtained from these sites, and establish and maintain sitewide long-term monitoring programs to document environmental changes resulting from remediation activities. Ensure that ecological monitoring is included in sitewide environmental surveillance activities (this is required by DOE order but is not widely implemented). Solid long-term ecological monitoring programs will be essential for determining the ultimate ecological effectiveness of on-site remediation activities.

5. NRDA requirements and implications need to be considered in conducting the preliminary evaluations of potential remediation alternatives and included in feasibility studies.

6. Some basic research is required to develop standard assessment techniques for the cost-effective evaluation of natural resources injury. Additionally, appropriate techniques for relating contaminant releases to natural resource injury and for relating natural resource injury to economic value must be selected or developed. At present, there appears to be a significant gap between the ecological and economic assessment methodologies, and an appropriate method for coupling the two areas is required.

### 3.2.3 Conclusions

DOE serves as both the primary federal natural resources trustee at DOE facilities and as the lead response agency for conducting CERCLA environmental restoration/remediation activities at DOE facilities. Many of the assessment activities required by the NRDA rule are also required by the CERCLA/RCRA remediation process.

The key element for an effective (and proactive) DOE response to the NRDA requirements is to conduct a well-planned, thorough, and credible ecological assessment during the RI/FS or RFI/corrective measures study process. A technically excellent ecological characterization and assessment, conducted as part of the RI/RFI, will almost certainly exceed the requirements of an NRDA preassessment screening. Because remediation of large DOE

sites may require decades, equally thorough ecological monitoring programs will be necessary to determine and track the effectiveness of remediation measures.

### 3.3 NRDA/ECONOMIC EVALUATION WORK GROUP

*Chairperson:* J. J. Bascietto (DOE-HQ, EH-231)

*Members:* R. A. Cantor (ORNL, ED), C. G. Heckman (ORNL, HASRD), P. Y. Lu (ORNL, HASRD), David Rosenberger (DOI, Office of Environmental Affairs), J. W. VanDyke (ORNL, ED)

#### 3.3.1 Background

The NRDA/economic evaluation work group focused on a discussion of the overall framework for valuing resources and resource services presented in the DOI rule for CERCLA NRDA's (43 *CFR* 11). It was felt that a thorough examination of the economic valuation framework was necessary because, although the existing framework is workable, there will be many implementation problems.

#### 3.3.2 Recommendations/Comments

1. Prior to implementation of any damage assessment methodology, there needs to be a much better understanding of the scope of resource services that might be valued. For example, scoping at the ORR may have to include consideration of such questions as

- What is the research value of contaminated and uncontaminated sites?
- What is the educational value of the site?
- Is there a tax revenue loss for the federal or state governments from contamination? Valuing this type of loss is not explicitly addressed in the rule. Some members thought that any tax revenue loss would be to "the government" as a whole, and not to the specific trustee agencies such as DOE or the state of Tennessee Department of Natural Resources. The lost fees and rents of trustee agencies are already calculated into the loss of services.

2. If lost tax revenues are included in the scope of the damages, then perhaps *all* private economic activities have to be assessed. Having to implement an assessment that includes private-activity valuation would present a major implementation problem because the need for such private valuations would greatly expand the labor and resource requirements of the assessment.

3. The social and the individual perspectives on the assessment need to be reexamined. The individual perspective is exemplified by considering workmen's compensation insurance, where an individual's injuries are valued in an established system which decreases the time frame for recovery and reduces the high legal costs associated with tort claims. For example, a broken arm resulting in a 10% disability is worth  $n$  dollars. It appears that the NRDA rule currently values loss from the social perspective, with society being represented by the trustees.

4. All individually based valuation methodologies (e.g., "contingent valuation" and "appraisal") cannot help but imbed components *other than* simple use values. Some of these imbedded values are specifically prohibited by the current NRDA rule (e.g., punitive damages). For example:

- Punitive component: There may be a punitive component to the contingent valuation method. When the valuation methodology elicits information from persons who know that resources have been injured, how the injury occurred, and who is responsible for the injury, the contingent answers may reflect a desire on the part of the sampled population to punish the responsible parties.
- Information value: Where there are uninformed consumers, they may be willing to pay more or less for a resource (or for access), depending on how much value information is available to them at the time the value is estimated.
- Competition: When there are no competitive markets, the valuations may be arbitrary or otherwise unreliable.

5. The NRDA is a snapshot view, and therefore, may not be useful to measure the overall or true loss through time.

6. The use of an adjustment to the present worth, known as the "discount rate," is frequently used to account for a loss over time, but there is never a right answer to what the discount rate should be—only suggested positions. Some members of the group think the 10% discount rate in the current rule is too high.

7. Economists need appropriate "linkage models" to the ecological effects endpoints to assign monetary value to resource injury. This is of critical significance to implementing a successful NRDA. However, the consensus of both the NRDA/economic evaluation working group and the ecological assessments working group was that such models do not yet exist and need to be developed.

### 3.3.3 Conclusions

The scope of the issues discussed by this working group precluded the development of a suggested procedural framework for conducting the economic valuation portions of an NRDA at the ORR. Further consideration of the workability of the NRDA regulations as presented in the current NRDA framework may be warranted.

*Chapter 4*

***DOE-OR ER/WM INTERIM POLICY GUIDANCE***

---

In a document dated February 15, 1991, the DOE-OR ER/WM set forth its Interim Policy Guidance regarding the notification of natural resource trustees (See Appendix C for text of complete document).

The Interim Policy Guidance states that it is the policy of DOE-OR to notify other natural resource trustees of discharges of oil and releases of hazardous substances, pollutants, or contaminants that are injuring or may injure natural resources under the trustees' jurisdiction, as required by CERCLA Sect. 104(b)(2). DOE-OR will make information available to trustees of potentially affected natural resources so that those trustees can perform their responsibilities as required under CERCLA and as deemed necessary by those trustees. This information will be shared with the trustees as it becomes available. Such information may include the identity of the released substances, the amount released, the location of the release, and the extent of contamination; the status of action taken to investigate and remediate the release; an indication of the nature and extent of injury; and plans for restoring, replacing, or acquiring the equivalent of the injured natural resources.

DOE-OR will coordinate with other trustees (1) assessments and investigations of natural resource injury and damage and (2) plans for restoring, replacing, or acquiring the equivalent of injured natural resources as required.

*Appendix A*

*Scheduled Work Group Participants During March 1991 NRDA Workshop*

## Scheduled Work Group Participants During March 1991 NRDA Workshop

### Administrative/Legal Requirements Group

Beth Hyder, Chairperson, DOE, Office of Secretary  
Terry Cothron, Energy Systems  
Linda Houlberg,\* ORNL/HASRD  
Suzi Riddle, DOE-OR  
Fran Sharples, ORNL/ESD  
Jim Thompson,\* University of Tennessee College of Law  
Nancy Carnes, DOE-OR  
Dean Monroe, DOE, Office of General Counsel  
Larry Sparks,\* DOE-OR

### Ecological Assessment Group

Bruce Kimmel, Chairperson, ORNL/ESD  
Marshall Adams, ORNL/ESD  
Larry Barnhouse, ORNL/ESD  
Steve Bartell, ORNL/ESD  
Gordon Blaylock,\* ORNL/ESD  
Don DeAngelis, ORNL,ESD  
Clayton Gist, DOE-OR, ERD  
Mark Greeley, ORNL/ESD  
Owen Hoffman, ORNL/ESD  
Michael Huston, ORNL/ESD  
Jim Loar,\* ORNL,ESD  
Rich McLean, ORNL/ED  
Robert Ross, ORNL/HASRD  
Lee Shugart, ORNL/ESD  
Glenn Suter, ORNL/ESD  
Sylvia Talmage, ORNL/HASRD

### NRDA/Economic Evaluation Group

John Bascietto, Chairperson, DOE Headquarters, Office of Environmental Guidance  
Robin Cantor, ORNL/ED  
Liz Etnier, ORNL/HASRD  
Cindy Heckman, ORNL/HASRD  
Po-Yung Lu, ORNL/HASRD  
David Rosenberger, DOI, Office of Environmental Affairs  
Milton Russell,\* University of Tennessee, Environment and Resources Center  
David Swindle, Energy Systems/ER Division  
Jim VanDyke, ORNL/ED

\*Unable to attend

*Appendix B*

*Key Issues for the Work Groups*

---

## Key Issues for the Work Groups

### Administrative/Legal Requirements Working Group

*Goal 1: Develop recommendations on when DOE should notify other natural resource trustees.*

- Is there a *de minimus* release (e.g., less than a reportable quantity) for which the potential for injury is so slight that no notification is warranted?
- According to CERCLA Sect. 107(j), damages resulting from federally permitted releases are recoverable under existing laws in lieu of CERCLA. Should DOE notify natural resource trustees of potential injuries resulting from federally permitted releases?
- Under some permits, DOE must report permit excursions and the results of biological monitoring and assessments (e.g., BMAP requirements) to the state. Releases above permitted levels are not federally permitted, and some releases through permitted outfalls may not be deemed to be federally permitted. Should DOE seek to coordinate notifications of permit noncompliances and BMAP results with notification to the state of potential natural resource injury?
- How should DOE notify cotrustees of continuous releases and any potential injuries associated with such releases?
- CERCLA Sect. 107(f)(1) states that there is no liability for natural resource damages where such damages and the release of a hazardous substance from which such damages resulted have occurred wholly before the enactment of CERCLA (Dec. 11, 1980). As a matter of policy, should DOE notify trustees of releases that may have occurred wholly before this date?
- Under CERCLA Sect. 133(g)(1), damage claims at non-National Priorities List (NPL) sites must be filed within 3 years after (1) the date of discovery of the loss and its connection with the release in question or (2) the date on which the NRDA regulations are promulgated, whichever is later. Should DOE investigate all releases for a "loss" to define the beginning of this statute of limitations?

*Goal 2: Develop recommendations on how DOE should coordinate NRDA issues with cotrustees.*

- Who is the primary trustee when injuries occur within the facility and beyond the facility boundary? What mechanism could DOE use to negotiate roles, responsibilities, and authorities among cotrustees?
- Could the primary trustee decide (1) which natural resources should be investigated, (2) how injuries should be measured, (3) which cost estimating and valuation methodologies should be employed to assess damage, and (4) which restoration alternatives should be implemented? What dispute resolution mechanisms could be established among cotrustees?

- How should information on releases, potential injuries, RI plans, and restoration plans be transmitted to cotrustees? Should DOE establish a formal mechanism to allow cotrustees to comment on RI/FS plans and actions?
- Should an administrative record be established solely for NRDA-related documents? Which trustee should be responsible for placing information in the administrative record?
- If a damage claim is awarded to a cotrustee, what position should DOE take on allowing that trustee to perform restoration work within the facility boundary?

*Goal 3: Develop recommendations on what actions DOE could take to avoid citizen suits and damage claims.*

- Citizens can sue trustees for their failure to execute their natural resource trustee responsibilities. What actions could DOE take and encourage its cotrustees to take to minimize the potential for such suits?
- What mechanism could DOE employ to get the state and/or DOI to enter into a covenant not to sue? What actions must DOE take in order for the cotrustees to want to enter such a covenant (what's in it for them)?
- How could DOE retain the rebuttable presumption if the Department is sued for natural resource damages?

*Goal 4: Identify current plans or agreements that may need to be modified to reflect natural resource damage issues.*

- Do NRDA issues need to be addressed in a federal facility agreement? Could damage assessments impact negotiated schedules or responsibilities?
- What about the community relations plan, RI work plans, etc.?

#### *NRDA Issues*

- What may be required beyond that already planned for the RI?
- Can damages be assessed when no measurable injury has occurred but loss in use or nonuse damages may have occurred because of the public's perception of injury?
- Could damages be based solely on restoration costs where no loss of use has occurred because there is no public access allowed on site?

#### **Ecological Assessment Work Group**

##### *Objective*

The NCP-required implementation of the NRDA rule will necessitate major advances in the general area of ecological assessment nationwide. The primary objective of the ecological assessment working group of the NRDA Workshop was to identify the most

effective approach for meeting this challenge, ensuring these advances, and seizing this opportunity.

### *Key Issues*

- Ecologically speaking, what constitutes injury to a natural resource (e.g., to water quality or to a fishery)?
- Do estimates of human-health risk provide an adequate assessment of risk of injury to other organisms or to natural resources?
- The NRDA rule and the DOE NRDA guidance document assume that natural resource damage/injury can be measured. Again, ecologically, can we directly measure injury to a natural resource, and if so, how?
- Can organism-specific measurements (e.g., contaminant body burdens, bioindicators, biomarkers, reproductive success, etc.) be translated into estimates of injury that are relevant to the resource?
- Can the complementary areas of ecological risk assessment, biomarker-bioindicator measurements, reproductive physiology/reproductive potential assessment, and population modeling be linked for application to ecological/ecological risk/NRDA assessment purposes?
- What needs to be done to meet the requirements of an NRDA preassessment within the framework of an RI (e.g., for the Clinch River–Watts Bar River in Oak Ridge)?

### **NRDA/Economic Evaluation Work Group**

- Definitions
  - Restoration/rehabilitation
  - Replacement/acquisition of equivalent
  - Baseline
  - Services
- Assessment Plan
  - Systematic plan
  - Selection of methodology based on reasonable cost (versus cost effectiveness)
  - Public involvement
- Damage Determination
  - The residual of actual or anticipated response actions
  - Measure of damages: restoration costs plus compensable values
- Restoration Costs (direct and indirect)

- **Compensable Values (use plus nonuse)**
  - Lost public use: recreation and other public uses, lost fees and other payments, “economic rent,” option and existence values
  - Trustee enterprise lost net income
  
- **Restoration Methodology Plan**
  - Purpose: select reasonable cost alternatives and serve as basis for postaward restoration plan
  - Contents: management actions, resource acquisitions, identified alternatives (options range from no action to natural recovery to enhanced recovery)
  - Considerations: other resource laws, current available techniques, impacts, or restoration actions
  
- **Valuation Methodologies**
  - Marketed (price or appraisal)
  - Nonmarketed (factor income, travel cost, hedonic pricing, contingent valuation, unit values, and willingness to pay)
  
- **Damage Determination—Implementing Guidance**
  - Committed uses
  - Double counting
  - Uncertainty
  - Discounting
  - Substitutability
  - Loss of use (restoration methodology)
  - Natural recovery (use values)
  
- **“Life-Cycle Costing”**
  - Integration of damage determination with selection of CERCLA remedy
  - FS analysis

*Appendix C*

*Natural Resource Trustees (as of September 1991)*

---

## Natural Resource Trustees (as of September 1991)

### Oak Ridge Reservation

**Federal:**

James H. Lee, Regional Environmental Officer  
U.S. Department of Interior  
Office of Environmental Affairs  
Richard B. Russell Federal Building  
75 Spring Street SW  
Atlanta, GA 30303

**State:**

J. W. Luna, Commissioner  
Department of Environment and Conservation  
Room 100, Customs House  
701 Broadway  
Nashville, TN 37219

### Portsmouth Gaseous Diffusion Plant

**Federal:**

Sheila M. Huff  
Department of Interior  
John Kluczynski Building, Room 3422  
230 South Dearborn Street  
Chicago, IL 60604

**State:**

Donald R. Schregardus, Director  
Ohio Environmental Protection Agency  
P.O. Box 1049  
1800 Watermark Drive  
Columbus, OH 43266

### Paducah Gaseous Diffusion Plant

**Federal:**

James H. Lee, Regional Environmental Officer  
U.S. Department of Interior  
Office of Environmental Affairs  
Richard B. Russell Federal Building  
75 Spring Street SW  
Atlanta, GA 30303

**State:**

William C. Eddins, Commissioner  
Department of Environmental Protection  
Frankfort Office Park  
18 Reilly Road  
Frankfort, KY 40601

*Appendix D*

*DOE Field Office, Oak Ridge,  
Office of the Assistant Manager  
for Environmental Restoration and Waste Management*

*Interim Policy Guidance*

---

2/15/91

**DOE FIELD OFFICE, OAK RIDGE,  
OFFICE OF THE ASSISTANT MANAGER  
FOR ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT**

**INTERIM POLICY GUIDANCE**

**SUBJECT: NOTIFICATION OF NATURAL RESOURCE TRUSTEES**

1. **PURPOSE.** To establish and implement a DOE Field Office, Oak Ridge (DOE-OR) policy for notifying natural resource trustees of discharges of oil or releases of hazardous substances, pollutants, or contaminants that are injuring or may injure natural resources under their jurisdiction.
  
2. **REFERENCES.**
  - a. DOE 5400.4, COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT REQUIREMENTS, of 10-6-89, which establishes the policies for implementing the Comprehensive Environmental Response, Compensation, and Liability Act, the National Oil and Hazardous Substances Pollution Contingency Plan, and Executive Order 12580.
  - b. DOE 5000.3A, OCCURRENCE REPORTING AND PROCESSING OF OPERATIONS INFORMATION, of 5-30-90, which establishes a system for reporting operations information related to DOE-owned or operated facilities.
  - c. DOE 5400.1, GENERAL ENVIRONMENTAL PROTECTION PROGRAM REQUIREMENTS, of 11-9-88, which establishes the environmental protection program for DOE operations.
  - d. Title 42 U.S.C. 9601 et seq., The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended, which requires the identification, notification, and cleanup of releases of hazardous substances by responsible parties.
  - e. Title 33 U.S.C. 1251 et seq., The Federal Water Pollution Control Act of 1972 (known as the Clean Water Act), as amended, which provides requirements to control discharges of pollutants into waters of the United States.
  - f. Title 40, *Code of Federal Regulations (CFR)*, Part 300, "National Oil and Hazardous Substances Pollution Contingency Plan," which outlines the organizational structure and establishes procedures for responding to discharges of oil and releases of hazardous substances into the environment.

2/15/91

**DOE FIELD OFFICE, OAK RIDGE,  
OFFICE OF THE ASSISTANT MANAGER  
FOR ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT**

**INTERIM POLICY GUIDANCE**

- g. Title 43, *CFR*, Part 11, "Natural Resource Damage Assessments," which promulgated procedures for conducting natural resource damage assessments to assess injury and damages to natural resources resulting from releases of hazardous substances into the environment.
- h. Executive Order 12580, "Superfund Implementation," of 1-29-87.
- i. DOE Office of Environmental Guidance, RCRA/CERCLA Division (EH-23), "Natural Resource Trusteeship and Ecological Evaluation for Environmental Restoration at Department of Energy Facilities, Draft Guidance Document," July 1990.

3. DEFINITIONS

- a. Discharge. As defined by Clean Water Act Sect. 311(a)(2), the term discharge includes, but is not limited to, any spilling, leaking, pumping, pouring, emitting, emptying, or dumping of oil into waters of the United States. Discharge also means threat of discharge.
- b. DOE Facility Representative. An individual or his or her designee assigned responsibility by the Head of the Field Organization (Manager, DOE-OR) for monitoring the performance of the facility and its operations. For purposes of this policy this is the designated Contracting Officer's Representative.
- c. Environment. The navigable waters, the waters of the contiguous zone, and the ocean waters of which the natural resources are under the exclusive management authority of the United States; and any other surface water, groundwater, drinking water supply, land surface or subsurface strata, or ambient air within the United States or under the jurisdiction of the United States.
- d. Facility Manager. That individual, or his or her designee, who has direct line responsibility for operation of a facility or group of related facilities. For the purposes of this policy, the Facility Manager is as designated in DOE Order 5000.3A.
- e. Hazardous Substance. Any substance designated pursuant to Clean Water Act, Sect. 311(b)(2)(A), or any element, compound, mixture, solution, or substance designated pursuant to CERCLA Sect. 102. Hazardous substances under the Clean Water Act are listed in 40 *CFR* 116, and hazardous substances under CERCLA are listed in 40 *CFR* 302.

2/15/91

**DOE FIELD OFFICE, OAK RIDGE,  
OFFICE OF THE ASSISTANT MANAGER  
FOR ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT**

**INTERIM POLICY GUIDANCE**

- f. Natural Resources. Land, fish, wildlife, biota, air, water, groundwater, drinking water supplies, and other such resources belonging to, managed by, held in trust by, appertaining to, or otherwise controlled by the United States, any state or local government, any foreign government, or any Indian tribe.
  - g. Oil. Oil of any kind and in any form, including, but not limited to, petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged spoil.
  - h. Pollutant or Contaminant. These terms include, but are not limited to, any element, substance, compound, or mixture, including a disease-causing agent, which after release into the environment and upon exposure, ingestion, inhalation, or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, will or may reasonably be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions, or physical deformation in such organisms or their offspring.
  - i. Program Manager. The DOE Headquarters individual, or his or her designee, designated by and under the direction of a Program Senior Official, who is directly involved in the operation of facilities under his or her cognizance.
  - j. Program Senior Official (PSO). Heads of DOE offices which have responsibility for specific facilities. These include the Assistant Secretaries for Conservation and Renewable Energy, Nuclear Energy, Defense Programs, and Fossil Energy and the Directors of Energy Research and Environmental Restoration and Waste Management.
  - k. Release. Any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment (including the abandonment or discarding of barrels, containers, and other closed receptacles containing any hazardous substance or pollutant or contaminant).
  - l. Trustee. An official of a federal natural resources management agency designated under 40 *CFR* 300, Subpart G, or a designated state official or Indian tribe who may pursue claims for damages under CERCLA Sect. 107(f).
4. POLICY
- a. It is the policy of DOE-OR to notify other natural resource trustees of discharges of oil and releases of hazardous substances, pollutants, or contaminants that are

2/15/91

**DOE FIELD OFFICE, OAK RIDGE,  
OFFICE OF THE ASSISTANT MANAGER  
FOR ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT**

**INTERIM POLICY GUIDANCE**

injuring or may injure natural resources under the trustees' jurisdiction, as required by CERCLA Sect. 104(b)(2).

- b. DOE-OR will make information available to trustees of potentially affected natural resources so that those trustees can perform their responsibilities as required under CERCLA and as deemed necessary by those trustees. This information will be shared with the trustees as it becomes available. Such information may include the identity of the released substances, the amount released, the location of the release, and the extent of contamination; the status of action taken to investigate and remediate the release; an indication of the nature and extent of injury; and plans for restoring, replacing, or acquiring the equivalent of the injured natural resources.
- c. DOE-OR will coordinate with other trustees (1) assessments and investigations of natural resource injury and damage and (2) plans for restoring, replacing, or acquiring the equivalent of injured natural resources, as required.

5. LEGAL REQUIREMENTS

CERCLA Sect. 104(b)(2) requires the President to promptly notify federal and state natural resource trustees of potential injury to natural resources resulting from releases of hazardous substances, pollutants, or contaminants into the environment. Under Executive Order 12580, the President has delegated this responsibility to Executive Branch agencies when they are the lead agency in a CERCLA response action. DOE is the lead agency for releases on, under, or over the land controlled by DOE.

As stated in the National Oil and Hazardous Substances Pollution Contingency Plan, the on-scene coordinator/remedial project manager must notify natural resource trustees of discharges or releases that are injuring or may injure their trust resources. The Environmental Restoration Program manager (ERPM) in the DOE system is the equivalent of the CERCLA Remedial Project manager. For the DOE-OR ER Program the ERPM is the Director of the ER Division, DOE-OR.

Under Executive Order 12580, the Secretary of Energy has been designated as the primary federal natural resource trustee for land controlled by DOE. Accordingly, DOE has the dual role of both lead agency and trustee. CERCLA Sect. 104(b)(2) states that the lead agency shall seek to coordinate all response activities with the natural resource trustees. "Coordination" with other trustees may be taken to generally include notification and the sharing of information about the nature of the discharge or release, the status of actions planned or taken to investigate and remediate the release, and plans for restoring, replacing, or acquiring the equivalent of the injured natural resources.

2/15/91

**DOE FIELD OFFICE, OAK RIDGE,  
OFFICE OF THE ASSISTANT MANAGER  
FOR ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT**

**INTERIM POLICY GUIDANCE**

**6. RESPONSIBILITIES AND AUTHORITIES**

**a. Past Releases**

1. The DOE-OR ER Division shall identify releases of hazardous substances, pollutants, and contaminants from solid waste management units being remediated under the ER Program.
2. The DOE-OR ER Division shall notify natural resource trustees, the manager of the DOE-OR Office, and DOE Assistant Secretary for Environment, Safety, and Health (EH-1). An example notification is appended.

**b. Future Releases**

1. Notification of trustees for potential injuries resulting from (a) releases from newly identified environmental restoration units, (b) newly discovered releases from previously identified environmental restoration units, and (c) future releases occurring because of facility operation shall be accomplished through the notification procedures found in DOE Order 5000.3A.
  - (a). Facility staff and operators shall promptly notify the Facility Manager of any discharges of oil or releases of hazardous substances, pollutants, or contaminants into the environment (as in DOE Order 5000.3A).
  - (b). The Facility Manager shall advise the DOE-OR ER Division and the Environmental Protection Division (EPD) of the release.
  - (c). The EPD, and/or the ER Division in consultation with EPD, shall evaluate the potential of the release to injure natural resources and shall identify which trustees must be notified based on this evaluation.
  - (d). The DOE Facility Representative shall notify the natural resource trustees, the manager of the DOE-OR Office, and the Assistant Secretary for Environment, Safety, and Health (EH-1). An example notification is appended.

2/15/91

**DOE FIELD OFFICE, OAK RIDGE,  
OFFICE OF THE ASSISTANT MANAGER  
FOR ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT**

**INTERIM POLICY GUIDANCE**

**EXAMPLE NOTIFICATION: PAST RELEASES**

**CERTIFIED MAIL**

**RETURN RECEIPT REQUESTED**

James H. Lee, Regional Environmental Officer  
U.S. Department of the Interior  
Office of Environmental Affairs  
Richard B. Russell Federal Building  
75 Spring Street SW  
Atlanta, GA 30303

RE: Natural Resource Trustee Notification

Dear Mr. Lee:

Pursuant to Sect. 104(b)(2) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the U.S. Department of Energy (DOE) hereby notifies the U.S. Department of the Interior (DOI) of the potential for injury to natural resources under DOI's jurisdiction resulting from releases of hazardous substances from environmental restoration sites at the DOE Oak Ridge Reservation. Releases from these sites are currently being investigated and remediated under CERCLA and the Resource Conservation and Recovery Act.

Under Executive Order 12580, the Secretary of Energy has been designated as the lead agency and the primary federal natural resource trustee for land controlled by DOE. CERCLA Sect. 104(b)(2) requires that the lead agency seek to coordinate all response activities with the natural resource trustees.

It is DOE's intention to assist in the coordination of meetings and communication between DOE, DOI, and Tennessee natural resource trustees to decide on how trustee responsibilities will be implemented at the Oak Ridge Reservation. It is further DOE's intention to share information about the nature of the releases, the status of actions planned or taken to investigate and remediate the releases and potential natural resources injury, and plans for restoring, replacing, or acquiring the equivalent of the damaged natural resources. You may contact \_\_\_\_\_ of my staff to discuss this matter.

Thank you for your support and cooperation.

2/15/91

DOE FIELD OFFICE, OAK RIDGE,  
OFFICE OF THE ASSISTANT MANAGER  
FOR ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT

INTERIM POLICY GUIDANCE

EXAMPLE NOTIFICATION: FUTURE RELEASES

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

James H. Lee, Regional Environmental Officer  
U.S. Department of the Interior  
Office of Environmental Affairs  
Richard B. Russell Federal Building  
75 Spring Street SW  
Atlanta, GA 30303

RE: Natural Resource Trustee Notification

Dear Mr. Lee:

Pursuant to Sect. 104(b)(2) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the U.S. Department of Energy (DOE) hereby notifies the U.S. Department of the Interior (DOI) of the potential for injury to natural resources under DOI's jurisdiction resulting from a release of [substance] on [date] from [location] at the DOE Oak Ridge Reservation. This release is currently being investigated. The enclosures provide details on the nature of the releases and the extent of contamination.

Under Executive Order 12580, the Secretary of Energy has been designated as the lead agency and the primary federal natural resource trustee for land controlled by DOE. CERCLA Sect. 104(b)(2) requires that the lead agency seek to coordinate all response activities with the natural resource trustees.

It is DOE's intention to assist in the coordination of meetings and communication between DOE, DOI, and Tennessee natural resource trustees to decide on how trustee responsibilities will be implemented for this release. It is further DOE's intention to share information about the nature of this release, the status of actions planned to investigate and remediate this release and potential natural resources injury, and plans for restoring, replacing, or acquiring the equivalent of the damaged natural resources. You may contact \_\_\_\_\_ of my staff to discuss this matter.

Thank you for your support and cooperation.

## DISTRIBUTION

1. S. M. Adams
2. L. W. Barnhouse
3. S. M. Bartell
4. L. D. Bates
5. B. G. Blaylock
6. R. A. Cantor
7. L. B. Cobb
8. T. K. Cothron
9. D. I. DeAngelis
10. N. W. Durfee
11. E. L. Etnier
12. C. D. Goins
13. M. S. Greeley
14. P. J. Halsey
15. C. G. Heckman
16. F. O. Hoffman
17. L. M. Houlberg
18. M. A. Huston
19. B. L. Kimmel
20. J. M. Loar
21. P. Y. Lu
22. J. A. Martin
23. R. B. McLean
- 24-25. P. T. Owen
26. R. H. Ross
27. G. E. Pymer
28. F. E. Sharples
29. L. R. Shugart
30. G. W. Suter
31. D. W. Swindle
32. S. S. Talmadge
33. J. W. VanDyke
34. D. R. Watkins
35. D. C. White
36. R. K. White
37. L. F. Willis
38. Central Research Library
- 39-42. ER Document Management Center
43. ORNL Laboratory Records
44. Office of Assistant Manager for Energy Research and Development, Department of Energy Field Office, Oak Ridge, P.O. Box 2001, Oak Ridge, Tennessee 37831-8600
45. P. H. Edmonds, Radian Corporation, 120 South Jefferson Circle, Oak Ridge, TN 37830
- 45-48. W. E. Murphie, Department of Energy, Office of Environmental Restoration, Eastern Area D&D Branch, EM-423 (GTN), Washington, DC 20545
- 49-53. J. J. Bascietto, Department of Energy, Office of Environmental Guidance, EH-231, GA-076, Forrestal Building, 1000 Independence Avenue, Washington, DC 20585
54. M. B. Hyder, Department of Energy, Office of Secretary, S-1, 1000 Independence Avenue, Washington, DC 20585

55. R. J. Aiker, Department of Energy, Office of the Director, Five-Year Plan, EM-2.1, 1000 Independence Avenue, Washington, DC 20585
56. W. Dennison, Department of Energy, Office of General Counsel, GC-11, 1000 Independence Avenue, Washington, DC 20585
57. J. J. Fiore, Department of Energy, Office of Environmental Restoration, EM-42, Washington, DC 20585
58. R. G. Lightner, Department of Energy, Office of Environmental Restoration, EM-45, Washington, DC 20585
59. S. A. Mann, Department of Energy, Office of Environmental Restoration, EM-44, Washington, DC 20585
60. S. Miller, Department of Energy, Office of General Counsel, GC-11, Washington, DC 20585
61. R. F. Pelletier, Department of Energy, Office of Environmental Guidance, EH-23, Washington, DC 20585
62. K. I. Taime, Department of Energy, Office of Environmental Compliance, EH-22, Washington, DC 20585
63. T. T. Traceski, Department of Energy, Office of Environmental Guidance, EH-231, Washington, DC 20585
64. R. P. Whitfield, Department of Energy, Office of Environmental Restoration, EM-40, Washington, DC 20585
65. W. E. Wisenbaker, Department of Energy, Office of Environmental Restoration, EM-43, Washington, DC 20585
- 66-67. S. S. Perkins, DOE Field Office, Oak Ridge, Information Resource Center, 105 Broadway, Oak Ridge, TN 37830
68. A. B. Perkins, DOE Field Office, Oak Ridge, P.O. Box 2001, Oak Ridge, TN 37830
- 69-70. R. C. Sleeman, DOE Field Office, Oak Ridge, P.O. Box 2001, Oak Ridge, TN 37831-8541
71. C. S. Gist, DOE Field Office, Oak Ridge, P.O. Box 2001, Oak Ridge, TN 37830
72. S. P. Riddle, DOE Field Office, Oak Ridge, P.O. Box 2001, Oak Ridge, TN 37830
73. N. L. Carnes, DOE Field Office, Oak Ridge, P.O. Box 2001, Oak Ridge, TN 37830
74. Dean Monroe, Department of Energy, Office of General Counsel, 1000 Independence Avenue, Washington, DC 20585
75. J. H. Lee, Department of the Interior, Office of Environmental Affairs, 75 Spring Street S.W., Atlanta, GA 30303
76. David Rosenberger, Department of the Interior, Office of Environmental Affairs, 1849 C Street, Washington, DC 20240
77. Cecil Hoffman, Department of the Interior, Office of Environmental Affairs, 1849 C Street, Washington, DC 20240
78. G. R. Cecil, Department of Commerce, National Oceanic and Atmospheric Administration, Office of General Counsel, Special Counsel for Natural Resources, Washington, DC 20230
79. Earl C. Leming, Tennessee Department of Environment and Conservation, DOE Oversight Division, 761 Emory Valley Road, Oak Ridge, TN 37830-7072
80. J. W. Luna, Tennessee Department of Environment and Conservation, 701 Broadway, Nashville, TN 37219
81. David Turner, Tennessee Department of Environment and Conservation, Division of Water Pollution Control, Mining Section, 2700 Middlebrook Pike, Ste. 220, Knoxville, TN 37921
82. Wendy Graham, PTI Environmental Services, 15375 SE 30th Place, Suite 250, Bellevue, WA 98007
83. David McKinney, Tennessee Wildlife Resources Agency, P.O. Box 40747, Nashville, TN 37204
- 84-85. Office of Scientific and Technical Information, P.O. Box 62, Oak Ridge, TN 37831

**MARTIN MARIETTA ENERGY SYSTEMS, INC.**POST OFFICE BOX 2003  
OAK RIDGE, TENNESSEE 37831  
December 13, 1991

Distribution

**Workshop Summary on Implementation of the National Resource Damage Assessment Role on the Oak Ridge Reservation**

A workshop entitled "Implementation of the Natural Resource Damage Assessment Rule" was held in Oak Ridge, Tennessee, on March 13-14, 1991, under joint sponsorship of the DOE Oak Ridge Field Office (DOE-OR) and the Martin Marietta Energy Systems, Inc., Environmental Restoration Division. The purpose of this workshop was to develop recommendations for DOE-OR regarding implementation of the Department of Interior (DOI) Natural Resource Damage Assessment (NRDA) regulations on the Oak Ridge Reservation. The attendants were divided into three working groups to consider (1) administrative/legal requirements, (2) ecological assessments, and (3) the NRDA/economic evaluation process.

Enclosed is the report *Implementation of the Natural Resource Damage Assessment Rule: Workshop Summary and Interim Notification Policy*, which supplies an overview of the DOE NRDA regulations, summaries of the consensus of each of the three working groups, and a DOE-OR interim policy guidance for notification of natural resource trustees.

Should there be any questions, please contact E. L. Etnier at FTS 624-7772 or commercial 615-574-7772.

Sincerely,



D. W. Swindle, Director  
Technical Integration  
Environmental Restoration Division

DWS:eab

Enclosure: ES/ER/TM-24

**END**

---

**DATE  
FILMED**

**2 12 1 192**

**I**

