

United States Army Interim Natural Resource Injury Guidance

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Acronyms

AR	Army Regulation
ARAR	Applicable or Relevant and Appropriate Requirements
ATSWMO	Association of State and Territorial Solid Waste Managers Organization
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BRAC	Base Realignment and Closure
BTAG	Biological Technical Assistance Group
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CoC	Constituent of Concern
CWA	Clean Water Act
DASA	Deputy Assistant Secretary of the Army
DERP	Defense Environmental Restoration Program
DOC	U.S. Department of Commerce
DOD	U.S. Department of Defense
DOE	U.S. Department of Energy
DOI	U.S. Department of the Interior
DOJ	U.S. Department of Justice
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ER,A	Environmental Restoration, Army
ESOH	Environment, Safety, and Occupational Health
FDCA	Food, Drug, and Cosmetic Act
FUDS	Formerly Used Defense Site
GIS	Geographic Information System
INRMP	Integrated Natural Resource Management Plan
MCL	Maximum Contaminant Level

MMS	Mineral Management Service
NCP	National Contingency Plan
NEBA	Net Environmental Benefit Analysis
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
NRD	Natural Resource Damages
NRDA	Natural Resource Damage Assessment
NRI	Natural Resource Injury
RCRA	Resource Conservation and Recovery Act
SDWA	Safe Drinking Water Act
TSCA	Toxic Substance Control Act
U.S.C.	United States Code
USAEC	U.S. Army Environmental Center
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

SECTION 1.0

Introduction

1.1 Purpose

In 2002, the Army Interim Natural Resource Injury (NRI) Policy was published (Army NRI Policy, 11 July 02). The Army NRI Policy was drafted to supplement the Department of Defense Interim Policy on Integration of Natural Resource Injury Responsibilities and Environmental Restoration Activities (U.S. Department of Defense [DOD] Policy, 2 May 00).

The goal of this guide is to assist Army project managers in integrating NRI considerations into their CERCLA Lead Agent remediation responsibilities and fulfill the requirements of the Army NRI Policy. Under this policy, Lead Agents are encouraged to work with both Trustees and Army natural resource professionals to develop data relating to the natural resources affected by a CERCLA release and to develop informed remedies when addressing those releases. The Army's NRI policy and guidance are entirely focused on the process of making smarter, better cleanup decisions.

1.2 Summary of Army NRI Policy

The Army's NRI policy and this guidance are based on the requirements imposed under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). There are two primary goals contained within the Army's NRI policy. The first is that the Army Lead Agent should be knowledgeable enough about NRI (known or potential) at the site to be able to notify the appropriate natural resource trustees if there is the potential for NRI from the release of a CERCLA hazardous substance and then coordinate their investigations and remedial plans with the natural resource trustees for sites with known or potential NRI. The second goal of the NRI policy is that, during the evaluation of cleanup actions, the Lead Agent should consider NRI information along with all other National Contingency Plan (NCP) selection criteria. If possible, they should try to select a response action that results in the least amount of residual NRI, while also evaluating actions that may be taken during execution of a remedy to reduce or eliminate potential NRI.

The Army NRI Policy requires the following actions:

- Identify potential NRI at Army sites when investigating the release of a CERCLA hazardous substance.
- Notify natural resource trustees of potential injury.
- Coordinate with the appropriate trustees for assessments, investigations, and planning (CERCLA §104[b][2]), and help identify response actions that could, when implemented, reduce or minimize injury to natural resources.

- Use the services of qualified natural resource professionals when performing necessary assessments, investigations and response action planning activities.
- Whenever practicable, appropriate and consistent with the NCP, ensure response actions are evaluated and selected that limit the potential for NRI.

This guidance document provides instructions to assist the Army CERCLA Lead Agent in determining NRI and in implementing the Army NRI Policy at appropriate sites requiring a response action.

1.3 Applicability

This guidance applies to actions taken to address releases of CERCLA hazardous substances pursuant to CERCLA and/or Resource Conservation and Recovery Act (RCRA) Corrective Action under the Defense Environmental Restoration Program (DERP), to include the Active Army Restoration Program and the Army Base Realignment and Closure (BRAC) Cleanup Program. This guidance does not apply to Army Civil Works facilities, Formerly Used Defense Site properties or overseas cleanup projects.

While the Army NRI policy addresses all Active and BRAC installations, due to the individual nature of each site's cleanup, not all installations will need to implement this policy. If the four criteria listed below are applicable to your installation, the Army NRI policy does apply and this guide should assist you in fulfilling your responsibilities.

- There must have been a release of a CERCLA hazardous substance resulting from Army operations at the site.
- The release of a CERCLA hazardous substance must either have injured the natural resources or have the potential to injure the natural resources.
- The CERCLA release at issue must pose an unacceptable risk that requires remediation to protect human health and/or the environment, as per CERCLA and NCP requirements.
 - Note – If the first and second bullets apply to your installation, but the third bullet does not, only the identification of NRI and trustee notification sections of this guide apply (Sections 2.1.1 – 2.1.4).
- There must be an ongoing response action at the site that has not reached the implementation of the selected remedial action.
 - Note - If all bullets except the fourth bullet apply at your installation, please refer to Section 2.1.4, "Notification of Trustees," for further instructions on retroactive trustee notification.

If the above criteria do not match the characteristics of the site in question, the Army NRI Policy and this guidance document do not apply. If the above criteria are consistent with the site characteristics, further clarification and direction are provided in the remainder of this document to assist in implementing the Army NRI Policy.

SECTION 2.0

Integration of NRI Activities into the DERP

The Army NRI policy has two major goals. The first is to ensure that our responsibilities as Lead Agent are carried out in accordance with CERCLA 104(b)(2) which requires Trustee notification and coordination when there is the potential for NRI as the result of a release of a CERCLA hazardous substance. The second goal is to consider NRI information along with all other relevant factors outlined in the NCP when selecting a remedy and, when appropriate, to select a CERCLA response action that will result in the least amount of residual NRI once the response action is complete.

CERCLA requires that the Lead Agent consider both human health and the environment in its cleanup decision-making. The Army's NRI policy and guidance is focused on the environmental half of this equation. This guidance discusses NRI and how it will be handled. It calls upon the decision-maker to investigate the environmental impacts caused by a CERCLA hazardous substance release and to ensure that significant injuries are appropriately addressed. The decision-maker is encouraged to select remedies that, if appropriate and practicable, involve the least harm to the environment, once implemented.

2.1 Lead Agent Responsibilities

2.1.1 Identifying a Release of a Hazardous Substance

The first step in identifying the necessity of implementing the Army NRI Policy is to determine if there has been a release of a CERCLA hazardous substance as a result of onsite Army operations with the potential to injure natural resources. (Note - Not all contaminants qualify as CERCLA hazardous substances. See Section 101(14) of CERCLA for the complete definition.) The Lead Agent needs to know about CERCLA hazardous substance releases because only hazardous substances can cause NRI (see Section 2.1.3 and Appendix A for information on NRI). If there have been no releases of CERCLA hazardous substances, there is no potential for NRI, there is no need to implement the Army NRI Policy and no requirement for the Lead Agent to notify or coordinate studies with the trustees, per CERCLA 104(b)(2). However, if CERCLA hazardous substances have been released, then the potential for NRI does exist and the notification and coordination requirements in CERCLA 104(b)(2) do apply.

2.1.2 Identification of Natural Resources

In order to comply with the second goal of the Army NRI policy, the Lead Agent must consider NRI information along with all other relevant factors outlined in the NCP during remedy selection. This task can only be accomplished if the Lead Agent has a working knowledge of NRI and natural resources.

By definition, all land, biota, wildlife, surface water, groundwater and air are considered to be natural resources. It is important for the Lead Agent to involve Army natural resource

personnel in identifying those resources that have or may be injured by a CERCLA hazardous substance release. Likewise, the input from environmental professionals should be considered throughout the remedial decision-making process. If assistance is required in identifying the site's natural resources, the Lead Agent can speak with either the local natural resource agencies or their own facility staff. In many cases, Lead Agents will also access these same sources during the ecological risk assessment. Other natural resource information that could be used by the Lead Agent may include information possessed by site Natural Resources Staff or found in existing National Environmental Policy Act documentation, Integrated Natural Resource Management Plans, Integrated Training Area Management Programs, or other published sources. Non-Army natural resource agencies and organizations may also have published information on natural resources that could be used for NRI evaluation and natural resource determination.

2.1.3 Identification of NRI

When considering impacts to environmental media from a CERCLA hazardous substance release, the decision-maker seeks a wide scope of information on the possible and actual NRI that may have resulted from that release. Once this investigatory phase is complete, the Lead Agent would then consider whether there are unacceptable risks to an identified natural resource that will require CERCLA remediation. This guidance will first look to the wide scope of environmental issues that may be considered during the NRI investigation process, then discuss how significant NRI are considered as part of remedial decision-making.

NRI is defined as follows:

"...a measurable adverse change, either long- or short-term, in the chemical or physical quality or the viability of a natural resource resulting either directly or indirectly from exposure to a release of a hazardous substance..." (43 CFR Subtitle A, 11.14).

There are three forms of NRI. NRI can result (1) from the direct effects of a release of CERCLA hazardous substances (i.e., pre-response injury), (2) from the effects of the remediation in response to the release (i.e., remediation or response-related injury), and (3) from the effects of residual contamination remaining after remediation is complete (i.e., residual injury).

The identification of direct injury is best done during the investigation phase. In fact, data from the ecological risk assessment will likely assist in this evaluation. If the Lead Agent is aware of the site's natural resources and what potential NRI exists at the site before the start of the alternatives analysis, they are in a good position to incorporate that knowledge into the remedy selection process. The identification and evaluation of remediation NRI is best addressed in the alternatives analysis phase (see Section 2.2 for more information on this topic).

2.1.4 Notification of Trustees

Consistent with Section 104(b)(2) of CERCLA, Lead Agents shall notify the appropriate natural resource trustees when there has been a release of a CERCLA hazardous substance. Ideally, the trustees should only be notified when there has been a release of a CERCLA

hazardous substance that generated potential injury to natural resources. (For further discussion relative to NRI or trustees, please refer to the glossary in Section 4.0 and the text in Appendix A.) However, to remain compliant with existing regulations, notification should occur for all releases of CERCLA hazardous substances that require a remedial investigation and should be accomplished with a formal letter. This activity should occur shortly after the release is identified. A notification letter template is provided in Appendix B. A listing of State Trustee organizations is provided at Appendix C.

If the response action at the site has progressed to the selection of the remedial or removal action, but the trustees have not been officially notified, the trustees should still be notified of a release of a CERCLA hazardous substance resulting from Army operations, as required by law. A “retroactive” notification letter template for trustees is provided in Appendix B.

2.1.5 Coordination with Trustees

As the Lead Agent begins to design work plans and implement field investigations at the site, coordination with the trustees should begin. Consistent with Section 104(b)(2) of CERCLA, when there is a response action occurring at a site in response to a CERCLA hazardous substance release, Lead Agents shall seek to coordinate site assessment, investigation, and with required regulator coordination, remedy selection and implementation with appropriate trustees.” Note: Different regulators and procedures for decision-making will differ at sites, depending on whether they are on the NPL or are non-NPL. While the Army is the decision-maker with regard to assessing sites and choosing and implementing remedies, trustee coordination can assist the Lead Agent to address existing NRI and minimize NRI during remediation, if consistent with the protocols set in place in the NCP. Inviting the trustees to participate can often simplify natural resource concerns. Trustees can provide support in identifying remedial alternatives that reduce NRI. Appendix D contains a coordination letter template for reference.

The Lead Agent should also notify the appropriate Army natural resource professionals to an equal extent as trustees, allowing their integration into remedial decision-making. These Army professionals may also interface with the natural resource trustees when undertaking the necessary assessments, investigations and planning activities.

2.1.6 Considering NRI During the Investigatory Process

If there has been a hazardous substance release that has created or may create NRI, such facts should be investigated, along with issues relating to risk to human health and the environment. CERCLA requires us to examine the risks or potential risks to both human health and environment posed by a hazardous substance release. The NRI evaluation suggested in this guide provides a tool that will allow the Lead Agent to recognize and consider NRI during the risk-evaluation and remedial decision-making process.

There are three steps to considering NRI as part of a response action. First, the Lead Agent would generally assess if a CERCLA release to environmental media has occurred. Next, the Lead Agent would determine if the NRI is “significant” -- whether it poses an unacceptable risk to human health or the environment that requires a CERCLA response action. If so, the Lead Agent would then consider both the unacceptable environmental and human health risks posed by a CERCLA release and ensure that relevant NRI facts have

been considered during the remedy selection process. Natural Resource Trustees and Army natural resource professionals should be asked to provide input into both the investigation phase and remedial decision-making process.

2.1.7 Trustee Coordination and the Lead Agent's Role

This guidance memorializes the Army's commitment to making informed decisions when assessing facts and selecting CERCLA remedies. Accordingly, the Lead Agent shall undertake effective coordination with natural resource trustees, as well as other stakeholders. However, when both the Lead Agent and the Trustees speak, they may use different terms, drawing from different contexts. Trustees may focus upon the NRI that remains after cleanup – comparing these long-term effects with the “baseline” or “original condition” of the resource before the CERCLA release. (This is a standard approach used when assessing NRI to support a claim for natural resource damages). Because of this context, Trustees may wish to have the Lead Agent reduce NRI to its “baseline” state – so there will be no NRIs remaining after remediation.

The Lead Agent has a different approach to cleanup – focusing on the remedial requirements of CERCLA and the NCP. Both CERCLA and the NCP call for risk-based remediation, rather than cleaning a site to its pre-release condition. Also, the NCP's nine criteria require that all remedial alternatives be both protective and practical, given the facts of the cleanup. This means that one may have response actions that result in contamination – and long-term NRI -- remaining on-site after remediation is complete, as long as this action does not pose unacceptable risks for human health or the environment. Such a situation may occur when addressing industrial sites being remediated for continued industrial use or when it is not feasible or cost-effective to clean to unrestricted use.

Decision-makers can avoid conflicts between these two notions of remediation and restoration by undertaking a sincere dialogue with trustees early in the cleanup process. The goal of this communication is to develop better cleanup decisions that balance the need to protect both the environment and human health. If a conflict arises, the Lead Agent should focus upon the remedial requirements of CERCLA and the NCP. This means that a Lead Agent is not required to clean NRI to a pre-release or baseline state, but to address unacceptable risks to both human health and the environment. Likewise, there may be circumstances that require an invasive remedy that will generate NRI. (This may occur when a cleanup must address pressing human health concerns.) This guidance does not limit such options when they are appropriate. However, it is hoped that consistent communication with trustees, along with a robust assessment of both facts and cleanup options, will result in cleanups that are protective, while avoiding unnecessary NRI.

2.1.8 Moving Toward the Development of Remedial Alternatives

When developing remedial alternatives, the Lead Agent will take the information culled from its investigations of both human health and environmental impacts, considering whether these facts involve unacceptable risks. In particular, when assessing NRI, Army Lead Agents shall consider “significant” injuries to the media at risk. Significant injuries involve a consistent environmental harm that poses an unacceptable risk requiring a CERCLA response action. As such, the phrase

significant NRI does not include academic injuries or periodic exceedances that do not result in an unacceptable risk (i.e., no cleanup is required).

During the alternatives analysis, the following NRI evaluations are conducted:

- The identification of which remedies might best redress significant NRI caused by past practices
- An evaluation to determine if implementation of a response will itself cause additional significant NRI

A finding of possible NRI is not an end in itself. As with any CERCLA response action, the identification of actual or potential NRI will be considered in light of CERCLA and NCP requirements. So, this first step would call for a decision-maker to consider the risks that may be posed by the identified NRI and whether those risks are unacceptable under CERCLA and NCP requirements. It is possible to have NRI but no risk-requiring cleanup. In such a case, although data on NRI might have been collected during the investigation phase, if the release at issue does not pose an unacceptable risk and no cleanup is proposed, the Lead Agent would document these conclusions, but no additional response action would be required under CERCLA to address NRI.

2.2 Integrating NRI Considerations into the Remedy Selection Process

The goal of the Army's NRI policy and this guidance is to allow for smarter, better, remedial decisions that address unacceptable risks to the environment, including natural resources, as well as human health concerns. So, the Lead Agent would first consider the data culled during its environmental investigations, along with information provided by natural resource trustees and Army natural resource professionals. At this point, the decision-maker is prepared to develop remedial alternatives. Specifically, the Lead Agent considers which remedial alternatives may address significant natural resource injuries and human health concerns. Then, the decision-maker considers which remedial alternative could result in the least NRI in the long-term, while also addressing risks to human health. Once all facts and impacts are reviewed, the Lead Agent is in a position to select a remedy.

A primary goal of the Army's NRI policy is to ensure that Lead Agents consider NRI information along with all other relevant factors outlined in the NCP when selecting the remedy for the site. The Lead Agent performs this evaluation during the alternatives analysis phase of the remediation, after the nature and extent of contamination has been completed and all risk assessments have been performed. Only sites with unacceptable human health and/or ecological risks will make it to this phase.

In order to successfully incorporate the evaluation of significant NRI into the feasibility study, the Lead Agent first has to be cognizant of the natural resources present at the site. Next, the Lead Agent needs to be familiar with the concept of injury and how injury occurs. This is a qualitative evaluation of NRI, not an in-depth study to determine the extent of the injury. The Lead Agent must evaluate whether the resources under consideration have been injured directly by the release of a CERCLA hazardous substance or whether the implementation of the remedy itself has the capability to significantly injure the natural

resources, so that a response action will be required. The identification of both the site natural resources and the potential for NRI are best conducted during the investigation phase of the project. Data from the ecological risk assessment can be used to assist in evaluating NRI. The identification and evaluation of NRI is not meant to become an extra step in the investigation phase of a project. Rather, it is something that should be done in conjunction and concurrently with other investigations. Since the recommendation does not require a full quantification of all NRI, the work should not add much, if any, extra expense to a project. Section 2.2.2 provides specific information on what kind of effort is involved, such as using tools like the Net Environmental Benefit Analysis (NEBA).

2.2.1 When to Include NRI in the Alternatives Analysis

The Army's NRI policy is meant to serve as a guide for informed remedial decision-making by incorporating significant NRI into the development and selection of response actions. The Army policy does not require that NRIs be addressed as part of remediation when such action is impractical or not appropriate. Accordingly, when we say that NRI should be considered during the remedy selection phase, it does not mean that the Lead Agent must choose the remedy that best addresses NRI. Instead, significant environmental impacts, like human health concerns, should be included among the factors considered when evaluating and selecting a remedy.

For a restoration project to move into the remedy selection phase, the CERCLA release must pose an unacceptable human health and/or ecological risk. If NRI was identified during the remedial investigation, but there are no unacceptable risks, then the site will not proceed to the cleanup phase. In this case, the Lead Agent should not continue to address NRI. However, if the site does qualify to move into remedy selection phase, as directed by the Army NRI policy, and whenever practicable and otherwise consistent with the NCP, the Lead Agent should select a remedy that would result in the least amount of NRI once the response is complete. The best way to do this is to consider NRI information along with all other relevant factors outlined in the NCP's nine remedy selection criteria when selecting the remedy. It is important to remember, however, that there will be times when the selected remedy will not or cannot redress the NRI that has been identified -- even after all considerations are taken into account. Additionally, there will be times when remediation-caused injury cannot be avoided based on the level of contamination and the regulatory requirements for the site. The key issue is whether or not NRI was fully considered as part of addressing both the environmental and human health issues involved with cleanup.

2.2.2 NRI and the NCP Nine Selection Criteria

While the Lead Agent is reviewing the various appropriate response actions to meet the regulatory requirements of the site, one of the considerations should be to identify opportunities to address or reduce significant NRI. The speed or completeness of a remedy is not always good indicators of whether or not it is a good remedy to reduce NRI. For instance, at one site, an aggressive remedy that quickly reduces the concentration of a CERCLA hazardous substance in groundwater might be the most effective at eliminating the NRI. However, at another site, a non-aggressive, limited hot spot removal of contaminated sediments with natural attenuation of the remaining contamination might be the better candidate to address the most NRI at that site. Consideration of NRI during the

alternatives analysis should be accomplished by integrating its evaluation into the nine NCP selection criteria listed below.

1. Overall protection of human health and the environment
2. Compliance with Applicable Relevant and Appropriate Requirements (ARAR)
3. Long-term effectiveness and permanence
4. Reduction of toxicity, mobility, or volume through treatment
5. Short-term effectiveness
6. Implementability
7. Cost
8. State acceptance
9. Community acceptance

Evaluating and addressing NRI does not constitute a 10th selection criterion. The Army's NRI guidance and this policy are provided as tools to assist the Lead Agent in better capturing environmental concerns during its CERCLA investigations, its development of remedial alternatives, the weighing of those alternatives and the selection of a remedy. The NCP process for making remedial decisions remains the same. This guidance simply recognizes that factoring significant natural resource injury issues into the decision-making process will allow for better-informed remedial decisions.

With all response actions, the Lead Agent is required to follow the CERCLA process, as well as the NCP and, when assessing remedial alternatives. This includes the consideration of NRI and impacts to human health via the NCP's nine criteria. The following discussion illustrates how NRI considerations can be integrated into the evaluation process. NRI considerations do not "fit" equally into all nine criteria. The following four criteria are most amenable to NRI integration.

2.2.2.1 Criteria 1 – Overall Protection of Human Health and the Environment

Within this criterion, cleanup alternatives are assessed to determine whether they can adequately protect the environment, in both the short- and long-term, from unacceptable risks from CERCLA hazardous substances by eliminating, reducing or controlling exposures. NRI considerations can be easily integrated into this criterion. The Lead Agent should evaluate and rank response actions that do the following:

- Focus on remediating the CERCLA hazardous substance release that caused an unacceptable risk to environmental resources (will result in lowering residual NRI).
- Focus on opportunities to minimize additional NRI to natural resources caused by the remediation efforts themselves (will result in lowering or eliminating remediation caused NRI).

To meet the Army NRI Policy goal of remediating and minimizing further injury, the Lead Agent should consider the potential impacts to natural resources from implementing each of the remedial alternatives under consideration. Reducing, avoiding or minimizing injuries to natural resources is a relevant consideration when determining what remedial alternative are protective of the environment under Criterion 1. Identification of the least injurious alternative with respect to remediation-related NRI involves considering the impact to site resources that would be caused by each alternative. For example, assume that hazardous

substances have contaminated a wetland and remediation of the contaminated sediments is required. Phyto-remediation and dredging are two of the potential remedies. The phyto-remediation project requires very little site disruption and the plants used in the remedy benefit the ecosystem. The dredging option is very destructive to the wetland and it could take years for the ecosystem to function as it did before the cleanup. If both remedies are equally effective in reducing site risk, it is likely that the phyto-remediation remedy would incur less remediation related NRI than the dredging option and thus, be more desirable in this regard.

The NEBA, which was designed by the U.S. Environmental Protection Agency (EPA), is one of several techniques available to analyze the benefits and detriments of various response actions to assist in making the most informed decision. In a NEBA, the pros and cons of each remedial alternative are normalized into a single metric for easier comparison. With regards to natural resources, a NEBA can tell you if the “cure” is better or worse than the “problem”. Natural resource trustees and Army Biological Technical Assistance Group (BTAG) members are familiar with using such indicators and may assist the Lead Agent.

2.2.2.2 Criteria 2 – Compliance with ARARs

In selecting and reviewing remedial alternatives that meet specific ARARs, the potential of each remedial alternative to generate significant NRI must be balanced with the ability of the remedial alternative to meet ARARs. There may be more than one response action that will allow the Army to meet specific ARARs; however, one response action could generate injury to natural resources upon being implemented, while another action may not. For example, two pump and treat alternatives may both meet ARARs, but the one that does not reinject the treated water locally may negatively impact the groundwater level (i.e., might cause injury). The alternative that includes local re-injection of groundwater may not negatively affect the groundwater level and may not cause additional NRI. Thus, when selecting an action that will allow the Army to meet a specific ARAR, the Lead Agent should consider the potential of each alternative to generate NRI.

2.2.2.3 Criteria 3 – Long-term Effectiveness and Permanence

Adverse measurable physical or chemical impacts (i.e., NRI) that are anticipated to result from a response action should be incorporated into the evaluation of the effectiveness of the action. During the remedy identification and evaluation process, the Lead Agent should consider remedial technologies that could secondarily benefit natural resources. For example, planting poplar trees to function as an appropriate hydraulic barrier would provide natural resource benefits. By comparison, installing a slurry wall as a hydraulic barrier may not generate any secondary natural resource benefits and thus, be less desirable under this criterion. If both remedial alternatives allow the Army to meet regulatory cleanup requirements and can be technically implemented, the remedial alternative that results in the least NRI would be favored.

2.2.2.4 Criteria 6 – Implementability

Implementability considers the technical feasibility of the technologies each alternative would employ and the administrative feasibility of implementing the alternative. The administrative feasibility of a technology is often enhanced if it can be demonstrated that the technology minimizes NRI. For instance, there might be two alternatives being evaluated at

a site. The first technology might be more aggressive and result in a quicker cleanup time, but might negatively impact natural resources during its implementation. The second alternative might take longer to achieve the cleanup goals, but may have no associated negatives to natural resources. If both remedial alternatives allow the Army to meet regulatory cleanup requirements and can be technically implemented, the remedial alternative that results in the least NRI would be favored.

SECTION 3.0

Funding

CERCLA cleanup programs are environmental restoration functions of the Army Secretary, authorized under DERP, 10 United States Code (U.S.C.) 2701, for which Environmental Restoration, Army (ER,A) and BRAC appropriations may be used. In accordance with 10 U.S.C. sec. 2701, environmental remediation or restoration involves "...actions taken consistent with a permanent remedy to prevent or minimize the release of a hazardous substance into the environment so that such substances do not migrate to cause substantial danger to present or future public health or welfare or the environment." The cost to consider NRI should be part of the standard CERCLA and NCP remedial investigatory and decisionmaking process. This guidance does not require an additional expense or documentation.

Likewise, in accordance with the Army NRI Policy, the Army MAY NOT use environmental restoration or BRAC account funds to:

- Compensate trustees or other parties impacted by any natural resource injury by providing direct compensation (i.e., paying monetary damages).
- Compensate trustees or other parties impacted by the injury by providing indirect compensation (i.e., performing restoration activities that have the principle effect of compensating trustees or impacted parties).
- Compensate trustees for coordination efforts pursuant to CERCLA, Section 104(b)(2).
- Provide for or perform projects that would serve only as environmental enhancements.
- Pay to conduct a formal NRDA or undertake any project work whose sole purpose is for development of an NRDA by another trustee.
- Use the ER,A account to offset potential costs of a possible NRD claim.

Army environmental restoration funds may be used to restore natural resources significantly injured by the release of a CERCLA hazardous substance during the implementation of the cleanup action. However, these funds may be used to undertake restoration actions to mitigate injuries to natural resources only when appropriate and consistent with Army Regulation (AR) 200-1, DERP, CERCLA, and the NCP. Requirements for addressing NRIs should be part of the budget and should be funded by the restoration program, only as appropriate. This can be accomplished by considering the injury to natural resources during the investigation and remedy selection phases.

3.1 For Further Assistance

Please contact the U.S. Army Environmental Center (USAEC) for technical assistance with regard to questions about NRI, natural resource trustees, or implementation of this guidance document.

SECTION 4.0

Glossary

This glossary includes terms used in the guidance concerning NRIs and the CERCLA process. However, Army professionals may be asked about issues that are outside of the scope of this guidance. Specifically, natural resource trustees may inquire about matters that relate to natural resource damages or the Trustee's concept of baseline. So, this glossary also includes terms addressing these subjects to provide background information.

Applicable or Relevant and Appropriate Requirements: ARARs may include any state or federal statute or regulation that pertains to protection of public health and the environment in addressing certain site conditions or using a particular cleanup technology. To serve as an ARAR, the state or federal law or regulation must be specifically selected in the Record of Decision (ROD) or Decision Document (DD). A state law to preserve wetland areas is an example of an ARAR, if it is selected as such in the ROD or DD. The Lead Agent must consider whether a remedial alternative meets ARARs as part of the process for selecting a cleanup method.

Army Natural Resource Professionals: An individual with an undergraduate or graduate degree in natural resource management sciences, and who has responsibility for supporting natural resource management on Army lands. Such individuals may be Department of the Army civilian employees, contractors, or other individuals providing natural resource management support on Army lands through interagency agreement, cooperative agreement, or similar arrangements.

Baseline: Natural resource trustees may refer to the term "baseline" in the context of Natural Resource Damage Assessment or claims. This term involves the following notion: The condition or conditions of the natural resources and their services that would have existed at the assessment area if the release had not occurred. This may be referred to as "original condition." It is important to remember that this concept of "baseline" differs from the approach the Army takes as Lead Agent during remediation. In accordance with CERCLA and the NCP, the Lead Agent focuses on addressing unacceptable risks, rather than restoring an affected media to its baseline conditions.

CERCLA Hazardous Substance: A CERCLA hazardous substance is defined by CERCLA 101(14) as any substance designated pursuant to section 311(b)(2)(A) of the Clean Water Act (CWA); any element, compound, mixture, solution, or substance designated pursuant to section 102 of CERCLA; any hazardous waste having the characteristics identified under or listed pursuant to section 3001 of the Solid Waste Disposal Act; and any substance that the U.S. Environmental Protection Agency (EPA) has designated for special consideration under the Clean Air Act (CAA), CWA, or the Toxic Substance Control Act (TSCA). An updated list of the CERCLA hazardous substances is provided in Table 300 of 40 Code of Federal Regulations (CFR) Part 302.

Cleanup: Actions taken to deal with a release or threat of release of a CERCLA hazardous substance that could create an unacceptable risk affecting humans and/or the environment. The term “cleanup” is sometimes used interchangeably with the terms remedial action, removal action, or response action.

Injury: “Injury”, as defined in 43 CFR Part 11.14(v), is a measurable adverse change, either short or long-term, in the chemical or physical quality or the viability of a natural resource resulting either directly or indirectly from exposure to a release of a hazardous substance. Injury includes impact destruction, loss, and loss of use. This Army guidance focuses on significant injuries. These are environmental injuries that require investigation and/or a CERCLA response action because they pose an unacceptable risk.

Interim Loss: Trustees may choose to assess interim loss when developing a potential claim for natural resource damages. Interim loss is defined as an injury that occurs as a result of a release of a CERCLA hazardous substance that occurs prior to initiating a response action.

Natural Resource: Land, fish, wildlife, biota, air, surface water, groundwater, and other such resources belonging to, managed by, held in trust by, appertaining to, or otherwise controlled by the United States, state or local government, any foreign government, or native tribe, or if such resources are subject to a trust restriction on alienation, any member of a Native American tribe. (CERCLA §101(16). This definition is used specifically for this Army NRI Policy.

Natural Resource Damages (NRD): The liability – either in money damages or other forms of compensation – assessed by a natural resource trustee in the adjudication or settlement of a legal claim regarding NRI (a damage claim includes both compensation for injuries and the administrative costs incurred by trustees). A trustee cannot initiate a legal claim for NRD until after a CERCLA cleanup is completed or, or if appropriate, after remedy selection. (See CERCLA §113 [g] [1].) Furthermore, NRD can only be used by a trustee to restore, replace, or acquire the equivalent of natural resources injured by the release of a CERCLA hazardous substance, where such release occurred after December 11, 1980. (See CERCLA, §107[f], 42 U.S.C. §9607[f].) Finally, NRD involves a claim against the United States that must be paid from the Judgment Fund rather than directly from agency appropriations.

Natural Resource Damage Assessment (NRDA): The process by which the trustees determine, after remedy selection, whether the release of a CERCLA hazardous substance has resulted in natural resource injury; quantify the level of injury and resultant loss of services; and assess a monetary value for the trustee to repair, replace, or acquire the equivalent of the injured natural resource. It is the process of collecting, compiling, and analyzing information through prescribed methodologies to determine if the trustees wish to seek a claim for damages for injury to natural resources and appropriate compensation. (See CERCLA, §113[g][1].) The NRDA is not part of Army’s remedial decision-making.

Natural Resource Trustee: Any federal agency designated in the NCP in Section 300.600 as having natural resource trustee responsibilities pursuant to CERCLA, §107(f)(2)(A); any state agency designated by the governor of each state pursuant to CERCLA, §107(f)(2)(B); or a Federally recognized Indian Tribe pursuant to CERCLA, §126. The Army is a natural

resource trustee for land and natural resources under its jurisdiction, management, and control. The Army is not a trustee at Formerly Used Defense Site (FUDS), Army post-transfer sites, or third-party sites because these properties are no longer – or were never – under DOD jurisdiction, management, and /or control. In addition to providing valuable input into development and selection of remedies, trustees are authorized to assess NRDs and bring claims against potentially responsible parties.

Residual Injury: Residual injury is the NRI that remains after the response action is completed. In theory, it is the sum of the NRI associated with contamination that is not cleaned up (i.e., hazardous substances remaining on-site after implementation of a risk-based remediation) and remediation-related injuries that have not been addressed. A determination of residual injury will depend on the facts. Because CERCLA cleanups address unacceptable risks to the environment – rather than returning a resource to its baseline condition – it is possible that a cleanup may be complete while leaving some natural resource injuries onsite. This post-remedy or “residual injury” may become the subject of discussion with natural resource trustees.

Trust Resources: The land, fish, wildlife, biota, air, water, groundwater, drinking water, endangered or threatened species, migratory birds, waterfowl, anadromous fish, their habitats, and other resources belonging to, managed by, held in trust by, appertaining to, or otherwise controlled by the United States, any state or local government and any Federally recognized Indian Tribe.

SECTION 5.0

References

This reference section includes terms used in the guidance concerning NRIs and the CERCLA process. However, Army professionals may be asked about issues that are outside of the scope of this guidance. Specifically, natural resource trustees may inquire about matters that relate to natural resource damages or the Trustee's concept of baseline. So, this reference section also includes terms addressing these subjects to provide background information.

Internet Sites:

1. The Association of State and Territorial Solid Waste Managers

<http://www.astswmo.org>

2. The Department of the Interior

<http://restoration.doi.gov/>

<http://restoration.doi.gov/contacts.htm>

3. Environmental Protection Agency

<http://www.epa.gov/superfund/programs/nrd/nrda2.htm>

4. National Oceanographic and Atmospheric Administration

<http://www.darp.noaa.gov/>

Statutes and Regulations:

Army Interim Policy for Integrating Natural Resource Injury Responsibilities and Environmental Response Activities, DASA (ESOH), 11 July 2002

Comprehensive Environmental Response, Compensation, and Liability Act (December 1980); Superfund Amendments and Reauthorization Act, 42 U.S.C. 9601 *et seq.*

National Oil and CERCLA hazardous substances Pollution Contingency Plan, 40 CFR Part 300, Office of Federal Register National Archives and Records Administration, United States Environmental Protection Agency, July 1992.

"Natural Resource Damage Assessment; Final Rule," 15 CFR Part 990, United States Department of Commerce, National Oceanic and Atmospheric Administration, January 1996.

"Natural Resource Damage Assessment Regulations", 43 CFR Part 11, United States Department of the Interior, 1995.

Resource Conservation and Recovery Act (RCRA), 1976.

Suter, G.W. II. 1993. *Ecological Risk Assessment*. Lewis Publishers. Boca Raton, Florida, p. 2-5.

APPENDIX

APPENDIX A

Natural Resource Injury Background and the Net Environmental Benefit Analysis

An understanding of NRI and the necessity to implement the Army NRI Policy requires comprehension of natural resources, natural resource trustees, the difference between injury and risk, types of natural resource injuries, and Natural Resource Damages. These topics are discussed briefly within this Appendix. Additionally, a discussion relative to Net Environmental Benefit Analysis (NEBA) is provided as one resource for assisting the Lead Agents with remedial and corrective action selection. The Lead Agent may choose to undertake the NEBA process as a means to ensure that natural resource injuries have been fully considered during the remedial investigation and remedy selection process. This approach allows the decisionmaker to fully consider the relative environmental costs associated with each remedial alternative.

A. Natural Resources and Trustees

1. Natural Resources

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, or any federally recognized North American Indian tribe (CERCLA §101[16]).

Specific to the natural resource components associated with Army sites, many facilities have natural resource information in Geographic Information System (GIS) format. Land use mapping, topography, wetlands, aquatic water bodies, and habitat type information are often available. In conjunction with aerial photography, these resources can provide significant information about the natural resources at a site; can help determine whether those resources may have been negatively affected by a hazardous substance release and whether remediation is required.

2. Natural Resource Trustees

Natural resource trustees have responsibility for natural resources held in trust for the public. There are three main groups of natural resource trustees: federal trustees, state

trustees, and Federally recognized Indian Tribe trustees. Trustees often have overlapping jurisdiction for the same resource. For example, state trustees and Federally recognized Indian Tribes can share jurisdiction over surface water, or federal trustees and state trustees could share trusteeship over birds. In this case, they would be considered co-trustees. Discussion regarding each trustee group is provided in the following sections, and a list of jurisdictional resources for each trustee “group” is provided in Table 1.

i. Federal Trustees

Federal natural resource trustees were designated by the President through Executive Order (EO) 12580, which is mirrored in the NCP. The President has designated the Secretaries of the Departments as federal trustees for natural resources, subject to the departments’ respective management or control (40 CFR §300.600). Those federal trustees include the Secretary of Defense, the Secretary of the Interior, the Secretary of Commerce, the Secretary of Agriculture, and the Secretary of Energy. Specific information relative to the jurisdiction of natural resources assigned to each federal trustee can be found in Table 1, the NCP at 40 CFR 300.600, or from the Department of Interior (DOI) or National Oceanic and Atmospheric Administration (NOAA) websites provided in the references.

Department of Defense/ Army

The Secretary of Defense has delegated the Assistant Secretary of each service the natural resource trustee responsibility for that service. The Deputy Assistant Secretary of the Army (DASA) for Environment, Safety and Occupational Health (ESOH) is the trustee for the Army properties to which this guidance is applicable. The Army is a natural resource trustee of land and natural resources under its jurisdiction, management, and control. The Army bears no trustee responsibility for FUDS, Army post-transfer sites (non-FUDS eligible land that has transferred out of Army control via either a base closure or other excessing action), or third-party sites.

ii. State Trustees

The governor of each state has been designated the natural resource trustee for his or her state (CERCLA §107[f][2][B]). The governor of each state has delegated either one or more environmental regulatory agencies or an individual to serve as natural resources trustee for resources under state management or control, based on the jurisdiction of each state regulatory agency. A listing of state organizations designated as natural resource trustee within their state is located in Appendix C

iii. Federally Recognized Indian Tribe Trustees

Federally recognized Indian Tribes, or their designees, act as trustees of natural resources under tribal jurisdiction. The scope of a tribal trusteeship is determined by tribal lands owned, lands owned by a tribal member (if subject to a trust restriction on alienation), lands held in trust for the benefit of the tribe, or tribal treaties, statutes, and regulations granting tribal authority over natural resources. The Natural Resource Damage and Restoration Program at the Department of the Interior has listed contacts for the Bureau of Indian Affairs (BIA) and will be able to assist the Army with notification of appropriate tribal trustees. The BIA website is also included in the references.

iv. Co-trustees

Co-trustees exist when the federal, state, and/or tribal trustees have jurisdiction over and interests in the same natural resources. Each trustee can exercise individual jurisdictional responsibilities regarding assessments; however, they may share responsibilities.

v. Non-Trustees

The U.S. Environmental Protection Agency is not a natural resource trustee, although they may be very involved with NRI and risk issues at Army installations. The Department of Justice (DOJ) supports the interests of the federal trustees, although it has no focused interest on specific natural resources. Rather, the DOJ provides expert advice on complicated legal questions arising from releases of CERCLA hazardous substances from federal facilities as the result of federal activities and assists with determining appropriate federal agency responses. It represents the federal government in litigation relating to such discharges or releases, including formal NRDA.

TABLE 1
Natural Resources Trustees' Jurisdictional Table

Agency	Trust Responsibilities
Department of Defense (DOD)	Trusteeship of the natural resources existing within properties that the DOD owns, or over which it potentially has jurisdiction or control such as: <ul style="list-style-type: none"> • Groundwater (drinking water source, livestock consumption, irrigation, or water recharge for surface water, etc.) • Surface water (lakes, streams, ponds, rivers, etc.) • Flora (trees, bushes, grasses, etc.) • Fauna (mammals, fish, insects, etc.) • Geology (soils, sediments)
Department of Energy (DOE)	Trusteeship of the natural resources existing within properties that the DOE owns, or over which it potentially has jurisdiction or control. (Similar, if not identical to, DOD.)
Department of Agriculture (USDA)	Trusteeship of the natural resources existing within properties that the USDA owns, which include national forest resources. Their trustee responsibilities are fulfilled traditionally through the National Forest Service. <ul style="list-style-type: none"> • Flora and fauna associated with national forests • Grasslands (terrestrial receptors including livestock) • Geology (soils)
Department of Commerce (DOC)/ National Oceanic and Atmospheric Administration (NOAA)	NOAA fulfills the DOC trustee responsibilities. Their trust resources include coastal environments and habitats, tidal wetlands, marine mammals and sanctuaries, commercial and recreational marine fisheries, and the habitats of anadromous and catadromous fish. Their responsibilities include: <ul style="list-style-type: none"> • Surface water (as it affects their jurisdictional resources) • Sediments (as they affect their jurisdictional resources) • Anadromous and catadromous fish (salmon, eels, etc.), including their fresh water spawning grounds (e.g., the Salmon River in Idaho for anadromous salmonids)

TABLE 1
Natural Resources Trustees' Jurisdictional Table

Agency	Trust Responsibilities
State Trustees	<p>The governor of each state delegates his/her trustee responsibility to one or more state regulatory agencies, based on the natural resources within their regulatory responsibility and jurisdiction. The state has trustee authority over all "waters of the state," state-owned lands, and the natural resources contained within those areas. In some states, one agency addresses all natural resources for their state, and in other states there are numerous agencies. For instance, California and Texas assign jurisdiction for specific state natural resources, and an example is the groundwater as a drinking water source, livestock consumption, irrigation, or other water source, surface water recharge, etc.</p> <ul style="list-style-type: none"> • Surface water (lakes, streams, ponds, rivers, etc.) • Flora and fauna (primarily endangered species and specially listed species; however, not limited to these resources only) • Geology (soils, sediments) • Groundwater (surface water recharge, drinking water supplies, etc.)
Federally recognized Indian Tribes	<p>Federally recognized Indian Tribes have jurisdiction over the natural resources associated or contained within their "lands" (fee owned land, reservation lands, trust lands and allotments and other holdings that have restrictions on alienation). Additionally, the Bureau of Indian Affairs has a duty to carry out trust responsibilities on Indian lands that are held by DOI in trust for the benefit of tribes. It is not uncommon for trust resources to extend beyond their reservation, based on cultural circumstances. This varies among tribes. Natural resource responsibilities include:</p> <ul style="list-style-type: none"> • Groundwater (surface water recharge, drinking water supplies, etc.) • Surface water (water supplies and services including livestock support and religious ceremonial purposes [tribe specific]) • Soils (support of agricultural practices, livestock, religious significance [tribe specific]) • Flora (trees, grasses, shrubs, special plants, flowers, roots [tribe specific]) • Fauna (deer, elk, moose, bison, rabbit, birds [hunting, recreation, religious significance (tribe specific)])
Department Of Interior (DOI)	<p>DOI has jurisdiction over wild and scenic rivers, national parks, national seashores, and national wildlife refuges. In addition, it has jurisdiction over migratory birds and threatened and endangered species. The bureaus and offices that provide expertise include the U.S. Fish and Wildlife Service (USFWS), the U.S. Geological Survey (USGS), the Bureau of Land Management (BLM), and the Mineral Management Service (MMS), although the USFWS typically carries out the responsibilities of the DOI. Natural resource responsibilities include:</p> <ul style="list-style-type: none"> • Endangered species and their habitats • Migratory birds, their breeding grounds or rookeries, and their migratory pathways • Groundwater (drinking water source, livestock consumption, etc.) • Surface water (lakes, streams, ponds, rivers, etc.) • Flora (trees, bushes, grasses, etc.) • Fauna (non-domesticated terrestrial receptors) • Geology (soils, sediments)

B. Natural Resource Injury

The following information is provided to assist the Lead Agent to determine: (1) whether NRI are a result of the release of a CERCLA hazardous substance, (2) whether significant NRI requires a CERCLA response and (3) if opportunities exist to reduce natural resource injuries onsite.

1. Natural Resource Injury

NRI is defined as follows:

“...a measurable adverse change, either long- or short-term, in the chemical or physical quality or the viability of a natural resource resulting either directly or indirectly from exposure to a release of a hazardous substance...”
(43 CFR Subtitle A, 11.14).

Army Lead Agents shall consider significant injuries to the media at risk when assessing and addressing NRI. Significant injuries involve consistent environmental harm that poses an unacceptable risk requiring a CERCLA response action.

To carry out this responsibility, the decision-maker undertakes an analysis that this guidance refers to as an NRI evaluation. An NRI evaluation involves determining what natural resources were injured and, if possible, to what extent they were injured. Significant NRI can result from the direct effects of a release of CERCLA hazardous substances, the effects of the remediation in response to the release, and from the unacceptable risks that may be posed if residual contamination remains on-site after remediation is completed. The NRI evaluation is not a new document requirement – an NRI evaluation refers to information that should be captured in the eco-risk assessment and remedial documentation.

The following discussion provides examples of injury based on natural resource categories. These examples are from the NRDA Regulations published by DOI and are provided here to give the Lead Agent more details on what may or may not be considered as NRI. However, it is important to remember that any NRI must be significant enough to warrant a response action under CERCLA; mere exceedances of specific standards may not require cleanup if there is no lasting environmental injury or no unacceptable risk is posed.

- **Surface Water Injury**—contaminants in potable water exceed SDWA (§1411-1416, §1401) standards; contaminants in sediments are present at levels sufficient to be considered a hazardous waste; contaminants are present at levels sufficient to injure other resources exposed to the water (43 CFR 11.62[b][1]).
- **Groundwater Injury**—contaminants are present in excess of SDWA (§1401) or the CWA (§304[a][1]); contaminant levels sufficient to cause injury to other resources (43 CFR 11.62[b][1]).
- **Air Resources Injury**—emissions of hazardous air pollutants are present in excess of Clean Air Act (§112) or other air quality standards; emissions sufficient to cause injury to other resources (43 CFR 11.62[b][1]).

- **Geologic Resources Injury**—contaminant levels sufficient to (1) be considered a hazardous waste (RCRA [§3001]), (2) lower pH to below 4.0 or raise pH above 8.5, (3) yield sodium absorption ratio above 0.176, (4) decrease water holding capacity, (5) impede microbial respiration, (6) inhibit carbon mineralization, (7) cause injury to ground water (e.g., prevent groundwater from being used as a drinking water resource), (8) cause toxic response in invertebrates and plants, and (9) cause injury to other resources (43 CFR 11.62[b][1]).
- **Biological Resources Injury**— contaminant levels sufficient to adversely affect resource viability, including death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (reproductive), or physical deformation; concentrations of contaminants are present in edible portions of the organism in excess of Food, Drug, and Cosmetic Act (FDCA) tolerance levels [§402]; contamination in tissues exceeds levels established by a state health agency to limit or ban consumption (43 CFR 11.62[b][1][iii]).

2. Categories of Injury

i. Pre-Response Injury

Pre-Response injury is defined as the injury that occurs as a result of a release of a CERCLA hazardous substance prior to initiating a response action. This is the category of NRI that is evaluated during the CERCLA investigation phase (i.e., in the RI/FS or ecological risk assessment). It is sometimes referred to as the “original” NRI. Examples of pre-response injury could include:

- Mercury seeping from an old landfill into a small stream, killing all downstream invertebrates in the stream for about a quarter of a mile
- TCE in groundwater contaminating a public drinking water well field at concentrations in excess of its MCL of 5 ppb, causing the well to be shutdown.
- DDT residues in soil at a dump site causing a significant reduction in microbial activity over a 2 acre site

ii. Remediation (or Response)-related Injury

Remediation (or response)-related injury is an injury that results from implementing the response action. For example, destruction of a wetland habitat by removing contaminated sediment and vegetation could be considered remediation-related injury because the action destroys/kills plants and animals. Implementing and operating a groundwater treatment system that results in the dewatering of a wetland would create injuries to both the surface water resources of the wetland and the biotic resources dependent on the wetland. This type of injury can be minimized through careful screening and selection of remedies and implementing appropriate restoration, such as wetland remediation or riparian vegetative enhancement, if appropriate. It is important for the Lead Agent to remember that there may also be situations that require an aggressive response action, resulting in NRI. This choice should be made with all available information and appropriate coordination.

iii. Residual NRI:

Residual or long-term NRIs are the injuries that may remain on-site after remediation is complete. For example, while a response action may eliminate “hot spot” contamination in a wetland to address unacceptable ecological risks, NRI may still exist following the cleanup because low-level contamination remains on-site. As part of a cleanup action, it is appropriate for the Lead Agent to consider whether it is appropriate and practicable to reduce residual or long-term NRI. So, if a remedial alternative allows for the cleanup of all or most long-term NRI, this approach should be considered with other alternatives. These alternatives should then go through the weighing process outlined in the NCP’s nine criteria. If all remedial options are equal, the Lead Agent is encouraged to choose the approach that will lead to the least NRI remaining on-site after remediation is complete.

3. Natural Resource Damages

Natural resource damages (NRDs) are defined as:

“...the amount of money sought by the natural resource trustee as compensation for injury, destruction, or loss of natural resources as set forth in section 107(a) or 111(b) of CERCLA” (43 CFR Subtitle A, 11.14).

NRDs are determined through a process formally known as a NRDA. Trustees may, on behalf of the public, pursue monetary damages for injuries to natural resources. Damages are the monetary claim that results from an assessment process that identifies injuries to natural resources and the lost use of the injured natural resources. The Army NRI Policy does not address NRD. This definition is included to provide additional understanding, not guidance, in implementing or addressing NRD.

C. Net Environmental Benefit Analysis (NEBA)

The following text describes the NEBA approach and its application in addressing response actions. This approach and associated methodologies are becoming increasingly used to address environmental contamination issues and are supported by state and federal resource agencies. NEBA approaches have been used to reduce remediation costs, expedite site closures, reduce managing environmental liabilities, and gain public and agency goodwill. The general NEBA approach is described below. The Lead Agent may choose to undertake the NEBA process as a tool to ensure that natural resources injuries have been fully considered during the remedial investigation and remedy selection process. The goal of the NEBA is to allow the decision-maker to fully consider the relative environmental costs associated with each remedial alternative.

A NEBA is used to rank alternative actions in terms of the total environmental benefits realized from the implementation of those actions. In a NEBA, the pros and cons of each remedial alternative are normalized into a single metric for easier comparison. A NEBA was first used by the EPA and the NOAA and is comprised of a set of techniques and tools for comparing the benefits of alternative land uses or response actions that affect the environment.

NEBA also considers a broader range of environmental effects than the traditional remedial investigation/feasibility type (RI/FS) studies or risk assessment processes. These processes

consider only the remedial alternatives' effects of limiting exposure from a contaminant release so the risks to human health and the environment are not unacceptable. These traditional decision processes (RI/FS) may ultimately be focused upon a default cleanup standard or, if it is warranted, based upon risk assessment findings. Typically, for ecological risk evaluations, a limited set of indicators is relied upon (e.g., determining the possible adverse effects to target species as a result of exposure to a particular contaminated media [i.e., the great blue heron, raccoon, and others]) to determine the risk to the environment and whether the remedial alternative will effectively reduce that risk.

APPENDIX B

Example Notification Letters

EXAMPLE
TRUSTEE NOTIFICATION LETTER

Name of Trustee Person
Office
Trustee Agency
Address

To Whom it May Concern:

In accordance with Section 104(b)(2) of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended by the Superfund Amendments and Reauthorization Act (CERCLA/SARA) and 40 CFR Part 300 (the National Contingency Plan), this letter is written to provide notification that the (insert name of installation) has determined potential injury to natural resources resulting from release(s) of CERCLA hazardous substances at (insert name of installation).

(Insert a paragraph that summarizes the installation's cleanup response process to date).

(Insert name of installation) asks that you identify resources under your trusteeship on or in the vicinity of (insert name of installation) and invites the appropriate trustees to speak with the Army relative to trustee concerns at the site.

Please provide the specific agency or trustee contact relative to the natural resources at (insert name of installation) to (insert name and address of receiving POC at installation) within 45 days of receipt of this letter.

The point of contact for this action is (insert POC name) at (insert commercial phone number).

Sincerely,

Name of Person
Position

EXAMPLE
TRUSTEE NOTIFICATION LETTER

(Retro-active Notification)

Name of Trustee Person
Office
Trustee Agency
Address

To Whom it May Concern:

(Insert Installation name) has been participating in a (CERCLA/RCRA-choose appropriate regulatory process), and we have come to the point in the process where final action has been selected and is planned for implementation. It has been brought to our attention that during this regulatory process, we did not notify the natural resource trustees of a hazardous substance release onsite. In accordance with Section 104(b)(2) of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended by the Superfund Amendments and Reauthorization Act (CERCLA/SARA) and 40 CFR Part 300 (the National Contingency Plan), this letter is written to provide notification that the (insert name of installation) has determined potential injury to natural resources resulting from release(s) of CERCLA hazardous substances at (insert name of installation)

(Insert a paragraph that summarizes the installation's cleanup response process to date).

(Insert name of installation) asks that you identify resources under your trusteeship on or in the vicinity of (insert name of installation). Should the trustees identify any of their jurisdictional resources associated with the installation, the Army would like to invite the trustees to engage in dialogue relative to natural resource concerns at the site. Please provide the specific agency or trustee contact relative to the natural resources at (insert name of installation) to (insert name and address of receiving POC at installation) within 45 days of receipt of this letter.

The point of contact for this action is (insert POC name) at (insert commercial phone number).

Sincerely,

Name of Person
Position

APPENDIX C

State Trustee Contact List

CONTACT LIST
STATE NATURAL RESOURCE TRUSTEE ORGANIZATIONS

ALASKA

Department of Environmental Conservation
410 Willoughby Avenue, Suite 105
Juneau, AK 99801-1795
ph: 907-465-5065

ARIZONA

Superfund Programs
Department of Environmental Quality
3033 North Central Avenue, 7th Floor
Phoenix, AZ 85012
ph: 602-207-2300 (ext. 4420)

CALIFORNIA

Office of Spill Prevention & Response
Department of Fish & Game
1700 K Street, Suite 250
Sacramento, CA 95814
ph: 916-327-0911

COLORADO

Colorado Department of Public Health & Environment
4300 Cherry Creek Drive South
Denver, CO 80246-1530
ph: 303-692-2011 or 303-692-2100

CONNECTICUT

Department of Environmental Protection
Bureau of Natural Resources
79 Elm St.
Hartford, CT 06106-5127
ph: 860-424-3010

DELAWARE

Department of Natural Resources & Environmental Control
89 Kings Highway
Dover, DE 19901
ph: 302-739-4403

DISTRICT OF COLUMBIA

Department of Health
Bureau of Environmental Quality
51 N Street N.E., 5th Floor
Washington D.C. 20002
ph: 202-535-1660

HAWAII

Hazard Evaluation & Emergency Response Office
Department of Health
919 Ala Moana Blvd., Room 206
Honolulu, HI 96814
ph: 808-586-4249

IDAHO

State of Idaho
700 West Jefferson, 2nd Fl.
Boise, ID 83702
ph: 208-334-2100

ILLINOIS

Department of Natural Resources
524 S. 2nd Street, Room 400
Springfield, IL 62701
ph: (217) 785-0075

INDIANA

Department of Natural Resources
400 W. Washington
Indianapolis, IN 46206
ph: (317) 232-4027

Department of Environmental Management
100 North Senate IGCN-13
P.O. Box 6015
Indianapolis, IN 46206-6015
ph: (317) 233-3043

IOWA

Department of Natural Resources
Wallace Building
502 E. 9th Street
Des Moines, IA 50319
ph: (515) 281-5385

KANSAS

Department of Health and Environment
400 SW 8th, Suite 200
Topeka, KS 66603-3930
ph: (785) 296-1521

MAINE

Department of Inland Fisheries & Wildlife
State House, Station 41
Augusta, ME 04333
ph: 207-287-5202
(for non-marine fish & wildlife)

Department of Marine Resources
State House, Station 21
Augusta, ME 04333
ph: 207-624-6550
(for marine fish, wildlife & other marine resources)

Department of Conservation
Bureau of Parks & Lands
State House, Station 22
Augusta, ME 04333
ph: 207-287-3821
(for state lands, parks and reserves)

Department of Environmental Protection
State House, Station 17
Augusta, ME 04333
ph: 207-287-7688
(for all other resources)

MARYLAND

Department of the Environment
2500 Broening Highway
Baltimore, MD 21224
ph: 410-631-3084

Department of Natural Resources
Tawes State Office Building
Annapolis, MD 21401
ph: 410-260-8100

MASSACHUSETTS

Executive Office of Environmental Affairs
251 Causeway St., Suite 900
Boston, MA 02114
ph: 617-626-1100

MICHIGAN

Michigan Department of Environmental Quality
Hollister Bldg., 6th Floor, 106 W. Allegan
P.O. Box 30473
Lansing, MI 48909
ph: (517) 373-7917

State of Michigan
G. Mennen Williams Bldg., 7th Floor
525 Ottawa Street
P.O. Box 30212
Lansing, MI 48909
ph: (517) 371-1110

MINNESOTA

Department of Natural Resources
500 Lafayette Road
St. Paul, MN 55155
ph: (651) 296-2549

Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155
ph: (651) 296-7302

MISSOURI

Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102
ph: (573) 751-4732

MONTANA

Department of Environmental Quality
1520 E. 6thAve, Metcalf Bldg.
P.O. Box 200901
Helena, MT 59620-0901
ph:(406) 444-2544

Department of Fish, Wildlife, and Parks
1420 East 6th Avenue
P.O. Box 200701
Helena, MT 59620-0701
ph: (406) 444-3186

Department of Natural Resources and Conservation
1625 11th Avenue
P.O. Box 201601
Helena, MT 59620-1601
ph: (406) 444-2074

NEBRASKA

Nebraska Department of Environmental Quality
Box 98922
Lincoln, NE 68509-8922
ph: (402) 471-4231

NEVADA

Corrective Actions
Division of Environmental Protection
333 West Nye Lane
Carson City, NV 89706-0851
ph: 775-687-4670 (ext. 3127)

NEW HAMPSHIRE

Departmental of Environmental Services
6 Hazen Drive
P.O. Box 95
Concord, NH 03302-0095
ph: 603-271-3503

Department of Fish & Game
2 Hazen Drive
Concord, NH 03301
ph: 603-271-3422

NEW JERSEY

Department of Environmental Protection
P.O. Box 402
401 East State Street
Trenton, NJ 08625
ph: 609-292-2885

NEW YORK

Department of Environmental Conservation
50 Wolf Road
Albany, NY 12233
ph: 518-457-1162

NORTH DAKOTA

Department of Health
600 East Boulevard Avenue
2nd Floor Judicial Wing
Bismarck, ND 58505-0200
ph: (701) 328-2372

OHIO

Ohio Environmental Protection Agency
122 South Front Street
Columbus, OH 43215
ph: (614) 644-3020

OREGON

Department of Environmental Quality
811 SW 6th St.
Portland, OR 97204
ph: 503-229-5301

PENNSYLVANIA

Department of Environmental Protection
P.O. Box 2063
Harrisburg, PA 17105-2063
ph: 717-787-2814

RHODE ISLAND

Department of Environmental Management
235 Promenade Street
Providence, RI 02908
ph: 401-222-6602 (ext. 2401)

SOUTH CAROLINA

South Carolina Department of Health &
Environmental Control
Site Assessment & Remediation
2600 Bull Street
Columbia, SC 29201
ph: 803-896-4052

SOUTH DAKOTA

Department of Environment and Natural Resources
Joe Foss Building
523 East Capitol Avenue
Pierre, SD 57501-3181
ph: (605) 773-3153 or (605) 773-5559

TEXAS

TX Natural Resource Conservation Commission
Natural Resource Trustee Program
P.O. Box 13087, MC-142
Austin, TX 78711-3087
ph: 512-239-2523

Resource Protection Division
Texas General Land Office
Resource Management
P.O. Box 12873
Austin, TX 78711-2873
ph: 512-475-1464

Texas Parks and Wildlife Department
Resource Protection Division
Trustee Assessment & Restoration Program
4200 Smith School Rd.
Austin, TX 78744
ph: 512-912-7154

UTAH

Department of Environmental Quality
168 North 1950 West, 2nd Floor
Salt Lake City, UT 84116
ph: (801) 536-4400

VERMONT

Agency of Natural Resources
103 South Main Street
Center Building
Waterbury, VT 05671
ph: 802-241-3600

VIRGINIA

Natural Resources
P.O. Box 1475
Richmond, VA 23212
ph: 804-786-0044

WASHINGTON

Department of Ecology
P.O. Box 47600
Olympia, WA 98504
ph: 360-407-6000

WEST VIRGINIA

Division of Natural Resources
State Capitol Building #3, Room 669
Charleston, WV 25305
ph: 304-558-2754

WISCONSIN

Department of Natural Resources
101 South Webster St.
Box 7921
Madison, WI 53707-7921
ph: (608) 266-2121

WYOMING

Department of Environmental Quality
Herschler Building, 4 West
122 West 25th Street
Cheyenne, WY 82002
ph: (307) 777-7781

Game and Fish Department
5400 Bishop Boulevard
Cheyenne, WY 82006
ph: (307) 777-4501

APPENDIX D

Example Coordination Letter

EXAMPLE
TRUSTEE COORDINATION LETTER

Name of Trustee Person
Office
Trustee Agency
Address

Dear Ms./Mrs./Mr. _____(To Whom it may concern):

In accordance with Section 104(b)(2) of the Comprehensive Environmental Response, Compensation and Liability Act, as amended by the Superfund Amendments and Reauthorization Act (CERCLA/SARA) and 40 CFR Part 300 (the National Contingency Plan, NCP), this letter is written to fulfill the above listed CERCLA requirements and initiate coordination efforts between natural resource trustees for natural resources contained within (insert name of installation). The (insert name of installation) is currently participating in a regulatory process that may result in the selection of a remedial or response action. (insert name of installation) requests the participation of the natural resource trustees in this process with the goal of minimizing any potential injury to natural resources as a result of implementing a remedial or response action.

As laid out in Section 300.615 of the NCP, at sites where multiple trustees have responsibilities, the Army, as Lead Natural Resource Trustee and Lead Response Agent, intends to cooperate with appropriate natural resource trustees to coordinate our efforts due to the coexisting or contiguous natural resources and our concurrent jurisdictions. For purposes of coordinating trustee information, the (insert name of installation) designates (insert name, phone number and address of installation trustee POC) as the primary installation point of contact for natural resource trustee issues.

We request that your organization contact (insert name of installation POC) to coordinate trustee involvement with the ongoing installation restoration program for the purposes of cooperating and consulting in the remedy selection process.

Sincerely,

Name of Person & Position