Association of State and Territorial

ASTSWMO

Solid Waste Management Officials

# ACCOMPLISHING RESTORATION

## A Reference Guide for Restoring Natural Resources Under the Comprehensive Environmental Restoration, Compensation, and Liability Act, Oil Pollution Act and Federal and State Laws

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**July 10, 2006**

## FOREWORD

*Everyone benefits from "getting to restoration" as quickly as possible in the Natural Resource Damage Assessment and Restoration (NRDAR) process.*

During meetings between State Natural Resource Damage (NRD) Trustees and Industry in 2003 and 2004, it became clear that both the Industrial community and the Trustee community would benefit from having a "how to" reference that identifies some of the considerations that lead to timely and cost-effective restoration of natural resources and that builds upon the extensive experience to date in restoring natural resources. This document was prepared by the Association of State and Territorial Solid Waste Management Officials (ASTSWMO) Natural Resource Damages (NRD) Focus Group, in consultation with Industry representatives. The document is intended to be a reference that can assist companies and Trustees in site-specific situations. It is not a comprehensive guide to restoring natural resources. Other helpful references are provided at the end of this document. This document will continue to be a "living" document and may change as warranted by on-the-ground NRDAR experiences and/or the changing state of the art. We hope that this document will be helpful and spur more collaborative efforts between the Industrial and Trustee communities.

The NRD Focus Group wishes to thank the many volunteers from Industry who contributed their time and effort in preparation of this document.

It is important to note that this document does not establish any official opinions, positions, preferences, or recommendations by ASTSWMO or by any individual ASTSWMO member or their respective State or region.

This document was prepared by the ASTSWMO NRD Focus Group, with assistance from the U.S. Environmental Protection Agency under Cooperative Agreement R-829817.

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## INTRODUCTION

Brief Summary of NRDAR Process

The NRDAR process begins with the identification of a release of a hazardous substance(s) or discharge(s) of oil into the environment. Identification is followed by a determination of the nature and extent of injury to natural resources and services provided. This information is then used to calculate the appropriate compensation for the resource injury or service loss as incurred from the time of injury to the full recovery of the resource. Compensation may take either the form of a restoration project implemented by the Responsible Party (RP), a cash settlement to be used by Trustees for project implementation, or a combination of both. The objective of both restoration projects and cash settlements is to restore or rehabilitate the injured natural resources, or, if that is not possible, to replace or acquire the equivalent of those natural resources and services which were lost or impaired.

Identification of Joint Industry/Trustee Goals and Uses of Document

Trustees and RPs have found that a cooperative NRDAR process frequently results in more timely completion of restoration projects. State Trustees consulted with Industry in preparation of this restoration document, with the expectation that this effort will result in parties accomplishing restoration sooner by incorporating flexibility and efficiency into the NRDAR process. This document provides, by way of practical suggestions, means for overcoming obstacles and reaching restoration goals.

## GUIDELINES FOR CONDUCTING COOPERATIVE NRDAR DISCUSSIONS: ASSESSMENT AND RESTORATION

Cooperative NRDAR entails joint involvement of the Trustees and RPs in injury assessment and in restoration planning and implementation. Given that site characteristics and circumstances are typically complex (e.g., complex

ecosystems, multiple contaminants and impacts, multiple Potentially Responsible Parties (PRPs) and Trustees, etc.), involvement in a successful cooperative process requires flexibility and openness on the part of all entities. In addition, establishing and agreeing upon general guidelines that will govern the cooperative process are critical to ensuring that the process stays on track and continues towards the common vision of timely, high quality, and cost-effective restoration.

Based on prior experience, the following list of practices or agreements between the Trustees and PRPs is suggested for achieving effective cooperative settlements:

1. Be willing and able (authorized) to pursue a cooperative settlement via coordinating assessment and restoration planning activities, where possible. Incorporate restoration planning into the assessment with the common goal of early restoration planning and implementation.
2. Agree upon a reimbursement mechanism through the PRPs for the Trustees' work on the cooperative assessment.
3. Build trust through candor, compromise with safeguards (reservations of rights/defenses), and meaningful mutual involvement in decision-making. Proceed incrementally, if necessary.
4. Consider using a neutral facilitator to broker compromises and to build trust between Trustees and PRPs, among Trustees, and among PRPs.
5. Establish open sharing of information (e.g., site database, historical information, pertinent information from other sources, etc.).
6. Agree early upon the framework and assessment tools for injury assessment and restoration planning and implementation (e.g., habitat equivalency analysis).
7. Implement phased approaches to cooperative assessment or data gathering (e.g., attempt to agree upon what existing data reveals, the scope and nature of additional assessment activities, additional activities that can be narrowed in scope as a result of agreements about existing data).

8. Ensure that the right Trustee and PRP participants are involved to help promote efficient restoration planning and implementation (e.g., get managers involved earlier in these processes to help promote decision-making and coordinate assessment and restoration planning functions).
9. Consider opportunities to invest in early, non-binding approaches in order to facilitate timely settlements and restoration (e.g., allow parties to work together in ways that encourage collaboration without the risk of their efforts being used against them later).
10. Simplify decision-making and negotiations by keeping the number of parties at the table to the minimum required to get the work done (e.g., delegate authority to Trustees' and PRPs' representatives in appropriate circumstances).
11. Agree upon the specific resources that are at issue and avoid getting sidetracked by other, less important issues or parameters.
12. Cooperatively address the issue of uncertainty in the assessment, and the cost-benefit of conducting further studies or analyses to reduce the uncertainty (see Figure 1 below). In particular for parameters that do not strongly affect the assessment, such studies (and associated costs) can be avoided with conservative, agreed-upon assumptions. Hence, a balance can be struck that achieves a negotiated compromise, facilitates settlements, promotes efficiency, and accelerates restoration. Uncertainty will always exist but can be tolerated in the interest of progress and efficiency. Parties can reach early agreement on common ground principles instead of building a litigation case. Pursuit of "reasonably conservative" or "reasonable worst case" injury evaluation can narrow down the areas of uncertainty or disagreement for focused data gathering or dispute resolution.
13. Provide opportunities to convey and debate technical arguments clearly and unambiguously so that each side can be informed of the level of importance and convictions held by the other side.

14. Address coordination between cleanup and NRDAR in the CERCLA context. Coordinate injury assessments and remedial investigation ecological risk assessments (promote efficiency in approaches and data gathering; rely on existing information, where possible). Understand the positive and negative effects that remedial actions may have on the relevant resource types, and how these effects will impact recovery time frame and quantification of injury. Integrate cleanup and restoration decision-making and implementation. (See section on Achieving Restoration Goals and Objectives for more detailed discussion.)

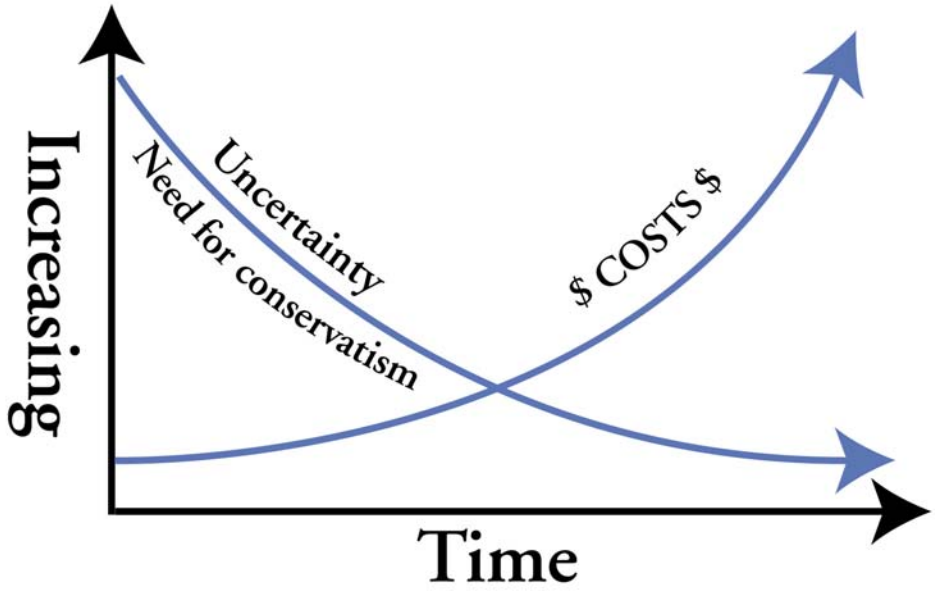


**Figure 1:** Relationship between the need for conservatism, uncertainty, and the cost of reducing the need for conservatism and uncertainty in the "Reasonably Conservative Injury Evaluation" process (courtesy of Ron G. Gouguet, NOAA).

## RESTORATION PLANNING: THE BASICS

The Natural Resource Trustee's primary goal is to seek the timely restoration of injured resources, including lost services, to conditions that would have existed but for the releases (U.S. Department of Interior, 2004).

Restoration Project Categories/Types

An initial step of restoration planning is identifying what categories and types of restoration to consider. Restoration can be categorized into several types of restoration projects.

*Primary Restoration* is action taken to return an injured resource to its baseline condition of service. For example, at a site where remediation of contamination has taken place under CERCLA or another program, the remedial action may be the only appropriate primary restoration action. Alternatively, the remedial action, combined with some other action, such as planting wetland plants, may constitute the primary restoration action. In some cases, a decision may already have been made that returning the resource to its baseline condition of service may not be feasible. Primary restoration should be considered as a possible option as should the potential for natural restoration of the resource.

*Compensatory Restoration* is any action taken to offset the interim losses of natural resources from the date of the incident until recovery.

*Acquisition of Equivalent Resources or Replacement* is the substitution of an injured resource with a resource that provides the same or substantially similar services.

Restoration Project Selection Criteria and Prioritization

Among the basic categories of restoration, primary (on-site) restoration is most preferred, followed by replacement and acquisition of equivalent resources. It is important to note, however, that Trustees must consider both primary and compensatory restoration, and determinations of the appropriate restoration type are generally site-dependent. Where replacement or acquisition of equivalent resources is preferred over primary restoration, there is a preference to select services provided by replacement resources that are more similar to the injured resources (in-kind), and to select projects that are closer to the site of injury. Beyond these basic preferences, there are a variety of factors that should be considered in selecting and prioritizing restoration projects, several of which are listed below.

1. Technical factors to be considered may include, but are not limited to:
    - likelihood of success of the project;
    - technical feasibility of implementing the project;
    - ability to protect the project once implemented;
    - natural recovery period, i.e. the amount of time needed for the resource to recover to baseline levels if no restoration efforts are undertaken; and
    - additional factors listed in DOI NRDA regulations 43 CFR Part 11, §11.82 (d).
2. Projects may be ranked by the benefits provided, such as:
    - providing benefits in multiple resource categories;
    - time required to provide the expected benefits;
    - duration of the benefits;
    - cost/benefit ratio; and
    - relationship of resource benefits to injured resources.
3. Environmental factors may include:
    - project impacts on public health and safety;
    - impacts that may be the direct result of restoration implementation; and

- compliance with applicable laws and level of permitting obstacles.

4. Public factors include:
    - public acceptance of the project;
    - the ability of the project to address issues important to the public; and
    - the level of public benefits.

These and any other relevant factors relating to particular projects can be considered in varying levels of detail. It is often useful to develop a matrix of factors to be considered, including criteria to give appropriate weight to the factors and scoring criteria to be used to rank the projects. Trustees and RPs are likely to have different opinions on the weight to be given to some of the criteria.

It may be appropriate to conduct a tiered evaluation of alternatives, particularly if a large number of alternatives are being considered. A first tier evaluation can focus on threshold factors or factors relating to project benefits and feasibility in order to screen a large number of projects down to a more manageable set. Additional criteria such as cost, environmental, and public factors can be used to further evaluate and prioritize among the remaining projects. (See Appendix A for Matrix of Cases with Restoration Plans.)

Restoration Planning Process Pursuant to CERCLA: Recommendations on How to Streamline Administrative Process

The restoration planning process generally includes the preparation of a plan that describes the alternative restoration projects considered and the criteria used to evaluate the alternatives; provides a justification for the selected alternative; provides a budget for implementation of the selected alternative; and documents public review and comments on the restoration plan. Administrative processes include the National Environmental Policy Act (NEPA) process when federal Trustees are involved and compliance with any permitting or licensing requirements that apply to the restoration project.

Ideally restoration planning at CERCLA sites should be coordinated with remedial activities to streamline the process. Data collection and evaluation, community involvement, and consideration of natural resource damages in conjunction with the evaluation of remedial actions can help streamline the NRDAR process.

Careful up-front planning can streamline the administrative process by integrating the restoration plan with NEPA documentation, if required, and to integrate other steps of the process, such as NEPA public involvement requirements with other public involvement steps taken as part of the restoration planning process. Documentation of the identification, evaluation and selection of a preferred alternative for restoration is similar to the NEPA process. Consequently, if NEPA applies, the restoration plan document can be structured consistent with NEPA requirements for an environmental assessment, eliminating duplication of efforts. Thus, alternatives may be presented, evaluated, and selected as preferred projects via one document, i.e., a Draft Restoration Plan/Environmental Assessment.

Trustees typically issue public notice of the availability of the draft restoration plan for public review and comments. As with the documentation requirements, the public process can be streamlined if public notice and comment on the draft restoration plan can be conducted jointly with other requirements. Following public comment, a final document can be prepared to satisfy all applicable documentation requirements, such as a Final Restoration Plan/Environmental Assessment, that satisfies both the restoration planning process requirements and NEPA requirements.

Administrative requirements also may be streamlined if restoration projects have already undergone evaluation under NEPA or other applicable processes. For example, regional planning or other agency planning processes may have resulted in the evaluation of potential restoration projects in accordance with applicable requirements.

Trustee vs. PRP Implemented Restoration

A restoration project can be funded, constructed, monitored and otherwise implemented by either Trustees or PRPs. In some cases, particularly when a PRP owns the site where restoration will be implemented, it may be less costly and more efficient for the PRP to implement the restoration. Implementation by a PRP may result in cost savings due to a more timely and less expensive process, use of available equipment, and use of other resources more readily available to the PRP. However, provisions for monitoring and reporting to Trustees, Trustee inspections, contingency plans and funds, and funding for Trustee oversight may be needed when the PRP implements the restoration.

Trustee implementation may be more appropriate for a restoration project implemented on public property or when there are multiple PRPs. Since Trustees often administer the same type of public resources that are addressed by a restoration project, Trustees can also efficiently administer restoration projects.

Property Ownership for Restoration Projects

Restoration projects can be implemented on private or public property. When a restoration project is implemented on private property, and particularly when the restoration project must be maintained over a long period of time to achieve the desired level of resource benefits, it is recommended that steps be taken to manage the private property with legal covenants and other protections to ensure that the project is protected and maintained despite potential changes in property ownership or land use. Because of the potential impairment of future transfer and use of private property where a restoration project is implemented, and the resulting potential loss of property value, restoration projects are often implemented on public lands, or, private lands used for restoration projects may be transferred to public ownership or control or management by a third-party non-governmental conservation or management organization.

How a Public Information Process Can Help

As discussed above, some of the factors that are considered in the selection of restoration projects include public acceptance, addressing issues of importance to the public, and the level of public benefits provided. A public information project implemented at an appropriate stage in the restoration planning process can provide the public with information that may avoid public misperceptions and misunderstandings concerning the restoration planning process and projects that are being considered. It also can provide the parties with important information to assess public concerns and priorities.

For CERCLA sites and other sites where a community involvement process is established to address site remediation, there may be a readily useable mechanism for providing the public information regarding the restoration process, and for obtaining public input. Where such an avenue does not exist, a public information process appropriate for the community where the site is located, and possibly where potential restoration projects are located, should be considered.

Measures of Success: Performance Criteria, Monitoring, and Adaptive Management Requirements

Generally, establishment of performance criteria is necessary to measure whether a restoration project provides the anticipated resource benefits. Performance criteria will vary depending on the nature of the project and the resource benefits to be achieved. Once performance criteria are selected, a plan should be developed to monitor the project with respect to these performance criteria. Monitoring also can help with adaptive management of a project to make adjustments based upon lessons learned during implementation. The duration of monitoring should be commensurate with the time it takes to show that the anticipated levels of benefits are likely to be attained and maintained. Provisions for adequate funding for monitoring and management of restoration projects are essential for project success.

## ACHIEVING RESTORATION GOALS AND OBJECTIVES

As stated previously, the Trustee's primary goal is to seek the timely restoration of injured natural resources, including lost services, to conditions that would have existed but for the releases. The following outlines some, but not all, considerations necessary to achieve this goal.

Need for Early Definition

It is important for the technical and legal teams to first understand and then articulate the role of restoration planning and implementation in the overall NRDAR process. Restoration planning should take place throughout the assessment phase of a NRDAR process. In that context, members of the technical team are primarily tasked with determining the appropriate methodologies to scale the restoration based on the nature and extent of the natural resources injuries and service losses. Once the restoration is scaled, the next step is to define the restoration goals and objectives.

Goals and Objectives for Timely and Successful Restoration-Oriented Assessment

The initial definition of the goals and objectives is based on the scaling, as well as the types of services that have been reduced and/or lost. When the technical team has defined the goals and objectives, then they can begin the step of collating and evaluating various restoration options that might exist in the area of interest. This early definition and evaluation is important for a number of reasons. First of all, waiting until the end of the process to set the goals and objectives assumes that there will be a number of equally available (and acceptable) restoration projects in the area of interest. This is not always the case, especially in highly developed or industrialized areas. Second, the legal team is likely to need an early indication of what the technical team is considering, as there may be a need for legal support in the identification and evaluation of potential restoration options. Legal support is often required to advise technical teams on issues related to land use restrictions, local ordinances, ownership, access, and long term protections through

conservation easements, fee title purchase, land use covenants and/or other issues. Waiting until the end of the process only forestalls this discussion and may, in the worst case, result in the NRD settlement being delayed or becoming contentious.

In order to be useful, restoration goals and objectives cannot be abstract and overly broad. For example, setting a goal of achieving "viable tidal wetland in the area of interest" is not specific, nor is it quantitative enough so that the entity implementing the restoration knows when or if they have achieved the goal. A better goal might be "establishing 85% cover over 5 acres by *Spartina patens* within 10 years." While one might argue that the goal is too specific, it provides the needed metric of completion (85% cover), definition of size (5 acres), and time (10 years). The various objectives that would accompany this goal could include: planting of the *Spartina* on 3-foot centers; erosion and other controls on the area during the time of re-establishment (control for wildlife that might destroy the restoration project); or other measures geared for each of several important milestones (e.g., achieve 25% coverage in year 1, 50% by year 3, etc.). The team might also decide that ancillary measures would be useful to understanding the value of the restoration. For example, the team may view the utilization of the newly established wetland by tidal fish as an important restoration objective. To that end, the team may decide that measuring the numbers and types of young-of-year fish that are captured in the restored wetlands is useful, although attempting to set a specific goal for this may be complicated and perhaps unrealistic. While some ecologists might argue that "if you build it, they will come", this may not be the case in all situations and may constrain the team in a way that is not needed.

Relationships to Injured Resources and Restoration Scaling

Scaling may be accomplished through a number of approaches, including Habitat Equivalency Analysis (HEA) and Resource Equivalency Analysis (REA). HEA and REA are tools that allow the technical team to work on the injuries, service losses, and scaling, during the assessment process. There are other approaches to

valuing loss of human use services provided by natural resources that have been injured. These include stated preferences techniques, travel cost model evaluations, factor income and market models of demand and supply, or hedonic price models. Describing these approaches is beyond the scope of this document.

Additional guidance documents regarding restoration scaling are available at: www.noaa.gov. These include: Guidance Document for Natural Resource Damage Assessment Under the Oil Pollution Act of 1990. Injury assessment. (NOAA 1996a); Guidance Document for Natural Resource Damage Assessment under the Oil Pollution Act of 1990. Primary Restoration (NOAA 1996b); and Guidance Document for Natural Resource Damage Assessment under the Oil Pollution Act of 1990. Restoration Planning (NOAA 1996c).

Relationships to Remedial Actions

To the extent possible, NRDAR should be conducted in coordination with any investigations undertaken as part of remedial actions, particularly a Remedial Investigation/Feasibility Study (RI/FS) [43 CFR §11.31(a)(3)]. The Trustees realize that implementing a protective remedy is of primary importance for the protection of human health and the environment. However, in all likelihood, remediation alone will not achieve full restoration of the injured natural resources and the services provided by those resources. Moreover, the timing and nature of the remedy selected will affect the extent and duration of continuing injuries to natural resources. The amount of restoration required will depend, to a degree, on the remedy selected, the timing of its implementation, and the degree to which it is successful. In general, a less protective remedy will result in greater residual injury to natural resources, requiring more extensive restoration to return the resources to their baseline condition, and greater compensation to make the public whole for the additional services lost.

The NRDAR regulations [43 CFR §11.15 (a) (1)] provide that the Trustees may recover damages for “any increase in injuries that are reasonably unavoidable as a

result of response actions taken or anticipated." Thus, through integration of NRDAR into the response actions, injuries can be minimized or mitigated early in the process with the end result being reduced NRD liability.

Another important consideration in NRDAR, done on a case-by-case basis and depending on the services that have been reduced, is the relationship between restoration and any remedial action. The remedial action is often targeted to reduce potentially unacceptable risk to ecological receptors (and natural resources), but it is not designed to offset service losses per se (Barnthouse and Stahl, 2002). However, on a case-by-case basis (and with the agreement of the PRPs), the technical team may decide that it is cost effective and preferable to undertake the remedial action and the restoration at the same time, i.e., to implement restoration as part of the remediation. Where this is found to be the case, the technical team needs to be even more proactive in scaling the restoration based on the injuries and service losses. Sometimes neither the technical team nor the PRPs are prepared to take this "combined" approach, although it has some advantages with respect to achieving a timely resolution of the NRD claim as well as saving money.

Effective integration of restoration into a remedial action requires early coordination among the Trustees, Remedial Agency(ies) and PRPs. Successful integration requires recognition and acceptance of each group's authorities, requirements and/or potential liabilities. Each party must weigh the costs and benefits of such a cooperative action.

## CONCLUSIONS

Through hands on experience, Trustees and industry have recognized the benefits of achieving quality restoration in a timely manner. This document is intended to communicate the NRD Focus Group's experiences on how such restoration was accomplished. Most significant is the willingness on the part of the Trustees and industry to openly discuss the "tough" NRDAR issues in an effort to improve the NRDAR process overall. We hope that this document will encourage the readers to continue this dialogue and develop additional avenues that will facilitate timely restoration in an efficient and cost-effective manner.

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# APPENDIX A:

## Matrix of Restoration Projects for Natural Resources Damages Cases

**Matrix of Restoration Projects for Natural Resources Damages Cases**

| Case Name & Location | Injury Categories | Restoration Projects Selected | Date of Settlement | Project Costs (if known or projected) | Relevant Web site(s) |
|---|---|---|---|---|---|
| **California Cases** | | | | | http://www.dfg.ca.gov/ospr/organizational/scientific/nrda/NRDA.htm |
| Searles Valley Minerals/Searles Lake (Trona, California) | Waterfowl, grebes, loons, other birds | Wetlands creation at Owens Lake, CA (migration stopover) | | | |
| *T/V Command*/ Central California Coast | Marbled Murrelets | Corvid management in the Santa Cruz Mtns; | | | |
| | | Nesting habitat (old growth forest) acquisition & protection | | | |
| | Common Murres | Seabird colony protection program (e.g. education & enforcement) to address human disturbances | | | |
| | | Nesting ledge creation at Farallon Islands | | | |

| Case Name & Location | Injury Categories | Restoration Projects Selected | Date of Settlement | Project Costs (if known or projected) | Relevant Web site(s) |
|---|---|---|---|---|---|
| *T/V Command*/ Central California Coast | Brown Pelicans | Roost site enhancement and protection from disturbance | | | |
| | | Fishing line entanglement education and outreach at piers | | | |
| | Sooty Shearwaters | Rat eradication on nesting islands in New Zealand | | | |
| | Human recreational beach uses | Beach stairway accesses and bike path improvement | | | |
| *American Trader*/Southern California Coast | Human recreational beach uses | Various public beach improvements (parking, bathrooms, lights, etc.) | | | |
| | Brown Pelicans and other seabirds | Rat eradication on Anacapa Island, CA | | | |
| | Western Grebes | Grebe colony protection at northern Calif. lakes from human disturbance | | | |
| *Apex Houston*/Central California Coast | Marbled Murrelets | habitat acquisition & protection | | | |
| | Common Murres | Murre colony restoration (via social attraction, decoys, etc.) | | | |

| Case Name & Location | Injury Categories | Restoration Projects Selected | Date of Settlement | Project Costs (if known or projected) | Relevant Web site(s) |
|---|---|---|---|---|---|
| *Cape Mohican*/San Francisco Bay & Central California Coast | Shoreline habitats; human recreational beach uses; birds; fish | Eradication of non-native vegetation in dunes and saltmarsh; saltmarsh wetland restoration; rocky intertidal protection from human disturbance; foot trail enhancement; contribution to Crissy Field wetlands and recreation area; Least Tern colony enhancement; Snowy Plover protection; Common Murre nesting habitat enhancement at the Farallon Islands; herring spawning habitat enhancement (at pier pilings); steelhead stream restoration. | | | |
| ARCO/Santa Clara River & Mobil/Santa Clara River, California (combined) | Riparian and stream habitat | Eradication of non-native vegetation (e.g. arundo); land acquisition/protection | | | |

| Case Name & Location | Injury Categories | Restoration Projects Selected | Date of Settlement | Project Costs (if known or projected) | Relevant Web site(s) |
|---|---|---|---|---|---|
| Guadalupe Oil Fields/Nipomo Dunes, California | Dune, beach, and riparian habitat | Establishment of a competitive grants program for dune and watershed restoration and education projects (e.g. non-native vegetation control; Snowy Plover management; public trails) | | | |
| Cantara Loop/Upper Sacramento River, California | Fish and all stream biota; recreational fishing | Stream enhancement, including restoration of tributaries; public education and outreach | | | |
| Iron Mtn Mine/Shasta County, California | Fish, including salmon, and stream biota | Improving fish passages and screens; improving in-stream flows by acquiring water rights; spawning gravel enhancement; cattle fencing; riparian planting; non-native vegetation removal; land protection | | | |
| | Human recreational uses | Land acquisition and trail enhancement | | | |

| Case Name & Location | Injury Categories | Restoration Projects Selected | Date of Settlement | Project Costs (if known or projected) | Relevant Web site(s) |
|---|---|---|---|---|---|
| **Massachusetts Cases** | | | | | http://www.mass.gov/envir/nrd/nrd_home.htm |
| New Bedford Harbor NPL site | Sediments; water column; shellfish; recreational fishing; beach usage; anadramous fisheries, Rare & Endangered species: Roseate Terns | | 1992 | $20.2 million | Restoration is On-Going. Visit: http://www.darrp.noaa.gov/northeast/new_bedford/index.html |
| | | **Tern Restoration**: Restore & Enhance Tern Habitat; Implement Tern Recovery Management Plan | | $1.2 Million | |
| | | **Land Preservation**: Acquisition or Conservation Restriction permanently protected 390 acres to date | | $3 Million | |

| Case Name & Location | Injury Categories | Restoration Projects Selected | Date of Settlement | Project Costs (if known or projected) | Relevant Web site(s) |
|---|---|---|---|---|---|
| | | **Anadramous Fish Restoration**: Fish Passage established w/ construction of 265' long Fish Ladder @ river dam; Feasibility Study for partial breaching of 2 additional dams | | $599,000 to date | |
| | | **Salt Marsh Restoration**: Replacement of undersized culverts & clean/enhance old drainage ditches to restore salinity completed @ 2 tidally restricted marshes; 106 acres restored to date. Additional projects underway. | | $75,000 | |
| | | **Shellfish Restoration**: Planting and seeding shellfish; adult contaminated relays. | | $2 million | |
| | | **Eelgrass Restoration:** Survey existing eelgrass beds; transplant eelgrass from established beds to priority reestablishment areas. | | | |
| | | **Parks and Recreation:** Park construction & enhancement to provide passive recreational opportunities. | | $4.2 Million | |

| Case Name & Location | Injury Categories | Restoration Projects Selected | Date of Settlement | Project Costs (if known or projected) | Relevant Web site(s) |
|---|---|---|---|---|---|
| Charles George Landfill NPL site, Tyngsboro, MA | Groundwater, brook, pond, marsh, and wetland, migratory bird habitat | **Land Preservation**: Acquisition of 130 acres of land. | 1993: $1.2 million | Restoration is On-Going: $1.2 million | |
| Posavina, East Boston | Coastal land and habitat, salt water vegetation | Salt Marsh Restoration: Restoration and monitoring of Belle Isle Urban Wild project in East Boston: Indigenous, herbaceous plantings of Spartina and 2 years of enhanced physical and biological monitoring. Partnered with the City of Boston | 2004 | $148,000 | |
| **New Mexico Cases** | | | | | http://www.onrt.state.nm.us/ |
| Sparton Industries/New Mexico | Groundwater | Removal of phreatophytes from shoreline of middle Rio Grande. Development of water conservation ordinances for small communities along middle Rio Grande | | | |

| Case Name & Location | Injury Categories | Restoration Projects Selected | Date of Settlement | Project Costs (if known or projected) | Relevant Web site(s) |
|---|---|---|---|---|---|
| **South Carolina Cases** | | | | | |
| Sangamo/Lake Hartwell – South Carolina | Ecological Damages – Surface Water, Sediment, and Biological Resources (Fish, including large mouth bass) injured by PCB releases; Recreational Fishing – lost fishing opportunities. | Removal of Two Small Dams on Twelve Mile Creek followed by Stream Corridor Restoration consisting of instream habitat structures, erosion control, and planting of native vegetation. | January 30, 2006 | $11,960,000 for lost fishery opportunities; Dam removal costs not available; $160, 000 for ecological monitoring. | |
| **Texas** | | | | | http://www.tceq.state.tx.us/remediation/nrtp/nrtp.html |
| **New Jersey** | | | | | http://www.nj.gov/dep/nrr/ |
| **New York** | | | | | http://www.dec.state.ny.us/website/dfwmr/habitat/hoa1b2j.htm |