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RESOURCE SIGNIFICANCE:

A NEW PERSPECTIVE FOR ENVIRONMENTAL PROJECT PLANNING

by

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for

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Alexandria, VA 22315-3868

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IWR Report ##-#-#

PREFACE

The work reported herein was conducted as part of the Evaluation of Environmental Investments Research Program (EEIRP). The EEIRP is sponsored by the Headquarters, U.S. Army Corps of Engineers (HQUSACE). It is jointly assigned to the U.S. Army Engineer Water Resources Support Center (WRSC), Institute for Water Resources (IWR) and the U.S. Army Engineer Waterways Experiment Station (WES), Environmental Laboratory (EL). Mr. William J. Hansen of IWR is the Program Manager and Mr. H. Roger Hamilton is the WES Manager. Technical Monitors during this study were Mr. John W. Bellinger and Mr. K. Brad Fowler, HQUSACE. The Field Review Group members that provide overall Program direction and their District or Division affiliation are: Mr. David Carney, New Orleans; Mr. Larry M. Kilgo, Lower Mississippi Valley; Mr. Richard Gorton, Omaha; Mr. Bruce D. Carlson, St. Paul; Mr. Glendon L. Coffee, Mobile; Ms. Susan E. Durden, Savannah; Mr. Scott Miner, San Francisco; Mr. Robert F. Scott, Fort Worth; Mr. Clifford J. Kidd, Baltimore; Mr. Edwin J. Woodruff, North Pacific; and Dr. Michael Passmore, Walla Walla.

This report was prepared by Apogee Research, Inc., under Task Order 0032, Contract No. DACW72-90-D-0001. Ms. Amy Doll was the principal investigator, under the general direction of Kenneth I. Rubin, Ph.D. This report was prepared as part of the Determining and Describing Environmental Significance Work Unit, within EEIRP. Mr. Darrell G. Nolton of the Technical Analysis and Research Division (TARD) at IWR manages this work unit. Previous IWR reports that contributed to this report include: a draft *Review and Evaluation of Programs for Determining Significance and Prioritization of Environmental Resources*, prepared by Ms. Amy Doll of Apogee Research, Inc.

The report was prepared under the general supervision at IWR of Mr. Michael R. Krouse, Chief, TARD; and Mr. Kyle E. Schilling, Director, IWR. At the time of publication of this report, Mr. Kenneth H. Murdock was Director, WRSC.

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1. INTRODUCTION

A number of authorities now exist for environmental restoration studies and implementation of restoration projects within the U.S. Army Corps of Engineers (Corps) Civil Works Program. Restoration activities under the Civil Works Program involve examining the condition of existing ecosystems, or portions thereof, and determining the feasibility of restoring degraded ecosystem structures, functions, and dynamic processes to a less degraded, more natural condition. In contrast, mitigation activities address the unavoidable adverse environmental impacts of new project construction and operation. Mitigation is planned for and undertaken concurrently with new project development, and not specifically authorized except in unusual cases. While Corps planners have traditionally viewed restoration as a means of mitigating adverse impacts on fish and wildlife from water resources development, new Congressional authorities and policy changes are providing more and more opportunities to adopt a planning mode specifically for environmental restoration projects. With this new emphasis on environmental projects, the concept of resource significance now has an important and distinct meaning in formulating and evaluating environmental restoration project plans.

This chapter discusses the objectives of this report on resource significance and summarizes existing authorities and policy changes that support environmental restoration studies and projects in the Corps Civil Works Program. It also briefly reviews the planning setting for environmental restoration projects. The final section describes the organization of the report.

1.1 Objectives of the Report

One objective of this report is to encourage Corps planners to rethink their approach to the issue of the "significance" of environmental resources with respect to environmental project planning within the Corps Civil Works Program. Another objective is to summarize the results of a previous study[1] that reviewed and evaluated programs that are currently establishing environmental resource priorities and the methods by which those priorities are being derived. The previous work was conducted as a first step in developing more detailed significance protocols to assist Corps planners in the identification and description of the significance of environmental resources.

The Corps of Engineers is accustomed to planning water resources projects which provide outputs that can be valued in terms of dollars. Flood damage reduction and navigation projects are justified by an economic analysis that compares both project benefits (e.g., flood damage reduction, recreation) and construction and operation costs in monetary terms. Alternative project plans are evaluated based on a discrete decision criterion: the maximization of net national economic benefits. Currently, the Corps Civil Works budget guidance also identifies the restoration and protection of environmental resources, including fish and wildlife habitat, as a priority project purpose. In contrast to traditional project outputs, many of the outputs of environmental restoration projects cannot be

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[1] Apogee Research, Inc., *Review and Evaluation of Programs for Determining Significance and Prioritization of Environmental Resources*, prepared for the U.S. Army Corps of Engineers, Institute for Water Resources, November 1993.

measured in monetary terms because of inherent analytical problems in measuring environmental outputs and assigning accurate monetary values to environmental resources.

Without the option of quantifying environmental outputs in monetary terms, other criteria must be considered for evaluating environmental projects in the Corps planning process and to support plan justification in the Corps budgeting process. Currently, one important criterion[2] appears to be the "significance" of an environmental resource or project. Since the enactment of the National Environmental Policy Act and the adoption of *Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies*[3] (P&G) as the guiding regulation in water resources planning, the issue of significance[4] has been considered in identifying and describing the significant impacts of a proposed action on an environmental resource. For many traditional water resources projects, the significant impacts were detrimental to the affected area. With environmental restoration and protection as a "priority" output in the Corps of Engineers budgeting process, environmental restoration is likely to be a primary mission now and into the future. This requires a new perspective on the issue of significance. The concept of resource significance has a distinct meaning in environmental project planning and is important as a new criterion in establishing a Federal interest for such projects. To implement its environmental mission, the Corps must now evaluate the significance of an environmental resource, including an assessment of scarcity, to assist in justifying an environmental restoration project.

1.2 Environmental Restoration in the Corps Civil Works Program

The Water Resources Development Act of 1990 (WRDA 90) marks a significant change in policy direction for the Corps Civil Works Program. Section 306 of WRDA 90 authorizes the Secretary of the Army to " . . . include environmental protection as one of the primary missions of the Corps of Engineers in planning, designing, constructing, operating and maintaining water resources projects." In addition, Section 307(a) of WRDA 90 establishes as goals, "no net loss of wetlands" and "an increase in the quality and quantity of the Nation's wetlands." In response, the Assistant Secretary of the Army for Civil Works gave protection and restoration of environmental resources equal budget priority with the more traditional navigation and flood damage reduction purposes of the Corps water resources projects and programs. While Sections 306 and 307 support the Corps in pursuit of environmental restoration opportunities, neither section of WRDA 90 provides

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[illegible]

[illegible] Water Resources Council, *Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies*, (March 10, 1983).

[illegible]

a specific new authority to study, construct, or implement specific measures for restoring environmental resources.

Restoration planning studies may be pursued directly under several existing legislative authorities. Section 1135 of the Water Resources Development Act of 1986 (WRDA 86), as amended, provides authority to implement environmental restoration projects through structural or operational changes to completed projects. Section 204 of the Water Resources Development Act of 1992 (WRDA 1992) provides authority to protect, restore and create aquatic and ecologically related habitats, including wetlands, in connection with dredging for construction, operation or maintenance of Corps navigation projects. Section 1103 of WRDA 86, as amended, provides authority to plan and implement restoration projects in support of the Upper Mississippi River System Environmental Management Program. Individual studies and projects to restore environmental resources have also been authorized (e.g., Kissimmee River, Florida, Yolo Basin Wetlands, California).

Planning studies (reconnaissance and feasibility studies) for environmental restoration can be authorized in the same manner that flood damage reduction and navigation investigations are authorized. Such authorizations include individual study authorities granted by legislation, or by favorable reconnaissance studies initiated under Section 216 of the River and Harbor and Flood Control Act of 1970 (i.e., review of the operation of completed projects when found advisable due to significantly changed physical or economic conditions). These studies can examine environmental restoration opportunities.

1.3 Background on Planning Setting for Environmental Projects

In addition to increased emphasis on planning projects with objectives of environmental restoration, there is increasing emphasis within the Corps on planning such environmental projects using an ecosystem approach, with a watershed focus. A comprehensive ecosystem or watershed approach to addressing environmental restoration problems and opportunities is encouraged as a means to develop more sustainable restoration projects. This approach involves a broader focus on restoration of ecosystem characteristics and processes that make habitats self-sustainable over time rather than recreation-oriented fish and wildlife outputs. It also involves defining a study area for planning purposes that encompasses an ecosystem within a watershed and examining the role of environmental resources in the broader context of the ecosystem and its plant and animal communities. Instead of maximizing habitat benefits for a single species or a resource commodity such as game fish or birds, environmental projects should be formulated to restore the structural and functional characteristics of ecosystems to ensure that natural dynamic ecosystem processes are operating effectively.

Greater emphasis on the restoration of ecological structure and function in environmental project planning supports the formulation of projects with primarily environmental outputs that cannot be measured in monetary terms. The Corps budgetary process, however, must continue to address two types of allocation issues: 1) site questions (i.e., whether a recommended action is the most effective and efficient alternative for a particular location), and 2) portfolio questions (i.e., how to allocate limited resources among competing recommended actions). The significance of environmental resources based on their non-monetary values may be used as one of the criteria for

planning, managing, or allocating funds for environmental restoration efforts. Resource significance is particularly important in establishing the Federal interest in an environmental restoration project. Projects that relate to resources considered significant from a national or regional perspective generally will have higher budget priority. The contributions of environmental projects or plans to addressing national or regional resource priorities[5] will be considered in budgetary decisions to ensure that limited funds are directed to the most worthy environmental investments.

Other changes have occurred in the Corps planning setting that support consideration of the significance of environmental resources in project planning. Because of current cost-sharing requirements for planning studies and Federal budget constraints, it is not feasible to conduct broad problem identification and prioritization efforts similar to the basin planning studies prepared under the authority of the Water Resources Planning Act of 1965. Although basin planning studies are no longer being conducted by the Corps, there are existing programs, established agency or organization processes, and readily available information or products that can assist in identifying and setting priorities among environmental restoration problems or opportunities.

Existing information and programs can also be used to determine and describe the significance of particular environmental resources related to a proposed restoration project. The significance of an environmental resource should be determined and described when identifying restoration problems or opportunities in the preliminary phases of environmental plan formulation and evaluation. Because resource significance is important in establishing the Federal interest to justify an environmental restoration project, the planning team should assure themselves as soon as possible in the planning process (i.e., before much planning money has been spent) that a case for resource significance can be made. Focusing on significant resources also makes practical sense. Screening a range of alternatives to only those involving significant resources allows for more meaningful and efficient planning studies.

1.4 Organization of the Report

The remainder of this report discusses the use of significance as a criterion that should be considered in environmental project planning and provides information on existing programs that can assist Corps planners in determining and describing resource significance. Chapter 2 discusses institutional, public, and technical recognition as the three bases for determining and describing the significance of environmental resources. It also introduces useful terms for describing significance in an ecosystem or watershed context and provides examples of questions for field planners to consider in viewing significance from a new perspective for environmental restoration projects. Chapter 3 summarizes the approach and selected findings of the previous study, *Review and*

Evaluation of Programs for Determining Significance and Prioritization of Environmental Resources.

Chapter 4 presents examples of existing programs that can assist in the identification and description of the significance of environmental resources. It summarizes selected exemplary programs among the categories listed below:

- Models of a prioritization process to derive national environmental resource priorities,
- Models of a prioritization process to derive regional environmental resource priorities,
- Models which use established sets of scientific or technical criteria as a source of priority recognition,
- Models which use institutional criteria or laws as a source of priority recognition,
- Models which incorporate public support or opinion as a source of priority recognition, and
- Models which promote interagency cooperation to establish environmental resource priorities.

Chapter 5 reviews conclusions from the previous study and discusses future steps in developing planning methodologies for determining and describing significance in environmental plan formulation and evaluation.

2. SIGNIFICANCE: A DECISIONMAKING PROTOCOL IN PROJECT PLANNING

In environmental project planning, resource significance is established by institutional, public, or technical recognition of the environmental resources or attributes in the study area. This chapter first reviews the concept of significance and then discusses institutional, public, and technical recognition as the three bases for determining and describing the significance of environmental resources. It also introduces useful terms for describing significance in an ecosystem or watershed context and provides examples of questions for field planners to consider in viewing significance from a new perspective for environmental restoration projects.

2.1 The Concept of Significance

In 1983, the U.S. Water Resources Council published the *Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies* (P&G). The methodology in P&G is the analytical procedure currently used by the Corps of Engineers in evaluating alternative water resources projects. To be considered in plan formulation and evaluation, P&G requires that environmental resources be "significant." Significant environmental resources are defined as those that are institutionally, publicly, or technically recognized as important. As defined in P&G, the term "significant" means "likely to have a material bearing on the decisionmaking process."[6] In terms of environmental plan formulation and evaluation, the significance of environmental resources based on their non-monetary values may be established by institutional, public, or technical recognition of the importance of the environmental resources or attributes in the study area.

Focusing on significant issues is also required by the Council on Environmental Quality (CEQ) National Environmental Policy Act (NEPA) regulations (40 CFR 1500.1(b), 1501.7(a) (2) and (3), and 1502.2(b)). The NEPA regulations require that a process called "scoping" be used to identify the likely significant issues and the range of those issues. This scoping process is used to select the specific issue areas to be studied during an environmental review. The NEPA process can be integrated with environmental restoration project planning to ensure that all significant issues are analyzed.

In environmental project planning, existing information and programs can be used to determine and describe the significance of particular environmental resources related to a proposed restoration project. However, determinations of resource significance and prioritization listings from existing information and programs should not be indiscriminately used. Corps planners should review the process used for the determination of significance or prioritization listing. Until further guidance is available on what constitutes an appropriate process, planners should assure themselves that

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[6] Water Resources Council, *Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies*, (March 10, 1983), paragraph 3.2.1. Also see ER 1105-2-100, "Guidance for Conducting Civil Works Planning Studies," (December 28, 1990), p. 7-4. Also known as the "Planning Guidance Notebook," this guidance is currently under revision.

determinations of significance or environmental resource priorities will have beneficial environmental results consistent with policy from the Office of the Assistant Secretary of the Army (Civil Works).[7]

2.2 Significance based on Institutional Recognition

Significance based on institutional recognition means that the importance of an environmental resource is acknowledged in the laws, adopted plans, and other policy statements of public agencies, tribes, or private groups. Sources of institutional recognition include:

- Public laws, executive orders, rules and regulations, treaties, and other policy statements of the Federal government. Table 7-3 in ER 1105-2-100 lists the Federal policies that should be considered in all studies as bases for identifying institutionally recognized significant resources. Other Federal policies should be considered as appropriate.

- Plans and constitutions, laws, directives, resolutions, gubernatorial directives, and other policy statements of states with jurisdiction in the planning area. Examples are state water and air quality regulations; state lists of rare, threatened, or endangered species; state comprehensive fish and wildlife management plans; and state wetlands priority plans.

- Laws, plans, codes, ordinances, and other policy statements of regional and local public entities with jurisdiction in the planning area. Regional entities include river basin commissions, councils of government, and regional planning boards. Local entities include counties, districts, parishes, cities, towns, tribal governments and villages. Examples of their sources of institutional recognition are regional open space plans and local zoning ordinances.

- Charters, bylaws, and formal policy statements of private groups. Examples are the National Audubon Society Blue List of Species, and listings of priority properties of The Nature Conservancy.

In some cases, environmental resources may be considered by law as highly significant. Species listed as endangered species under the Endangered Species Act of 1973, as amended, are considered highly significant regardless of their role within the ecosystem of a study area. Under this Act, the Secretary of the Interior may also designate the "critical habitat" for a listed endangered species, which is defined to include areas essential for the conservation of the species. In such cases, the Endangered Species Act provides institutional recognition of not only the endangered species but also its habitat. Other examples of the listing of protected species or the designation of critical areas because of their environmental importance can be found in state laws and regulations.

2.3 Significance based on Public Recognition

Significance based on public recognition means that some segment of the general public recognizes the importance of an environmental resource. Public recognition may take the form of controversy, support, conflict, or opposition and may be expressed formally (as in official letters) or informally. For environmental restoration projects, willingness to cost share or evidence of local public support (e.g., volunteer efforts to restore urban streams) are also indicators of public significance. Environmentally related customs and traditions should also be considered.

Environmental resources recognized as important by the public may change over time as public preferences and perceptions change. In addition, the significance of a particular resource may differ among interested parties. Different interest groups (e.g., environmental organizations, recreation user groups, and fish and wildlife groups) may express differing values and concerns for the non-monetary values associated with environmental resources. Such differences should be documented, including the rationale used in selecting and developing arguments to describe public recognition of the significance of particular environmental resources.

Corps planners should invite the public to participate in the identification of environmental resources that are considered significant. The public's participation in this activity can be used to meet the scoping requirements of P&G and the NEPA regulations (40 CFR 1501.7) to avoid duplication of public involvement efforts.

2.4 Significance based on Technical Recognition

Significance based on technical recognition means that the importance of an environmental resource is based on scientific or technical knowledge or judgement of critical resource characteristics. Examples are spawning areas for native fish in a channelized stream, summer roosting areas for bald eagles, and nesting areas for colonial shorebirds considered scarce due to loss of habitat.

A resource's technical significance may differ between geographic areas and depending on whether a local, regional, or national perspective is being taken. Technical significance is also affected by the spatial scale used in a planning study. Typically, a watershed or larger context (e.g., ecosystem, landscape, ecoregion) is required when considering the technical significance of environmental resources. Restoration projects should be related to environmental resources that are considered significant within an identified watershed or larger context. While it is recognized that virtually all species and habitats are important in an ecosystem context, limited funds and planning resources necessitate focusing on those considered significant in terms of justifying a Federal interest. Generally, technical recognition from a national or regional perspective provides more supportable data and arguments to establish the Federal interest in an environmental restoration project.

There are many scientific and technical criteria or concepts that may assist in determining and describing technical significance. Examples of criteria or concepts relevant to technical recognition are listed below:

- **Scarcity**. Scarcity is a measure of a resource's relative abundance within a specified universe; ranging from "rare or uncommon" to "widespread or abundant." Additionally, "rare" can indicate either few in number or found in few places or both. The scarcity or uniqueness of a resource may vary from an international, national, regional, state, or local perspective.

- **Representativeness**. Representativeness is a measure of the importance of a species in representing the biological communities within the ecosystem. It may be used to indicate the importance of a species in the prior or pre-disturbance condition of the ecosystem represented by the study area, or the importance of a species in a reference ecosystem (e.g., an area with similar ecosystem structural and functional characteristics).

- **Status and Trends**. The concept of status and trends involves evaluating the occurrence and extent of species and habitats over time, how they have changed, and why. Such information may be used to indicate the immediacy or the degree of threat of loss or degradation of a resource given current conditions.

- **Landscape Considerations/Connectivity**. Connectivity is a measure of the degree of habitat or population fragmentation; ranging from "connected and sustainable," to "fragmented," to "isolated." It may be used to indicate recovery potential if the level and type of disturbance in adjacent areas is reduced, or if corridors are created between currently discontinuous habitat areas or undisturbed areas.

- **Critical Habitat**. Critical habitat represents a habitat type essential for the conservation or survival of a species. Where critical habitat is designated under Federal or state law, this also provides institutional recognition of significance.

- **Biodiversity**. Biodiversity encompasses not only the variety of distinct species and the genetic variability within them, but also the ecosystems they inhabit. Biodiversity is an important measure of ecosystem quality.

Scientific uncertainty and information gaps may become an issue in determining and describing technical significance. Planners can use sources of technical recognition based on established scientific and technical criteria, where such criteria are available, or sources that rely on best professional judgement of critical resource characteristics. However, all sources of technical recognition should be reviewed to determine the extent to which they are based on scientific input by the appropriate disciplines.

2.5 Multiple Recognition

In practice, resource significance may be recognized on more than one basis. For example, a specific bird species may be institutionally recognized (protected by Federal and state law), publicly recognized (of interest to the local community), and technically recognized (due to its uniqueness in the environment). The planning process should identify and document all supportable bases of significance for the environmental resources or attributes in a study area.

2.6 Definitions of Useful Terms

Definitions of useful terms for determining and describing resource significance in an ecosystem or watershed context for environmental project planning are provided below. These terms are environmental resource, ecological attributes, ecoregion, ecosystem, habitat, landscape considerations, and watershed.

- **Environmental resource.** An environmental resource is a natural form, process, system, or other phenomenon that: 1) is related to land, water, atmosphere, plants, animals, or biological communities, and 2) has one or more ecological attributes.

- **Ecological attributes.** Ecological attributes are components of the environment and the interactions among all its living (including people) and nonliving components that directly or indirectly sustain dynamic, diverse, viable ecosystems. Ecological attributes include functional and structural characteristics of ecosystems.

- **Ecoregion.** An ecoregion is a large biogeographical unit characterized by distinctive biotic (i.e., species, populations, and communities) and abiotic (i.e., land, air, water, energy) relationships.[8]

- **Ecosystem.** An ecosystem is the dynamic and interrelating complex of plant and animal communities and their associated non-living environment. Ecosystems occur at spatial scales that range from local through regional to global.[9]

- **Habitat.** Habitat refers to the place occupied by an organism, population or community. It is the physical part of the community structure in which an organism finds its home, and includes the sum total of all the environmental conditions present in the specific place occupied by an organism. Often a habitat is defined to include a whole community of organisms.

- **Landscape Considerations.** Landscape considerations take into account the effects of spatial and temporal heterogeneity, geometry, and areal extent on ecological processes. These are not only considerations of the detrimental effects that activities and conditions in adjacent areas can have on the restoration project, but also, the migratory routes and dispersal patterns for species of interest, invertebrates and food

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[8] Ecoregions have been delineated by Robert G. Bailey, 1976, "Ecoregions of the United States" (map), published by the U.S. Forest Service; and by James M. Omernik, 1987, "Ecoregions of the Coterminous United States," *Annals of the Association of American Geographers*, vol. 77, pp. 118-125.

sources. Landscape considerations also take into account accessibility of areas from which recolonizing individuals can come.

- **Watershed.** Watershed refers to the geographically defined drainage basin that contributes water to an ecosystem or habitat. For environmental project planning, the watershed is the hydrologic unit encompassed in the study area because the events and activities therein influence the ecological success of the proposed restoration project. The watershed will be defined by the scope of the study and study objectives.

2.7 Examples of Questions Related to Significance

This section presents examples of questions that may assist Corps planners in identifying significant resources and, in a broader sense, enhance the awareness and importance of resource significance in environmental project planning. The example questions are listed below.

- What is (are) the environmental resource(s) related to a restoration problem or opportunity?
- Why is it important to protect, enhance, or restore that resource?
- What is special about the resource that makes it not only important to us individually but also to us as a society?
- Does the resource fall into the category of threatened or endangered?
- Is the resource listed or proposed for listing on a protected list?
- Has the resource received any national or international designations (e.g., Wetland of International Importance)?
- Does the resource contribute to the enhancement of a larger system (e.g., watershed, ecosystem, landscape) or other species?
- Are there existing laws or regulations (local, state, regional, or Federal) that serve to protect a particular type of habitat or species, and are they effectively implemented?
- How does the local government view the resource?
- How does the state government view the resource?
- How do various interest groups (e.g., environmental organizations, recreation user groups, and fish and wildlife groups) view the resource?
- Have the state and local governments spent money in the past to protect, enhance or restore the resource?

- Have any interest groups spent money (directly or in cooperation with government agencies through contributions or cost sharing) to protect, enhance or restore the resource?

- Do neighboring states or local governments have similar priorities with respect to the resource?

- Is there a nationally recognized effort to protect, enhance, or restore the resource (e.g., the Upper Mississippi River System Environmental Management Program)?

- Are there existing or planned efforts among national nonprofit organizations (e.g., The Nature Conservancy, National Audubon Society) to protect, enhance, or restore the resource or similar resources?

3. STUDY APPROACH AND FINDINGS

This chapter summarizes the approach and selected findings of the study, *Review and Evaluation of Programs for Determining Significance and Prioritization of Environmental Resources.*[10] The objective of the study was to review and evaluate programs that are currently establishing environmental resource priorities and the methods by which those priorities are being derived. Many Federal agencies have developed and are continuing to develop programs to facilitate decisions about environmental resource priorities. The states as well as various regional and nonprofit organizations have also developed or are developing programs to determine environmental resource priorities. A review of such programs was conducted as a first step in developing more detailed significance protocols for environmental plan formulation and evaluation. The results of the study will be used to: 1) assist in identifying appropriate processes for determining institutional, public, and technical significance, and 2) if appropriate processes exist, identify whether they result in readily available information or products that could be used by the Corps in determining significance and prioritization of environmental resources.

3.1 Study Approach

A set of general guidelines were developed to identify and select existing programs that: 1) conduct activities related to planning or management for environmental mitigation, protection, or restoration; and 2) are used to determine the significance of, or prioritize, environmental resource areas or activities. Two different levels of prioritization -- national and regional -- were considered in identifying and selecting programs for the study. The general guidelines are outlined below:

- Focus on programs that conduct planning or management for restoration or protection of aquatic habitat, such as lakes, wetlands, rivers, or riparian areas, or of aquatic environmental resources, such as fish and wildlife.

- Identify, where possible, whether the program has a prioritization process of determining "significance," or deriving national or regional priorities for protection or restoration efforts. Also identify, where possible, whether the process resulted in specific products that could be used by the Corps.

- Provide more emphasis to planning processes than regulatory programs, programs that focus primarily on research or education, or programs that exist primarily for fundraising.

Programs selected using the guidelines above were evaluated to determine whether they were appropriate for more detailed review and for preparation of an abstract summarizing the program. In most cases, programs were selected for the summary abstracts if they actually implement a

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[10] Apogee Research, Inc., *Review and Evaluation of Programs for Determining Significance and Prioritization of Environmental Resources*, prepared for the U.S. Army Corps of Engineers, Institute for Water Resources, November 1993.

prioritization process (i.e., conduct a systematic evaluation and use the results of determining significance to set priorities for planning, management, or allocating funds). In other cases, the prioritization process was more informal, but considered effective in meeting a program's goals. A set of criteria were developed to determine whether a program was appropriate for more detailed review. The criteria used to select programs for the summary abstracts, in order of importance, are outlined below:

- The program has an established process (or uses established criteria) for determining the significance of environmental resource areas or activities. Further, the basis for determining significance is within the realm of P&G (e.g., law, scientific findings, or public opinion/preference).

- The program has an established process (or uses established criteria) for deriving national or regional priorities for environmental mitigation, protection, or restoration efforts.

- The program evaluates and selects among alternative environmental resource areas, projects, or activities on the basis of their potential benefit or consistency with a clearly defined program mission.

Summary abstracts were prepared for 95 programs that met the criteria. Because it was not possible to identify every potential program throughout the United States, the 95 programs selected for the study represent examples, not an all inclusive listing, of programs that can assist in determining and describing the significance of environmental resources. An effort was made to select good examples of programs that actually implement a prioritization process for different types of environmental resources. Consequently, the types of environmental resources covered by the 95 programs include wetlands, rivers, riparian areas, lakes, and estuaries.

The summary abstract for each program presented information on the program's goals and objectives; the types of activities associated with the program; the sources of priority recognition; and the process of determining the significance of environmental resources, or which environmental resources deserve a level of priority for mitigation, protection, or restoration efforts. Relevant products, such as databases, lists of designated significant environmental resources, or plans that describe national or regional resource goals or priority resource areas, were also referenced where appropriate.

3.2 Summary of Findings

A total of 95 programs were reviewed, which includes selected Federal, regional, state, and nonprofit organization programs as well as several examples of historical programs. Exhibit 1 presents the number of programs reviewed by the five types of programs considered in the study.

Exhibit 1. Number of Programs Reviewed

Type of Program	Number of Programs
Federal	42
Regional	2
State	42
Nonprofit	6
Historical	3
TOTAL	95

The geographic scope covered by a program or product is summarized in Exhibit 2. For purposes of the study, the geographic scope was defined as the geographic area where a program is currently authorized to conduct activities that relate to environmental mitigation, protection, or restoration. Two of the Federal programs (North American Waterfowl Management Plan and North American Wetlands Conservation Act Grant Program) involve international cooperation among the United States, Canada, and Mexico, to protect, restore, and enhance wetland habitat for migratory waterfowl. Another Federal program (Great Lakes Program) conducts restoration and protection activities under an international agreement between the United States and Canada. One of the nonprofit organization programs (The Nature Conservancy) works globally to identify significant species and natural areas and set priorities for their protection.

Exhibit 2. Geographic Scope Covered by a Program or Product

Type of Program	Geographic Scope of Program				
	Interna-tional	Nationwide	Regional/ Multi-state	Statewide	Regional/ within one state
Federal	3	22	16	0	1
Regional	0	0	2	0	0
State	0	0	0	34	8
Nonprofit	1	4	0	0	1
Historical	0	2	0	1	0
TOTAL	4	28	18	35	10

Twenty-two programs (52 percent) of the 42 Federal programs are authorized nationwide, while another 16 programs (38 percent) are authorized over a regional area that includes more than one state. Most of the Federal programs in the regional/multi-state category are authorized in the western states or in coastal areas. One Federal program, which is authorized by the Coastal Wetlands Planning, Protection, and Restoration Act of 1990, addresses the significant loss of coastal wetlands in the state of Louisiana. Of the 42 state programs, 34 programs (81 percent) are authorized statewide. Among the eight state programs selected for the study that cover a regional area within a state, five are authorized for coastal areas and three are authorized in Joint Venture areas under the North American Waterfowl Management Plan. The two regional programs address regionally significant fish and wildlife issues in the Pacific Northwest, which includes the states of Idaho, Montana, Oregon, and Washington. The three historical programs include examples of two national programs and one state program.

Exhibit 3 presents a summary of the number of programs or products that use each of the three sources of priority recognition -- institutional, public, and technical. The sources of priority recognition for each program were identified by examining the criteria used by a program or product for determining the significance of environmental resources, or the process of determining which environmental resources deserve a level of priority for mitigation, protection, or restoration efforts. Exhibit 3 also indicates the number of programs where the prioritization process resulted in specific spatial designations of significance that can be used by the Corps in identifying and describing significant environmental resources.

Exhibit 3. Sources of Priority Recognition and Spatial Product

Type of Program	Sources of Priority Recognition			Spatial Product
	Institutional	Public	Technical	
Federal	42	22	36	22
Regional	2	2	2	2
State	41	23	42	34
Nonprofit	2	4	5	2
Historical	3	0	3	3
TOTAL	90	51	88	63

A comparative analysis of the 95 programs was conducted to facilitate some generalizations about the determination of national and regional resource priorities, the bases for determination of significance, and the potential applicability of the process or products to environmental project planning in the Corps Civil Works Program. Results from the comparative analysis of 95 programs were used to classify each of the programs by six general categories of potential applicability to the Corps' environmental program. The Appendix to this report presents the results of the comparative

analysis and is designed as a tool to indicate the potential applicability to the Corps of the process or product for each program. The six general categories of potential applicability used in the Appendix are listed below:

- Provides a model of a prioritization process to derive national resource priorities,
- Provides a model of a prioritization process to derive regional resource priorities,
- Identifies significant environmental resources and provides that information in a manner useful to water resource planners,
- Uses an established set of scientific or technical criteria as a source of priority recognition,
- Provides a model for incorporating public opinion/preference as a source of priority recognition, and
- Provides a model of interagency cooperation to establish environmental resource priorities.

4. EXAMPLES OF EXISTING PROGRAMS THAT CAN ASSIST IN IDENTIFICATION AND DESCRIPTION OF THE SIGNIFICANCE OF ENVIRONMENTAL RESOURCES

There are many existing programs that can assist Corps planners in the identification and description of the significance of particular environmental resources. The review of programs discussed in the previous chapter covered a wide range of existing programs that are used to evaluate environmental projects and/or to determine the significance of, or prioritize, environmental resource areas or activities. This chapter presents selected examples of existing programs that could be used by Corps planners to determine and describe the significance of environmental resources related to restoration problems or opportunities. The sections below summarize exemplary programs among the following categories:

- Models of a prioritization process to derive national environmental resource priorities,
- Models of a prioritization process to derive regional environmental resource priorities,
- Models which use established sets of scientific or technical criteria as a source of priority recognition,
- Models which use institutional criteria or laws as a source of priority recognition,
- Models which incorporate public support or opinion as a source of priority recognition, and
- Models which promote interagency cooperation to establish environmental resource priorities.

The brief summary of each selected program includes a description of information available from the program that can be used by Corps planners in identifying significant environmental resources and/or national or regional priorities for environmental protection or restoration. For each program, the summary includes a short section describing the potential applicability to the Corps of a program's prioritization process or product (e.g., databases, lists of designated significant environmental resources, plans that describe national or regional resource goals or priority resource areas).

4.1 Models of a Prioritization Process to derive National Environmental Resource Priorities

This section summarizes two examples of programs that can be used to derive national environmental resource priorities. These programs are the North American Waterfowl Management Plan and the National Estuary Program. Examples of two additional programs that indicate national priorities for protection of riverine ecosystems -- the Nationwide Rivers Inventory and the National Wild and Scenic Rivers System -- are presented in Section 4.4.

North American Waterfowl Management Plan

Established in 1986, the North American Waterfowl Management Plan (NAWMP) is an international plan to reverse the downward trend in waterfowl populations by identifying, protecting, and improving priority waterfowl habitats across the North American continent. The overall goal of NAWMP is to protect, restore, and enhance wetland habitat and return waterfowl populations to levels observed in the 1970s. The continental approach of NAWMP facilitated development of a 15-year framework for international cooperation between the countries of the United States, Canada, and Mexico. The following principles were endorsed by the three countries to guide their waterfowl management and habitat conservation measures undertaken within the framework of the NAWMP:

- Wetlands and waterfowl constitute one of North America's highly valued natural heritages.

- Conservation takes precedence over any other use of the waterfowl resource.

- The maintenance of abundant waterfowl populations is dependent on the long-term protection, restoration and management of habitat at a landscape level. The persistent loss of important wetlands and associated uplands throughout North America must be reversed.

- Protection of waterfowl and their habitats in North America requires long-term programs and the close cooperation and coordination of management activities by Canada, the United States and Mexico.

- Population and habitat objectives for waterfowl will be met through long-term actions that maintain or enhance other ecological values and promote biological diversity on a landscape basis.

- Joint ventures of private and governmental organizations are the primary vehicle for implementing high-priority projects of international concern.

- Contemporary habitat conservation actions that counter 200 years of habitat degradation on a landscape scale will take time to result in significant waterfowl population responses.

- The managed subsistence and recreational harvest of the renewable waterfowl resource are consistent with its conservation, and will continue to be managed under existing regulatory processes in Canada, the United States and Mexico, to ensure they are compatible with waterfowl population needs and with attaining goals under the NAWMP.

The NAWMP is implemented by the North American Waterfowl Management Plan Committee, which has six members appointed by the Director General of the Canadian Wildlife Service, six members appointed by the Director of the U.S. Fish and Wildlife Service, and one appointed by the National Institute of Ecology to represent Mexico. The six U.S. representatives

include two representatives from the U.S. Fish and Wildlife Service and four state representatives from the United States. The North American Waterfowl and Wetlands Office of the U.S. Fish and Wildlife Service represents the government of the United States by administering the NAWMP and coordinating efforts with the other two partner countries. Private foundations and conservation groups form the nineteen-member Implementation Board, which contributes to the NAWMP through fund raising, communications support, and lobbying.

Based on their importance to waterfowl breeding and wintering habitats, the NAWMP identifies 34 waterfowl habitat areas of major concern in the United States and Canada. Five of the 34 areas are identified as priority habitat areas (or ranges) and thus targeted as areas to begin implementation of the NAWMP. These five areas are the Lower Mississippi River Delta and Gulf Coast, Prairie Potholes and Parklands, Middle-upper Atlantic Coast, the Central Valley, and the Lower Great Lakes-St. Lawrence Basin. The five priority habitat areas became the first eight joint ventures (Atlantic Coast, Central Valley, Gulf Coast, Lower Great Lakes/St. Lawrence Basin, Lower Mississippi Valley, and Prairie Pothole joint ventures in the United States; and Eastern Habitat and Prairie Habitat joint ventures in Canada).

Within the priority waterfowl habitat areas, partnerships are formed called "joint ventures." A joint venture is a partnership between public/private entities that is established because of common waterfowl management and habitat conservation objectives pertaining to a particular physiographic region. Currently, there are 12 active habitat joint ventures in the United States and Canada and two population joint ventures (Artic Goose Joint Venture and Black Duck Joint Venture). The joint ventures are usually composed of state, local, provincial, and Federal agencies, corporations, conservation groups, and individuals. These joint ventures serve as the principal mechanism to implement NAWMP goals and objectives on a regional basis. Each joint venture's activities are administered by a Joint Venture Management Board, which constitutes representatives of partners in the joint venture. These partners can combine staff resources, funding, and influence to accomplish collectively projects that could not be done separately. Joint Venture Implementation Plans outline specific joint venture habitat objectives, identify priority habitats, and specify priority projects within the joint venture area.

Authorization for the NAWMP came in 1986 when the U.S. Secretary of the Interior and the Minister of the Environment for Canada signed the North American Waterfowl Management Plan. Mexico became a full partner in the NAWMP with the 1993 update. Congressional recognition of the NAWMP comes from the North American Wetlands Conservation Act of 1989. Department of the Army support to the NAWMP is set forth in an agreement signed with the Department of the Interior in 1989.

Potential Applicability

The NAWMP could be used to indicate national priorities for the protection, restoration, and management of waterfowl habitat and provide both institutional and technical recognition of the significance of specific habitat areas. The International Agreement with Canada and the Cooperative Agreement between the Corps and the U.S. Fish and Wildlife Service concerning NAWMP provide institutional recognition of the significance of waterfowl habitats. Technically, the NAWMP identifies 34 waterfowl habitat areas of major concern in the United States and Canada and further identifies

five as priority habitat areas. Restoration projects under consideration in these habitat areas, therefore, could potentially be related to both institutionally and technically recognized significant resources.

National Estuary Program

The National Estuary Program is administered by the U.S. Environmental Protection Agency (EPA). The program was authorized by Section 320 of the Water Quality Act of 1987 to identify nationally significant estuaries threatened by pollution, development, or overuse, and to convene Management Conferences to develop Comprehensive Conservation and Management Plans (CCMPs) to ensure their ecological integrity. The overall goals of the National Estuary Program are protection and improvement of water quality and enhancement of living resources.

For an estuary to become part of the National Estuary Program, it must first be nominated by a state governor. The governor must show that the proposed body of water is nationally significant and meets given EPA criteria requirements. After the EPA Administrator reviews the nomination and selects the estuary for the National Estuary Program, the EPA Administrator convenes a Management Conference to oversee estuary activities. The Management Conference includes the EPA Administrator (or designee); representatives of other Federal, state, and local government agencies as well as any appropriate interstate or regional entities; and representatives of affected industries, educational institutions, and the general public. For each estuary, the Management Conference identifies and ranks the most important environmental problems based on scientific and technical information. This information is then used to formulate the CCMP and its action plans.

Potential Applicability

Currently, there are 21 estuaries of national significance in the National Estuary Program. These 21 estuaries and important living resources and their habitats identified in CCMPs could be used to provide institutional as well as technical recognition of the significance of specific estuarine areas.

4.2 Models of a Prioritization Process to derive Regional Environmental Resource Priorities

This section highlights the Protected Areas Program (Pacific Northwest Rivers Study/Hydropower Assessment Study) as a good example of a prioritization process to derive regional environmental resource priorities. Other examples of programs that can assist in identifying regional environmental resource priorities include EPA's geographically targeted initiatives such as the Chesapeake Bay Program, Great Lakes Program, and Gulf of Mexico Program. Through such initiatives, EPA is coordinating comprehensive, aquatic ecosystem-based programs to protect and restore natural resources and address threats to human and ecosystem health.

Protected Areas Program (Pacific Northwest Rivers Study/Hydropower Assessment Study)

The Northwest Power Planning Council and the Bonneville Power Administration (BPA) conducted the Pacific Northwest Rivers Study and Hydropower Assessment Study (HAS) to identify critical fish and wildlife habitat in the Columbia River Basin. The Council then developed the Protected Areas Program as a major regional policy initiative to protect critical habitat. The Council derives its authority from the Northwest Power Act of 1980, which required the Council to develop a program to "protect, mitigate, and enhance fish and wildlife, including related spawning grounds and habitat" that had been affected by hydroelectric development in the Columbia River Basin. Based on extensive cooperative studies, the Council designated certain river reaches in the region as "Protected Areas," where the Council believes hydroelectric development would present an unacceptable risk of loss to fish and wildlife species of concern, their productive capacity, or their habitat. Designated Protected Areas are those river reaches or portions of reaches listed on the Protected Areas List adopted by the Council on August 10, 1988, or as later amended by the Council. The Council listed 44,000 miles of protected streams in 1988, which is about 12 percent of the region's total stream miles. For each designated Protected Area, the fish and wildlife species to be protected are those identified on the Protected Areas List. Protected area designation is now maintained as the Northwest Environmental Data Base (NED).

NED is currently the repository for regional rivers data. Development of NED began with HAS, which included four distinct components: 1) the development of a regional hydropower site data base; 2) an assessment of anadromous fish; 3) an assessment of Indian cultural sites; and 4) an assessment of other river-related environmental values. Because the fourth component had the broadest range of resource and geographic coverage, the environmental values assessment was organized into a distinct study called the Pacific Northwest Rivers Study. The Council coordinated most aspects of HAS, which was a cooperative regional effort by the Council, BPA, the four Pacific Northwest states, Native American tribes, and Federal land management agencies. BPA coordinated and funded the Pacific Northwest Rivers Study with oversight from the Council's Hydropower Assessment Steering Committee.

The NED contains assessments of the significance of the region's rivers for use in the Council's Protected Areas Program, system planning for anadromous fish, and BPA's regional hydropower supply estimates. Since completion of HAS in 1986, data have been structured under NED into both regional and state-specific computerized information systems. Each state has prepared and now maintains a Rivers Information System accessible to the public. These systems are compiled into personal computer, menu-driven user access systems. The software that comes with the data enables users to locate easily any river in the region, traverse up or down stream or up a tributary, and view summary data describing that river reach. Information updates are transmitted from the states to the regional system biannually. Source data are maintained at the state level to ensure accuracy and ties to other state data collection efforts. Data are currently available for over 34,000 distinct river reaches, covering approximately 135,000 miles of streams throughout the region.

The Pacific Northwest Rivers Study assessed natural, recreational, and cultural values associated with the 350,000 miles of rivers that flow through Washington, Montana, Idaho, and Oregon. The study compiled existing information; structured evaluation by resource experts; and comments from participating agencies, tribes, scientists, river users, and the public into an assessment

of significant river resources. The result is a determination of the relative significance of each river segment for six resource categories, based upon the best available scientific information. The six resource categories chosen as indicators of the environmental significance of rivers were: 1) resident fish, 2) wildlife, 3) natural features, 4) cultural features, 5) recreation opportunities, and 6) institutional constraints. Criteria and standards were developed to evaluate each resource category and assign one of five value classes to a river segment to denote its relative significance: 1) outstanding, 2) substantial, 3) moderate, 4) limited, or 5) unclassified or unknown. Organizationally, the Pacific Northwest Rivers Study was structured within each state by resource category and geographic region. Because the states followed parallel assessment procedures, the resulting data bases were similar and selected information for the entire region could be compiled into the regional data base.

Potential Applicability

Through the assessment of a wide variety of environmental values for the rivers in Washington, Montana, Idaho, and Oregon, the Pacific Northwest Rivers Study could provide both institutional and technical recognition of the significance of specific rivers or river segments in the region. In addition, the 44,000 miles of protected streams listed for the Council's Protected Areas Program (under authority derived from the Northwest Power Act) could be used to identify river reaches within the Columbia River Basin that are institutionally and technically recognized significant resources based on the presence of critical fish and wildlife habitat.

4.3 Models which use Established Sets of Scientific or Technical Criteria as a Source of Priority Recognition

Scientific or technical criteria are part of the prioritization process for nearly all of the programs reviewed in the study. Some programs employ a quantitative rating system and others rely solely, or in part, on best professional judgement of critical resource characteristics. The Nature Conservancy's Natural Heritage Programs and Conservation Data Centers are an excellent example of the use of scientific and technical criteria or information as a source of priority recognition for particular environmental resources. Five additional programs are summarized representing different types of environmental resources. These five programs are the:

- California Riparian Habitat Conservation Program (riparian areas),
- New York State Coastal Management Program (coastal and estuarine areas),
- Nebraska Wetlands Priority Plan (wetlands),
- Maine Wildlands Lake Assessment (lakes), and
- Save Our Rivers Program (rivers).

The Nature Conservancy

The Nature Conservancy (TNC) coordinates Natural Heritage Programs (NHPs) and Conservation Data Centers (CDCs), which are continually updated, computer assisted inventories of the biological and ecological features and biodiversity preservation of the county or region in which they are located. They are designed to assist in conservation planning, natural resource management, environmental impact assessment, and planning for sustainable development.

The NHPs are currently state-administered efforts that identify and catalog species and natural communities at the state level. Originally established by TNC and transferred to state governments for management, NHPs now operate in all 50 states. A global and state ranking system for species and plant communities was developed by TNC for use by NHPs to rank the elements of natural diversity. Using this system, species are ranked in relative order of their wide-range or global importance (i.e., global element ranks), and on their relative importance within a specific state (i.e., state element ranks). These ranks are used to develop several site ratings, as listed below:

- Biodiversity significance rating (i.e., the significance of occurrences of elements, any community elements, or concentrations of elements at a site from the standpoint of biodiversity),

- Protection urgency rating (i.e., urgency for legal, political, or administrative measures to minimize adverse impacts to element occurrences at a site), and

- Management urgency rating (i.e., urgency for management intervention to prevent loss or degradation of element occurrences or to maintain the current quality of element occurrences).

Each CDC uses the Biological and Conservation Data System as the basis for its operation. This system was developed and has been refined by TNC since 1974. The information is managed in more than 30 interrelated computer files, supported by extensive map and manual files, and a library. A trained staff of biologists, natural resource specialists, and data managers interprets the data for use in local conservation and development planning, natural resource management, and environmental impact assessment. TNC is involved in the establishment and operation of the CDCs by providing technical, scientific, and administrative support and training. TNC also makes available the computer technology, data inventory and management methodology, and procedure manuals used by CDCs and NHPs. The methodology constantly undergoes improvements as part of the partnership between the CDCs and TNC. These continual advancements ensure that the entire network remains responsive to the needs of the conservation and development communities.

Information assembled and managed by CDCs focuses on ecosystems and species, and their biology, habitats, locations, conservation status, and management needs; managed areas such as National Parks, Forest Reserves, and watersheds; and on data sources. Each CDC compiles information from existing sources such as scientific literature, knowledgeable people, and museum collections. The local staff also direct and conduct field inventories of species and natural communities of special concern, or may be contacted for biological assessments of specific sites. Each study and report benefits from earlier work in the same area and, through the network, related

information gathered at other times and places supplements the local effort. Central network databases are supported through cooperative agreements with academic and scientific institutions.

TNC also purchases significant natural areas that need protection. To date, TNC and its members have been responsible for the protection of more than 5.5 million acres in all 50 states and in Canada. While some Conservancy-acquired areas are transferred for management to other conservation groups, both public and private, TNC owns more than 1,300 preserves -- the largest private system of nature sanctuaries in the world. Information collected and maintained by CDCs and NHPs plays an important role in the efforts of TNC and other agencies and organizations to identify significant natural areas and set priorities for their acquisition and protection.

Potential Applicability

Based on their use of scientific and technical criteria and information, The Nature Conservancy's NHPs and CDCs can serve as technical sources of priority recognition for particular environmental resources. The Conservancy-owned properties or listings of priority properties for protection can be used to identify technically and institutionally recognized significant resources.

California Riparian Habitat Conservation Program

The goal of the California Riparian Habitat Conservation Program (CRHCP) is to protect, preserve, restore, and enhance riparian habitat throughout California. The California Riparian Habitat Conservation Act of 1991 established the CRHCP with a mission to coordinate and track riparian habitat protection on a statewide basis. CRHCP activities include the following:

- Assess the current amount and status of riparian habitat throughout the state;
- Identify those areas which are critical to the maintenance of California's riparian ecosystem;
- Identify those areas which are in imminent danger of destruction or significant degradation;
- Prioritize protection needs based on the significance of the site and potential loss or degradation of habitat;
- Develop and fund project-specific strategies to protect, enhance, or restore significant riparian habitat;
- Develop, administer, and fund a grants program for riparian habitat conservation; and
- Provide a focal point for the coordination of riparian habitat conservation efforts statewide.

Under CRHCP, the California Department of Fish and Game (DFG) is developing a statewide riparian habitat inventory and assessment. Once complete, DFG will use this information to identify

critical riparian habitat in the state and develop priorities for the protection, enhancement, or restoration of significant riparian habitat. Until the inventory and assessment process is complete, the California Wildlife Conservation Board (WCB) and DFG have developed a prioritization process to evaluate proposed projects against specific criteria selected to identify ecologically significant projects and with respect to the goals and objectives of the CRHCP. These criteria are based primarily on scientific or technical knowledge or professional judgement by the DFG of critical resource characteristics. For example, the criteria recognize the importance of a watershed-based protection and conservation strategy as the most effective means for maintaining the long-term ecological viability of specific projects.

Potential Applicability

Information on critical riparian habitat and priorities developed under CRHCP for protection of significant sites could provide technical recognition of the significance of specific riparian areas. In addition, the California Riparian Habitat Conservation Act, which established the CRHCP, could provide institutional recognition of the significance of riparian habitats.

New York State Coastal Management Program

As part of the New York State Coastal Management Program, the New York Department of State's Division of Coastal Resources and Waterfront Revitalization established a program to protect significant coastal fish and wildlife habitats. To implement the program, the New York State Department of Environmental Conservation (DEC) developed a protocol to determine the significance of coastal habitats. The method consists of a quantitative rating system for coastal habitats in terms of their support of fish and wildlife species, presence of endangered or threatened species, frequency of occurrence, human use, and likelihood of replacement. Habitats that receive a score above a specific threshold value are recommended by the DEC for designation by the Secretary of State as significant coastal habitats. Each habitat designated as significant is then mapped and described in a habitat narrative.

Potential Applicability

Because the DEC's rating system is based on scientific criteria, the designation of significant habitats under the New York State Coastal Management Program could provide technical recognition of the significance of coastal resources and habitats. Furthermore, a policy aimed at protecting the state's most important coastal habitats was established in the Waterfront Revitalization and Coastal Resources Act of 1981, which established the New York State Coastal Management Program. This policy, and other coastal policy statements set forth by the New York State Coastal Management Program also could provide institutional recognition of the significance of coastal habitats.

Nebraska Wetlands Priority Plan

The Nebraska Wetlands Priority Plan was developed by the Nebraska Game and Parks Commission as a wetlands component to be included in Nebraska's 1991-1995 State Comprehensive Outdoor Recreation Plan (SCORP) consistent with the National Wetlands Priority Conservation Plan (NWPCP). Under Federal law, specifically Section 303 of the Emergency Wetlands Resources Act

of 1986, a wetland component must be included in SCORP documents and must be consistent with the NWPCP developed by the U.S. Department of the Interior. The Nebraska Wetlands Priority Plan identifies wetland sites that meet specified threshold criteria and qualify for acquisition consideration under provisions of the NWPCP. It recognizes the important outdoor recreation resource that Nebraska wetlands provide, addresses wetland protection strategies, and provides wetland acquisition goals, objectives, and strategies. The plan also considers which specific actions can be taken to protect, enhance, or restore Nebraska wetlands.

In Nebraska, the NWPCP wetland assessment criteria were modified and supplemented, where deemed appropriate, to better meet Nebraska wetland assessment needs. The three threshold criteria used to determine which wetland sites are suitable for acquisition are listed below:

- Wetland loss (i.e., wetland types that are rare or have declined within an ecoregion),
- Wetland threats (i.e., wetlands subject to identifiable threat of loss or degradation), and
- Wetland functions and values (i.e., wetlands with important and diverse functions and values and/or especially high or special value for specific wetland functions).

Based on these criteria, a simplified priority ranking system was developed to rank wetland sites in Nebraska that qualify for acquisition consideration under provisions of the NWPCP. The ranking system is based on a series of weighted questions designed to allow comparison of each wetland site's known overall values to those of other wetland sites. Six wetland complexes in Nebraska have adequate documentation to meet requirements for acquisition consideration under the provisions of the NWPCP and each are considered to have a high priority for acquisition under the Nebraska Wetlands Priority Plan. The general priority assessment criteria were used to rank the six wetland complexes in order of their relative importance. Within a given wetland complex there may be many individual wetlands sites that meet the criteria for acquisition. Appendices in the Nebraska Wetlands Priority Plan identify wetland sites that are known to meet the criteria required by the NWPCP. These individual wetlands are intended to be used as examples of suitable wetlands occurring within the wetland complex rather than the definitive list of sites qualifying for acquisition. Individual wetland sites will be more thoroughly identified during acquisition planning or as part of implementing other wetlands protection, enhancement, or restoration actions.

Potential Applicability

The Nebraska Wetlands Priority Plan could provide technical recognition of the significance of specific wetland complexes and sites because it uses a prioritization process based on scientific criteria or judgement of critical resource characteristics. Where the State of Nebraska has jurisdiction within a planning area, the Nebraska Wetlands Priority Plan also provides institutional recognition of the significance of wetland areas. Such areas are also institutionally and technically recognized as significant resources based on criteria in the U.S. Department of Interior's NWPCP as well as the Emergency Wetlands Resources Act of 1986. In addition, Nebraska's priority ranking system includes consideration of whether a wetland site is within a joint venture area under the NAWMP or

one of the 34 waterfowl habitat areas of major concern as specified in the NAWMP (see Section 4.1 for a discussion of significance based on the NAWMP).

Maine Wildlands Lake Assessment

The objectives of the Maine Wildlands Lake Assessment program, as administered by the Maine Department of Conservation, Land Use Regulation Commission (LURC) are, in general, to develop a systematic base of natural resource and land/water use information for lakes within LURC jurisdiction, including the identification of all lakes that have exceptional natural values. Specifically, the Maine Wildlands Lake Assessment was designed to identify lakes that are priorities for protection (i.e., relatively inaccessible and undeveloped lakes with high natural resource values), and to identify lakes most suitable for development. Methods were developed in the Maine Wildlands Lakes Assessment Work Plan for assessment of the following resource values:

- Fisheries (including species, habitat, and public use values),
- Wildlife (including species and habitat values),
- Physical features (i.e., geologic and hydrogeologic features),
- Botanical features (i.e., rare, threatened, unusual, or declining species and plant communities),
- Cultural features (i.e., lake-related archeological and historic features and Indian canoe routes),
- Scenic quality (i.e., scenic values of the landscape), and
- Shoreline character (i.e., factors that make the shore area of a lake suitable for recreational use).

Lakes that possessed "significant" or "outstanding" resource values in any of the assessment areas were identified, and each lake was placed into one of the following four resource classifications based on its cumulative resource significance:

- Lakes of statewide significance, with multiple outstanding natural values, categorized as Resource Class 1A (110 lakes);

- Lakes of statewide significance with a single outstanding natural value, categorized as Resource Class 1B (211 lakes);

- Lakes of regional significance with one or more significant ratings, categorized as Resource Class 2 (577 lakes);

- Lakes of local or unknown significance, categorized as Resource Class 3 (62 lakes).

Less than 100 lakes were identified as having multiple outstanding natural resource values that also are inaccessible and undeveloped, which is a small subset out of approximately 1,000 classified lakes. As noted above, relatively inaccessible and undeveloped lakes with high natural resource values are considered the highest priority for protection. LURC maintains a database that serves as a computerized lake information system, which includes information on natural value assessment findings for all lakes under LURC jurisdiction.

Potential Applicability

Information from the Maine Wildlands Lake Assessment could be used by Corps planners to identify lakes that are designated as of state, regional, or local significance within the state of Maine based on their resource classification. The prioritization process used in conducting the Assessment was based primarily on the use of scientific and technical information to determine significant environmental resource values. Projects related to lakes included in the Assessment's statewide or regional significance classifications could be related to environmental resources recognized as technically significant.

Florida Save Our Rivers Program

Florida's five regional Water Management Districts (WMDs) are responsible for acquiring critical water resource lands under the state's Save Our Rivers (SOR) Program. The major purposes of the SOR program are water management, water supply, and the protection, enhancement, restoration, and preservation of water and related resources for the beneficial use and enjoyment of existing and future generations. Manageability, surface and ground water systems, and the formation of corridors for the critical interaction of wildlife populations are major considerations in the SOR program's land acquisition process. Each January, the WMDs must submit to the state legislature and the Florida Department of Environmental Protection (DEP), pursuant to Section 373.59 Florida Statutes, an updated Five-Year Acquisition and Management Plan. Each WMD has a proactive program of identifying lands within their District that might be suitable as candidates for acquisition under the SOR Program. SOR applications from private and public groups are reviewed, and WMD staff select other sites for consideration from small-scale aerial photography. All lands considered under the SOR Program are reviewed for conformance with the WMD's basin management plans.

The South Florida WMD has developed a two-part Evaluation Matrix for the purpose of screening and prioritizing prospective additions to the annual Five-Year Plan for the SOR Program. A similar prioritization process is used by the other WMDs. The South Florida WMD's two-part matrix evaluates parcels for water resource related issues (i.e., water management, water supply, and conservation and protection of water resources such as areas of critical state concern, aquatic preserves, and major wetland systems) before consideration is given to environmental values. Proposed projects that have appropriate water resource values are also evaluated for the remaining seven parameters that deal with environmental values (i.e., manageability or an assessment of long-term viability, habitat diversity, species diversity, connectedness or how the site links with other protected lands or large parcels of undisturbed lands, rarity of species and habitat, vulnerability to development, and nature-oriented human use). Following on-site and aerial inspections of each tract, the value of each project with regard to the matrix parameters is determined by a team of senior technical staff.

Following the matrix scoring, projects are recommended by SOR staff for inclusion in the Five-Year Plan. Those not receiving adequate scores are dropped from the list. Staff recommendations are presented to the Land Selection Committee, which consists of senior managers representing all of the South Florida WMD's departments. The endorsements or changes from the Land Selection Committee are presented to the Governing Board for final approval as the annual Five-Year Plan.

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Potential Applicability

Land acquisition priority lists developed for the Five-Year Acquisition and Management Plans by the five Florida WMDs could be used by Corps planners to provide both technical and institutional recognition of the significance of specific resource areas. The nearly 500,000 acres of environmentally sensitive lands and vital aquifer recharge areas already acquired and protected under the SOR program could be used to identify technically and institutionally recognized resources of regional and state significance.

4.4 Models which use Institutional Criteria or Laws as a Source of Priority Recognition

Nearly all of the programs reviewed in the study have institutional sources of priority recognition, which exist primarily in the form of Federal or state public laws, or rules and regulations. This section summarizes four programs that can provide institutional recognition of the significance of environmental resources. They are examples of programs that acknowledge the significance of specific resources or establish specific environmental resource priorities. These programs are the National Wetlands Priority Conservation Plan, the Nationwide Rivers Inventory and National Wild and Scenic Rivers System, and the Michigan Natural Rivers Program.

National Wetlands Priority Conservation Plan

Under the Emergency Wetlands Resources Act of 1986, Congress found that wetlands are nationally significant resources and authorized the National Wetlands Priority Conservation Plan (NWPCP) to specify the types and locations of wetlands that should be given priority with respect to Federal and state acquisition. The NWPCP was prepared by the U.S. Fish and Wildlife Service for the U.S. Department of the Interior in response to Section 301 of the Act and provides a process to assist decision makers in focusing their acquisition efforts on the nation's more important, scarce and vulnerable wetlands. The primary purpose of the NWPCP is to assist Federal and state agencies in making wetland acquisition decisions when Land and Water Conservation Fund appropriations are used. It can also be used by the private sector, and local, state, and Federal agencies to assist in identifying wetlands warranting priority consideration for protection, management, restoration and/or enhancement using non-acquisition measures.

The NWPCP uses wetlands assessment criteria based on scientific or technical knowledge to evaluate three factors specified in Section 301(c) of the Act: historic wetland losses, threat of future wetland losses, and wetland functions and values. Wetlands assessment criteria have been established for each of these factors to assist Federal and state decision makers in determining which types and locations of wetlands warrant priority attention for acquisition. In summary, priority consideration for acquisition will be given to:

1) Wetland types that are rare or have declined within an ecoregion (one half or more of the wetland site consists of rare or declining wetland types);

2) Wetland sites subject to identifiable threat of loss or degradation; and

3) Wetland sites with diverse and important functions and values and/or especially high or special value for specific wetland functions.

At a minimum, proposed wetland acquisition projects should be selected based on evaluation according to all three factors. The NWPCP contains only threshold criteria for each factor. Users who need to rank various wetlands must develop a weighted scoring system taking into account the priorities and needs of the agency considering acquisition. The NWPCP intentionally avoided development of a weighted scoring system because a single system will not serve all the differing applications of the NWPCP by various users.

Potential Applicability

Identification of priority wetlands or wetland types under the NWPCP could be used to determine the institutional significance of specific wetland areas. Because scientific and technical criteria are used in the prioritization process, the NWPCP could also be used to indicate the technical significance of specific wetland areas or wetland types.

Nationwide Rivers Inventory and National Wild and Scenic Rivers System

With the passage of the Wild and Scenic Rivers Act of 1968, Congress called for preparation and maintenance of a continuing inventory and evaluation of the outdoor recreation needs and resources of the United States and the identification of potential wild, scenic, and recreational river areas within the nation. In partial fulfillment of these mandates, the National Park Service prepared the Nationwide Rivers Inventory (NRI), which compiled comprehensive, consistent data on the nation's significant free flowing rivers that may qualify as wild, scenic, or recreational rivers. All rivers and river segments 25 miles or longer within the coterminous United States were evaluated using a prioritization process based primarily on scientific or technical knowledge and judgement of the outstanding natural and cultural characteristics of the river and its immediate environment. Through the inventory process, approximately 61,700 river miles involving 1,524 river segments were identified in the 1982 NRI as probably possessing sufficient natural or cultural attributes to qualify for the National Wild and Scenic Rivers System. This is just under 2 percent of the total river miles in the United States. The National Park Service added 1,007 additional river segments to the NRI in 1993.

The National Wild and Scenic Rivers System established a method for providing Federal protection for certain of the nation's remaining free-flowing rivers to preserve them and their immediate environments for the use and enjoyment of present and future generations. Rivers are included in the system so that they may benefit from the protective management and control of development provided by the Wild and Scenic Rivers Act. Rivers or river segments are designated based on professional judgement of whether a river and its immediate environment possesses outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values. Designated rivers are classified as wild, scenic, or recreational rivers based on their degree of naturalness.

Potential Applicability

Corps planners could use the NRI to identify rivers or river segments that are institutionally and technically recognized as significant environmental resources. The Wild and Scenic Rivers System could be used to identify institutionally recognized significant free-flowing rivers and, more generally, to indicate national priorities for protection strategies dealing with riverine ecosystems.

Michigan Natural Rivers Program

The goal of the Michigan Natural Rivers Program, as administered by the Michigan Department of Natural Resources (DNR), Land and Water Management Division, is to establish a system of designated natural rivers for the purpose of preserving, protecting, and enhancing these river environments in a natural state for the continued use and enjoyment of present and future generations. The Natural Rivers Act (Act No. 231 of the Public Acts of 1970) charges the Natural Resources Commission with the responsibility for developing a system of wild, scenic and recreational rivers in Michigan. The Act did not clearly define the extent or nature of such a system, but does provide for the designation of rivers to preserve and enhance their fish, wildlife, boating, scenic, aesthetic, flood plain, ecologic, historic and recreational values and uses; and maintain existing free flowing conditions.

A criteria point system was devised to assist in evaluating individual rivers and river segments. The results of examining a river utilizing the criteria indicate those rivers that possess outstanding values and are in greatest need of protection. The criteria point system is based on the evaluation of three basic concerns:

- The values of the resource in light of the objectives and purposes of the Natural Rivers Act, and the quality of the river user's experience;
- The threats to the resource that might destroy or alter those values; and
- The anticipated workability of natural rivers protection, including local attitudes and institutions which could serve to further or detract from the purposes of the Natural Rivers Act.

Of the possible total of 200 points in the system, 120 points (60 percent) are concerned with the values of the resource based on professional judgement of critical resource characteristics. Another 60 points (30 percent) are concerned with the threats to those values. The final 20 points (10 percent) evaluate the probability that the Natural Rivers Program will protect the river environment. The river or river segment with the highest point total may not necessarily be the first actively studied for designation under the Natural Rivers Program. Specific priorities can also be affected by geographical distribution and documented local support. The criteria point system recognizes the importance and need for local initiative and support, and provides that bonus points, up to 25 percent of the possible total, may be awarded for a river when documented local support is received. Proposed rivers are placed in one of three priority groupings:

Priority A -- Rivers with high values and which are highly threatened,

Priority B -- Rivers with high values but not significantly threatened at this time, and

Priority C -- Rivers which are highly threatened but which do not possess as high a value as other proposed rivers.

As of March 1993, there were 14 Designated State Natural Rivers and 25 Proposed State Natural Rivers under the Michigan Natural Rivers Program. The 14 Designated State Natural Rivers account for almost 1,700 miles of rivers protected. In addition, under the National Wild and Scenic Rivers Program there were 14 Designated Federal Wild and Scenic Rivers, and 11 Federal Wild and Scenic Rivers under study in Michigan.

Potential Applicability

Corps planners could use information on rivers from the Michigan Natural Rivers Program to identify rivers deemed of state significance. These designated and proposed rivers could provide institutional, technical, and public recognition of significant river environments. In addition, rivers designated under the National Wild and Scenic Rivers Program could be used to identify the rivers in Michigan deemed of national significance.

4.5 Models which incorporate Public Support or Opinion as a Source of Priority Recognition

Around half of the programs reviewed in the study consider public support or public opinion as a source of priority recognition. In some cases, evidence of local public support is considered an essential factor in setting priorities that are used to allocate funds to specific environmental resource areas, problems, or activities. EPA's Clean Lakes Program, for example, considers local public support a key factor in selecting lakes for restoration and protection efforts. An organized, three-tier process of incorporating public opinion or preference is an integral component of setting priorities under the Iowa Resource Enhancement and Protection Program. Some programs include a measure of local public support as one of the criteria in point ranking systems used to determine significance or establish environmental resource priorities (e.g., the California State Coastal Conservancy Resource Enhancement Program and the Michigan Natural Rivers Program) and other programs incorporate a process whereby the public can nominate areas for consideration in the prioritization process (e.g., the Massachusetts Scenic and Recreational Rivers Program and the Puget Sound Wetlands Preservation Program in the State of Washington).

The sections below summarize the use of public support or opinion as a source of priority recognition in the Iowa Resource Enhancement and Protection Program, and the EPA Clean Lakes Program. The use of local public support in the prioritization process for the Michigan Natural Rivers Program is discussed briefly in Section 4.4.

Iowa Resource Enhancement and Protection Program

The Resource Enhancement and Protection (REAP) Program was authorized by the Resource Enhancement and Protection Act of 1989. Section 455A.16 of the Act declares the State Resource Enhancement Policy: it is the policy of the State of Iowa to protect its natural resource heritage of

air, soils, waters, and wildlife for the benefit of present and future citizens. This policy is implemented through the REAP Program, which represents a long-term integrated effort to wisely use and protect Iowa's natural resources through the acquisition and management of public lands; the upgrading of public park and preserve facilities; environmental education, monitoring, and research; and other environmentally sound means. The Iowa State Legislature directed the Department of Natural Resources (DNR) to prepare an Iowa Open Space Protection Plan by July 1, 1988. The legislature included in its directive an overall goal of having 10 percent of all land in the state under some form of public protection by the year 2000. The Iowa Open Spaces Plan serves as a foundation for REAP.

Public participation is an integral component of setting overall priorities for REAP and is organized into three tiers. First, all 99 counties are required to create a Resource Enhancement Committee. Representation on the county committees include the county board of supervisors, the county conservation board, mayors of cities in the county, soil conservation districts, school district boards, farm organizations, and conservation organizations. Second, multi-county meetings called regional assemblies are periodically held in 17 locations throughout the state. These are open public meetings where all REAP programs and associated projects are presented. Third, five delegates are elected at each of the 17 assemblies to serve on the statewide REAP Congress. The responsibility of the REAP Congress is to organize, discuss, and make recommendations for approval by the Governor, the General Assembly, and the Natural Resource Commission on priorities for natural resource enhancement and protection, and other issues concerning REAP.

Potential Applicability

The REAP Program could serve as a model of incorporating a systematic process of public participation in setting priorities for resource enhancement and protection efforts. The recommendations of the regional assemblies and REAP Congress could be used to identify resource areas within the state of Iowa that are publicly recognized as significant. In addition, many acres of land have been purchased for enhancement and protection purposes through REAP to implement the Iowa Open Spaces Plan. This plan could provide institutional recognition of the significance of specific resource areas.

EPA Clean Lakes Program

Public participation and support are important in setting priorities for EPA's Clean Lakes Program. The Clean Lakes Program offers financial and technical assistance to states and local communities under cooperative agreements. Local communities can request financial assistance from their states for specific lake restoration and protection projects. Because the Clean Lakes Program funds local lake projects as part of state lake management activities, the prioritization process relies largely on public support through local initiatives. The success of the Clean Lakes Program depends largely on local agencies and organizations that focus and maintain public attention on a lake restoration and protection project. The premise that local public support is a prerequisite to success is well founded because many solutions to lake water quality problems depend upon individual voluntary actions. Funds are also available under the Clean Lakes Program for State/Tribal Lake Water Quality Assessments, which can be used to set priorities for lake restoration and protection programs across a state or on a reservation. Authorization for the Clean Lakes Program is provided under Section 314 of the Water Pollution Control Act of 1972, known as the Clean Water Act.

Potential Applicability

Public interest and willingness to provide in-kind services, or local cost sharing in some cases, under the Clean Lakes Program could be considered indicators of public significance for specific lakes. In states that have identified priority lakes for restoration and protection based on lake water quality sampling and analysis, findings from the lake assessment process could be used to provide technical and institutional recognition of the significance of specific lakes.

4.6 Models which promote Interagency Cooperation to establish Environmental Resource Priorities

This section summarizes the Coastal America Partnership, which is a good example of a program that promotes interagency cooperation to establish environmental resource priorities. A brief description of the Corps current role in this cooperative effort is also provided.

Coastal America Partnership

The Coastal America Partnership was initiated in 1991 as an interagency initiative to address coastal living resources problems and management issues. The Federal partners are the Department of Agriculture, Department of the Air Force, Department of the Army, Department of Commerce, Department of Energy, Department of Housing and Urban Development, Department of the Interior, Department of the Navy, Department of Transportation, Environmental Protection Agency, and The Executive Office of the President. Coastal America facilitates cooperation among Federal programs and integrates Federal actions with state, local, and nongovernmental efforts. Coastal America advocates activities designed to produce demonstrable environmental and programmatic results in the short term and long-term environmental improvements in three areas of concern: loss and degradation of habitat, pollution from nonpoint sources, and contaminated sediments. Coastal America projects will serve as models for effective management of coastal living resources, with activities carried out at national, regional, and watershed levels.

Under the Coastal America initiative, prioritization occurs at the regional level through interagency Regional Implementation Teams (RITs) representing the seven Coastal America regions: Northeast, Southeast, Gulf of Mexico, Northwest, Southwest, Great Lakes, and Alaska. These regions develop a working list of priority projects, for which they will establish interagency partnerships. To establish Coastal America priorities for each region, RITs meet on a regular basis to develop an overall regional strategy that considers both state and local goals. By sharing project information, project plans, and program changes, RITs can learn of potential projects and identify opportunities for collaborative action. Proposed projects are given initial priority if they: (1) are action-oriented, with a focus on habitat loss and degradation, nonpoint source pollution, or contaminated sediments; (2) are multi-agency, including at least three Federal partners and one non-Federal participant; and (3) include education/outreach and monitoring components. Further prioritization occurs based on the goals and objectives of a specific region. Project concepts endorsed by RITs are placed on a working list of projects for priority funding and partner contributions are solicited. At the local level, partnership teams have pooled financial resources, technical expertise, and legislative authorities to implement projects no agency could accomplish alone.

Potential Applicability

The interagency approach of Coastal America fosters innovative solutions to environmental restoration and protection problems. It provides a framework for action that focuses agency expertise and resources on jointly identified problems. Under the Section 1135 Program, the Corps is the lead agency for several Coastal America projects (e.g., the Galilee Bird Sanctuary, Rhode Island). Through regular meetings of RITs, Coastal America also provides a mechanism for establishing regional priorities and developing overall regional strategies for protecting, preserving, and restoring the nation's coastal ecosystems, which also consider both state and local goals.

5. CONCLUSIONS AND FUTURE STEPS

Achieving the best use of public resources within today's budget constraints implies a need to make decisions regarding which environmental resources deserve a level of priority in planning, managing, or allocating funds for environmental restoration efforts. Information on the significance of different types of environmental resources could assist planners and decision makers in several ways. Planners could formulate alternative environmental restoration project plans that more effectively address national and regional environmental resource priorities. Information identifying national and regional resource priorities and significant environmental resources could assist decision makers in evaluating which projects best meet national or regional goals. Finally, such information could facilitate cooperative decisionmaking among Federal agencies, state agencies, and nonprofit organizations, for development of objectives and alternatives on a watershed basis to address restoration problems or opportunities. Cooperative planning efforts are likely to facilitate partnerships that leverage investments in environmental restoration, thereby achieving greater environmental benefits than any single agency could achieve alone.

The previous study, *Review and Evaluation of Programs for Determining Significance and Prioritization of Environmental Resources*, found that existing information and programs can successfully serve the Corps in determining the significance of environmental resources and establishing priorities for planning, managing, or allocating funds for environmental restoration projects. Many existing programs, representing a diversity of agency/organization type and geographic coverage, can assist Corps planners in determining and describing the significance of particular environmental resources. Ninety-five Federal, regional, state, and nonprofit organization programs were identified in the study. Those programs represent selected examples, not an all inclusive listing, of existing programs that determine the significance of, or prioritize, environmental resources areas or activities. At the state level, in particular, it is likely that there are many other existing programs, established agency/organization processes, and readily available information and products that can assist in identifying and setting priorities among environmental restoration problems or opportunities.

The results from the study to review and evaluate programs that are used to determine the significance of, or prioritize, environmental resource areas or activities will be used by the Corps to develop more detailed significance protocols for environmental plan formulation and evaluation. While the P&G currently defines what comprises institutional, public, and technical significance, there is a need for further guidance and procedures to operationalize these factors into the Corps environmental planning process. Protocols will be developed and field tested for determining and describing the institutional, public, and technical significance of environmental resources. In general, the significance protocols will use existing information and existing programs to identify and describe the significance of environmental resources based on their non-monetary values. Once developed, the significance protocols will be used for two purposes: 1) to determine the significance of environmental resources in environmental project planning, and 2) to assist in prioritizing such projects at the national, regional, state and local levels.

APPENDIX
COMPARATIVE ANALYSIS OF 95 SELECTED PROGRAMS

The study, *Review and Evaluation of Programs for Determining Significance and Prioritization of Environmental Resources*, reviewed 95 programs that are used to evaluate environmental projects and/or to determine the significance of, or prioritize, environmental resource areas or activities. A comparative analysis of the 95 programs was conducted to facilitate some generalizations about the determination of national and regional resource priorities, the bases for determination of significance, and the potential applicability of the process or products to environmental project planning in the Corps Civil Works Program. This Appendix was designed as a tool to indicate the potential applicability to the Corps of the process or product for each program. Each of the 95 programs were classified by six general categories of potential applicability. The six general categories of potential applicability are listed below along with the total number of programs in each category:

- Provides a model of a prioritization process to derive national resource priorities (17 programs),
- Provides a model of a prioritization process to derive regional resource priorities (69 programs),
- Identifies significant environmental resources and provides that information in a manner useful to water resource planners (63 programs),
- Uses an established set of scientific or technical criteria as a source of priority recognition (86 programs),
- Provides a model for incorporating public opinion/preference as a source of priority recognition (50 programs), and
- Provides a model of interagency cooperation to establish environmental resource priorities (27 programs).

This Appendix also indicates whether a program conducts, or is authorized to conduct, environmental restoration or management activities. Based on available information about program activities, or a program's goals and objectives, each program was classified under one or both of the following categories of environmental activities:

- Restoration (70 programs), and
- Management (87 programs).

Appendix: Distribution of Programs or Products/Studies by General Categories of Potential Applicability to the Corps Environmental Program

Name of Program	General Categories of Potential Applicability to the Corps Environmental Program						Activities	
	Provides a model of a prioritization process to derive national resource priorities	Provides a model of a prioritization process to derive regional resource priorities	Identifies significant environmental resources and provides that information in a manner useful to water resource planners	Uses an established set of scientific or technical criteria as a source of priority recognition	Provides a model for incorporating public opinion/ preference as a source of priority recognition	Provides a model of interagency cooperation to establish environmental resource priorities	Restora-tion	Manage-ment
FEDERAL PROGRAMS								
Agricultural Conservation Program					✓		✓	✓
Rural Clean Water Program				✓			✓	✓
Water Bank Program				✓			✓	✓
Wetlands Reserve Program				✓			✓	✓
Every Species Counts Program		✓	✓	✓			✓	✓
Rise to Future				✓	✓		✓	✓
Resource Conservation & Development Program					✓		✓	✓
Watershed Protection and Flood Prevention Program		✓			✓	✓	✓	✓

Appendix: Distribution of Programs or Products/Studies by General Categories of Potential Applicability to the Corps Environmental Program (continued)

Name of Program	General Categories of Potential Applicability to the Corps Environmental Program						Activities	
	Provides a model of a prioritization process to derive national resource priorities	Provides a model of a prioritization process to derive regional resource priorities	Identifies significant environmental resources and provides that information in a manner useful to water resource planners	Uses an established set of scientific or technical criteria as a source of priority recognition	Provides a model for incorporating public opinion/ preference as a source of priority recognition	Provides a model of interagency cooperation to establish environmental resource priorities	Restora-tion	Manage-ment
Coastal Zone Management Program: Special Area Management Plans		✓	✓	✓		✓		✓
Coastal Nonpoint Pollution Control Program		✓	✓	✓	✓	✓	✓	✓
National Marine Sanctuary Program			✓	✓	✓		✓	✓
National Estuarine Research Reserve System			✓	✓	✓			✓
Section 1135 Program				✓			✓	
Upper Mississippi River System Environmental Management Program		✓		✓		✓	✓	✓
Marine Fish Habitat Restoration and Creation Program				✓			✓	✓
Areas of Critical Environmental Concern			✓	✓	✓			✓

Appendix: Distribution of Programs or Products/Studies by General Categories of Potential Applicability to the Corps Environmental Program (continued)

Name of Program	General Categories of Potential Applicability to the Corps Environmental Program						Activities	
	Provides a model of a prioritization process to derive national resource priorities	Provides a model of a prioritization process to derive regional resource priorities	Identifies significant environmental resources and provides that information in a manner useful to water resource planners	Uses an established set of scientific or technical criteria as a source of priority recognition	Provides a model for incorporating public opinion/ preference as a source of priority recognition	Provides a model of interagency cooperation to establish environmental resource priorities	Restora-tion	Manage-ment
Riparian-Wetlands Initiative	✓	✓	✓				✓	✓
Waterfowl Habitat Management on Public Lands Strategic Plan	✓	✓	✓	✓	✓		✓	✓
Challenge Cost-Share Program	✓					✓	✓	✓
Bay/Estuary Program			✓	✓			✓	✓
National Coastal Wetlands Conservation Grant Program				✓			✓	✓
Private Lands Habitat Assistance and Restoration Program		✓		✓			✓	
National Natural Landmarks Program	✓		✓				✓	✓
Nationwide Rivers Inventory	✓		✓	✓				✓
National Wild and Scenic Rivers System	✓		✓	✓	✓			✓

Appendix: Distribution of Programs or Products/Studies by General Categories of Potential Applicability to the Corps Environmental Program (continued)

Name of Program	General Categories of Potential Applicability to the Corps Environmental Program						Activities	
	Provides a model of a prioritization process to derive national resource priorities	Provides a model of a prioritization process to derive regional resource priorities	Identifies significant environmental resources and provides that information in a manner useful to water resource planners	Uses an established set of scientific or technical criteria as a source of priority recognition	Provides a model for incorporating public opinion/ preference as a source of priority recognition	Provides a model of interagency cooperation to establish environmental resource priorities	Restora-tion	Manage-ment
Chesapeake Bay Program		✓	✓	✓	✓	✓	✓	✓
Clean Lakes Program				✓	✓		✓	✓
Great Lakes Program		✓	✓	✓	✓	✓	✓	✓
Gulf of Mexico Program		✓		✓	✓		✓	✓
National Estuary Program	✓	✓	✓	✓	✓		✓	✓
Near Coastal Waters Program	✓	✓	✓	✓			✓	✓
Wetlands Protection Program -- Advanced Identification		✓	✓	✓	✓			✓
Section 319 Nonpoint Source Program	✓	✓	✓	✓		✓	✓	✓
Watershed Protection Approach		✓		✓	✓	✓	✓	✓
EPA Region IV Watershed Initiative		✓	✓	✓	✓	✓	✓	✓

Appendix: Distribution of Programs or Products/Studies by General Categories of Potential Applicability to the Corps Environmental Program (continued)

Name of Program	General Categories of Potential Applicability to the Corps Environmental Program						Activities	
	Provides a model of a prioritization process to derive national resource priorities	Provides a model of a prioritization process to derive regional resource priorities	Identifies significant environmental resources and provides that information in a manner useful to water resource planners	Uses an established set of scientific or technical criteria as a source of priority recognition	Provides a model for incorporating public opinion/ preference as a source of priority recognition	Provides a model of interagency cooperation to establish environmental resource priorities	Restora-tion	Manage-ment
EPA Science Advisory Board: *Reducing Risk*	✓			✓				
Coastal America		✓			✓	✓	✓	✓
Land and Water Conservation Fund				✓	✓	✓	✓	✓
National Wetlands Priority Conservation Plan	✓		✓	✓			✓	✓
North American Waterfowl Management Plan	✓	✓	✓	✓			✓	✓
North American Wetlands Conservation Act Grant Program	✓	✓		✓			✓	✓
Coastal Wetlands Planning, Protection, and Restoration Act, "Priority Project List Report"		✓	✓	✓	✓	✓	✓	✓
Federal Subtotal	13	21	22	35	21	13	35	39

Appendix: Distribution of Programs or Products/Studies by General Categories of Potential Applicability to the Corps Environmental Program (continued)

Name of Program	General Categories of Potential Applicability to the Corps Environmental Program						Activities	
	Provides a model of a prioritization process to derive national resource priorities	Provides a model of a prioritization process to derive regional resource priorities	Identifies significant environmental resources and provides that information in a manner useful to water resource planners	Uses an established set of scientific or technical criteria as a source of priority recognition	Provides a model for incorporating public opinion/ preference as a source of priority recognition	Provides a model of interagency cooperation to establish environmental resource priorities	Restora-tion	Manage-ment
REGIONAL PROGRAMS								
Integrated System Plan, Columbia Basin Fish and Wildlife Authority		✓	✓	✓	✓	✓	✓	✓
Protected Areas Program (Pacific Northwest Rivers Study/Hydropower Assessment Study)		✓	✓	✓	✓	✓	✓	✓
Regional Subtotal	0	2	2	2	2	2	2	2

Appendix: Distribution of Programs or Products/Studies by General Categories of Potential Applicability to the Corps Environmental Program (continued)

Name of Program	General Categories of Potential Applicability to the Corps Environmental Program						Activities	
	Provides a model of a prioritization process to derive national resource priorities	Provides a model of a prioritization process to derive regional resource priorities	Identifies significant environmental resources and provides that information in a manner useful to water resource planners	Uses an established set of scientific or technical criteria as a source of priority recognition	Provides a model for incorporating public opinion/ preference as a source of priority recognition	Provides a model of interagency cooperation to establish environmental resource priorities	Restora-tion	Manage-ment
STATE PROGRAMS								
Arizona Identification, Inventory, Acquisition, Protection and Management of Sensitive Habitat Program		✓	✓	✓	✓			✓
Arizona Land and Water Conservation Fund		✓		✓	✓			✓
Arkansas Natural Areas Inventory, Acquisition and Stewardship Program		✓	✓	✓			✓	✓
California Inland Wetlands Conservation Program		✓	✓	✓		✓	✓	✓
California Riparian Habitat Conservation Program		✓	✓	✓		✓	✓	✓
California State Coastal Conservancy Resource Enhancement Program		✓		✓	✓		✓	✓

Appendix: Distribution of Programs or Products/Studies by General Categories of Potential Applicability to the Corps Environmental Program (continued)

Name of Program	General Categories of Potential Applicability to the Corps Environmental Program						Activities	
	Provides a model of a prioritization process to derive national resource priorities	Provides a model of a prioritization process to derive regional resource priorities	Identifies significant environmental resources and provides that information in a manner useful to water resource planners	Uses an established set of scientific or technical criteria as a source of priority recognition	Provides a model for incorporating public opinion/ preference as a source of priority recognition	Provides a model of interagency cooperation to establish environmental resource priorities	Restora-tion	Manage-ment
Colorado Lake Water Quality Assessment Program		✓	✓	✓			✓	✓
Florida Save Our Rivers Program		✓	✓	✓			✓	✓
Florida Surface Water Improvement and Management Program		✓	✓	✓			✓	✓
Idaho Wetlands Priority Plan		✓	✓	✓		✓		✓
Illinois Clean Lakes Program		✓	✓	✓	✓		✓	✓
Illinois Natural Areas Acquisition Program		✓	✓	✓			✓	✓
Indiana T-by-2000 Lake Enhancement Program		✓		✓	✓	✓	✓	✓
Iowa Prairie Pothole Joint Venture		✓	✓	✓		✓	✓	✓

Appendix: Distribution of Programs or Products/Studies by General Categories of Potential Applicability to the Corps Environmental Program (continued)

Name of Program	General Categories of Potential Applicability to the Corps Environmental Program						Activities	
	Provides a model of a prioritization process to derive national resource priorities	Provides a model of a prioritization process to derive regional resource priorities	Identifies significant environmental resources and provides that information in a manner useful to water resource planners	Uses an established set of scientific or technical criteria as a source of priority recognition	Provides a model for incorporating public opinion/ preference as a source of priority recognition	Provides a model of interagency cooperation to establish environmental resource priorities	Restora-tion	Manage-ment
Iowa Resource Enhancement and Protection Program		✓		✓	✓		✓	✓
Kansas Wetland and Riparian Areas Project		✓	✓	✓		✓	✓	✓
Louisiana Coastal-Wetlands Conservation and Restoration Plan		✓	✓	✓	✓		✓	✓
Maine Atlantic Salmon Restoration and Management Program		✓	✓	✓	✓		✓	✓
Maine Wildlands Lake Assessment		✓	✓	✓				✓
Massachusetts Scenic and Recreational Rivers Program		✓	✓	✓	✓			✓
Michigan Natural Rivers Program		✓	✓	✓	✓		✓	✓
Minnesota Lake Assessment Program		✓	✓	✓	✓		✓	✓

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Appendix: Distribution of Programs or Products/Studies by General Categories of Potential Applicability to the Corps Environmental Program (continued)

Name of Program	General Categories of Potential Applicability to the Corps Environmental Program						Activities	
	Provides a model of a prioritization process to derive national resource priorities	Provides a model of a prioritization process to derive regional resource priorities	Identifies significant environmental resources and provides that information in a manner useful to water resource planners	Uses an established set of scientific or technical criteria as a source of priority recognition	Provides a model for incorporating public opinion/ preference as a source of priority recognition	Provides a model of interagency cooperation to establish environmental resource priorities	Restora-tion	Manage-ment
Minnesota Protected Waters and Wetlands Inventory Program		✓	✓	✓				✓
Mississippi Coastal Program		✓	✓	✓	✓	✓		✓
Missouri Nonpoint Source Watershed Program		✓	✓	✓	✓		✓	✓
Montana River Restoration Program		✓		✓	✓		✓	✓
Nebraska Rainwater Basin Joint Venture		✓	✓	✓			✓	✓
Nebraska Wetlands Priority Plan		✓	✓	✓			✓	✓
New York State Coastal Management Program		✓	✓	✓	✓			✓
North Carolina Basinwide Water Quality Management Program		✓	✓	✓	✓		✓	✓

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Appendix: Distribution of Programs or Products/Studies by General Categories of Potential Applicability to the Corps Environmental Program (continued)

Name of Program	General Categories of Potential Applicability to the Corps Environmental Program						Activities	
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North Carolina Wetland Rating System		✓	✓	✓			✓	✓
North Dakota Natural Heritage Program		✓	✓	✓		✓		✓
North Dakota Waterbank Program		✓		✓		✓	✓	✓
Rhode Island State Clean Water Strategy		✓	✓	✓	✓		✓	✓
South Carolina Scenic Rivers Program		✓	✓	✓				✓
South Dakota Lake Protection Program		✓	✓	✓	✓		✓	✓
Tennessee Natural Areas Program		✓	✓	✓	✓			✓
Washington State, Puget Sound Wetlands Preservation Program		✓	✓	✓	✓	✓	✓	✓
Washington State Scenic Rivers Program		✓	✓	✓	✓			✓

Appendix: Distribution of Programs or Products/Studies by General Categories of Potential Applicability to the Corps Environmental Program (continued)

Name of Program	General Categories of Potential Applicability to the Corps Environmental Program						Activities	
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Wisconsin Lake Protection Grant Program		✓		✓	✓		✓	✓
Wisconsin Stewardship Program		✓		✓	✓	✓	✓	✓
Wisconsin Water Quality Management Plans		✓	✓	✓		✓		✓
State Subtotal	0	42	34	42	23	12	29	42

Appendix: Distribution of Programs or Products/Studies by General Categories of Potential Applicability to the Corps Environmental Program (continued)

Name of Program	General Categories of Potential Applicability to the Corps Environmental Program						Activities	
	Provides a model of a prioritization process to derive national resource priorities	Provides a model of a prioritization process to derive regional resource priorities	Identifies significant environmental resources and provides that information in a manner useful to water resource planners	Uses an established set of scientific or technical criteria as a source of priority recognition	Provides a model for incorporating public opinion/ preference as a source of priority recognition	Provides a model of interagency cooperation to establish environmental resource priorities	Restora-tion	Manage-ment
NONPROFIT ORGANIZATION PROGRAMS								
American Rivers Outstanding Rivers List	✓		✓					
Ducks Unlimited Matching Aid to Restore States Habitat				✓	✓		✓	✓
Long Live the Kings		✓		✓	✓		✓	
The Nature Conservancy	✓	✓	✓	✓				✓
Trout Unlimited Embrace-A-Stream Program				✓	✓		✓	✓
Waterfowl U.S.A. Projects		✓			✓		✓	✓
Nonprofit Subtotal	2	3	2	4	4	0	4	4

Appendix: Distribution of Programs or Products/Studies by General Categories of Potential Applicability to the Corps Environmental Program (continued)

Name of Program	General Categories of Potential Applicability to the Corps Environmental Program						Activities	
	Provides a model of a prioritization process to derive national resource priorities	Provides a model of a prioritization process to derive regional resource priorities	Identifies significant environmental resources and provides that information in a manner useful to water resource planners	Uses an established set of scientific or technical criteria as a source of priority recognition	Provides a model for incorporating public opinion/ preference as a source of priority recognition	Provides a model of interagency cooperation to establish environmental resource priorities	Restora-tion	Manage-ment
HISTORICAL PROGRAMS								
National Historic Landmarks Program	✓		✓	✓				
National Register of Historic Places	✓		✓	✓				
California Registered Historical Landmark Program		✓	✓	✓				
Historical Subtotal	2	1	3	3	0	0	0	0
TOTAL FOR ALL PROGRAMS	17	69	63	86	50	27	70	87

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