Final Environmental Assessment,

Finding of No Significant Impact, and

Regulatory Analysis for

the Compensatory Mitigation Regulation

US Army Corps of Engineers
BUILDING STRONG®

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EXECUTIVE SUMMARY

ES.1 Purpose and Need

Section 314 of the National Defense Authorization Act for Fiscal Year 2004 (Public Law 108-136) requires the Secretary of the Army, acting through the Chief of Engineers, to issue regulations establishing, to the maximum extent practicable, equivalent performance standards and criteria for the use of on-site, off-site, and in-lieu fee mitigation and mitigation banking as compensation for lost wetland functions in Department of the Army (DA) permits issued under Section 404 of the Clean Water Act.

Although the statute cites only Section 404 of the Clean Water Act, the rule applies to compensatory mitigation requirements for losses of all categories of waters of the United States, not just jurisdictional wetlands. This approach is intended to promote regulatory efficiency by establishing standards and criteria that would apply to compensatory mitigation required for DA permits issued under Section 404 of the Clean Water Act and Sections 9 and 10 of the Rivers and Harbors Act of 1899.

The provisions of this rule will also help improve the quality of compensatory mitigation, by incorporating recommendations of the National Research Council (2001) and others to improve the planning, development, implementation, and performance of compensatory mitigation projects.

ES.2 Background

An objective of the Corps Regulatory Program is to balance environmental protection with sustainable development. The Corps issues four types of permits: standard permits, letters of permission, nationwide permits, and regional general permits. Under any of these permits, compensatory mitigation may be required by district engineers to offset environmental losses resulting from authorized activities.

In Fiscal Year (FY) 2005, the Corps issued 85,207 authorizations, including individual permits and general permit verifications. For those permits involving discharges of dredged or fill material into waters of the United States, approximately 20,754 acres of wetlands were impacted in FY 2005, and 56,693 acres of compensatory mitigation was required. Not all DA permits require compensatory mitigation. In FY 2003, 51 percent of the individual permits and 19 percent of the general permit verifications required compensatory mitigation. Overall, 22 percent of the authorizations issued by the Corps in FY 2003 required compensatory mitigation.

The goal of compensatory mitigation is to offset aquatic resource functions that will be lost or impaired by the authorized activity, or to otherwise maintain or improve the overall aquatic environment. Compensatory mitigation may be provided through

permittee-responsible mitigation or by third parties, such as mitigation banks and in-lieu fee programs. In FY 2003, an estimated 60 percent of the compensatory mitigation was provided through permittee-responsible compensatory mitigation, 33 percent was provided by mitigation banks, and 7 percent was provided by in-lieu fee programs.

In 2005, there were at least 391 operational mitigation banks, including 305 commercial and 86 single user banks and another 198 mitigation banks had been proposed (149 commercial and 49 single user banks). In 2005, there were 58 operational in-lieu fee programs, while seven new in-lieu fee programs have been proposed.

ES.3 Alternatives

We have identified three alternatives for this rule. The preferred alternative is a watershed approach to compensatory mitigation which involves mitigation banks, in-lieu fee programs, and permittee-responsible mitigation to provide compensatory mitigation. The watershed approach is intended to improve the performance and quality of compensatory mitigation, and involves selecting compensatory mitigation projects that will provide ecological contributions to watersheds, including the improvement of watershed functions. The no-action alternative involves the continued reliance on existing compensatory mitigation guidance, including the 1995 Mitigation Banking Guidance, the 2000 In-Lieu Fee Guidance, Regulatory Guidance Letter 02-02, as well as other guidance documents. The third alternative is the watershed approach to compensatory mitigation, with in-lieu fee programs required to change their practices to meet exactly the same standards and requirements as mitigation banks.

ES.4 Affected Environment

According to the most recent National Wetland Inventory (Dahl 2006), there are 149,058,500 acres of wetlands in the contiguous United States. The 2003 NRI estimates that there are 110,760,000 acres of palustrine and estuarine wetlands on non-Federal land and water areas in the United States (NRCS 2003). There are 3,692,830 miles of perennial and intermittent rivers and streams, 40,603,893 acres of lakes, reservoirs, and ponds, and 87,369 square miles of estuarine waters in the United States (U.S. EPA 2002). During the period of 1999 to 2005, activities authorized by Department of the Army Permits impacted an average of 21,731 acres of wetlands per year, for which an average of 48,510 acres of wetland compensatory mitigation per year was required.

Aquatic resources provide a wide variety of ecosystem services, such as consumable resources (e.g., water and food), habitat, environmental regulation (e.g., water, nutrients, climate, waste accumulation), and support of non-consumptive uses, such as recreation and aesthetics (NRC 2005). Some wetland services, such as biodiversity support or carbon sequestration, are not location-dependent, but other wetland services, such as those related to aesthetics or recreation, are location dependent (King et al. 2000). Most

wetland services benefit the general public, and to a lesser degree to individual landowners (Heimlich et al. 1998, Mitsch and Gosselink 2000).

Activities authorized by DA permits provide a wide variety of goods and services that are valued by society. Examples include residential developments (including single family homes); commercial developments; road construction and maintenance; utility lines; transportation facilities; other types of infrastructure; the production of food, fiber, and other commodities; bank stabilization activities; shore protection structures; marinas; and dredging in navigable waters.

Costs to permittees to develop and implement compensatory mitigation projects include those costs needed to identify the potential compensatory mitigation site, prepare plans for the compensatory mitigation project, and seek approval from the Corps to use that compensatory mitigation project to offset the environmental losses caused by the authorized activity. Other costs include expenditures necessary for construction, monitoring, and long-term management of the compensatory mitigation project. If the district engineer approves the use of a mitigation bank to provide the required compensatory mitigation credits, then the permittee's costs are limited to the amount required to secure those credits.

The direct cost of compensatory mitigation to permittees, the purchase price of compensatory mitigation, is highly variable across the country. The cost of compensatory mitigation to permittees varies at least in part on the nature of the resource to be impacted, the relative difficulty of providing compensatory mitigation for the affected resources (including availability of suitable land, logistics, and technical feasibility), and demand.

In 2005, the price of wetland mitigation from mitigation banks ranged from a low of $1,000 per acre or credit to a high of $400,000 per acre or credit. The price of wetland mitigation through in-lieu fee programs ranges from a low of $3,000 to a high of $350,000 per acre or credit.

ES.5 Environmental Consequences

The preferred alternative, a watershed approach to compensatory mitigation, is expected to result in more environmental benefits than the no action alternative through more effective replacement of aquatic resource functions and services that are lost as a result of activities authorized by DA permits. The watershed approach is intended to provide more effective compensatory mitigation, by directing compensatory mitigation activities to suitable locations that will support the desired aquatic resource functions. Improving the performance of compensatory mitigation projects through better site selection can reduce the risk of failure.

The "no action alternative" is unlikely to result in the effective replacement of aquatic resource functions and services provided by aquatic resources adversely affected by activities authorized by DA permits, because the current on-site preference often results

in compensatory mitigation projects that cannot support the desired aquatic resource type. Many on-site compensatory mitigation projects fail because they are surrounded by altered landscapes or developments that adversely affect the functionality and sustainability of those projects.

The environmental consequences of the third alternative are similar to those of the preferred alternative, except requiring in-lieu fee programs to change to meet the same requirements and standards as mitigation banks is likely to provide fewer opportunities for compensatory mitigation, because there are areas where there are no mitigation banks, or it is not practical for in-lieu fee program sponsors their in-lieu fee programs to meet the same requirements and standards as mitigation banks.

ES.6 Regulatory Analysis

Any change in social costs resulting from implementation of the final rule will depend on the extent to which the rule changes aggregate mitigation costs borne by permittees and Corps administrative burdens and associated costs. Since it is not possible to quantify rule-induced changes in these costs, a qualitative evaluation approach was used to describe potential incremental social costs of the rule.

The qualitative evaluation of rule effects on the two major variables that drive permittee compensatory mitigation costs—mitigation supply costs and permittee flexibility—provide only limited clues to possible rule effects on the development, use, and costs of different compensatory mitigation options. It is not possible to confidently predict even the direction of change in total permittee mitigation costs in the with-rule scenario. What can be concluded is that the added permittee flexibility introduced by the rule should ensure that aggregate permittee mitigation costs are no higher than necessary to fulfill compensatory mitigation requirements imposed by regulators.

The net effect of the final rule on Corps administrative burdens is also difficult to predict based on the descriptive evaluation presented here, since some rule provisions appear to increase administrative burdens while others appear to have the opposite effect. In the near term, rule effects that increase and decrease Corps burdens might cancel each other out, leaving overall Corps administrative burdens largely unchanged from current levels. But in the longer term the rule could potentially decrease overall Corps administrative burdens to the extent that it results in a significant shift away from permittee-responsible mitigation in favor of the use of mitigation banks and in-lieu fee programs as compensatory mitigation.

1.0 PURPOSE AND NEED

Section 314 of the National Defense Authorization Act for Fiscal Year 2004 (Public Law 108-136) requires the Secretary of the Army, acting through the Chief of Engineers, to issue regulations establishing performance standards and criteria for the use of on-site, off-site, and in-lieu fee mitigation and mitigation banking as compensation for lost wetland functions in Department of the Army (DA) permits issued under Section 404 of the Clean Water Act. This statute also states that these regulations shall, to the maximum extent practicable, maximize available credits and opportunities for mitigation, provide flexibility for regional variations in wetland conditions, functions and values, and apply equivalent standards and criteria to each type of compensatory mitigation.

Although this statutory directive cites only Section 404 of the Clean Water Act, we believe it would be beneficial to address compensatory mitigation requirements for all DA permits through the promulgation of these regulations. Therefore, this rule applies to compensatory mitigation requirements for losses of all categories of waters of the United States, not just jurisdictional wetlands. This approach would promote regulatory efficiency by establishing standards and criteria that would apply to compensatory mitigation required for DA permits issued under Section 404 of the Clean Water Act and Sections 9 and 10 of the Rivers and Harbors Act of 1899.

The provisions of this rule will also help improve the quality of compensatory mitigation, by including some of the key recommendations of the National Research Council (2001) and others to improve the planning, development, implementation, and performance of compensatory mitigation projects. By establishing equivalent standards and criteria for all providers of compensatory mitigation, while providing flexibility to address case-specific situations, there will be more equity between compensatory mitigation providers. It is also our intent to improve the efficiency and predictability of the mitigation bank review and approval process, which may result in an increase in the numbers of approved mitigation banks. This rule is also intended to improve the performance of in-lieu fee programs, so that they provide the required compensatory mitigation in a timely manner. If there are more mitigation banks, as well as highly effective in-lieu fee programs, the aquatic environment may benefit from the ecological and economic advantages provided by third-party mitigation providers.

2.0 BACKGROUND

2.1 Corps Regulatory Program

An objective of the Corps Regulatory Program is to balance environmental protection with sustainable development.

2.1.1 Statutory Authorities

Section 9 of the Rivers and Harbors Act of 1899 prohibits the construction of dams or dikes across navigable waters of the United States in the absence of Congressional consent and approval of plans by the Chief of Engineers and the Secretary of the Army.

Section 10 of the Rivers and Harbors Act of 1899 provides the Corps the authority to regulate any work in, over, or under navigable waters that could affect the course, location, condition, or capacity of those waters. Examples of activities regulated under Section 10 include piers, bulkheads, revetments, power transmission lines, and aids to navigation.

Under Section 404 of the Clean Water Act, the Corps regulates discharges of dredged or fill material into waters of the United States. This permitting authority applies to all waters of the United States, including navigable waters and wetlands. The selection of disposal sites for dredged or fill material is done in accordance with the Section 404(b)(1) Guidelines, which were developed by the U.S. Environmental Protection Agency (see 40 CFR Part 230).

Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972, as amended, requires all activities involving the transportation of dredged material for the purpose of disposal in the ocean to be evaluated under standard permit procedures.

2.1.2 Categories of Waters Regulated Under the Corps Program

Navigable waters of the United States are defined as those waters that are subject to the ebb and flow of the tide, and/or are presently used, or have been used in the past, or may be susceptible to use to transport interstate or foreign commerce. In tidal waters, the shoreward limit of navigable waters of the United States is the mean high water shoreline. In non-tidal rivers and lakes, the landward limit of navigable waters of the United States is the ordinary high water mark.

Waters of the United States can be divided into three categories: territorial seas, tidal waters, and non-tidal waters. Navigable waters of the United States are also considered waters of the United States. Other waters of the United States include: all interstate waters including interstate wetlands; all other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sand flats, wetlands, sloughs, prairie

potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce; all impoundments of waters otherwise defined as waters of the United States under the definition; tributaries to navigable waters, interstate waters, and impoundments of waters of the United States; the territorial seas; and wetlands adjacent to waters, other than waters that are themselves wetlands.

The landward limit of tidal waters of the United States is the high tide line. In non-tidal waters where adjacent wetlands are absent, Clean Water Act jurisdiction extends to the ordinary high water mark. In non-tidal waters where adjacent wetlands are present, Clean Water Act jurisdiction extends beyond the ordinary high water mark to the limit of adjacent wetlands. When a water of the United States consists only of a non-tidal wetland, Clean Water Act jurisdiction extends to the limit of the wetland.

2.1.3 Types of Permits

The Corps issues four types of permits: standard permits, letters of permission, nationwide permits, and regional general permits. A standard permit is processed through the public interest review procedures, including a public notice and evaluation of comments. Letters of permission are issued through an abbreviated procedure that involves coordination with Federal and state resource agencies and a public interest evaluation, but a public notice is not issued for each activity. General permits are issued on a nationwide or regional basis to authorize a category or categories of activities. Activities that are authorized by general permits must be substantially similar in nature and cause only minimal individual or cumulative adverse effects on the aquatic environment. Nationwide permits are a type of general permit that authorize certain activities across the country. Regional general permits may be issued by a district or division engineer for a category or categories of activities after public notice and evaluation of comments. A programmatic general permit is a type of regional general permit based on an existing state, local or other Federal agency program and is designed to avoid duplication. A summary of the number of permit decisions made by the Corps for fiscal years 1999 to 2005 is provided in Table 2.1-1. For FY 2004 and FY 2005, estimates are provided from the best available data.

Table 2.1-1 Summary of Corps permit decisions, by fiscal year. Source: Corps Quarterly Permit Data System (QPDS) and OMBIL Regulatory Module (ORM).

Permit Type	Fiscal Year						
	1999	2000	2001	2002	2003	2004	2005
standard permits	4,168	3,883	4,159	4,023	4,035	4,221	3,761
letters of permission	2,687	2,560	3,066	3,258	3,040	3,262	2,811
nationwide permits	44,913	41,385	37,088	35,768	35,317	36,234	34,114
regional general permits	38,595	40,702	38,759	38,125	43,486	45,789	44,222
denials	221	180	171	128	299	128	299
Totals	90,584	88,710	83,243	81,302	86,177	89,634	85,207

The Corps uses automated information systems (AIS) to track the number of permits issued and the acreage of wetland impacts permitted and mitigated. The Corps does not track impacts and mitigation for other aquatic resources consistently among all Corps districts. The Corps is developing and deploying a new AIS, so the most recently available consistent national data are for fiscal year 2003. Estimates are provided for FY 2004 and FY 2005. The new AIS (ORM 2.0) will enable the Corps to improve its tracking of impacts authorized by Corps permits, as well as required compensatory mitigation, including mitigation banks and in-lieu fee programs.

A summary of wetland impacts authorized by Corps permits during fiscal years 1999 to 2005 is provided in Table 2.1-2.

Table 2.1-2 Wetland impacts authorized by Corps permits and wetland compensatory mitigation required. Source: Corps Quarterly Permit Data System (QPDS) for FY 1999 through FY 2003. For FY 2004 and FY 2005, estimates using best available data.

Fiscal Year	wetland impacts permitted (acres)	wetland compensatory mitigation required (acres)
1999	21,556	46,433
2000	18,900	44,757
2001	24,089	43,832
2002	24,651	57,821
2003	21,413	43,550
2004*	20,754	46,481
2005*	20,754	56,693

Another objective of the Corps Regulatory Program is to provide timely permit decisions that protect the environment. The Standard Operating Procedures for the Corps Regulatory Program (U.S. Army Corps of Engineers 1999) states that permit applications

should be evaluated and authorized using the least time-consuming review process, while protecting the aquatic environment.

2.1.4 General Mitigation Policy

A general statement concerning mitigation for the Corps Regulatory Program is found at 33 CFR 320.4(r). This statement discusses the importance of mitigation in the review of applications for Department of the Army (DA) permits. This provision states that all mitigation required for Corps permits will be directly related to the impacts of the proposed work, appropriate to the degree and scope of those impacts, and reasonably enforceable.

The goal of compensatory mitigation is to replace aquatic resource functions that will be lost or impaired by the authorized activity, or to otherwise maintain or improve the overall aquatic environment. Compensatory mitigation may be provided on a case-by-case basis by permittees through the restoration, establishment, enhancement, or preservation of aquatic habitats. Compensatory mitigation requirements support the objective of the Clean Water Act, which is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters (33 U.S.C. 1251(a)). Compensatory mitigation may be required in order to comply with the Section 404(b)(1) Guidelines (40 CFR part 230). It also may be required to ensure that permitted activities are in the public interest.

For general permits, compensatory mitigation to replace lost or impacted aquatic resources may be required by district engineers to ensure that the proposed work will result in minimal adverse effects on the aquatic environment (see 33 CFR 330.1(e)(3)).

Compensatory mitigation requirements for activities impacting wetlands help support the national "no overall net loss" goal for wetlands. The Corps Regulatory Program strives to meet this goal programmatically, not on a project-by-project basis. Each activity authorized by a Corps permit is not required to contribute to the "no overall net loss" goal for wetlands. For some activities authorized by Corps permits, compensatory mitigation may be infeasible, impractical, or accomplish only inconsequential reductions in impacts.

2.1.5 Mitigation for Different Permit Types

Standard permits and letters of permission may be conditioned to require compensatory mitigation to offset impacts to aquatic resources. These permits may also be conditioned to ensure that the authorized work does not result in substantial adverse effects on the aquatic environment, and is not contrary to the public interest. Permit conditions may also be used to ensure compliance with the Section 404(b)(1) Guidelines (40 CFR part 230) and the 1990 Mitigation Memorandum of Agreement (U.S. EPA and Army 1990), if applicable.

For nationwide permits, regional general permits, and programmatic general permits, mitigation is generally required to the extent necessary to ensure minimal individual and cumulative adverse effects on the aquatic environment.

Typically, mitigation for a project authorized by a nationwide permit involves on-site avoidance and minimization, and, under some circumstances, compensatory mitigation. Since 1996, Corps districts have been encouraged to require compensatory mitigation for certain nationwide permit activities that require pre-construction notification and involve wetland fills to ensure that those activities have minimal adverse effects on the aquatic environment. Compensatory mitigation for impacts authorized by nationwide permits may be accomplished either on-site or off-site. Off-site compensatory mitigation may be provided through permittee-responsible mitigation projects, mitigation banks, or in-lieu fee programs.

For other general permits, compensatory mitigation may be provided through permittee-responsible mitigation projects, but consolidated mitigation may be used more frequently for these activities. For activities authorized by regional general permits, there may be specific consolidated compensatory mitigation programs or sites that can be used by permittees. For example, a regional general permit may be conditioned by the district engineer to require specific compensatory mitigation as part of a special area management plan. A regional general permit may also prescribe specific locations or types of compensatory mitigation, including in-lieu fee programs or mitigation banks. Likewise, compensatory mitigation for activities authorized by a state programmatic general permit may be provided by a specific program run by the state for restoring, creating, enhancing, and preserving waters and wetlands.

2.1.6 Current Compensatory Mitigation Policy Documents

The Corps issued Regulatory Guidance Letter (RGL) 02-02 on December 24, 2002, to provide consolidated guidance on compensatory mitigation for activities authorized by DA permits. It was also intended to help improve compensatory mitigation by incorporating recommendations made by the National Research Council (NRC) in its report on compensatory mitigation for wetland losses authorized under the Clean Water Act (NRC 2001). This RGL discussed general considerations for determining compensatory mitigation requirements for DA permits. The RGL discussed the information that should be included in compensatory mitigation plans, and other requirements relating to compensatory mitigation. The RGL also included the operational guidelines developed by the National Research Council (NRC 2001) for establishing or restoring self-sustaining wetlands.

Federal guidance for the establishment, use, and operation of mitigation banks was issued by the Corps, U.S. Environmental Protection Agency, National Marine Fisheries Service, U.S. Fish and Wildlife Service, and Natural Resources Conservation Service in 1995 (Federal Register 1995). Mitigation banks are aquatic resource restoration, establishment, enhancement, and/or preservation projects undertaken for the purpose of

providing compensatory mitigation for unavoidable losses of aquatic resources in advance of development activities. Mitigation banks established under this guidance may be used to satisfy the compensatory mitigation requirements for DA permits or the wetland conservation provisions of the Food Security Act.

According to the 1995 mitigation banking guidance (Federal Register 1995), mitigation banks provide greater flexibility to comply with mitigation requirements and have several advantages over individual compensatory mitigation projects constructed and maintained by permittees. A mitigation bank may help maintain the integrity of aquatic ecosystems by consolidating compensatory mitigation into a single large parcel or contiguous parcels. A mitigation bank can bring together resources, such as finances, planning, and scientific expertise, to increase the likelihood of ecologically successful compensatory mitigation that supports biodiversity and/or watershed functions. Mitigation banks may also reduce temporal losses of aquatic resource functions, services, and values, as well as uncertainty over whether the compensatory mitigation will offset project impacts. Mitigation banks may provide cost-effective compensatory mitigation and reduce permit processing times. The national goal of "no overall net loss" of wetlands may also be supported by mitigation banks, because they can provide opportunities for wetlands compensatory mitigation that might otherwise be inappropriate or impractical.

Federal guidance for the use of in-lieu fee arrangements to provide compensatory mitigation for DA permits issued under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act was issued in 2000 by the Corps , U.S. Environmental Protection Agency, National Marine Fisheries Service, and U.S. Fish and Wildlife Service (Federal Register 2000). In-lieu fee mitigation occurs where a permittee provides funds to an in-lieu fee program sponsor instead of doing his or her own compensatory mitigation project or purchasing credits from an approved mitigation bank. The in-lieu fee program sponsor utilizes those funds to plan and implement aquatic resource restoration, establishment, enhancement, and/or preservation activities. In-lieu fee programs can help support the "no overall net loss" goal for wetlands, and they can also support the objectives of the Clean Water Act.

On February 6, 1990, the Department of the Army and the U.S. Environmental Protection Agency (U.S. EPA) signed a Memorandum of Agreement (MOA) concerning compensatory mitigation for standard permits (U.S. EPA and Army 1990). The 1990 MOA provides guidance for implementing the Section 404(b)(1) Guidelines when considering mitigation requirements for standard permits. The mitigation sequence described in the 1990 MOA consists of appropriate and practicable avoidance, minimization, and compensation. The 1990 MOA also states that the Corps will strive to achieve a goal of no overall net loss of wetland functions and values, but it recognizes that this goal may not be achieved for each and every permit action. The 1990 MOA does not apply to general permits, such as nationwide permits, or letters of permission.

2.1.7 Types of Compensatory Mitigation

Compensatory mitigation can be undertaken by the permittee (or an authorized agent or contractor) to offset impacts associated with a specific project (i.e., a permittee-responsible mitigation project). Individual mitigation projects may be constructed by permittees to provide compensatory mitigation for activities authorized by individual or general permits. The permittee is responsible for the completion and success of the required compensatory mitigation project.

Mitigation banks and in-lieu fee programs are types of consolidated compensatory mitigation that can be used to offset losses of waters of the United States authorized by all types of DA permits.

A mitigation bank is a site or suite of sites where aquatic resources such as wetlands or streams are restored, established, enhanced, and/or preserved for the purpose of providing compensatory mitigation in advance of authorized impacts to similar resources (Federal Register 1995). A mitigation bank may also include terrestrial resources such as non-wetland riparian areas or upland buffers that contribute to the overall ecological functions of the mitigation bank. The operation and use of a mitigation bank is governed by a mitigation banking instrument. The mitigation bank, not the permittee, is responsible for the completion and success of the compensatory mitigation associated with permits that use the mitigation bank. To address financial considerations that may be important early in mitigation bank development, limited debiting of a percentage of the total credits projected for the bank at maturity is often authorized when there are adequate financial assurances to guarantee completion of the mitigation bank site and there is high likelihood of success (Federal Register 1995).

In-lieu fee programs involve the restoration, establishment, enhancement, or preservation of aquatic and terrestrial resources through funds paid to a governmental or non-governmental natural resource management entity (Scodari and Shabman 2000). An in-lieu fee program may consist of a single project or a group of projects. In-lieu fee programs do not typically provide compensatory mitigation in advance of permitted impacts. In fact, there is often a delay between payments into an in-lieu fee program fund and initiation of a mitigation project to offset permitted impacts. An in-lieu fee program instrument governs the use and operation of an in-lieu fee program. The in-lieu fee program is responsible for the completion and success of the compensatory mitigation associated with permits that provide funds to that program.

2.1.8 Compensatory Mitigation Methods

There are four general methods of providing compensatory mitigation for impacts to aquatic resources: restoration, establishment, enhancement, and preservation. Restoration and establishment entail manipulation of physical, biological, and chemical characteristics of a compensatory mitigation site to produce a desired habitat type.

Enhancement also involves manipulation of a compensatory mitigation site to heighten, intensify, or improve one or more aquatic resource functions. Preservation is intended to protect existing aquatic resources from destruction, degradation, and other changes.

Restoration has the goal of returning natural and/or historic functions to a former or degraded wetland or other aquatic resource. Restoration can also be defined as returning an area "from a disturbed condition or totally altered condition to a previously existing natural or altered condition by some action of man" (Lewis 1990). Restoration does not require returning an ecosystem to a pristine condition (Lewis 1990). For the purpose of tracking gains in wetland acreage, restoration may be divided into two categories, re-establishment and rehabilitation. Re-establishment involves manipulation of a former aquatic resource to return natural and/or historic functions, and, for wetlands, results in a gain of acreage. Rehabilitation involves manipulation of a degraded aquatic resource to return natural and/or historic functions, and, for wetlands, does not result in a gain of acreage.

Establishment is intended to develop a wetland or other aquatic resource that did not previously exist on an upland site. Establishment results in a gain of wetland acreage. Another term for establishment is "creation". Creation involves the conversion of non-wetland areas into wetlands in locations where wetlands never existed, or did not exist in the past 100 to 200 years, through some activity of man (Lewis 1990).

Enhancement involves manipulation of the physical, chemical, and/or biological characteristics of an aquatic resource, and is intended to increase specific functions. Such manipulations may also cause other aquatic resource functions to decline. Enhancement does not result in a change in wetland area.

Preservation, which is also referred to as protection/maintenance, is defined as the removal of a threat to or preventing the decline of aquatic resources by an action in or near those resources. This term includes activities such as the protection of resources through the implementation of appropriate legal and physical mechanisms. It does not result in a gain of wetland acreage.

The ability to create and restore wetlands varies by wetland type and the extent of restoration experience for that wetland type (NRC 2001). While preservation offers the highest assurance of successful mitigation, it does not reverse losses of aquatic resources. However, preservation may stabilize wetland acreage and functions in an area and may facilitate the restoration of other wetlands in that area, because some potential restoration sites may be adversely affected by changes to hydrology and other landscape-scale features. In Florida, mitigation value from preservation is determined by considering what the anticipated condition of the site would be with preservation, and what the condition would be without preservation, assuming that a non-degrading conservation easement would prevent functional losses over time (Reiss et al. 2007).

For certain types of wetland and aquatic resources, preservation is the only effective method of compensation because those resources cannot be restored using currently

available science or technology (NRC 2001). The National Research Council (2001) has indicated that preservation of aquatic resources as a compensation option could be appropriate if done to achieve a goal set within a watershed perspective.

2.2 Compensatory Mitigation Requirements

2.2.1 General Requirements

The Corps Regulatory Program authorizes a wide variety of activities in waters of the United States, including navigable waters. Under Section 404 of the Clean Water Act, discharges of dredged or fill material into waters of the United States may be used to construct houses, roads, bank protection measures, utility lines, boat ramps, etc. Examples of structures and other work in navigable waters of the United States authorized under Section 10 of the Rivers and Harbors Act of 1899 include the construction of piers, boat ramps, wharves, weirs, breakwaters, jetties, and artificial reefs, and other activities such as dredging, filling, or other modifications of those waters.

Activities in open waters and certain other types of waters typically do not require compensatory mitigation. Also, for minor activities, such as those authorized by general permits, compensatory mitigation may not be required by district engineers because it may not be appropriate or practicable to provide compensatory mitigation for small impacts. For nationwide permit activities, compensatory mitigation is normally not required for those wetland impacts that do not require submission of pre-construction notifications to district engineers. Activities with temporary impacts to waters of the United States, or activities that result in environmental benefits, may also be authorized without requiring compensatory mitigation.

2.2.2 Current Permitting and Compensatory Mitigation Profile

This section provides hard data on permit authorizations and impacts, and rough estimates of compensatory mitigation requirements and practices, for the most recent year for which information is available. This serves to characterize the baseline, without-rule permitting and mitigation profile used for the Regulatory Analysis reported in Section 10.

Much of the information on compensatory mitigation requirements and practices reported here was obtained using a survey of Corps districts conducted in 2005 as part of rule development and evaluation (i.e., the *2005 Corps Survey of District Mitigation Practices*). The *2005 Corps Survey of District Mitigation Practices* was deemed necessary because the Corps Regulatory Program's automated information systems that were in use to record permit data at the time the proposed rule was developed do not gather information on compensatory mitigation requirements and practices, such as mitigation type and location. The Corps is now developing and deploying a new standard

automated information system that will be used by all Corps districts to record more data on compensatory mitigation requirements and practices. At the present time, however, substantive data on compensatory mitigation requirements and practices for DA permits are not available.

The survey questionnaire, which is provided in Appendix A, sought data and information on compensatory mitigation requirements and practices that are not available from other sources. For example, information was requested on the share of permits requiring compensatory mitigation, and the type and location of compensatory mitigation provided. It is important to note that each district was asked to provide estimates based on best professional judgment when hard data were not readily available or quantifiable. Accordingly, the data on compensatory mitigation requirements and practices reported here should be interpreted as no more than rough estimates (rather than hard data) that are broadly suggestive of the current compensatory mitigation profile.

The data obtained through the *2005 Corps Survey of District Mitigation Practices* were aggregated by Corps divisions and nationally for presentation. For district estimates expressed as percentages, the data were weighted to calculate division shares. For example, reported division estimates of the share of total required compensatory mitigation supplied through different mitigation types were calculated by weighting the reported shares for each district in that division by the share of total required compensatory mitigation acreage in the division accounted for by each district. The division estimates were then weighted in the same manner to calculate national averages. Since five of the 38 Corps districts did not respond to the survey (Seattle, Sacramento, Albuquerque, Detroit, and New York districts), they were excluded from the calculation of weighted average division and national estimates.

For survey questions that sought information on shares (e.g., the share of permits for which compensatory mitigation is required), district staff were asked to provide a single estimate for the three year period of 2002 to 2004. In the tables reported here, reported shares for 2002-2004 time period were interpreted as FY 2003 estimates so that they could be combined with data on permit authorizations in that year. Fiscal Year 2003 is the most recent year for which complete records on DA permits and authorized impacts are available.

FY 2003 Permit Authorizations and Impacts

Table 2-2.1 provides data on permit authorizations and wetland impacts in FY 2003. In that year, there were 85,878 permit authorizations issued, resulting in impacts to approximately 21,413 acres of wetlands. General permits (i.e., nationwide permits and regional general permits) comprised nearly 92 percent of all permit authorizations issued and approximately 53 percent of the wetland acreage impacted. Nearly 47 percent of the wetland area affected by the entire permit program was authorized under individual permits (i.e., standard permits and letters of permission) even though individual permits accounted for only 8 percent of all permit authorizations issued in FY 2003.

Table 2.2-1 Permit Authorizations and Aquatic Impacts in FY 2003. Source: Corps Quarterly Permit Data System (QPDS). General permits include nationwide permits and regional general permits. Individual permits include standard permits and letters of permission.

Permit Type	Number of Permit Authorizations Issued	Non-Tidal Wetland Impacts Authorized (Acres)	Tidal Wetland Impacts Authorized (Acres)
Individual	7,075	8,767	1,282
General	78,803	10,955	409
Total	**85,878**	**19,722**	**1,691**

In FY 2003, the Corps authorized impacts to 19,722 acres of non-tidal wetlands. Individual permits accounted for approximately 44 percent of the authorized non-tidal wetland impacts. The Corps authorized impacts to 1,691 acres of tidal wetlands representing almost 8 percent of all authorized impacts in that year. Individual permits accounted for nearly 76 percent of the tidal wetland impacts.

Permits Requiring Compensatory Mitigation

Table 2.2-2 reports information on the share of permit authorizations in FY 2003 for which some form of compensatory mitigation was required. In FY 2003, 43,550 acres of wetland compensatory mitigation was required for authorized impacts, consisting of 3,407 acres of tidal wetlands compensatory mitigation and 40,143 acres of non-tidal wetlands compensatory mitigation. Nationally, about 22 percent of all FY 2003 permits required compensatory mitigation. The share of general permits that required compensatory mitigation was 19 percent, and the share of individual permits that required compensatory mitigation was 51 percent.

The relatively low share of DA permits for which compensatory mitigation was required in FY 2003 largely reflects the fact that many activities authorized by general permits do not normally require compensatory mitigation, because of the nature of those activities or the types of waters of the United States impacted. Examples of activities authorized by general permits include maintenance of existing permitted facilities, pier construction, shoreline stabilization, boat ramps, installation of underwater utilities, minor dredging, construction access activities, and cleanup of hazardous or toxic wastes.

Similarly, activities authorized under individual permits often involve only minor or transitory impacts to waters of the United States, and thus often do not require compensatory mitigation. Individual permits are used to authorize activities such as dredging projects, ocean disposal of dredged material, marinas, commercial or industrial piers and wharves, and shoreline stabilization projects.

Table 2.2-2 Share of Permits Requiring Compensatory Mitigation in FY 2003.
Source: *2005 Corps Survey of District Mitigation Practices* and Corps QPDS data.

Corps Division	Number of Permits Issued (FY 2003)	Percentage of Individual Permits Requiring Compensatory Mitigation	Percentage of General Permits Requiring Compensatory Mitigation	Percentage of All Permits Requiring Compensatory Mitigation
Lakes and Rivers	12,924	24	28	21
Mississippi Valley	14,576	86	25	31
North Atlantic	15,829	30	6	6
Northwestern	8,397	91	30	30
Pacific Ocean	1,267	14	8	9
South Atlantic	23,478	72	20	24
South Pacific	4,500	79	69	36
Southwestern	4,907	33	7	10
National Average		**51**	**19**	**22**

Types of Compensatory Mitigation

Table 2.2-3 presents estimates of the shares of total required compensatory mitigation in FY 2003 that were supplied by different mitigation types, such as permittee-responsible mitigation, mitigation banks, and in-lieu fee programs. The estimates suggest that permittee-responsible mitigation accounted for roughly 60 percent of all compensatory mitigation acreage required in FY 2003, while mitigation banks supplied 33 percent, and in-lieu fee programs supplied 7 percent. These national averages mask considerable variation in the estimated use of each mitigation type across Corps divisions, however.

It is worth noting that the estimated national share of mitigation acreage supplied through mitigation banks is much higher (and the reported share for permittee-responsible mitigation is much lower), than what many observers of the permit program have surmised. It is not clear what accounts for this. The shares reported in Table 2.2-3 were derived from the *2005 Corps Survey of District Mitigation Practices* responses, which were based on the best professional judgment of district staff. It may be that the discrepancy reflects imprecision in these judgments. Alternatively, the seemingly high estimate of mitigation bank use may reflect a significant increase in mitigation bank use in recent years, at least in certain districts, that has not yet been fully appreciated by observers of the Corps permit program. The Environmental Law Institute reported similar estimated national shares in its 2005 Status Report on Compensatory Mitigation in the United States (ELI 2006a). At any rate, hard data on mitigation shares accounted for by the different mitigation types will not become available until the new Corps automated information system is fully developed and deployed in all Corps districts.

Table 2.2-3 Use of Different Compensatory Mitigation Types in FY 2003. Source: *2005 Corps Survey of District Mitigation Practices* and Corps QPDS data.

Corps Division	Permittee-Responsible Mitigation (percent)	Mitigation Banks (percent)	In-Lieu Fee Programs (percent)
Lakes and Rivers	62	32	5
Mississippi Valley	28	64	8
North Atlantic	69	23	9
Northwestern	90	4	6
Pacific Ocean	20	0	80
South Atlantic	70	24	6
South Pacific	80	16	4
Southwestern	58	38	4
National Average	**60**	**33**	**7**

The *2005 Corps Survey of District Mitigation Practices* also requested information from district staff on their impressions of recent trends in permittee demand for commercial mitigation bank credits in their districts. Districts in four Corps divisions (Lakes and Rivers, Northwestern, South Pacific, and Mississippi Valley divisions) characterized demand for commercial mitigation bank credits as steady or increasing. Mitigation bank credit demand was characterized as generally flat in districts within the North Atlantic Division, although some districts reported increasing demand for mitigation bank credits certified for use as compensation for stream impacts. Within the South Atlantic and Southwestern divisions, some districts reported increasing demand for commercial mitigation bank credits, while others reported that credit demand was flat or falling.

Impacts Served by Mitigation Banks and In-Lieu Fee Programs

In the *2005 Corps Survey of District Mitigation Practices*, each district was asked to estimate the share of total mitigation acreage supplied by mitigation banks and in-lieu fee programs in their districts as compensation for impacts to three broad types of waters: tidal wetlands, non-tidal wetlands, and streams. The estimates for mitigation banks and in-lieu fee programs are presented in Table 2.2-4 and Table 2.2-5, respectively.

The data show that mitigation banks have been used almost entirely as compensatory mitigation for impacts to non-tidal wetlands. Only 3 percent of the compensatory mitigation supplied by mitigation banks in FY 2003 was for impacts to tidal wetlands, and only 4 percent was for stream impacts. This contrasts sharply with the distribution of different waters served by in-lieu fee programs in FY 2003. In that year roughly 14 percent of the compensatory mitigation supplied by in-lieu fee programs was for impacts to tidal wetlands, and 27 percent was supplied as compensation for stream impacts.

Table 2.2-4 Use of Mitigation Banks in FY 2003, by Type of Impacted Waters.
Source: *2005 Corps Survey of District Mitigation Practices*.

Corps Division	Tidal Wetlands (percent)	Non-Tidal Wetlands (percent)	Streams (percent)
Lakes and Rivers	0	99	1
Mississippi Valley	4	96	0
North Atlantic	0	91	9
Northwestern	0	91	9
Pacific Ocean	0	0	0
South Atlantic	6	87	8
South Pacific	0	98	2
Southwestern	0	84	16
National Average	**3**	**92**	**4**

In its 2005 status report on compensatory mitigation practices, the Environmental Law Institute (ELI 2006a) said that 88% of the credits produced by mitigation banks were wetland credits, 11% were a combination of wetland and stream credits, and 1% was stream credits.

Table 2.2-5 Use of In-Lieu Fee Programs in FY 2003, by Type of Impacted Waters.
Source: *2005 Corps Survey of District Mitigation Practices*.

Corps Division	Tidal Wetlands (percent)	Non-Tidal Wetlands (percent)	Streams (percent)
Lakes and Rivers	0	2	98
Mississippi Valley	29	57	14
North Atlantic	4	77	19
Northwestern	0	10	90
Pacific Ocean	10	53	37
South Atlantic	9	80	11
South Pacific	0	50	50
Southwestern	14	71	15
National Average	**14**	**58**	**27**

For active in-lieu fee programs, ELI (2006a) determined that 36.6% of the credits produced were wetland credits, 39.0% were a combination of wetland and stream credits, 9.8% were stream credits, and 14.6% were comprised of wetland, stream, and other credit types.

Location of Permittee-Responsible Mitigation

Mitigation banks and in-lieu fee programs provide compensatory mitigation for permitted impacts in areas located away from the impact sites. Permittee-responsible mitigation, however, can take place on or off the impact site, or consist of a combination of compensatory mitigation activities located both on- and off-site. Permittee-responsible mitigation relying on a combination of on-and off-site compensatory mitigation is a common practice, and often represents an effort to compensate for specific functions provided by the impacted aquatic resource. Impacts to wildlife habitat may be compensated more effectively off-site than in an area adjacent to the permitted development activity, while impacted resource functions that are more site-specific, such as flood storage and water quality functions, often may be more effectively compensated for on the site of the permitted activity.

Table 2.2-6 reports information on the location of permittee-responsible mitigation in FY 2003. It suggests that nationally, roughly 55 percent of all compensatory mitigation acreage supplied by permittee-responsible mitigation was provided entirely on-site, 18 percent was provided entirely off-site, and 27 percent was provided by a combination of on-site and off-site compensatory mitigation activities.

Table 2.2-6 Location of Permittee-Responsible Mitigation in FY 2003. Source: *2005 Corps Survey of District Mitigation Practices*.

Corps Division	Permittee-Responsible Mitigation On-Site (percent)	Permittee-Responsible Mitigation Off-Site (percent)	Permittee-Responsible Mitigation Combining On-Site and Off-Site (percent)
Lakes and Rivers	56	26	18
Mississippi Valley	49	34	17
North Atlantic	50	18	32
Northwestern	60	19	20
Pacific Ocean	18	18	63
South Atlantic	60	9	31
South Pacific	40	26	34
Southwestern	38	38	24
National Average	**55**	**18**	**27**

2.2.3 Ecological Performance Standards and Other Requirements

Ecological performance standards are used to determine if a compensatory mitigation project is developing into the desired aquatic habitat type and providing the expected functions. To facilitate the success of compensatory mitigation projects, district engineers may also impose various administrative and adaptive management requirements. Administrative requirements are intended to ensure that a compensatory

mitigation site is constructed according to the approved compensatory mitigation plan, and that the compensatory mitigation project is protected and maintained. Administrative requirements may include as-built surveys, financial assurances (e.g., performance bonds), real estate instruments for the protection of compensatory mitigation project sites (e.g., conservation easements), and funding for long-term site management. Adaptive management requirements focus on learning from successes and failures of compensatory mitigation projects and are similar to contingency planning. Monitoring is a primary tool used for the adaptive management of compensatory mitigation project sites. Monitoring results can lead to modification of current and future management and maintenance actions to improve the success and sustainability of compensatory mitigation sites.

All compensatory mitigation types, including permittee-responsible mitigation, mitigation banks, and in-lieu fee programs, are normally held to some type of performance standards, as well as administrative and adaptive management requirements. However, there appears to be much variation in the ways that performance standards and administrative requirements are defined and applied to different compensatory mitigation types across Corps districts, as outlined below.

Ecological Performance Standards

Ecological performance standards are typically based on aquatic resource function and/or structure. For example, ecological performance standards may utilize functional assessment criteria for streams, wetlands, and other aquatic resources. They may also be defined in terms of the physical characteristics of compensatory mitigation projects, such as the criteria in the Corps of Engineers Wetland Delineation Manual (1987 Manual) (Environmental Laboratory 1987), relating to wetland hydrology, soils, and vegetation.

In the *2005 Corps Survey of District Mitigation Practices*, each district was asked to report on the use of performance standards for different mitigation types. Table 2.2-7 summarizes the use of different types of performance standards, by Corps division.

The survey results indicate that ecological performance standards are required for the vast majority of compensatory mitigation projects regardless of mitigation type. The results show that the 1987 Manual criteria are also commonly used as performance standards, although more so for certain mitigation types. Nationally, an average of 92 percent of mitigation banks were held to performance standards based at least in part on the 1987 Manual criteria. By contrast, roughly 60 percent of permittee-responsible mitigation and in-lieu fee programs used 1987 Manual criteria to evaluate compensatory mitigation site performance. This difference may reflect that permittee-responsible mitigation and in-lieu fee programs are the primary compensatory mitigation types used to provide compensation for impacts to streams, for which the 1987 Manual criteria are not applicable.

Reiss et al. (2007) reviewed the permits and supporting documentation for mitigation banks in Florida, and concluded that the release of mitigation bank credits should be

linked to ecological functions, instead of completing activities to implement a mitigation bank. They also recommended that credit releases be based on measurable attributes that can be used to demonstrate that the compensatory mitigation project is becoming successful.

Table 2.2-7 Use of Performance Standards, by Mitigation Type. Source: *2005 Corps Survey of District Mitigation Practices.*

Corps Division	Permittee-Responsible Mitigation			Mitigation Banks			In-Lieu Fee Programs		
	1987 Manual criteria (percent)	Functional/ ecological standards (percent)	Other standards (percent)	1987 Manual criteria (percent)	Functional/ ecological standards (percent)	Other standards (percent)	1987 Manual criteria (percent)	Functional/ ecological standards (percent)	Other standards (percent)
Lakes and Rivers	83	83	17	100	83	17	50	75	25
Mississippi Valley	100	100	33	100	100	17	33	67	67
North Atlantic	50	75	25	100	100	0	100	100	0
Northwestern	100	100	0	100	75	0	100	100	0
Pacific Ocean	0	100	0	100	100	100	0	100	0
South Atlantic	60	80	60	60	100	60	50	50	100
South Pacific	50	100	50	100	100	0	100	100	0
Southwestern	50	100	50	75	100	25	67	100	33
National Average	**62**	**92**	**29**	**92**	**95**	**27**	**63**	**86**	**28**

Administrative Requirements

In 2004, the Institute for Water Resources examined use of administrative requirements for compensatory mitigation projects in 17 Corps districts located within seven different Corps divisions. Those districts accounted for roughly 40 percent of the DA permits issued nationwide. The study results suggest that mitigation banks are generally held to higher administrative requirements than permittee-responsible mitigation projects and in-lieu fee programs.

All of the studied districts require long-term protection of mitigation bank sites, and most also require protection for relatively large permittee-responsible mitigation sites. Only one-third of the districts require long-term protection of all compensatory mitigation project sites, however. Nearly all of the districts studied accept third-party conservation easements for the protection of compensatory mitigation project sites, although deed restrictions are most commonly used because of the difficulty in locating third-party conservation easement holders. One-third of the studied districts indicated that the transfer of title for a compensatory mitigation project site to another party (such as a state or local government resource agency) is an acceptable and common method to secure site protection. Most of the studied districts have developed standard permit conditions and

template real estate instruments for compensatory mitigation project site protection, and about half of these districts have also developed standard operating procedures for securing site protection.

Nearly all of the studied districts require mitigation banks to post financial assurances to guarantee completion and success of their compensatory mitigation projects. Financial assurances are not generally required for permittee-responsible mitigation, however. Only four of the 17 studied districts require financial assurances for most compensatory mitigation projects regardless of mitigation type, although about one-half of the studied districts require financial assurances for particularly large or controversial compensatory mitigation projects. Most of the studied districts accept performance bonds (82 percent), escrow accounts (71 percent), and letters of credit (65 percent) as financial assurances. Some districts also accept trusts and guarantees or certificates of deposit as assurances that compensatory mitigation will be completed and successful.

The studied districts generally do not require allocation of funds for long-term management of most mitigation projects. Nevertheless, about one-third of these districts require establishment of some form of endowment fund for long term management for at least some compensatory mitigation projects, particularly mitigation bank projects. Some districts require the grantors of conservation easements to ensure that adequate funds are available for the management of compensatory mitigation project sites in perpetuity. Nearly a quarter of the studied districts indicated that the provision of funds for long-term management of compensatory mitigation project sites is a matter between the permittee and the easement-holder/long-term landowner.

Adaptive Management Requirements

Most of the studied districts require monitoring of compensatory mitigation project sites to assess compliance with ecological performance standards, as well as the development and implementation of contingency plans to address site problems.

2.3 Development of Mitigation Banks and In-Lieu Fee Programs

2.3.1 Mitigation Banks

Trends in the development of commercial and single-user mitigation banks are reported below. Commercial mitigation banks are those developed to produce compensatory mitigation credits for sale to the general universe of permit recipients in need of compensatory mitigation. Single user mitigation banks are those developed and used by a single entity, such as a state department of transportation, to provide compensatory mitigation exclusively for its own permitted impacts.

Across the country there are a number of so-called “umbrella” mitigation banks in which multiple mitigation sites are developed and used as compensatory mitigation under a

single mitigation bank instrument. Umbrella mitigation banks have been used primarily in the single-user mitigation bank model. However, there are several commercial umbrella mitigation banks now in operation, such as the statewide mitigation program operated by the Minnesota Bureau of Soil and Water Resources together with local governments in the state. Under that program, many individual landowners have restored wetlands for credit production and sale. In the tabulations that follow, however, the Minnesota program as well as any other umbrella mitigation bank is counted as one single bank.

Commercial Mitigation Banks

Table 2.3-1 shows the number of federally-approved commercial mitigation banks by Corps division and nationally at three points in time: 1995, 2001, and 2005. These inventories indicate that commercial mitigation bank development increased more than twelve-fold between 1995 and 2001. Although the rate of increase has slowed in more recent years, the number of commercial mitigation banks nearly doubled between 2001 and 2005.

Table 2.3-1 Trends in the Development of Commercial Mitigation Banks. Source: Year 1995 estimates are from Scodari and Brumbaugh (1996); year 2001 estimates are from Environmental Law Institute (2002); year 2005 estimates are from the *2005 Corps Survey of District Mitigation Practices*, and district web sites.

Corps Division	1995	2001	2005	Proposed (as of 2005)	Sold Out (as of 2005)
Lakes and Rivers	2	39	43	15	10
Mississippi Valley	1	22	87	36	30
North Atlantic	2	18	40	12	5
Northwestern	0	18	23	10	2
Pacific Ocean	0	0	1	0	0
South Atlantic	5	57	83	54	6
South Pacific	3	16	14	15	5
Southwestern	0	6	14	7	1
Total	**13**	**176**	**305**	**149**	**59**

As of 2005, at least 305 commercial mitigation banks had received Federal approval. The greatest increase in commercial mitigation banks from 1995 to 2005 occurred in the Mississippi Valley and South Atlantic divisions, and to a lesser extent, the Lakes and Rivers and North Atlantic divisions. About 20 percent of all certified commercial mitigation banks had sold out their credit capacity by 2005; more than half of the sold-out mitigation banks are located in the Mississippi Valley Division. Another 149 commercial mitigation banks with a high likelihood of approval are now in the proposal stage; roughly 36 percent of these proposed mitigation banks are located in the South Atlantic Division.

Single-User Mitigation Banks

Table 2.3-2 shows estimates of the number of established single-user mitigation banks by Corps division and nationally at three points in time: 1992, 2001, and 2005. Several factors complicate the interpretation of these estimates as trends, however. First, the data for these years were derived from different sources that may not have defined mitigation banks in the same way. Perhaps most importantly, the *2005 Corps Survey of District Mitigation Practices*, which was the source for the year 2005 estimate, sought information on the number of federally-certified single-user mitigation banks in each district. At least some districts apparently reported only those mitigation banks that had received Federal approval pursuant of the 1995 Federal banking guidance. However, the Table 2.3-2 estimates for year 1992 represent single-user mitigation banks developed prior to issuance of the 1995 Federal banking guidance, and the reported estimates for year 2001 likely include a mix of mitigation banks that were and were not certified in accordance with Federal guidelines. Second, it is not clear whether any of the reported data in Table 2.3-2 exclude single-user mitigation banks that had been fully debited as of the reporting year. For these reasons, the reported year 2005 inventory of single-user mitigation banks probably understates the number of single-user mitigation banks that have been developed and used to provide compensatory mitigation for DA permits as of that year.

Table 2.3-2 Trends in the Development of Single-User Mitigation Banks. Source: Year 1992 and 2001 data are from Environmental Law Institute (1994, 2002); Year 2005 data are from the *2005 Corps Survey of District Mitigation Practices*.

Corps Division	1992	2001	2005	Proposed (as of 2005)
Lakes and Rivers	3	6	18	10
Mississippi Valley	9	15	10	8
North Atlantic	4	10	12	5
Northwestern	5	11	5	9
Pacific Ocean	0	0	0	0
South Atlantic	11	24	33	17
South Pacific	11	4	0	0
Southwestern	0	6	8	0
National Total	**43**	**76**	**86**	**49**

2.3.2 In-Lieu Fee Mitigation Programs

Table 2.3-3 reports the number of operating in-lieu fee programs in selected years from 1995 to 2005, as well as the number of discontinued and proposed in-lieu fee programs as of 2005. The data indicate that the number of operational in-lieu fee programs grew ten-fold between 1995 and 2001, but then declined by about one-third between 2001 and

2005. The decline appears to be due to the discontinuation of many programs in recent years; indeed, the number of in-lieu fee programs that had been discontinued as of 2005 is nearly as great as the number of operational programs in that year. The decline in in-lieu fee programs over the last several years may be due largely to the year 2000 issuance of Federal guidance for the development and use of in-lieu fee mitigation programs. That guidance established a hierarchy for the use of different mitigation options that favored approved mitigation banks over in-lieu fee mitigation and also called for in-lieu fee mitigation programs to tighten up standards.

Table 2.3-3 Trends in the Development of In-Lieu Fee Programs. Source: Year 1995 data are from Scodari and Brumbaugh (1996); year 1999 data are from Scodari and Shabman (2000); year 2001 data are from ELI (2002); year 2005 data are from the *2005 Corps Survey of District Mitigation Practices* and State agency web sites.

	Operational In-Lieu Fee Programs				Discontinued In-Lieu Fee Programs	Proposed In-Lieu Fee Programs
Corps Division	**1995**	**1999**	**2001**	**2005**	**As of 2005**	**As of 2005**
Lakes and Rivers	2	26	34	8	29	1
Mississippi Valley	2	6	20	5	15	1
North Atlantic	2	4	3	5	0	0
Northwestern	1	2	5	5	1	2
Pacific Ocean	0	4	4	4	0	0
South Atlantic	1	7	8	2	7	0
South Pacific	0	3	8	18	0	0
Southwestern	0	1	5	11	0	3
National Average	**8**	**53**	**87**	**58**	**52**	**7**

2.4 Compensatory Mitigation Success

The National Research Council's Committee on Mitigating Wetland Losses was established to evaluate the effectiveness and success of wetlands compensatory mitigation required under Section 404 of the Clean Water Act (NRC 2001). The National Research Council (NRC) published its report in 2001. The NRC committee reviewed wetland mitigation policies, as well as examples of wetland restoration and creation projects in Florida, Illinois, and southern California.

The NRC committee (NRC 2001) found that although the Corps required 1.8 acres of wetlands compensatory mitigation for each acre of permitted wetland loss, the Corps could not provide the committee with data that were adequate for determining the status of the compensation wetlands. Also, the Corps could not provide the committee with data concerning wetland functions lost as a result of permitted activities. Therefore, the

NRC committee was not convinced that the no net loss goal is being met for wetland functions (NRC 2001).

The NRC committee concluded that some types of wetlands (e.g., freshwater marshes) can be restored or created, but other wetland types (e.g., fens and bogs) cannot be restored or created (NRC 2001). The ability to replace wetland functions is dependent on the particular function, as well as the condition of the watershed and the compensatory mitigation project site. Since hydrology is a primary factor for wetland development, structure, function, and persistence, it is necessary to establish appropriate hydrology to restore or create a wetland (NRC 2001). The NRC committee also observed that a number of wetland compensatory mitigation sites they visited were not located in landscape positions where those wetlands would be self-sustaining. Ecological equivalency between replacement wetlands and reference wetlands may not occur for months, years, or decades, depending on which attribute is assessed, since not all wetland structure and functions reach equilibrium at the same rate (NRC 2001).

The NRC (2001) also concluded that mitigation banks and in-lieu fee programs provide some advantages over permittee-responsible mitigation in supporting the no net loss goal for wetlands. The NRC (2001) made recommendations for creating or restoring ecologically self-sustaining wetlands, including the use of a watershed approach to improve decision-making for DA permits.

Other recent studies of compensatory mitigation projects are summarized below. These studies focused primarily on the evaluation of permit-specific mitigation projects (permittee-responsible mitigation). To the best of our knowledge, there have been few independent studies on the ecological success of compensatory mitigation projects produced by mitigation banks, and there have not been any independent studies on the ecological success of in-lieu fee programs for providing compensatory mitigation for DA permits.

Mack and Micacchion (2006) assessed 12 mitigation banks in the State of Ohio, by examining the vegetation, amphibian populations, hydrology, and soils of those banks, to consider the risks of mitigation banking. These mitigation banks comprised nearly 400 hectares. Approximately 25% of the bank area was classified as shallow, unvegetated pond, and was not considered to be wetland. Of the acreage that was classified as wetland, 24% was assessed to be “poor” quality wetland, 58% was “fair” quality, and 18% was classified as “good” quality. The mitigation banks were assessed with a vegetation index of biological integrity, and compared to a large natural reference wetland data set. Of permitted impacts for which these mitigation banks were used to provide compensatory mitigation, more than 50% were to forested wetlands. Only one of the mitigation banks had some forest regeneration, so a sufficient amount of in-kind replacement was not occurring. Mack and Micacchion (2006) stated that the primary risk for mitigation banks is when a large mitigation bank fails, it results in a substantial loss of wetland acreage or function. The authors concluded that mitigation banks succeed or fail for the same reasons that individual compensatory mitigation projects succeed or fail. Those reasons include poor design, planning, and/or management.

Reiss et al. (2007) conducted a study to gauge the effectiveness of mitigation banking in Florida by evaluating compliance with permit success criteria, the ecological integrity of the wetlands within mitigation banks, and whether permit compliance reflects ecological integrity. Fifty-eight wetland areas were assessed in 29 mitigation banks, to determine the ecological integrity of those wetlands. Mitigation bank credits were generated through wetland restoration, enhancement, and preservation. Reiss et al. (2007) concluded that wetland assessment areas that achieved final permit success criteria did not have the highest possible scores for the functional assessments that were used, which implies that those wetlands were not fully functional. Reiss et al. (2007) provided eight recommendations for improving the performance of mitigation banks, such as basing a greater proportion of credit releases on the achievement of ecological success criteria instead of task completion.

The Florida mitigation bank study included one in-lieu fee program (the "Hole in the Donut" in Everglades National Park) that is administered by the National Park Service (Reiss et al. 2007). At the time the Florida study was issued, the Hole in the Donut was comprised of 6,250 potential wetland restoration credits (which are based on acres), with approximately 2,111 released credits. Most of the credits were generated through removal of exotic species: melaleuca or Brazilian pepper (Reiss et al. 2007). Using the Uniform Mitigation Assessment Method, the Hole in the Donut was one of five third-party mitigation operations that rated the highest score (0.93 out of a possible 1.00) for one of its assessment areas (the other assessment area had a score of 0.83) compared to reference standards. When assessed with the Wetland Rapid Assessment Procedure, the two assessment areas in the Hole in the Donut produced a score of 0.94 and 0.77 (out of a possible 1.00, which reflects the reference standard condition).

Spieles (2005) evaluated the monitoring reports from 36 mitigation banks established in 21 states. For each mitigation bank, he examined the mitigation method (i.e., restoration, creation, enhancement), the geomorphic setting, the proportion of non-native plant species, and the prevalence indices for the plant communities. Spieles (2005) determined that 22 of the 45 wetlands at these 36 mitigation banks were successful. Spieles concluded that mitigation banks do not appear to be more successful than individual mitigation projects.

Johnson et al. (2002) examined wetlands compensatory mitigation projects in the State of Washington. They reviewed 24 wetland compensatory mitigation projects and found that 46 percent were fully or moderately successful and 54 percent were minimally successful or not successful. Johnson et al. (2002) generally found that on-site wetland mitigation projects can provide more water quality and quantity functions, but less habitat functions, in part because of their proximity to urban and urbanizing areas. They also concluded that the success of compensatory mitigation projects could increase if more compliance activities were done by regulatory agencies. Johnson et al. (2002) recommended that compensatory mitigation options be evaluated in a watershed context and they also encouraged the development and use of mitigation banks.

Minkin and Ladd (2003) conducted an evaluation of the success of 60 compensatory mitigation projects in the six New England states. Forty of those compensatory mitigation projects were considered successful because they met permit conditions, but only 10 were considered adequate functional replacements for impacted wetlands. In general, Minkin and Ladd (2003) found that impacted forested wetlands were compensated with open water and emergent wetlands, resulting in functional losses, especially for wildlife habitat and water quality. They also cited reasons for the lack of functional replacement by compensatory mitigation sites: adjacent land uses, improper hydrology, invasive plant species, use of cultivated plant species instead of native species, inadequate maintenance, and inadequate protection of mitigation sites. Minkin and Ladd (2003) recommended better site selection for compensatory mitigation projects, which could be accomplished by revising state laws that currently require on-site compensatory mitigation. They concluded that the location of a compensatory project is important for functional replacement, because wetland functions may not develop if there is degradation caused by adjacent land uses. Landscape position is an important factor affecting hydrology, as well as the wetland type that can develop on that site (Minkin and Ladd 2003). They also concluded that more enforcement and compliance activities, as well as better data management, would help improve success of compensatory mitigation projects.

The New Jersey Department of Environmental Protection (NJDEP 2002) assessed 90 freshwater wetland mitigation sites in New Jersey, and focused its efforts on wetland establishment activities. They found that for every acre of wetland impact requiring compensatory mitigation, 0.78 acre of wetlands was constructed. Emergent wetlands and open waters had higher success rates than forested wetlands. NJDEP (2002) concluded that wetland creation is possible for all community types, and cited incompatible land uses (e.g., adjacency to residential or industrial developments) and inadequate hydrology as reasons for low success rates. They state that compensatory mitigation projects need to be in suitable locations, with reliable and predictable sources of hydrology. To improve success rates, NJDEP (2002) recommended siting wetland compensatory mitigation projects adjacent to other wetlands or open space. NJDEP (2002) also recommended requiring water budgets for all wetland establishment projects, improving monitoring and compliance efforts, aggregating multiple small mitigation projects into single large sites, and directing projects with small mitigation requirements to mitigation banks.

The Michigan Department of Environmental Quality (Michigan DEQ) (2001) evaluated 159 compensatory mitigation sites in the State of Michigan. They concluded that wetland replacement has not been successful and recommended changes to improve success. Michigan DEQ (2001) also concluded that the preference for on-site mitigation results in wetland replacement projects conducted in unsuitable locations. They recommended requiring on-site compensatory mitigation only when it is practical and beneficial to wetland resources. Wetland compensatory mitigation projects should be located where they are most likely to be successful. Proper hydrology is the most critical component for successful wetland compensatory mitigation projects (Michigan DEQ 2001). Michigan DEQ (2001) found that on-site wetland replacement efforts were often completely

surrounded by development, and their hydrology was primarily urban runoff. That source of hydrology resulted in poor water quality that affected the plant community and provided limited value for wildlife.

The Tennessee Department of Environment and Conservation (Tennessee DEC) (1999) assessed 50 wetland compensatory mitigation sites and concluded that wetland mitigation in Tennessee nearly offsets wetland losses through its wetland restoration and creation efforts. All but one wetland compensatory mitigation project produced some jurisdictional wetland acreage. Tennessee DEC (1999) concluded that the principal reason for failure is inadequate design of the replacement wetland, and the inability to provide proper wetland hydrology. They recommended that wetland establishment be considered only in cases with a high likelihood of success and when no suitable restoration sites are available. Tennessee DEC (1999) also recommend the use of preservation only for rare or unique wetland types, or high-value wetlands, such as old-growth forested wetlands. Tennessee DEC (1999) also concluded that the desire to maintain the geographic distribution of wetlands in landscape through an on-site preference must be balanced against the likelihood of success. It may not be possible to create the desired wetland type on-site, and wildlife use of the compensatory mitigation project should also be considered, because it should not result in an isolated wetland surrounded by development (Tennessee DEC 1999).

Moerke and Lamberti (2004) conducted a survey of stream restoration efforts in Indiana that were greater than 300 meters in length. They identified 10 projects completed from 1995 to 2000. Most of these stream restoration projects were actually habitat rehabilitation activities, such as fish habitat structures and bank stabilization, because they were focused at the microhabitat level of riffles and pools. They concluded that stream restoration needs to be addressed at the watershed scale, instead of the microhabitat scale. Stream restoration efforts should use a watershed perspective and improve stream structure and function, since watershed degradation affects stream restoration efforts (Moerke and Lamberti 2004). Reach scale stream restoration efforts are more likely to be successful, because a watershed approach to stream restoration may be cost-prohibitive and require cooperation of multiple landowners (Moerke and Lamberti 2004).

In the State of Florida, Erwin (1991) evaluated 40 completed freshwater wetland compensatory mitigation projects. It was difficult to assess success because the goals of those compensatory mitigation projects were rarely stated in the permits. Erwin (1991) found that the most significant problem was lack of proper hydroperiod and water level for the desired wetland type. He recommend designing wetland compensatory mitigation projects to be self-maintaining, low energy systems, and to maximize habitat functions by integrating those projects with native upland habitat. Erwin (1991) determined that 16 of the 22 failed or incomplete projects could meet the “no net loss” goal for wetlands if corrective actions were taken; but for the remaining 6 failed or incomplete projects, corrective action would be unlikely to be successful because of urbanization of adjacent land. Erwin (1991) concluded that most of the wetland compensatory mitigation projects did not achieve no net loss of wetland functions and values, because of changes to

surrounding landscapes. The main reasons for lack of success were inappropriate siting, lack of management, and misapplication of available technology (Erwin 1991).

Erwin (1991) recommended, when selecting compensatory mitigation project sites, considering interactions between wetlands and adjacent uplands. He also stated that larger adjoining habitats generally support more species than small isolated habitats. Compensatory mitigation project sites should not be placed in heavily urbanized areas, because those projects are unlikely to withstand adverse effects from surrounding development, maintain good water quality, sustain healthy wildlife populations, and provide other functions (Erwin 1991). He also suggested that compensatory mitigation projects should be planned for large areas and provide connecting corridors that support species of concern, while allowing some use by humans. Erwin (1991) also determined that successful wetland mitigation efforts require appropriate design and landscape location that considers the relationship of the wetland to watershed resources and the permitted project. He said that such considerations include the cumulative effects of water use on adjacent habitats. Achieving the proper hydroperiod for the mitigation wetland depends on understanding the watershed and the relationship between water control structures and ground contours and elevations (Erwin 1991).

Matthews and Endress (2007) examined performance criteria, compliance success, and vegetation development at 76 wetland compensatory mitigation project sites, in 38 areas in the State of Illinois. Project goals and performance standards for these compensatory mitigation projects were examined, and these goals and standards focused primarily on plant communities. Of the 76 sites, 23 achieved all project goals by the end of the monitoring period, 45 met some of those goals, and 8 failed to achieve any goals. The partially successful sites either failed to meet the criteria for jurisdictional wetlands or meet vegetation standards, The failed sites exhibited upland plant communities. For most projects, the amount of wetland established or restored was less than what was planned, resulting in a net loss at a regional level. To improve the success of wetland compensatory mitigation projects, Matthews and Endress (2007) recommend using a greater variety of performance criteria, to assess more than vegetation. They also recommended establishing more realistic benchmarks based on surrounding landscapes, natural reference wetlands, and the performance of previously restored wetlands.

Hoeltje and Cole (2007) compared four created wetlands in central Pennsylvania to reference wetland systems in the same area. They reported that functional performance by the created wetlands differed significantly from the reference wetlands for seven of ten functions considered including: maintenance of characteristic hydrology, solute adsorption capacity, retention of inorganic particulates, maintenance of characteristic plant community composition, characteristic detrital biomass, and landscape scale biodiversity. Most of the differences were related to the unnatural hydrologic regimes and landscape characteristics. As a result, they found that the mitigation wetlands did not resemble or function like the impacted wetlands and thus were not fulfilling criteria for successful mitigation. They suggest that creating functional mitigation projects requires consideration of structural attributes that affect functional performance.

In their review of five decades of wetland restoration and creation projects in North America, Lewis, Kusler, and Erwin (1995) concluded that there are documented successful restoration projects for some wetland types, partial failures are common, and failed projects are due mostly to a lack of scientific understanding of wetlands, improper site conditions (especially hydrology), and improper ground elevations. Success varies by wetland type and functions. They found that the lowest rates of success are for those wetland types where it is difficult to restore or create the proper hydrology. Relatively high rates of success have been demonstrated for marshes, and many attempts to restore or create forested wetlands or seagrass meadows have failed (Lewis, Kusler and Erwin 1995). For forested wetlands, they concluded that the low success rate is due to the sensitivity of many tree species to hydrologic conditions and the amount of time required for trees to reach maturity.

In terms of specific functions, those wetland functions that have been most successfully restored are: flood storage and conveyance, waterfowl production, fish habitat, and some food chain functions (Lewis, Kusler, and Erwin 1995). The more difficult wetland functions to restore are removal of certain pollutants and ground water recharge and discharge functions. They found that unexpected changes in hydrology can affect long-term success of a wetland mitigation project, especially where the plants are sensitive to water level or hydroperiod changes. The success of wetland restoration projects depends on how easily wetland hydrology can be determined and established, the availability of appropriate plant propagules, the growth rates of key species, the degree of water manipulation incorporated into the project, and other factors (Lewis, Kusler, and Erwin 1995).

Various investigators have examined the relative success of wetland restoration and creation by wetland type. Lewis, Kusler, and Erwin (1995) ranked the probability of success, from highest to lowest: estuarine marshes; coastal marshes; freshwater marshes adjacent to rivers, streams, and lakes; mangrove forests; isolated marshes receiving primarily surface water; forested wetlands adjacent to rivers, streams, and lakes; isolated freshwater wetlands receiving primarily ground water; seagrass meadows. In its study on wetland creation in New Jersey, NJDEP (2002) concluded that creation of open waters had the highest success rate, followed by emergent wetlands, and scrub-shrub wetlands; creation of forested wetlands had the lowest success rate. Michigan DEQ (2001) also found that creation of emergent wetlands had relatively high success rates, because they are easier to construct, have faster development rates, and have greater tolerance for flooded hydrologic conditions.

To improve success of wetland restoration and creation, Mitch and Wilson (1996) stated that it is necessary to understand the general principles of wetland science (such as understanding the proper hydrology for particular wetland type), give the ecosystem time to develop its structure and functions, and allow natural processes to select species that will inhabit the mitigation wetland (i.e., allow self-design to occur).

3.0 ALTERNATIVES

3.1 Preferred Alternative – Watershed approach to compensatory mitigation

The objective of this alternative is to improve the success of compensatory mitigation used to offset adverse impacts to waters of the United States. Use of a watershed approach to compensatory mitigation can maintain and improve the quality and quantity of aquatic resources within watersheds through strategic selection of compensatory mitigation project sites. Use of a watershed approach could also result in more self-sustaining compensatory mitigation projects.

The preferred alternative is the result of our consideration of the recommendations made by the National Research Council (NRC) in its report on wetland compensatory mitigation under the Clean Water Act (NRC 2001). In this report, the NRC (2001) recommended using a watershed approach for wetland compensatory mitigation, which involves selecting compensatory mitigation projects that will provide ecological contributions to watersheds, including the improvement of watershed functions. The watershed approach requires identification of appropriate sites for wetlands compensatory mitigation projects, through structured consideration of factors such as landscape position, hydrologic variability, hydrologic regime, and the species that will inhabit or use those sites (NRC 2001). A watershed approach can also be used for compensatory mitigation for impacts to other types of aquatic resources, such as streams (e.g., Williams et al. 1997, Palmer and Allan 2006). Compensatory mitigation projects would be located where they would best address watershed goals (NRC 2001). A formal watershed plan is not necessary to implement a watershed approach to compensatory mitigation (NRC 2001).

A watershed approach can help maintain wetland diversity in a watershed, as well as connectivity between different habitats. That watershed approach would also help ensure the long-term sustainability of wetlands, riparian areas, and other ecosystems. Off-site compensatory mitigation would be located where it helps contribute to watershed goals (NRC 2001). Out-of-kind compensatory mitigation may be desirable if it results in aquatic habitat types that will improve watershed functioning (NRC 2001).

The watershed approach recognizes that it may be more effective to replace some aquatic resource functions on the project site, whereas other aquatic resource functions are more appropriately replaced off-site. For example, some aquatic resource functions, such as hydrologic and water quality functions, are site-dependent relative to the impact site, but other functions, such as habitat, are less site dependent (Shabman and Scodari 2004).

The watershed approach also involves the use of preservation as a means of obtaining mixes of wetland types to achieve Clean Water Act goals in the watershed (NRC 2001). Uplands may also be incorporated into compensatory mitigation projects if they provide terrestrial connections between wetlands, because these connections are necessary for some wetland-dependent species (NRC 2001).

The use of watersheds or other landscape scales to identify sites for aquatic resource restoration activities has been recommended by others. For example, the NRC (1992) recommended using a landscape-level approach at either a biogeographic or watershed scale to identify sites for wetland restoration that will produce the most benefits for the aquatic environment. The NRC (1992) also stated that it is necessary to integrate an aquatic resource restoration activity with its surrounding landscape.

Scodari and Shabman (2001) recommended a watershed "orientation" for compensatory mitigation projects, where the location and design of compensatory mitigation projects would be based on watershed needs and not an automatic on-site/in-kind preference. Their watershed orientation would focus on replacing wetland hydrologic functions at the impact site, but habitat functions or other watershed priorities would be located in areas that would best address those functions or priorities.

The American Water Resources Association (2005) also recommended integrated approaches to water resource management, and stated that governments should not focus on single projects, but instead should conduct integrated management to effectively resolve water resource problems. The Society for Ecological Restoration (2004) suggested using a landscape perspective for ecological restoration, to ensure necessary interactions with contiguous ecosystems. A landscape approach for siting wetlands compensatory mitigation projects was also recommended by Bedford (1996, 1999). Using a watershed approach for compensatory mitigation has also been recommended by Johnson et al. (2002) and Moerke and Lamberti (2004).

As another example, Kusler (2003) recommended using a combination of on-site and off-site compensation for wetland impacts. Flood storage could be provided on site by establishing and maintaining riparian areas, but habitat functions would be provided through off-site wetland creation or restoration (Kusler 2003). Kusler (2003) acknowledges that there are practical problems with wetland restoration or creation on the project site because site hydrology may be substantially changed by the development activity, or the altered hydrology may not support species even if that wetland was avoided.

For stream restoration activities, Riley (1998) recommended a watershed perspective, including the examination of factors causing stream instability, such as urbanization and other changes in the watershed. That watershed perspective would also consider which measures would restore riparian ecosystems, by rectifying those alterations that have made the stream unstable (Riley 1998). Stream restoration requires consideration of riparian areas and the surrounding landscape, and involves protecting stream banks and providing corridors for wildlife movement (Allan 1995).

The use of mitigation banks benefits the aquatic environment by: (1) providing advance compensation for permitted impacts; (2) consolidating wetlands mitigation into larger projects; and (3) providing economy of scale (e.g., lower costs, streamlined approval

processes, and better ecological performance) for the regulated public, regulatory agencies, and environment (Granger et al. 2005).

Mitigation bank credits are often of high ecological quality because of the link between credit release and achievement of performance standards, monitoring and remediation requirements (NRC 2001). For mitigation banks and in-lieu fee programs, there is less uncertainty about the long-term performance of compensatory mitigation projects than with permittee-responsible mitigation (NRC 2001). Mitigation banks also have requirements to post financial assurances (e.g., performance bonds) for those credits that are released prior to the achievement of performance standards, as well as requirements for long-term protection of the mitigation bank site (NRC 2001). Commercial mitigation banks also offer project management expertise, financial incentives to meet performance expectations, and an entrepreneurial incentive to supply ecologically successful and cost-effective compensatory mitigation projects (NRC 2001).

The Government Accountability Office (2001) concluded that in-lieu fee programs can be an effective source of compensatory mitigation for DA permits, provided mechanisms are implemented to ensure ecological success of those mitigation efforts. In-lieu fee programs are administered by state governments, local governments, and non-governmental organizations. When a non-governmental organization establishes an in-lieu fee program, it usually enters into an agreement with a Corps district office; the non-governmental organization collects the fees and implements compensatory mitigation projects (Scodari and Shabman 2000).

In-lieu fee programs can provide greater opportunities to support a watershed approach to compensatory mitigation (ELI 2006b). In its study of in-lieu fee programs, the Environmental Law Institute found that some sponsors conduct assessments of watershed needs, and establish site selection committees or coordinate with others to aid in prioritizing and selecting compensatory mitigation project sites (ELI 2006b).

In the conclusions to its study on wetlands compensatory mitigation under the Clean Water Act, the NRC (2001) stated that achieving the no net loss goal for wetlands will require stronger partnerships with states. Such partnerships often involve the development and implementation of in-lieu fee programs. To reduce the risk associated with in-lieu fee programs, monitoring is necessary to ensure that in-lieu fee programs are producing the promised compensatory mitigation.

In the preferred alternative, mitigation banks and in-lieu fee programs would have to comply with similar regulatory standards. Since in-lieu fee programs do not provide the same assurances as mitigation banks, those programs may result in lower quality compensation wetlands and temporal losses of aquatic resource functions (Shabman and Scodari 2004). In the preferred alternative, in-lieu fee programs would be required to develop a compensation planning framework, establish program accounts, be allowed to sell a limited number of credits prior to implementing compensatory mitigation projects, utilize full cost accounting, and maintain ledgers to track credit production. These new requirements are intended to provide result-oriented assurances that are analogous to the

assurances that may be required for mitigation banks. In some cases, credit prices charged by in-lieu fee programs may not be enough to cover costs of compensatory mitigation projects (Shabman and Scodari 2004). The preferred alternative would also address this concern. By requiring in-lieu fee programs to comply with the same regulatory standards as mitigation banks, the quality of compensatory mitigation is expected to increase.

The preferred alternative also imposes a timeline for mitigation bank and in-lieu fee program review and approval, which will provide predictability and accountability to the review and approval process for third-party mitigation operations.

3.1.1 Reviews of In-Lieu Fee Programs

The Government Accountability Office (GAO 2001), formerly the General Accounting Office, and Scodari and Shabman (2000) conducted studies on in-lieu fee programs that provide compensatory mitigation for activities authorized by DA permits. A third study was conducted by the Environmental Law Institute (ELI 2006b).

In its study on in-lieu fee programs, GAO (2001) examined 17 Corps districts with 63 in-lieu fee arrangements. Through FY 2000, these in-lieu fee programs were used to provide compensatory mitigation for more than 1,440 acres of wetland impacts, but GAO could not determine whether those programs effectively compensated for those wetland impacts. In some Corps districts, GAO (2001) found that there is competition between mitigation banks and in-lieu fee programs. Mitigation bank sponsors contacted for that study expressed concern that their costs are greater than in-lieu fee program costs, and said that they were at a disadvantage with in-lieu fee programs. The mitigation bankers said that they have higher costs because they are subject to different requirements than in-lieu fee programs.

In its report, the GAO (2001) concluded that in-lieu fee programs have the potential to provide environmentally beneficial compensatory mitigation, as well as the flexibility for permittees to satisfy their compensatory mitigation requirements. They also concluded that it is unclear whether the in-lieu fee programs examined in the study were adequately offsetting adverse impacts to wetlands, because the Corps could not supply data to support whether successful restoration, enhancement, creation, or preservation of wetlands was accomplished by these programs. They recommended that the Corps establish procedures to clearly identify whether permittee or the in-lieu fee program is responsible for ecological success of compensatory mitigation projects. They also recommended the development and use of ecological success criteria, instead of acreage or payments to in-lieu fee sponsors, to assess success and ensure that the objectives of compensatory mitigation are met.

Scodari and Shabman (2000) collected information from the 38 Corps districts and examined seven in-lieu fee programs that had been operating for several years. Four of those in-lieu fee programs were developed by Corps districts in cooperation with non-

profit resource conservation organizations and three were sponsored by state or local governments. The in-lieu fee programs were developed to provide compensatory mitigation for impacts authorized by general permits, because it often was not practical or feasible to require permittee-responsible mitigation and mitigation banks were not available in all watersheds. The reviewed in-lieu fee programs were occasionally used to provide compensatory mitigation for individual permits.

Scodari and Shabman (2000) found that the in-lieu fee programs reviewed are providing compensation in the same watershed as authorized impacts. Those in-lieu fee programs focus on site selection for securing priority wetlands in a particular watershed for restoration and preservation, rather than in-kind compensation. In general, they found in-lieu fee programs use a watershed perspective to identify compensatory mitigation project sites, which results in greater environmental benefits because of the high risk of failure of on-site compensatory mitigation projects. Scodari and Shabman (2000) also found that the watershed perspective used by in-lieu fee programs and the partnerships that develop with those programs contribute watershed benefits through greater diversity of compensatory mitigation projects, including the restoration and protection of regionally important aquatic resources.

Scodari and Shabman (2000) observed that the in-lieu fee programs reviewed varied widely regarding timing of compensatory mitigation. The amount of time depended on the in-lieu fee program structure and focus, but they also found that temporal losses of wetland functions were offset by the high performance of compensatory mitigation projects. Scodari and Shabman (2000) concluded that criticisms citing temporal losses fail to recognize that many permittee-responsible mitigation projects (e.g., on-site compensatory mitigation) may never achieve ecological success. In addition, they observed that in-lieu fee programs operating for long periods of time may have enough compensatory mitigation projects implemented to provide advance mitigation credits for permitted impacts, because some in-lieu fee programs are achieving high compensation ratios for the expended funds.

In their conclusions, Scodari and Shabman (2000) stated that in-lieu fee programs developed because of concerns about ecological failure of on-site compensatory mitigation projects for minor impacts authorized by general permits, and the lack of effective compensatory mitigation options for those general permits. They also concluded that in-lieu fee programs have provided some level of aquatic resource restoration and preservation to address watershed needs, but that further guidance is needed to address program cost accounting and fee setting.

The Environmental Law Institute (ELI 2006b) characterized and assessed in-lieu fee programs used to provide compensatory mitigation for DA permits. The 2006 ELI report addressed the 38 in-lieu fee programs that were approved and active as of October 2005. The 2006 ELI report was based solely on interviews with districts and in-lieu fee program sponsors, and did not address the ecological performance of in-lieu fee programs. The authors of that report noted that there has not yet been an empirical study comparing the

ecological effectiveness of mitigation banks, in-lieu fee programs, and permittee-responsible mitigation.

The ELI (2006b) discussed benefits and risks associated with in-lieu fee mitigation and reviewed the track record of existing in-lieu fee programs to date. They concluded that, in most cases, in-lieu fee mitigation is not being carried out in a manner that fully addresses the recommendations offered by existing studies and guidance. The ELI stated that this might be a product of the structure of existing in-lieu fee programs, not a result of the compensatory mitigation source itself.

The ELI (2006b) identified three primary risks associated with in-lieu fee programs: (1) a temporal lag between impacts and implementation of compensatory mitigation; (2) unrealistic plans for financing acquisition, implementation, and long-term management; and (3) a disconnect between goals of mitigation sponsor and Corps objectives in site selection.

The ELI (2006b) also identified the following benefits of in-lieu fee programs: (1) the nature of the mitigation provider, since sponsors are generally nonprofit conservation organizations or land trusts that have natural resource conservation as their primary goal; (2) site selection and long-term stewardship that has a greater likelihood of being done on a watershed basis; (3) the ability to meet local needs and mitigate small impacts; and (4) ease of regulatory oversight because in-lieu fee projects are typically consolidated mitigation projects.

3.1.2 In-Lieu Fee Program Case-Study

Several evaluations of in-lieu fee mitigation programs have been published within the last decade that noted potential problems this mitigation option. These include reports by the Environmental Law Institute (2006a, 2006b, 2002), the Government Accountability Office (2005, 2001), Gardner (2000), and the Corps of Engineers' Institute for Water Resources (Scodari and Shabman 2000). Each report noted that one or more of the in-lieu fee programs reviewed had potential shortcomings relating to (1) administrative controls and procedures (e.g., cost accounting and fee-setting; assurances for mitigation success) or (2) mitigation activities (e.g., mitigation timing, use of preservation as an acceptable mitigation method). Critics of in-lieu fee mitigation have pointed to these studies as evidence that the use of in-lieu fee programs as compensatory mitigation for permitted impacts may compromise the regulatory goal of no-net-loss of wetlands. In addition, the mitigation banking community has consistently argued that in-lieu fee programs are held to lesser standards than mitigation banks, which they contend can undercut the demand for bank credits and thus limit the full potential of mitigation banking.

However, Scodari and Shabman (2000), in their in-depth analysis of seven in-lieu fee programs, arrived at more nuanced conclusions than the other studies regarding the pros and cons of in-lieu fee mitigation. These researchers, while noting that greater oversight

of in-lieu fee program administration and accountability is warranted, concluded that many of the specific criticisms raised by in-lieu fee opponents "appear to be invalid or inconsequential for the achievement of the no-net-loss regulatory goal." Further, Scodari and Shabman (2000) found that the in-lieu fee programs analyzed were 1) providing a flexible, third-party mitigation option for permitted impacts that were not served by mitigation banks, or were serving similar impacts as banks but not competing with banks on credit price, and 2) securing greater than 1:1 mitigation for the impacts they served, where the location and type of in-lieu fee program mitigation is guided by watershed priorities.

While noting the shortcomings of many in-lieu fee programs, the ELI (2006b) observed that most in-lieu fee programs are sponsored by non-profit organizations with natural resource conservation as a primary goal. The ELI observed that these organizations have greater experience in identifying sites for ecological and environmental values as well as more experience and commitment to long-term management and stewardship than many other mitigation providers. The ELI indicated that some in-lieu fee programs are examples of how a natural resource organization can bring a conservation expertise to bear on mitigation site selection.

The Institute for Water Resources (IWR) is currently finalizing a comprehensive analysis of four in-lieu fee programs with the intent of evaluating the extent to which in-lieu fee programs could provide the benefits noted by Scodari and Shabman (2000). These in-lieu fee programs, and the ways in which they are filling a gap in the availability of third-party mitigation and securing environmental results consistent with watershed principles and the no-net-loss regulatory goal, are briefly reviewed below. Table 3.3-1 summarizes features and activities of these four in-lieu fee programs. The complete case study analyses will be published by IWR as a technical report later this year.

The IWR study focused on four in-lieu fee programs identified by Corps District staffers in the as examples of successful in-lieu fee programs in their respective districts. These include the Arizona Game and Fish Department's In-Lieu Fee Mitigation Program, the Florida Keys Environmental Restoration Fund, the Georgia Wetland Trust Fund, and the Virginia Aquatic Resources Trust Fund. Basic information characterizing the four programs is presented in Table 3.3-1 below. Two of the programs considered here, the Georgia and Virginia programs, were also considered by Scodari and Shabman (2000). The Florida Keys, Georgia, and Virginia programs are each run by non-governmental conservation organizations and have been operational for ten or more years; the Arizona program is run by a state agency and has been operational since 2005. The Florida Keys program is dedicated to the restoration of fish and wildlife habitat in the Florida Keys, while the other three programs operate throughout their respective states. These programs serve geographically diverse areas and provide compensation for markedly different types of aquatic resources.

Both the Arizona and Florida Keys programs operate in areas where there are no operational mitigation banks, and thus provide the only alternative to permittee-responsible compensatory mitigation in their respective areas. The absence of mitigation

banks in these areas is due in part to the scarcity and cost of suitable lands for mitigation banks. In both areas, much of the available land that may be suitable for mitigation projects is either publicly-owned, or faces limitations on the resources (e.g., reliable sources of water) necessary for a successful mitigation bank. Both programs locate their mitigation projects on government-owned lands. The Arizona program locates projects primarily on lands held by the Arizona Game and Fish Department, but is now evaluating use of federally-held conservation lands. The Florida Keys program focuses on restoration and enhancement of seagrasses, mangroves, palustrine, and estuarine wetlands on lands by the federal, state, and local governments.

The Georgia and Virginia in-lieu fee programs operate in states with active mitigation banking programs; however, in both cases, frameworks have been established to ensure that these programs complement rather than substitute for mitigation provided by authorized mitigation banks. In Georgia, the Corps Savannah District does not allow use of the in-lieu fee program for impacts for which suitable bank credits are available in the relevant service area. Permit applicants that propose to use the Georgia program are required to provide documentation indicating that suitable mitigation bank credits are not available in the relevant service area before the district will allow the in-lieu fee program to be used as compensatory mitigation.

In Virginia, where approximately one-third of the state is not served by mitigation banks, the Virginia in-lieu fee program often provides the only alternative to permittee-responsible mitigation. And in watersheds with active mitigation banks, the Virginia in-lieu fee program often provides the only appropriate and available form of third-party mitigation for certain types of compensatory mitigation that are in high demand and relatively scarce, such as stream mitigation credits in northern and central Virginia. For impacts for which bank credits are appropriate and available, the Norfolk District's policy is that in-lieu fee program fees may not undercut fees charged by commercial mitigation banks for the same mitigation resource (e.g., non-tidal wetland or stream credit) in the same area. Thus, the fees charged by the Virginia in-lieu fee program are nominally higher than prices charged by commercial mitigation banks in any given service area. In addition, the Virginia Department of Environmental Quality maintains a state regulatory preference for use of mitigation banks over the in-lieu fee program when banks have appropriate credits available. The Virginia Department of Environmental Quality's stated preference, together with the nominally higher prices charged by the Virginia program, ensures that the Virginia program is considered as a compensatory mitigation option only when the appropriate number and type of mitigation credits are not available from mitigation banks.

The Arizona, Florida Keys, and Virginia programs provide mitigation through restoration, establishment, and enhancement of aquatic resources. As Table 3.3-1 shows, three of the ILF programs (Virginia, Georgia, and the Florida Keys) are apparently meeting or exceeding the goal of no-net loss of wetlands as of 2006/2007. The Arizona program is approaching no-net loss of wetlands and is implementing the necessary plans for mitigation projects that would allow it to meet or exceed the no-net loss goal. All of

these programs have funds available for additional compensatory mitigation projects beyond those needed to achieve no-net loss of wetlands.

The Virginia program also provides high-value preservation, as long as preservation does not result in a net loss of aquatic resources. The Virginia program ensures this result by providing more than one acre of restored wetlands for every acre of impacted wetlands served by the program; thus, the preservation activities of the Virginia in-lieu fee program provides an extra environmental return beyond full compensation for permitted impacts.

The Georgia in-lieu fee program, unlike the other reviewed programs, focuses solely on preservation of threatened and high-value wetlands and streams and associated upland buffers. However, the allowable use of this in-lieu fee program is structured to ensure that it does not contribute to a net loss of aquatic resources. According to the Savannah District's Standard Operating Procedures and its nationwide permit regional conditions, the Georgia program can only be used for compensatory mitigation when suitable commercial mitigation bank credits (e.g., wetland or stream credits) are unavailable, and typically not until one-to-one restoration or establishment of similar aquatic resources is provided through other means. This means in essence that this program is achieving at least no net loss of wetlands.

Indeed, an examination of the permit files for a sample of the users the Georgia and Virginia in-lieu fee programs found that those permits were often required to secure compensatory mitigation from a mix of different mitigation providers. In Georgia, two-thirds of the permits examined required the permittee to secure mitigation bank credits in addition to payment of a fee to the in-lieu fee program. In one case, additional on-site restoration and preservation of wetlands was also required. In Virginia, more than one-third of the permits examined required additional mitigation beyond the use of the in-lieu fee program—13 percent of the permits examined also required compensatory mitigation from mitigation banks, and 28 percent required on-site restoration, enhancement, and/or preservation of aquatic resources as partial compensatory mitigation for permitted impacts.

The Environmental Law Institute (2006b) indicated that in-lieu fee programs may provide opportunities for supporting watershed-based site selection. Each of the studied in-lieu fee programs takes a landscape level or watershed approach to mitigation site selection. The Virginia in-lieu fee program identifies potential mitigation projects through a conservation planning procedure that includes identification of conservation targets (species and ecological systems) and ecological drainage units; establishment of conservation goals; and design of a portfolio of conservation sites. This planning process includes coordination with experts for review and input, including the Virginia Natural Heritage Program. Factors considered during the identification and review of a proposed mitigation project include: the potential to offset permitted impacts; mitigation obligations undertaken by the program in a given watershed/service area; likelihood of long-term project success; proximity to areas of concern, such as environmentally sensitive and protected sites; and project cost compared to the potential mitigation return

of the project.

The Georgia in-lieu fee program considers the following factors in selecting mitigation sites: location of the wetlands or stream systems to be preserved (with preference given to resources in the same river basin and physiographic province as permitted impacts); conservation value of proposed mitigation sites; availability of suitable land at a price at or below fair market value; and the potential for leveraging other sources of funds such as donations or grants. Aquatic resources with high conservation value include those lands that support rare, threatened, or endangered species; lands that link protected reserves or buffer existing reserves; and those that would be used for environmental education or scientific research.

The Florida Keys in-lieu fee program tracks impacts by geographic location in the Keys (i.e., upper, middle, and lower Keys) and resource type and generally seeks replacement compensation of the same type and in the same geographic area. Individually, the permitted impacts are very small in size, averaging 0.01 acres for impacts to shoreline fringe wetlands and 0.007 acres for impacts to submerged resources. The Florida Keys program identifies a suite of potential mitigation projects through a restoration planning process that involves communication with managers of state, county, and federal lands to identify potential restoration projects. The restoration planning process uses the following considerations: historic site conditions; ecosystem-based goals including removal of detrimental public access, reconnection of tidal regimes, increasing freshwater lens integrity, specific wildlife habitat objectives (including rare, threatened, and endangered species), and the types of permitted resource impacts for which the fund is intended to provide compensatory mitigation.

Arizona’s in-lieu fee program considers the watershed location of the impact and generally seeks mitigation in the same watershed, but a mechanism is not formally established. That program only selects mitigation sites where it will have direct control of the land to be used for restoration, or where there is a demonstrated long-term commitment for conservation management such as would be found at a National Resource Conservation Area.

Table 3.3-1 Compensatory Mitigation Provided by Four In-Lieu Fee Programs for Activities Authorized by Corps Permits

In-Lieu Fee Program	Sponsor	Year Established	Type of Compensation Provided	Number of Corps Permits Using the In-Lieu Fee Program	Total Authorized Impacts Using the In-Lieu Fee Program as Compensation	Total Compensation Provided by the In-Lieu Fee Program (constructed/ monitored or completed)	Percentage of Funds Unexpended
Arizona Game and Fish Department	Arizona Game and Fish Department	2005	Restoration, creation, enhancement of wetlands and riparian areas	35 permits	• 130 acres of ephemeral and xeroriparian washes • 30 acres of Sonoran riparian areas • 3/4 acre of Great Basin conifers	• 90 acres of emergent and riparian wetland restoration • 42 acres of wetland restoration	73%
Florida Keys Environmental Restoration Fund	Florida Audubon Society	1998	Restoration and enhancement of seagrasses, mangroves, and other wetlands	1,950 permits	• 6.19 acres of shoreline wetlands (including mangroves) • 3.68 acres of submerged resources (including subtidal lands, seagrasses, and corals)	Restoration: • 26.3 acres of mangroves • 1.36 acres of seagrasses • 1.2 acres emergent wetlands • 0.44 acre hardwood hammock wetlands Enhancement: • 600 acre of tidal enhancement • 6.4 acres of mangroves • 0.05 acre of seagrasses • 0.72 acre of hardwood hammock wetlands	66%
Georgia Wetland Trust Fund	Georgia Land Trust Service Center	1997	Preservation of high value wetlands, streams, and buffers	224 permits • 91 for wetland impacts • 133 for stream impacts	• 60.8 acres of wetlands • 5.57 miles of streams	• 252 acres of wetlands • 9.41 miles of stream	47%
Virginia Aquatic Resources Trust Fund	Virginia Chapter, The Nature Conservancy	1995	Restoration, establishment, enhancement, and preservation of wetlands, streams, and tidal waters	684 permits • 446 for non-tidal wetland impacts • 50 for impacts to tidal waters • 188 for stream impacts	• 201.84 acres of non tidal wetland • 2.03 acres of tidal waters • 27.81 miles of stream	Non-tidal: • 456 acres of wetland restoration • 2,990 acres of wetland preservation • 24 acres of wetland enhancement • 203 acres of buffer restoration • 758 acres of buffer preservation Tidal: • 10 acres of seagrass restoration • 3.5 acres of oyster reef creation • 220 acres of wetland enhancement • 115 acres of wetland preservation Stream: • 73.2 miles of riparian preservation • 1.8 miles of riparian establishment • 3.97 miles of channel restoration • 4.5 miles of livestock exclusion	53%

3.2 No Action Alternative – Do not promulgate this regulation

The no action alternative would result in continued reliance on 1995 Mitigation Banking Guidance (Federal Register 1995), the 2000 In-Lieu Fee Guidance (Federal Register 2000), and Regulatory Guidance Letter 02-02, as well as other guidance documents relating to compensatory mitigation for DA permits issued under Section 404 of the Clean Water Act and Sections 9 and 10 of the Rivers and Harbors Act of 1899.

Compensatory mitigation proposals would continue to be planned and evaluated using the on-site, in-kind preference stated in the 1990 Mitigation Memorandum of Agreement (U.S. EPA and Army 1990). The 1995 mitigation banking guidance (Federal Register 1995) states that mitigation banks can be used to provide compensatory mitigation if there is no practicable opportunity for on-site compensation or use of mitigation bank credits is environmentally preferable to on-site compensatory mitigation. In-lieu fee programs could continue to be established and used to provide compensatory mitigation for DA permits. The criteria for selecting between on-site compensatory mitigation, mitigation bank credits, and in-lieu fee programs presented in the 2000 in-lieu fee guidance (Federal Register 2000) to provide compensatory mitigation would continue to be used.

Current guidance for mitigation banks has few timelines and milestones required for the review and approval of mitigation banks, which are rarely adhered to because that guidance does not contain a dispute resolution process.

3.3 Third Alternative – Watershed approach with mitigation banks and permittee-responsible mitigation

This alternative would offer fewer opportunities for providing compensatory mitigation for activities authorized by DA permits. Under this alternative, in-lieu fee programs would either have to change their practices so that they would comply with the rules governing mitigation banks, or they would no longer be accepted as a source of compensatory mitigation for DA permits.

Under this alternative, the risks and uncertainties associated with in-lieu fee programs would not be accepted, and the Corps would rely solely on mitigation banks and permittee-responsible mitigation to provide any compensatory mitigation required for DA permits. Risks associated with in-lieu fee programs are explained by Scodari and Shabman (2000), and are summarized below. Some of the risk is due to the fact that in-lieu fee programs usually need to collect sufficient amounts of funds from permittees before they can implement compensatory mitigation projects. Fee setting is another source of risk. For example, an in-lieu fee program may not charge enough to fully cover the costs of compensatory mitigation projects initiated later in time. A lack of financial assurances may also be a source of risk, which some in-lieu fee programs address by

including a failure risk premium in the fees they charge permittees for compensatory mitigation credits. Overall, the risks inherent in in-lieu fee programs lie between the risks associated with mitigation banking and permittee-responsible mitigation.

Mitigation banks and in-lieu fee programs differ in how they are structured and operated (Scodari and Shabman 2000). Sponsors of mitigation banks must provide substantial financial resources to obtain approval to sell credits to provide compensatory mitigation for activities authorized by DA permits, and must also plan and/or implement compensatory mitigation projects prior to selling those credits (Scodari and Shabman 2000).

The cost of establishing an in-lieu fee program is usually less than the costs necessary for a mitigation bank to obtain approval by regulatory agencies, in part because most in-lieu fee programs do not require up-front capitalization prior to establishment (Scodari and Shabman 2000). In-lieu fee programs typically do not initiate compensatory mitigation project until they have collected sufficient fees, which may result in temporal losses of aquatic resource functions and services. In-lieu fee programs can conduct aquatic resource restoration, establishment, enhancement, and preservation activities that benefit watersheds in cases where permittee-responsible mitigation is not practicable or feasible, or there are no mitigation bank credits available (Granger et al. 2005). The use of in-lieu fee programs to provide compensatory mitigation for DA permits developed as a result of concerns about the ecological failure of on-site compensatory mitigation for small impacts that are usually authorized by general permits and the lack of practical alternative compensatory mitigation opportunities (e.g., mitigation banks) within many watersheds (Scodari and Shabman 2000).

In-lieu fee programs pool resources to conduct larger scale aquatic resource restoration, establishment, enhancement, and preservation activities that result in aquatic resource functions and services that might not occur through permittee-responsible mitigation for small impacts. For in-lieu fee programs and mitigation banks, there is less uncertainty about the long-term performance of compensatory mitigation projects than with permittee-responsible mitigation (NRC 2001).

By retaining in-lieu fee programs as a mechanism for providing compensatory mitigation for activities authorized by DA permits, without subjecting them to exactly the same requirements and standards as mitigation banks, there will be environmental benefits. In-lieu fee programs can provide effective consolidated compensatory mitigation projects that sustain and/or improve ecological functions, services, and values within watersheds, especially in areas where there are no mitigation banks with available credits. In their review of in-lieu fee programs, Scodari and Shabman (2000) concluded that in-lieu fee programs should not be subjected to the 1995 mitigation banking guidance review process because using that review process would increase the costs and time to develop those programs, and hinder their use as a mechanism for providing compensatory mitigation for minor impacts. They recommended using a less formal review process with interested federal agencies instead of the full Mitigation Bank Review Team process to approve in-lieu fee program agreements. The options for limiting the use of in-lieu fee

programs discussed below are intended to reduce some of the risks associated with those programs, since successful in-lieu fee programs do provide environmental benefits to watersheds.

This alternative would reduce the ability of the Corps Regulatory Program to support a watershed approach to compensatory mitigation, because it would provide fewer opportunities for aquatic resource restoration, establishment, enhancement, and preservation activities in a watershed. Relying solely on mitigation banks as a means of providing third-party mitigation would make a watershed approach less effective. According to Ruhl and Salzman (2006), mitigation banking causes wetland functions to be redistributed from urban to rural areas, reducing the benefits that human populations receive from those functions. Entrepreneurial mitigation bankers seek profit, which causes them to seek less costly land that will produce wetland credits (Ruhl and Salzman 2006). In a survey of wetland mitigation bank demographics in Florida, they found that wetland resources were moved from urban to rural areas through the use of mitigation banks to provide compensatory mitigation.

4.0 AFFECTED ENVIRONMENT

4.1 Physical and Biological Environment

The affected environment consists of terrestrial and aquatic ecosystems. The total land area in the contiguous United States is approximately 1,930,000,000 acres (Dahl 2006). Alaska is 366,050,000 acres in size and Hawaii is 4,110,720 acres in size (source: http://www.usgs.gov/state/ , accessed July 25, 2005). Terrestrial ecosystems comprise over 93 percent of the contiguous United States and most are abundant compared to aquatic ecosystems, which make up the remainder (Dahl 2000). In the contiguous United States, approximately 67 percent of the land is privately owned, 31 percent is held by the United States Government, and two percent is owned by state or local governments (Dale et al. 2000). Developed non-federal lands comprise 4.4 percent of the total land area of the contiguous United States (Dale et al. 2000).

The Federal Geographic Data Committee established the Cowardin system developed by the U.S. Department of the Interior's Fish and Wildlife Service (Cowardin et al. 1979) as the national standard for wetland mapping, monitoring, and data reporting (Dahl 2006). [See also http://www.fgdc.gov/standards/projects/FGDC-standards-projects/wetlands/fgdc-announce, accessed April 3, 2006] The Cowardin system is a hierarchical system which describes various wetland and deepwater habitats, using structural characteristics such as vegetation, substrate, and water regime as defining characteristics. Wetlands are defined by vegetation type, soils, and flooding frequency. Deepwater habitats are permanently flooded areas located below the wetland boundary. In rivers and lakes, deepwater habitats are usually less than two meters deep.

There are five major systems in the hierarchical Cowardin classification scheme: marine, estuarine, riverine, lacustrine, and palustrine (Cowardin et al. 1979). The marine system consists of open ocean on the continental shelf and its high energy coastline. The estuarine system consists of tidal deepwater habitats and adjacent tidal wetlands that are usually partially enclosed by land, but may have open connections to open ocean waters. The riverine system generally consists of all wetland and deepwater habitats located within a river channel. The lacustrine system generally consists of wetland and deepwater habitats located within a topographic depression or dammed river channel, with a total area greater than 20 acres. The palustrine system generally includes all non-tidal wetlands and wetlands located in tidal areas with salinities less than 0.5 parts per thousand; it also includes ponds less than 20 acres in size.

The Emergency Wetlands Resources Act of 1986 (Public Law 99-645) requires the U.S. Fish and Wildlife Service to submit wetland status and trends reports to Congress on a periodic basis (Dahl 2006). The latest status and trends report, which covers the period of 1998 to 2004, is summarized in Table 4.1-1.

Table 4.1-1. Estimated aquatic resource acreages in the conterminous United States in 2004 (Dahl 2006).

Aquatic Habitat Category	Estimated Area in 2004 (acres)
Marine	128,600
Estuarine intertidal non-vegetated	600,000
Estuarine intertidal vegetated	4,571,700
All intertidal waters and wetlands	5,300,300
Palustrine non-vegetated	6,633,900
Palustrine vegetated	95,819,800
• Palustrine emergent wetlands	26,147,000
• Palustrine forested wetlands	52,031,400
• Palustrine shrub wetlands	17,641,400
All palustrine aquatic habitats	102,453,700
Lacustrine deepwater habitats	16,773,400
Riverine deepwater habitats	6,813,300
Estuarine subtidal habitats	17,717,800
All aquatic habitats	149,058,500

The acreage of lacustrine deepwater habitats does not include the open waters of the Great Lakes (Dahl 2006).

According to Hall et al. (1994), there are more than 204 million acres of wetlands and deepwater habitats in the State of Alaska, including approximately 174.7 million acres of wetlands. Wetlands and deepwater habitats comprise approximately 50.7 percent of the surface area in Alaska (Hall et al. 1994).

The USFWS status and trends study does not assess the condition or quality of wetlands and deepwater habitats (Dahl 2006). The Nation's aquatic resource base is underestimated by the USFWS status and trends study, the National Wetland Inventory (NWI), and studies that estimate the length or number of stream channels within watersheds (see above). The 2006 status and trends study does not include Alaska and Hawaii. The underestimate by the status and trends study and the NWI results from the minimum size of wetlands detected through remote sensing techniques and the difficulty of identifying certain wetland types through those remote sensing techniques. The NWI maps do not show small or linear wetlands (Tiner 1997) that may be directly impacted by activities authorized by NWPs. For the latest USFWS status and trends study, most of the wetlands identified are larger than 2.5 acres, but the minimum size of detectable wetland varies by wetland type (Dahl 2006). Some wetland types less than one acre in size can be identified; the smallest wetland detected for the most recent status and trends report was 0.005 acre (Dahl 2006). Because of the limitations of remote sensing

techniques, certain wetland types are not included in the USFWS status and trends study: seagrass beds, submerged aquatic vegetation, submerged reefs, certain types of forested wetlands, and emergent wetlands along the Pacific coast (Dahl 2006). Therefore, activities authorized by NWPs will adversely affect a smaller proportion of the Nation's wetland base than indicated by the wetlands acreage estimates provided in the most recent status and trends report, or the NWI maps for a particular region.

According to Zedler and Kercher (2005), all wetlands are degraded to some extent as a result of a large number of causes, such as sedimentation, eutrophication, changes to hydrology, invasions by exotic species, and pollutants.

The National Resources Inventory (NRI) is a statistical survey conducted by the Natural Resources Conservation Service (NRCS) (2003) of natural resources on non-federal land in the United States. The NRCS defines non-federal land as privately owned lands, tribal and trust lands, and lands under the control of local and State governments. The land use determined by 2003 NRI is summarized in Table 4.1-2. The 2003 NRI estimates that there are 110,760,000 acres of palustrine and estuarine wetlands on non-Federal land and water areas in the United States (NRCS 2003).

Table 4.1-2 2003 National Resources Inventory acreages for palustrine and estuarine wetlands on non-federal land, by land cover/use category (NRCS 2003).

National Resources Inventory Land Cover/Use Category	Area of Palustrine and Estuarine Wetlands (acres)
cropland, pastureland, and Conservation Reserve Program land	16,730,000
forest land	65,440,000
rangeland	7,740,000
other rural land	15,800,000
developed land	1,590,000
water area	3,460,000
Total	110,760,000

The land cover/use categories used by the 2003 NRI are defined below (NRCS 2003). Croplands are areas used to produce crops adapted for harvest. Pastureland is land managed for livestock grazing, through the production of introduced forage plants. Conservation Reserve Program land is under a Conservation Reserve Program contract. Forest land is comprised of at least 10 percent single stem woody plant species that will be at least 13 feet tall at maturity. Rangeland is land on which plant cover consists mostly of native grasses, herbaceous plants, or shrubs suitable for grazing or browsing, and introduced forage plant species. Other rural land consists of farmsteads and other farm structures, field windbreaks, marshland, and barren land. Developed land is comprised of large urban and built-up areas (i.e., urban and built-up areas 10 acres or more in size), small built-up areas (i.e., developed lands 0.25 to 10 acres in size) , and rural transportation land (e.g., roads, railroads, and associated rights-of-way outside

urban and built-up areas). Water areas are comprised of waterbodies and streams that are permanent open waters.

Leopold, Wolman, and Miller (1964) estimated that there are approximately 3,250,000 miles of river and stream channels in the United States. This estimate is based on an analysis of 1:24,000 scale topographic maps, by stream order. This estimate does not include many small streams. Many small streams are not mapped on 1:24,000 scale U.S. Geological Survey topographic maps (Leopold 1994) or included in other analyses (Meyer and Wallace 2001). In a study of stream mapping in the southeastern United States, only 20% of the stream network was mapped on 1:24,000 scale topographic maps, and nearly none of the observed intermittent or ephemeral streams were indicated on those maps (Hansen 2001). For a 1:24,000 scale topographic map, the smallest tributary found by using 10-foot contour interval has drainage area of 0.7 square mile and length of 1,500 feet, and smaller channels are common throughout the United States (Leopold 1994). Due to the difficulty in mapping small streams, there are no accurate estimates of the total number of river or stream miles in the conterminous United States that may be classified as "waters of the United States."

According to the 2000 National Water Quality Inventory (U.S. EPA 2002), there are 3,692,830 miles of perennial and intermittent rivers and streams, 40,603,893 acres of lakes, reservoirs, and ponds, and 87,369 square miles of estuarine waters in the United States.

Current estimates of the extent of riparian areas in the United States range from 38 million acres to 121 million acres, or approximately five percent of the land area of the United States (NRC 2002).

Not all of the Nation's aquatic resources are subject to regulatory jurisdiction under Section 404 of the Clean Water Act. Waters of the United States subject to Section 404 of the Clean Water Act are defined at 33 CFR part 328. Some wetlands are not subject to Clean Water Act jurisdiction because they do not meet the criteria at Part 328. In its decision in *Solid Waste County of Northern Cook County v. U.S. Army Corps of Engineers*, 531 U.S. 159 (2001), the U.S. Supreme Court ruled that Clean Water Act jurisdiction does not apply to isolated, intrastate, non-navigable waters based on their use as habitat for migratory birds. Tiner (2003) estimated that in some areas of the country, the proportion of wetlands that are geographically isolated, and may not be subject to Clean Water Act jurisdiction is approximately 20 to 50 percent of the wetland area, and there are other areas where more than 50 percent of the wetlands are geographically isolated. Geographically isolated wetlands comprise a substantial proportion of the wetlands found in regions with arid, semi-arid, and semi-humid climates, as well as areas with karst topography (Tiner 2003). However, it is difficult to determine from maps or aerial photographs whether wetlands are hydrologically isolated from other waters, because there may be small surface hydrologic connections that are not included on those maps or detected by those photographs (Tiner 2003). Clean Water Act jurisdiction over aquatic resources may also be affected by another decision by the U.S. Supreme Court: *Rapanos et ux., et al. v. United States* (No. 04-1034).

Wetland functions are the biophysical processes that occur within a wetland (King et al. 2000). Wetlands provide many functions, such as habitat for fish and shellfish, habitat for waterfowl and other wildlife, habitat for rare and endangered species, food production, plant production, flood conveyance, flood-peak reduction, flood storage, shoreline stabilization, water supply, ground water recharge, pollutant removal, sediment accretion, and nutrient uptake (NRC 1992).

Functions provided by streams include sediment transport, water transport, transport of nutrients and detritus, habitat for many species of plants and animals (including endangered or threatened species), and maintenance of biodiversity (NRC 1992). Streams also provide nutrient cycling functions, food web support, and transport organisms (Allan 1995).

Riparian areas furnish a number of functions related to watersheds and aquatic habitats. Categories of functions provided by riparian areas are hydrology and sediment dynamics, biogeochemical and nutrient cycling, and habitat and food web maintenance (NRC 2002). Specific riparian area functions include: surface water storage; sediment storage; interception and uptake of nitrogen and phosphorous; biodiversity support and maintenance (e.g., food resources, corridors for dispersal); temperature regulation; contribution of large woody debris to the stream channel which helps maintain physical habitat, biodiversity, and ecosystem processes; bank stabilization; and aquatic habitat support (NRC 2002).

4.2 Socioeconomics

Activities authorized by DA permits provide a wide variety of goods and services that are valued by society. For example, residential and commercial developments, including single family homes may require DA permits if the construction of those developments involves regulated activities in waters of the United States. DA permits may also be required to construct and maintain roads, utility lines, transportation facilities, and other infrastructure. Activities authorized by DA permits may also support the production of food, fiber, and other commodities. Bank stabilization activities, shore protection structures, and other structures or fills requiring DA permits help protect life and property from storm damage. Dredging in navigable waters supports the transport of goods and services, as well as recreational activities, such as boating.

4.2.1 Ecosystem services and values

Ecosystem services are the benefits that human populations receive directly or indirectly from functions that occur in aquatic resources and other ecosystems (Costanza et al. 1997, King et al. 2000, Daily 1997). The capacity of a wetland to provide a service is dependent on the function of interest and the wetland's location in the landscape (King et al. 2000). Aquatic resources provide a wide variety of ecosystem services, such as

consumable resources (e.g., water and food), habitat, environmental regulation (e.g., water, nutrients, climate, waste accumulation), and support of non-consumptive uses, such as recreation and aesthetics (NRC 2005). Some wetland services, such as biodiversity support or carbon sequestration, are not location-dependent, but other wetland services, such as those related to aesthetics or recreation, are location dependent (King et al. 2000). The off-site replacement of aquatic resource functions may result in different social benefits because of the changed location in the human and natural landscape (Boyd and Wainger 2002).

Costanza et al. (1997) lists ecosystem services provided by different categories of aquatic resources:

- Coastal wetlands – disturbance regulation, nutrient cycling, biological control, habitat/refugia, food production, raw materials, recreation, and cultural uses
- Tidal wetlands – disturbance regulation, waste treatment, habitat/refugia, food production, raw materials, and recreation
- Non-tidal wetlands (swamps, floodplains) – gas regulation, disturbance regulation, water regulation, water supply, waste treatment, habitat/refugia, food production, raw materials, recreation, and cultural uses
- Lakes and rivers – water regulation, water supply, waste treatment, food production, and recreation

In its study on valuing ecosystem services, the NRC (2005) considered aquatic and related terrestrial ecosystems together because many ecological processes link aquatic and terrestrial areas (e.g., rivers and their floodplains). The opportunity to perform wetland functions is dependent upon conditions of the surrounding landscape. The importance of ecosystem functions, and the services they provide, is often scale-dependent (NRC 2005). The landscape context of a wetland, which is its proximity to natural or man-made features in the surrounding landscape, affects the opportunity for a wetland to perform functions, the services derived from those functions, the value of those services, and the risk that those services will not persist through time (King et al. 2000)

As a result of a review of several studies, Mitsch and Gosselink (2000) estimate that a temperate zone watershed should have an average of five percent wetland area (with a range of three to seven percent) to optimize ecosystem values.

Most wetland services benefit the general public, and to a lesser degree, individual landowners (Heimlich et al. 1998, Mitsch and Gosselink 2000). Many wetland functions result in benefits (i.e., services) that accrue, for the most part, off-site (King et al. 2000). Approximately 82 percent of the wetlands in the contiguous 48 states are privately owned (Heimlich et al. 1998).

If wetlands are too small, some wetland functions and services, such as habitat for large animals or water storage, may no longer exist (Mitsch and Gosselink 2000). In urban and suburban areas, a particular wetland's functions may be overwhelmed by outside factors,

such as humans and pollutants, and no longer be able to effectively provide ecosystem services.

The value of an ecosystem reflects the "willingness-to-pay" for each ecosystem service, for all people and all services (King et al. 2000). Table 4.2-3 summarizes the values of different ecosystems that accrue annually on a per-acre basis, by habitat type (Costanza et at. 1997). Since the value of a wetland depends on its landscape position and its proximity to humans, its value is highest when it is located in a moderately developed area, where there is a balance of natural areas and development (Mitsch and Gosselink 2000). Many wetlands function as components of broader ecosystems, such as watersheds, and should not be separated from those broader ecosystems when considering their value (King et al. 2000).

Table 4.2-3 Values of ecosystem services, by habitat type (Costanza et al., 1997).

Habitat Type	$ per acre per year
open ocean	102
coastal waters	1,641
estuaries	9,247
seagrass/algae beds	7,697
forests	392
grass/rangelands	94
wetlands	5,988
tidal marsh/ mangroves	4,046
swamps/floodplains	7,930
lakes/rivers	3,442
cropland	37

Examples of services and values provided by wetlands include (Mitsch and Gosselink 2007):

- Habitat for fish and shellfish, which supports fishing
- Habitat for waterfowl, which supports hunting
- Habitat for commercially valuable species, such as fur-bearing mammals
- Production of timber, such as cypress and other bottomland hardwood trees, and other vegetation (e.g., peat, grasses) that are commercially harvested
- Habitat for threatened and endangered species
- Flood mitigation, by reducing flood damage and storing floodwaters
- Storm abatement, through salt marshes and mangroves that provide buffers against coastal storms
- Water quality improvement, through processes such as the removal of organic and inorganic nutrients, the removal of toxic substances, sediment trapping, denitrification, and chemical precipitation

- Aesthetics, such as wetlands visited by hunters and birdwatchers, or others who enjoy wetland environments
- Subsistence use, where resources produced by wetlands are used by humans

Examples of services and values provided by streams include (NRC 1992):

- Recreational activities, such as fishing, canoeing, and wildlife observation
- Commercial activities, such as fishing
- Highways of transport for goods

Riparian areas also provide services and values, such as (NRC 2002):

- Flood damage reduction
- Water quality improvement, through pollutant removal
- Production of species for valuable fisheries
- Recreation, such as bird watching and wildlife observation

Services and values provided by lakes include (NRC 1992):

- Food production, such as fish
- Drinking water
- Transport of goods
- Recreation, such as fishing, boating, wildlife observation opportunities
- Commercial fishing
- Aesthetics, such as places for vacation homes

Freshwater ecosystems provide the following services (Postel and Carpenter 1997):

- Water for drinking, household uses, manufacturing, thermoelectric power generation, irrigation, and aquaculture
- Production of finfish, waterfowl, and shellfish
- Non-extractive services, such as flood control, transportation, recreation (e.g., swimming and boating), pollution dilution, hydroelectric generation, wildlife habitat, soil fertilization, and enhancement of property values

Marine ecosystem services include (Peterson and Lubchenco 1997):

- Production of fish and other goods
- Materials cycling, such as nitrogen, carbon, oxygen, phosphorous, and sulfur
- Transformation, detoxification, and sequestration of pollutants and wastes produced by human populations
- Support of ocean-based recreation, tourism, and retirement industries
- Coastal land development and valuation, including aesthetics related to living near the ocean

4.2.2 Wetland Restoration Costs

King and Bohlen (1994a) examined 1993 data concerning wetland restoration project costs. They reviewed data from Federal programs for restoring wetlands on agricultural lands and wetland restoration or creation activities used for compensatory mitigation for

activities authorized under Section 404 of the Clean Water Act. King and Bohlen (1994a) found that the cost of wetland restoration is dependent upon the particular wetland to be restored, the degree of degradation of that wetland, and the desired outcome of the wetland restoration activity. They observed large differences in restoration costs by project type, although wetland type (e.g., freshwater marsh) was not a substantial factor affecting costs.

According to King and Bohlen (1994a), there are higher costs per acre associated with smaller projects (less than 0.5 acre) or projects that need atypical work done (e.g., blasting through rock to get the desired elevation). Because of substantial fixed costs associated with most wetland restoration projects, the cost-per-acre for larger wetland restoration projects may be relatively low compared to smaller restoration projects (King and Bohlen 1994a). They stated that differences in per-acre costs between small and large wetland restoration projects are due to economy of scale and the type of restoration project. For example, King and Bohlen (1994a) found that for a 10 percent increase in project size for wetland compensatory mitigation projects, the cost per acre decreases 3.5 percent. King and Bohlen (1994a) also found that wetland restoration or creation costs may vary by a factor of five or ten because of differences in site characteristics.

High wetland restoration project costs may also be driven by the regulatory preference for on-site compensatory mitigation, because of the amount of work necessary to alter the landscape to create a wetland (King and Bohlen 1994a). For more effective expenditures of funds and to improve wetland or watershed functioning, King and Bohlen (1994a) recommend site selection focused on favorable locations for wetland restoration.

In another review of wetland restoration costs, King and Bohlen (1994b) found that wetland restoration costs depend on the wetland type, degree of degradation, timeframe for restoration, completeness of restoration, and permanency of the restored wetland. They also observed that wetland restoration on agricultural lands is less complex and less expensive than wetland restoration in suburban or urban areas. Average wetland restoration costs are more dependent on site characteristics, project size, and other project-specific factors than wetland type (King and Bohlen 1994b). On a per-acre basis, larger wetland restoration or creation projects are less costly than smaller projects, and those differences in per-acre costs are due to economy of scale and the type of project (King and Bohlen 1994b).

4.2.3 Compensatory Mitigation Costs to Permittees

The options potentially available to permittees for providing compensatory mitigation include permittee-responsible mitigation, mitigation banks, and in-lieu fee programs. Costs to permittees for these different mitigation types are reviewed briefly below.

Costs of Permittee-Responsible Mitigation

Costs for permittee-responsible mitigation include compliance costs as well as potential time and risk costs. Compliance cost components include costs for identifying and securing compensatory mitigation sites, and preparing mitigation project plans for Corps review and approval. After the district engineer approves a permittee-responsible compensatory mitigation plan, the permittee incurs compliance costs for the construction, monitoring, and maintenance of the compensatory mitigation project. The time costs of permittee-responsible mitigation include potential opportunity costs of any delay in permit issuance associated with the development and approval of mitigation plans. Risk costs include potential remediation costs if the compensatory mitigation project fails to fulfill its objectives. (The component costs faced by permittee-responsible mitigation are reviewed in more detail in Section 10.4.1).

Nationwide data on the costs of permittee-responsible mitigation are not available, in part because these costs are not fully observable. Such costs are likely highly variable nationwide, however, and driven largely by the nature and size of the permitted impacts, the difficulty of project implementation, and land costs.

Wetland Credit Prices

When a permittee proposes and is allowed by the district engineer to provide compensatory mitigation through use of a commercial mitigation bank or in-lieu fee program, the cost to the permittee is the credit price (fee rate) charged for the amount of credits deemed necessary by the district engineer. When a commercial mitigation bank is used, the permittee pays the mitigation bank a negotiated credit price. When an in-lieu fee program is used, the permittee typically pays a standard fee rate per unit of permitted impact.

The *2005 Corps Survey of District Mitigation Practices* conducted for this rulemaking (see Section 2.2.2) sought data on wetland credit prices charged by commercial mitigation banks and in-lieu fee programs in each Corps district. Table 4.2-4 presents the range of credit prices charged for wetland compensatory mitigation by commercial mitigation banks and in-lieu fee programs reported by one or more districts within each Corps division in 2005. These data are based on a limited set of Corps districts that responded to the survey questions on wetland credit prices, and thus may not be fully indicative of the range of wetland credit prices across the country. Nevertheless, even these limited data indicate that there is considerable variation in wetland credit prices within and across Corps divisions.

Table 4.2-4 Wetland Credit Prices Charged by Commercial Mitigation Banks and In-Lieu Fee Programs. (Prices are on a per-credit or per-acre basis). Source: *2005 Corps Survey of District Mitigation Practices*.

Corps Division	Wetland Credit Prices Charged by Commercial Mitigation Banks	Wetland Credit Prices Charged by In-Lieu Fee Programs
Lakes and Rivers	$7,000 - $145,000	$12,000
Mississippi Valley	$1,500 - $100,000	$18,000
North Atlantic	$16,000 - $350,000	$16,500 - $350,000
Northwestern	$40,000 - $120,000	$30,000
Pacific Ocean		$500 - $30,000
South Atlantic	$4,000 - $65,000	$12,000 - $122,000
South Pacific	$400,000	$125,000
Southwestern	$2,200 - $25,000	$3,000 - $30,000

Stream Credit Prices

The *2005 Corps Survey of District Mitigation Practices* also requested data on credit prices for stream mitigation charged by commercial mitigation banks and in-lieu fee programs in each Corps district. However, only four districts provided data on the prices of stream credits charged by mitigation banks, and only 11 districts provided data on stream credit prices charged by in-lieu fee programs. Moreover, while most of the responding districts reported stream credit prices in terms of linear feet, some districts reported prices based on other units of measure (e.g., square feet) that are not readily comparable. For those districts that reported stream credit prices per linear foot, the reported prices charged by commercial mitigation banks ranged from $45 to $400, and the reported range of prices charged by in-lieu fee programs was $15 to $400.

4.2.4 Mitigation Bank Development Costs

The credit prices charged by commercial mitigation banks necessarily reflect all mitigation bank development costs. As with permittee-responsible mitigation, costs for mitigation bank development include compliance costs, time costs, and risk costs. However, mitigation bank costs include a wider set of component costs within each of these cost categories. Compliance costs for mitigation bank development include planning costs, including costs to identify and secure project lands and to develop conceptual mitigation project plans. Once a suitable mitigation bank site is secured, there are costs for preparing the bank prospectus and the site development plan. Then there are compliance costs associated with navigating the Federal Interagency Review Team (IRT) review process that is necessary for bank certification, including all costs to prepare draft and final mitigation banking instruments. Once the mitigation bank instrument is approved, there are compliance costs to implement compensatory mitigation activities and for the operation, monitoring, and management of the mitigation bank (including data collection, preparation of monitoring reports, credit evaluation, and compiling credit

ledgers for submission to the district engineer). Other mitigation bank compliance costs include costs to provide financial assurances and, in some cases, funding for long term management.

Costs for the development of commercial mitigation banks also include risk and time costs that are not faced by other mitigation types. For example, during the mitigation bank proposal stage, a prospective mitigation bank faces investment risk costs driven by uncertainty about whether the mitigation bank venture will eventually be approved. The time costs of mitigation bank development include the opportunity costs of waiting until proposed mitigation bank ventures are approved and bank credits are released for sale. These opportunity costs include the costs of carrying land, labor and capital without any return on investment. (The component costs of mitigation bank development are reviewed in more detail in Section 10.4.1).

In a study of mitigation banking in Florida, the state Office of Program Policy Analysis and Government Accountability (OPPAGA, 2000) observed that delays in the Federal mitigation bank review and approval process increased costs for mitigation bank development, which are then passed on to permittees who purchase credits. The study concluded that reducing unnecessary delays in that process would reduce mitigation bank costs, and thereby facilitate and encourage mitigation bank development and use in the state.

4.2.5 In-Lieu Fee Program Development Costs

For in-lieu fee programs, there are costs incurred during the development of in-lieu fee agreements in accordance with Federal guidance established in the year 2000 (Federal Register 2000). Once an in-lieu fee program is established, it faces many of the same compliance cost components faced by commercial mitigation banks. Unlike mitigation banks, however, in-lieu fee programs face no investment risk costs or time costs, since in-lieu fee program mitigation activities are generally capitalized exclusively with fee revenues and do not take place until a sufficient level of funds have been collected.

4.2.6 Costs to the Federal Government

For permittee-responsible mitigation, the Corps has costs associated with reviewing those compensatory mitigation proposals, including the preparation of special conditions for incorporation into the DA permit. Additional costs are incurred for monitoring and compliance activities for compensatory mitigation projects. If the compensatory mitigation project fails to fulfill its objectives, compliance and/or enforcement actions may be required, which will impose additional costs on the Corps.

For mitigation banks, the Corps and other Federal agencies incur costs associated with the Interagency Review Team (IRT) process. The Corps, as chair of the IRT and the Federal agency responsible for approval of the mitigation bank, has additional costs for

reviewing and approving that mitigation bank. The Corps must review the prospectus and issue a public notice to initiate the IRT and public review processes. After the public notice comment period ends, there are costs associated with IRT coordination and addressing comments received in response to the public notice and prospectus. Once the sponsor has submitted draft and final mitigation banking instruments to the district engineer, there is likely to be review of those instruments by other Corps personnel.

If the mitigation bank is approved, there are costs associated with reviewing monitoring reports and other information submitted regarding the performance of the mitigation bank. If modifications to the mitigation banking instrument are necessary, there will be costs incurred to review and approve those modifications. Maintaining ledgers or automated information systems to track credit releases and the use of mitigation bank credits for specific activities result in additional costs to the Corps.

Mitigation banks are likely to help reduce costs incurred by the Corps for review and approval of compensatory mitigation projects, and improve regulatory efficiency. If more mitigation banks are available to provide compensatory mitigation, the Corps can focus its monitoring and compliance efforts on those mitigation banks, instead of a larger number of small permittee-responsible mitigation sites scattered throughout a district. In addition, there would be fewer compensatory mitigation project plans to review and approve, as well as fewer monitoring reports to review.

Case-Study – Mitigation Banking and In-Lieu Fee Program Implementation in Norfolk District

As part of the analysis of the likely effects of this mitigation rule, it is appropriate to evaluate the relative burden on Corps staff associated with the different types of compensatory mitigation (i.e., permittee-responsible mitigation, in-lieu fee programs, and mitigation banks). Most aspects of permit processing such as public interest reviews and alternatives analyses are unaffected by the type of compensatory mitigation, so the actual administrative cost is related to review and approval of mitigation plans and the review and approval of mitigation bank or in-lieu fee program proposals.

National data on time spent reviewing and approving mitigation plans are not available. However, senior staff members in Norfolk District Regulatory Branch with experience in the review of a range of compensatory mitigation projects and that serve as Chairs for a number of Mitigation Bank Review Teams were queried on these issues. Norfolk District has active mitigation banks (currently 41 operational banks with 48 bank sites) and in-lieu fee programs (two operational funds with combined assets in 2005 of approximately $25.8 million) and makes extensive use of permittee-responsible mitigation. From 2002 to 2004 approximately 52 percent of all compensatory mitigation acreage in Norfolk District was permittee-responsible mitigation. Contributions to in-lieu fee programs made up 11 percent of all compensatory mitigation, and mitigation bank credits accounted for 37 percent of all compensatory mitigation acreage. This is similar to the national average of 59 percent permittee-responsible mitigation, seven percent through

use of in-lieu fee programs, and 33 percent through mitigation banks (see Table 2.2-3 above). Thus, information from Norfolk District may provide insight into the potential national administrative burden associated with these different types of compensatory mitigation.

The Norfolk District query focused on the relative effect of permittee-responsible mitigation, mitigation banks, or in-lieu fee programs on permit review and permit processing times including the relative amount of administrative effort placed on the review and approval of mitigation banks.

Use of Mitigation Banks and In-Lieu Fee Programs

Review of mitigation plans for permits that entail only the purchase of mitigation bank credits or contributions to in-lieu fee programs require much less time and effort than the review of permittee-responsible mitigation. In Norfolk District, mitigation banks and in-lieu fee programs are used most often for impacts to aquatic resources authorized under general permits or relatively non-controversial individual permits that may slightly exceed general permit limits.

During the period of 2002 to 2004, review of compensatory mitigation plans that relied upon mitigation banks or in-lieu fee programs as the sole source of compensatory mitigation took senior project managers in Norfolk District an average of 1.7 hours to review (range of 0.25 to 4 hours). This review included consideration of the feasibility and practicality of on-site compensatory mitigation; whether the approved geographic service area of the proposed mitigation source included the proposed impact area; the nature of project impacts and resources provided by the proposed mitigation bank or in-lieu fee program (e.g., non-tidal wetland, tidal wetland, or stream); and the availability of credits if the applicant proposed use of a mitigation bank.

Use of Permittee-Responsible Mitigation

In Norfolk District, permittee-responsible mitigation is used most frequently for individual permits involving larger impacts (e.g., transportation, large development projects, water supply, or mining projects), impacts to rare or difficult to replace aquatic resources (e.g., tidal and freshwater tidal wetlands, wetlands underlain by organic soils, exemplary stream systems), and in areas currently without operational mitigation banks.

On average, a mitigation plan that relies on permittee-responsible mitigation takes substantially more time to review than a mitigation plan that relies solely on the use of in-lieu fee programs or mitigation banks. The average time involved in review and approval of permittee-responsible mitigation plans is 68 hours. That average includes 59 hours of review by the Corps project manager (range of 5 to 140 hours), 5 hours review by Corps Counsel (range of 1 to 9 hours), and four hours of supervisory review (range of 1 to 7 hours). Issues considered by Corps project managers and supervisory staff during review of permittee-responsible mitigation include: site location (including watershed); site suitability; suitability of the proposed compensatory mitigation plan to replace impacted

functions; technical issues including water budgets, site preparation, and planting; administrative issues including site protection, financial assurances, and long-term management. Review by the Corps' Office of Counsel includes evaluation of the adequacy of the proposed mechanism for protection of the mitigation site, presence of easements or other encumbrances recorded on the mitigation sites, and any financial assurances that may be proposed to guarantee completion of the mitigation project.

Review and Approval of Mitigation Banks and In-Lieu Fee Programs

Anecdotally, the amount of time it takes for review and approval of mitigation banks and in-lieu fee program proposals is extremely variable across the country. Review and approval times have been reported to vary from as little as four months to as long as four years.

Norfolk District's experience mirrors this national variability. From 2002 to 2004, review and approval time for mitigation banks and in-lieu fee programs in Norfolk District ranged from seven months to two years. The average amount of time spent by District staff in the review and approval of a Mitigation Bank Instrument (MBI) or in-lieu fee program instrument was approximately 380 hours. The Mitigation Bank Review Team (MRBT) Chair or Corps project manager spent an average of 320 hours on the review and approval of the mitigation bank or in-lieu fee program, although time spent on review and approval of a given MBI ranged from 50 to 750 hours. Supervisory review of an MBI averaged 20 hours. Review by the Corps' Office of Counsel averaged 40 hours and included evaluation of the legal sufficiency of the MBI and specifics of site protection and financial assurance mechanisms. In addition, the other MBRT agencies spend substantial time in the review and approval of MBIs, which has not been itemized.

During this period, Norfolk District working with other federal and state agencies developed a template MBI for single site commercial mitigation banks. This template included financial assurance instruments, mitigation bank development plans, and site protection instruments. This template MBI was developed with the intent of improving consistency between different bank instruments and to facilitate review and approval of bank instruments. It is not yet clear whether the use of a template has facilitated the review and approval of MBIs. Some mitigation banks such as those that included tidal or stream mitigation required additional agency coordination and review, including development of additional performance or success standards.

5.0 ENVIRONMENTAL CONSEQUENCES

There will be no environmental consequences resulting from the promulgation of this regulation, but there will be environmental consequences from its implementation. The environmental consequences will result from activities authorized by DA permits and any compensatory mitigation required to offset environmental impacts caused by those activities.

5.1 Consequences of the Preferred Alternative

The preferred alternative, a watershed approach to compensatory mitigation is anticipated to result in more environmental benefits than the third alternative or the no action alternative, because it may more effectively replace aquatic resource functions and services that are lost as a result of activities authorized by DA permits. Landscape setting has a large influence on the ecological functions of wetlands (NRC 2001). Compensatory mitigation projects located, planned, and designed with the watershed approach will be more likely to be self-sustaining and persist through time. Proper hydrology is critical for the long-term functioning of aquatic ecosystems, such as wetlands (Lewis, Kusler, and Erwin 1995; Bedford 1996), and the watershed approach considers large scale landscapes for appropriate site selection of compensatory mitigation projects. Assessment of wetland compensatory mitigation project sites needs to consider water sources, other wetlands, upland habitats, and deepwater habitats, especially in urban or urbanizing areas (Lewis, Kusler, and Erwin 1995). Placing wetland restoration projects in appropriate landscape locations is necessary for self-sustaining wetland ecosystems (Bedford 1999). The watershed approach to compensatory mitigation is likely to be more effective in maintaining or improving watershed functions than current wetland compensatory mitigation practices (NRC 2001).

5.1.1 Effects on Aquatic Resources

The objective of the watershed approach in the rule is to provide more effective compensatory mitigation, by directing compensatory mitigation activities to suitable locations that will support the desired aquatic resource functions. Carefully considered site selection for compensatory mitigation projects is expected to increase the likelihood of successfully replacing impacted aquatic resource functions within the watershed. The watershed approach may also increase the likelihood that the restored, established, enhanced, or preserved aquatic resources will be self-sustaining, and provide the desired ecological functions for long periods of time. The watershed approach considers the relationship of compensatory mitigation project sites to other features in the landscape, such as upland habitats and connections to other aquatic resources.

In urban areas and other highly disturbed areas, ecological functions may already be impaired, or will be impaired by the proposed activity, and off-site compensatory

mitigation options, such as mitigation banks, may be more effective at replacing lost ecological functions (Race and Fonesca 1996). Although on-site wetland mitigation projects may provide water quality and quantity functions, their habitat functions are likely to be impaired because of their proximity to urban and urbanizing areas (Johnson et al. 2002).

To improve the success of wetland restoration and establishment activities, Erwin (1991) recommended designing wetland mitigation projects to be self-maintaining, low energy systems, and to maximize habitat functions by integrating those projects with native upland habitat. Selection of compensatory mitigation project sites needs to include consideration of interactions between wetlands and adjacent uplands, including forests, agricultural lands, roads, riparian areas, and urban areas (Erwin 1991). Large, connecting habitats generally support more species, as well as more diverse biological communities, than small isolated habitats (Erwin 1991). Urbanization causes habitat fragmentation and isolates habitat areas from each other (Erwin 1991).

For stream restoration activities, it is necessary to consider current and historic land uses within the watershed, since changes to a watershed affect stream hydrology and energy (Rosgen 1996). The biological integrity of rivers and streams is dependent on land use in the watershed (NRC 1992). Restoration activities needed to mitigate stream degradation need to be addressed through a watershed perspective (Moerke and Lamberti 2004). Reach scale restoration efforts for streams are more likely to be successful because of practicability (Moerke and Lamberti 2004), but those efforts still need to be considered in a watershed context.

5.1.2 Socioeconomic Effects

The watershed approach described in the preferred alternative is expected to more effectively replace aquatic resource services and values through careful site selection for compensatory mitigation projects. Much of the value of a wetland, stream, or other open ecosystem depends on its landscape context, because these ecosystems interact with adjacent ecosystems to form a functional landscape (Mitsch and Gosselink 2007).

The watershed approach may also reduce costs of compensatory mitigation projects. Improving the performance of compensatory mitigation projects through better site selection can reduce the risk of failure, and permittees may be able to use smaller, less expensive compensatory mitigation project sites to offset the aquatic resource impacts.

By removing some of the impediments to mitigation bank approval, more mitigation banks may be established. The timeframes and milestones for mitigation bank approval will add more predictability and accountability to the mitigation bank approval process, and may result in more entrepreneurs proposing mitigation banks in areas currently without mitigation banks.

Imposing stringent standards on in-lieu fee programs to improve their accountability and success will help provide ecosystem services in areas where there are no mitigation bank credits available, or where existing mitigation banks cannot provide the desired aquatic resources that an approved in-lieu fee program is willing to provide.

Since the biological characteristics of rivers and streams depend on land use in the watershed, land management practices need to be changed to facilitate stream restoration activities (NRC 1992). Larger stream restoration projects may be less susceptible to watershed degradation, although a watershed-scale approach to stream restoration may be cost-prohibitive because it requires cooperation of multiple landowners, consideration of changes in land use, long-term financing, and time (Moerke and Lamberti 2004).

5.1.3 Other Environmental Effects

The watershed approach in the preferred alternative will more effectively support the "no overall net loss" goal for wetland acreage and function, through better site selection for wetland compensatory mitigation projects. By replacing wetland habitat functions off-site on an acreage basis, the Corps Regulatory Program's contributions to the "no overall net loss" goal for wetlands is likely to improve, because off-site compensatory mitigation for wetland habitat is usually more effective (Shabman and Scodari 2004) for the reasons discussed elsewhere in this document. Wetland habitat functions may be greater if compensatory mitigation projects are located in undeveloped areas or next to nature reserves (Shabman and Scodari 2004).

Failure to use landscape-level criteria for site selection is likely to result in freshwater wetlands mitigation projects with more open waters surrounded by emergent wetland vegetation, which differs from the diversity of wetland types found in natural landscapes (Bedford 1996). Using landscape-level criteria for planning freshwater wetland mitigation projects will more closely reflect wetland diversity in natural landscapes (Bedford 1996). Bedford (1996) recommends using the watersheds of major streams as natural landscape units within which templates for wetland restoration or establishment can be identified.

According to Lewis, Kusler, and Erwin (1995) it is difficult to completely duplicate a natural wetland because of the complexity and variability of wetlands, and the subtle relationships between hydrology, soils, plants, animals, and nutrients. For forested wetlands, the observed low success rate is due to the sensitivity of many tree species to hydrologic conditions and the time required to reach maturity (Lewis, Kusler, and Erwin 1995). Mitsch and Wilson (1996) expressed optimism that wetland functions can be replaced through wetland restoration and establishment. The low rate of successful wetland restoration and establishment is due to a lack of understanding of wetland functions, failure to provide enough time for wetlands to develop, and underestimation of nature's capacity for self-design (Mitsch and Wilson 1996). The typical five year monitoring period may provide early indications of the wetland's development, but it might not provide adequate information about the functions it will perform (Mitsch and

Wilson 1996). Freshwater emergent wetlands normally develop in 15 to 20 years, but more time is needed for the restoration and establishment of forested wetlands, coastal wetlands, and peat lands (Mitsch and Wilson 1996).

In-lieu fee programs are useful in providing compensatory mitigation for small impacts where it may not be practicable to do permittee-responsible mitigation or where there are no mitigation banks with available credits (Scodari and Shabman 2000). Many in-lieu fee programs utilize a watershed approach to identifying compensatory mitigation projects (Scodari and Shabman 2000, ELI 2006b). In-lieu fee programs also have the capability to consolidate compensatory mitigation requirements to do larger, more environmentally beneficial aquatic resource restoration, establishment, enhancement, and preservation activities.

In-lieu fee programs may also be able to provide effective compensatory mitigation in certain areas, such as coastal areas, where options for economically viable mitigation banks are limited. Also, in some parts of the country, there is a low density of dredge and fill projects requiring compensatory mitigation, and it may not be economically viable to obtain the level of up-front financing that is necessary to start a mitigation bank. Therefore, there are regions where in-lieu fee programs may be the only available third-party compensatory mitigation option.

5.2 Consequences of the No Action Alternative

The “no action alternative” is unlikely to support the effective replacement of aquatic resource functions, services, and values provided by aquatic resources adversely affected by activities authorized by DA permits. The “no action alternative” results in net loss of aquatic resource functions, because many on-site compensatory mitigation projects fail or are surrounded by altered landscapes or developments that adversely affect the functionality and sustainability of those projects.

The rationale behind the on-site, in-kind preference presented in the 1990 Mitigation Memorandum of Agreement (U.S. EPA and Army 1990) is the desire to retain wetland functions and values as close as possible to the impacted wetland (Kusler 2003). This preference recognizes that some functions are dependent upon landscape position (Race and Fonesca 1996).

The on-site preference has resulted in wetland compensatory mitigation projects that are not ecologically functional or sustainable (Granger et al. 2005). The development activity requiring compensatory mitigation usually alters the local hydrology (NRC 2001), which adversely affects the potential to restore or establish wetlands near that development activity. Altered landscapes cause changes in local hydrologic conditions, such as more frequent flooding or dryness (Mitsch and Wilson 1996). Since hydrologic equivalence is necessary for wetland sustainability and function, compensation wetlands must be located in an appropriate place in the landscape (NRC 2001).

Since hydrology is the primary factor affecting wetland development, structure, functions, and persistence, more degraded watersheds are less likely to support highly functional wetlands (NRC 2001). Proposals for on-site, in-kind compensatory mitigation should be based on an analytical assessment of the watershed, to determine if such actions further watershed goals (NRC 2001).

On-site wetland compensatory mitigation projects often replace hydrologic and water quality functions, but may not adequately replace lost habitat functions (Shabman and Scodari 2004). On-site wetland compensatory mitigation projects may result in habitat fragmentation (Erwin 1991), which adversely affects many species. Most animals that utilize wetlands cannot migrate if the terrestrial corridors they use are blocked by developments and roads (NRC 2001). Many wetland-dependent species depend on adjacent terrestrial habitats for their survival (NRC 2001). In cases where on-site wetland replacement efforts are completely surrounded by development, Michigan DEQ (2001) observed that hydrology was primarily urban runoff, which resulted in poor water quality that affected the plant community and limited the value of those wetlands for wildlife.

5.3 Consequences of third alternative (watershed approach with mitigation banks and permittee-responsible mitigation)

The environmental consequences of the third alternative are similar to those of the preferred alternative, except that eliminating in-lieu fee programs as a separate compensatory mitigation option is likely to provide fewer opportunities for compensatory mitigation in areas where in-lieu fee program sponsors cannot change their in-lieu fee programs to meet the same requirements and standards as mitigation banks.

In some areas of the country, there are no mitigation banks and in-lieu fee programs provide the only option for third-party compensatory mitigation. For permitted activities where it is not practicable to do permittee-responsible mitigation, and if there are no mitigation banks with available credits, then compensatory mitigation will normally not be required. Therefore, it may be more difficult to contribute to the “no overall net loss” goal for wetlands if in-lieu fee programs are not available.

In addition, phasing out in-lieu fee programs may decrease the ability to protect high quality aquatic resources under threat of destruction, because some existing in-lieu fee programs employ a conservation strategy that is compatible in some respects with the watershed approach presented in the rule. Those in-lieu fee programs partner with government agencies and non-profit non-governmental organizations to maximize protection of at-risk aquatic resources.

5.4 Cumulative Effects

The promulgation of this rule is unlikely to result in cumulative effects on the human environment, since compensatory mitigation decisions are made on a case-by-case basis by district engineers in response to permit applications. The cumulative effects of compensatory mitigation projects typically involve changes in ecosystem type, where an area of an existing ecosystem is altered to develop another desired ecosystem type, such as converting an upland meadow to a wetland. Compensatory mitigation is used to offset adverse environmental impacts authorized by DA permits, and reduces cumulative adverse effects on the aquatic environment that result from activities regulated under Section 404 of the Clean Water Act and Sections 9 and 10 of the Rivers and Harbors Act of 1899.

6.0 COORDINATION WITH OTHERS

In response to the March 28, 2006, proposal, we received six letters that included comments on the draft environmental assessment and regulatory analysis. The comments on the draft environmental assessment and regulatory analysis are arranged by topic, with our responses to those comments.

6.1 Requirement for an Environmental Impact Statement

A number of commenters recommended that an environmental impact statement be prepared because the rule would have a significant adverse effect on the environment by allowing more filling of existing wetlands. In contrast, several commenters stated that the rule itself does not result in changes or impacts to the physical or human environment, as permittees are currently required to provide effective compensatory mitigation. These commenters said that there are likely to be few environmental consequences of implementing this rule.

This rule guides compensatory mitigation for activities authorized under Section 404 of the Clean Water Act and/or Sections 9 or 10 of the Rivers and Harbors Act of 1899. The rule does not alter the requirement to avoid and minimize impacts to waters of the United States to the extent practicable. Therefore, this rule will not result in filling more wetlands. Also, this rule addresses only the compensation component of the mitigation sequence.

One commenter said that the draft environmental assessment fails to provide sufficient evidence and analysis and fails to explain the environmental impacts of the proposed action. This commenter also stated that the environmental assessment must address the environmental impacts of issuing permits and that compensatory mitigation is undertaken to compensate for impacts that violate the Clean Water Act. Several commenters stated that the environmental assessment does not consider the types of wetlands that are irreplaceable, such as bogs and fens. These commenters said that the environmental assessment fails to take into account the scientific uncertainty surrounding the effects of the proposed rule change. Commenters said that despite encouraging widespread use of mitigation banks, the Corps admits that the ecological performance of mitigation banks is largely unknown. Therefore, the Corps cannot assert that increased use of a compensatory mitigation technique of unknown ecological performance will have no significant impacts on the human environment.

Considering the environmental impacts resulting from the issuance of DA permits are addressed through other regulations, such as 33 CFR parts 320, 325, and 330, and the Section 404(b)(1) Guidelines at 40 CFR part 230. When this rule goes into effect, it will strengthen the requirements for all forms of compensatory mitigation, including mitigation banks and in-lieu fee programs, to improve performance. It encourages district engineers to consider the compensatory mitigation option that is best for the aquatic

environment. In many cases, this will consist of mitigation banks or in-lieu fee programs. The feasibility of compensating for impacts to difficult-to-replace wetlands, such as bogs and fens, will be addressed by district engineers on a case-by-case basis as they evaluate permit applications and consider compensatory mitigation options. The environmental assessment does take into account the scientific uncertainty regarding compensatory mitigation activities, including the ecological performance of mitigation banks and in-lieu fee programs. Since the draft environmental assessment was prepared, we have found a small number of studies that have examined the ecological performance of mitigation banks. The results of those studies have been summarized in Section 2.4.

6.2 Alternatives

Several commenters said that the draft environmental assessment fails to consider reasonable alternatives, and suggested a variety of alternatives that must be addressed. One commenter suggested alternatives such as revoking all nationwide permits and regional general permits, requiring all activities in wetlands to be water dependent, requiring all activities in wetlands to undergo an alternatives analysis, prohibiting the establishment and use of all in-lieu fee programs and mitigation banks, and having EPA identify areas unsuitable for disposal of dredged or fill material under Section 404(c) of the Clean Water Act.

The environmental assessment provides detailed consideration of all the reasonable alternatives we have identified, as required by 40 CFR 1502.14(a). Alternatives involving the types of permits that are used to authorize activities requiring DA authorization are outside the scope of this rulemaking activity. Water dependency and alternatives analyses for activities in wetlands that require a section 404 permit are addressed through the application of the 404(b)(1) Guidelines, and those provisions of the Guidelines have not been changed by this rule. Eliminating the use of mitigation banks and in-lieu fee programs is not a reasonable alternative, because there are statutory requirements for certain entities to consider the use of mitigation banks and in-lieu fee programs to compensate for environmental impacts. For example, Section 314 of the National Defense Authorization Act for FY 2004 (Pub. L. 108-136) allows the Secretary of a military department to use mitigation banks or in-lieu fee programs instead of creating wetlands on federal property. As another example, Section 2036(c) of the 2007 Water Resources Development Act requires the Secretary to first consider the use of a mitigation bank to provide wetlands mitigation for a water resources project. Prohibiting the use of specific sites to receive discharges of dredged or fill material is already addressed through EPA’s regulations at 40 CFR part 231.

Several commenters said the three alternatives considered all lead to the same result, which is an increased use of mitigation banks and decreased emphasis on avoidance of wetland impacts. They said that the draft environmental assessment did not look at how to avoid wetland losses in the first place and that it should consider alternatives such as

avoidance, prohibiting compensatory mitigation for irreplaceable wetlands, and strengthening monitoring and enforcement activities.

This rule addresses only the compensation component of the mitigation process. Avoidance and minimization are addressed through other regulations, such as the Corps mitigation policy at 33 CFR 320.4(r) and the Section 404(b)(1) Guidelines for activities involving discharges of dredged or fill material into waters of the United States. Avoidance and minimization are conducted first, before considering whether to impose compensatory mitigation requirements in a DA permit for the unavoidable impacts.

Several commenters said that the use of the watershed approach as the preferred alternative in the draft environmental assessment is confusing, because the proposed rule has a number of other components in addition to the watershed approach. The commenter also stated that, as the watershed approach is already promoted in existing guidance (i.e., Corps Regulatory Guidance Letter 02-02), it is the existing baseline, not a change to current practices. This commenter said that it is more appropriate to describe the preferred alternative in terms of standardizing the administration of mitigation, rather than in terms of an amorphous concept such as the watershed approach. One commenter suggested that the alternative for a watershed approach should require an inventory of all upland areas zoned for development and all wetland areas in a watershed. When all upland areas for non-water dependent uses are occupied, that watershed has reached its limiting factor and no more development in that watershed should occur.

The discussion of the watershed approach presented for the preferred alternative is a general discussion of the potential for that approach to improve compensatory mitigation in the Corps Regulatory Program. The specific details for a watershed approach will depend on local circumstances. Although a watershed approach is discussed in a general manner in Regulatory Guidance Letter 02-02, it is not present in sufficient detail to warrant considering it as the existing baseline. We believe the watershed approach is an important aspect of the rule, in addition to standardizing requirements for all forms of compensatory mitigation, as cited by the commenter. The final rule encourages both mitigation banks and in-lieu fee programs to be developed to support a watershed approach. The watershed approach suggested in the previous paragraph could be considered by a district engineer, but it has little potential to be feasible.

One commenter said that the “no action” alternative will result in little difference in environmental effects over the proposed rule, since the Corps has authority to impose requirements with or without the proposed rule. Therefore, the environmental assessment should not state that the “no action” alternative results in net loss of aquatic resources because mitigation sometimes fails.

The rule is intended to improve the success of compensatory mitigation projects by applying consistent and stringent standards to the planning, implementation and monitoring to those projects. The no-action alternative cannot be expected to accomplish this, since it is based on guidance documents that are discretionary in nature, rather than rules, so it is reasonable to expect it to result in more failure of compensatory mitigation.

6.3 Use of Mitigation Banks

Several commenters stated that an increased reliance on mitigation banks disregards the many site-specific functions that wetlands serve and the variability among wetland types. They stated that the draft environmental assessment ignores the many positive habitat functions served by small wetlands associated with specific places on the landscape and local species by asserting that impacts to habitat may be compensated more effectively off site, and that large, connecting habitats generally support more species and more diverse biological communities than small isolated habitats.

This rule does not alter the flexibility afforded district engineers in determining the compensatory mitigation requirements for DA permits. However, it does require district engineers to consider the potential for compensatory mitigation projects to successfully replace functions lost as a result of permitted activities. The watershed approach allows district engineers to require a combination of on-site and off-site compensation, to help ensure that some on-site aquatic resource functions are provided near the impact site. Small isolated habitats may be degraded or destroyed by changes in land use, or by nearby activities that do not require DA authorization.

One commenter stated that the draft environmental assessment fails to analyze the increased amount of wetland filling for non-water dependent activities due to the availability of mitigation banks, and that the Corps cannot assert that the aquatic environment will benefit from mitigation banking.

This rule merely establishes standards and criteria for satisfying the compensatory mitigation requirements of DA permits. Since the general mitigation policy at 33 CFR 320.4(r) is not being changed, this rule will not affect the frequency at which compensatory mitigation is required.

One commenter stated that Table 10.4-1 shows that for mitigation banks, long-term site management funding is not standard. They stated that this is incorrect as mitigation banks generally do provide long term site management funding, and this is required in current mitigation banking guidance. This commenter also stated that the text in Table 10.4-2 assumes that mitigation banks would be given preference over other mitigation options, but the proposed rule is not clear that this is the case.

The 1995 mitigation banking guidance is not a regulation, and therefore long-term management funding has been optional, not a requirement. Operational mitigation banks in many districts do not provide long-term management funding beyond completion of the required performance monitoring. In §332.3(b) of the proposed rule, there was a soft preference for using mitigation bank credits to satisfy compensatory mitigation requirements for DA permits, because of the sequence in which the location and type options were presented.

6.4 Types of Mitigation

One commenter said that the draft environmental assessment does not address ad hoc third-party mitigation and fails to identify other types of third-party mitigation such as Regional Off-site Mitigation Areas or "pooled mitigation." The commenter stated that these arrangements are not mitigation banks or in-lieu fee programs but are accepted as consolidated off-site mitigation in some Corps districts.

Under this rule, ad hoc mitigation is considered to be a form of permittee-responsible mitigation. A mitigation bank or an in-lieu fee program must have an approved instrument, and may be required to fulfill certain requirements, before it can sell or transfer credits to permittees to satisfy their compensatory mitigation obligations.

A commenter said that the draft environmental assessment provides data only from the 2005 survey reflecting the types of mitigation providers, but it should present historic data and the data from the Environmental Law Institute study.

The Environmental Law Institute's 2005 Status Report on Compensatory Mitigation in the United States was issued in April 2006, after the draft environmental assessment was made available during the comment period for the proposed rule. We used available historic data for the draft environmental assessment. In the final environmental assessment, we have made revisions to include appropriate information from the 2005 status report.

One commenter noted that the draft environmental assessment does not adequately address the point that the rule allows "preservation only" mitigation, which will contribute to no net loss of wetlands.

The purpose of the environmental assessment is to provide information to assist decision-makers in the promulgation of this rule. An evaluation of progress towards satisfying the "no overall net loss" goal for wetlands is beyond the scope of this environmental assessment.

6.5 Characterization of the Affected Environment

One commenter said that, in characterizing the affected environment, the draft environmental assessment fails to consider the age of some wetland types such as bogs and fens that are thousands of years old. Furthermore, the Corps uses the U.S. Fish and Wildlife Service's National Wetland Inventory (NWI) maps, are almost 10 years old. Other commenters stated that the draft environmental assessment asserts that the changes created by the rule will have a positive effect on wildlife habitat, but the environmental assessment does not adequately discuss the differences between wetland types and the

site-specific functions they serve. One commenter stated that Table 4.1-1 should be updated to include Dahl (2006).

The potential age of certain wetland types is irrelevant to the purpose of the draft environmental assessment. The draft environmental assessment did not use the NWI maps; instead we used the U.S. Fish and Wildlife Service's 2000 wetland status and trends report for the period of 1986 to 1997. The most current wetland status and trends report (Dahl 2006) was not published until after the draft environmental assessment was made available. We have used the data from Dahl (2006) for the final environmental assessment, and have updated Table 4.1-1 accordingly. The environmental assessment is intended to provide general information on the functions and services provided by wetlands and other aquatic resources, since it supports a rule that is to be applied across the country.

Several other commenters expressed disagreement with the draft environmental assessment's analysis of the environmental consequences of the rule, which concluded that the watershed approach will result in environmental benefits. They stated that this conclusion puts too much emphasis on the watershed approach, since it is part of the environmental baseline.

As discussed above, the watershed approach is not part of the environmental baseline. We believe that the watershed approach described in the final rule will help improve the performance of compensatory mitigation projects, thereby resulting in environmental benefits.

6.6 Costs

Several commenters addressed the estimates provided in the draft environmental assessment of the compensatory mitigation costs under the proposed rule. One commenter said that, contrary to Table 10.4-3, which suggests that permittee-responsible mitigation costs would increase significantly due to the requirement to submit a mitigation plan for public review and approval prior to permit issuance, the cost to the applicant for compensatory mitigation should be the same whether the project is done before or after the permit is issued. The commenter also took issue with the fact that this table also suggests that phasing out of in-lieu fee programs would significantly increase the cost to permittees, as mitigation costs should be based on the actual cost of doing the mitigation, and not vary by mitigation provider. The commenter posited that if in-lieu fee program sponsors providers charge less than it would cost for a permittee-responsible mitigation project or mitigation bank credits, this raises the question of whether an in-lieu fee program is accurately pricing the compensatory mitigation and able to accomplish it.

We believe that permittee-responsible mitigation costs will be substantially greater, because of the requirements in this rule. Prior to this rule, there were no specific information requirements for permittee-responsible mitigation projects; the content of

mitigation plans is likely to have varied substantially among Corps districts and reviewers. If in-lieu fee programs were to be phased out, as they would have been under the proposed rule, then we expect that there would be an increase in the number of permittee-responsible mitigation projects, which would increase costs. There is some economy of scale with consolidated mitigation provided through mitigation banks or in-lieu fee programs. Each permittee who secures credits from a third-party mitigation provider does not have to develop his or her own mitigation plans for permittee-responsible mitigation projects. Simply securing credits from a third-party mitigation sponsor costs less than developing mitigation plans, getting them approved, and implemented. This rule requires in-lieu fee sponsors to use full cost accounting when determining fees, to ensure that those fees are sufficient to fully implement compensatory mitigation projects and provide any required financial assurances or long-term management.

Another commenter stated that the draft environmental assessment's discussion of rule costs does not contain a reasonable level of detail to draw the conclusion that the rule "does not contain a Federal mandate that may result in expenditures of $100 million or more for State, local and Tribal governments, in the aggregate, or the public sectors and any one year." The commenter recommended that actual data derived from applicants' costs be used to develop a realistic, quantifiable cost for each category and subcategory listed in the various table of the environmental assessment rather than the qualitative ratings of cost significance that is used. They believe the cost of developing a comprehensive watershed assessment and plan is much higher than described in the environmental assessment.

We do not believe that this rule results in an unfunded mandate on state, tribal, or local governments because it is generally consistent with current agency practice. The economic threshold was not the basis for our preliminary determination, and it is not the basis for our final determination. We utilized a qualitative approach to the regulatory analysis because reliable quantified costs at a national or regional level are not available. Furthermore, this rule does not require development of comprehensive watershed assessments and plans.

6.7 Permit Data

One commenter questioned Table 2.2-3, Use of Different Compensatory Mitigation Types, FY 2003, and asked whether the data represented the percent of total mitigation acres required or the percent of permits issued. This commenter also stated that the information in Tables 2.2-4 and 2.2-5, which provided a comparison of mitigation banks and in-lieu fee programs according to the type of impacted waters, is incomplete and could be misleading. The commenter said that the table provides no information about whether in-lieu fee programs that received payment to mitigate for impacts to tidal wetlands and streams performed such mitigation.

Table 2.2-3 is based on the percentage of compensatory mitigation acreage that was provided through permittee-responsible mitigation, mitigation banks, or in-lieu fee programs. Permits may be conditioned to require a combination of compensatory mitigation from any of these three sources. Tables 2.2-4 and 2.2-5 are based on the required compensatory mitigation. Information on the status of specific in-lieu fee projects is not available.

One commenter asserted that the draft environmental assessment lacks credible data upon which decision makers can rely. Another commenter said that, as the Corps does not have permit data on compensatory mitigation requirements or practices, or have information on the age of wetlands being lost, the Corps cannot specify accurately in the draft environmental assessment how much wetland compensatory mitigation was required or provided. Therefore, the Corps has no basis for asserting that the preferred alternative will result in greater environmental benefit.

The tables in the environmental assessment were developed using the best available information. Much of the information reported in the draft environmental assessment was obtained using a survey of Corps districts conducted in 2005, because that information was not available in the Corps automated information system. Table 2.1-2 provides a summary of the permitted wetland impacts and the acres of wetland compensatory mitigation required for fiscal years 1999 to 2003, as well as estimates for fiscal years 2004 and 2005. The date for fiscal years 1999 to 2003 was provided by the Corps automated information system that was in use at that time. Data concerning the actual acreage of compensatory mitigation provided are not available at the national level. The assertion that the preferred alternative would result in greater environmental benefits is based on consideration of the increased likelihood of success that is expected to result from using a watershed approach to compensatory mitigation.

6.8 Success of Compensatory Mitigation

One commenter stated that the draft environmental assessment summarizes numerous sources that evaluated mitigation, which are confusing and misleading, since “success” is defined differently in the studies. The commenter also said that the 2001 NRC Report did not conclude that mitigation banks and in-lieu fee programs provide the same advantages, but “endorsed a tautology of features for compensatory mitigation, which embraced all the features of mitigation banks as most preferable.” This commenter stated that the proposed rule perpetuates a preference for on-site mitigation (§§332.3(b)(3) and (4)), which is not supported by studies cited in draft environmental assessment.

The environmental assessment provides a general overview of some studies of compensatory mitigation success. Readers interested in comparing these studies should examine the original papers. In the 2001 NRC Report, Conclusion 5 stated that “Third-party compensation approaches (mitigation banks, in-lieu fee programs) offer some advantages over permittee-responsible mitigation.” The discussion in the environmental

assessment accurately reflects Conclusion 5. The proposed rule did not contain a preference for on-site mitigation. The proposed rule advocated the use of a watershed approach before looking at opportunities for on-site mitigation.

One commenter stated that the environmental assessment should note in the Purpose and Need section that a significant amount of permittee-responsible mitigation fails to achieve successful mitigation. The commenter said that the Ohio Department of Natural Resources (ODNR) beneficially uses dredged material to enhance or create wetland habitat. As stated in the environmental assessment, many compensatory mitigation projects fail because of adjacent altered landscape or development, and ODNR does not want to be prevented from doing this type of beneficial work.

We do not believe it would be appropriate to make a general statement regarding the success of permittee-responsible mitigation in the Purpose and Need section of this environmental assessment.

6.9 In-Lieu Fee programs

One commenter pointed out that the draft environmental assessment states that phasing out in-lieu fee programs will result in fewer opportunities for compensatory mitigation and may decrease protection of high quality resources. The commenter contended that this conclusion is unwarranted, as a very small percentage of mitigation is conducted through in-lieu fee programs. Furthermore, the commenter believed that the assumption in the environmental assessment that in-lieu fee programs are performing actual mitigation is not supported.

Even though in-lieu fee programs have provided a small proportion of compensatory mitigation for DA permits nationally, the proposed phase-out would have resulted in fewer compensatory mitigation projects, especially when one considers the number of areas where in-lieu fee programs are the only third-party mitigation option available. As discussed in the final rule, there are many areas of the country where there are no mitigation banks. The draft environmental assessment did provide a case-study of an in-lieu fee program that has implemented compensatory mitigation projects (i.e., the Virginia Aquatic Resources Trust Fund).

One commenter disagreed with that maintaining in-lieu fee programs subject to different standards than mitigation banks will result in environmental benefits, as the environmental assessment provides no support for this.

Retaining in-lieu fee programs as a separate source of compensatory mitigation for DA permits, with appropriate standards and criteria that address differences with mitigation banks while maintaining high standards to ensure performance, will help maximize available compensatory mitigation credits. It may not be practicable to require permittee-responsible mitigation for some DA permits, in areas where there are no appropriate

credits available from mitigation banks or in-lieu fee programs. If more compensatory mitigation options are available, there will be environmental benefits.

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9.0 FINDING OF NO SIGNIFICANT IMPACT

In compliance with the National Environmental Policy Act (NEPA) and its implementing regulations at 40 CFR parts 1500 – 1508, an Environmental Assessment has been prepared for this rule. The Corps prepares appropriate NEPA documentation, including Environmental Impact Statements when required, for all permit decisions. The environmental review process undertaken for this rule has led me to conclude that the promulgation of this rule will not have a significant effect on the human environment, and therefore an Environmental Impact Statement is not required by §102(2)(C) of NEPA or its implementing regulations.

Date: 28 March 2008

John Paul Woodley, Jr.

John Paul Woodley, Jr.
Assistant Secretary of the Army
(Civil Works)
Department of the Army

10.0 REGULATORY ANALYSIS

The section presents a descriptive analysis of potential social costs of the final rule, including possible rule effects on 1) mitigation costs incurred by recipients of Department of the Army (DA) permits (or "permittees"), and 2) administrative burdens on the Corps. The analysis of permittee mitigation costs considers rule effects on compensatory mitigation supply costs, including costs for the development and operation of commercial mitigation banks and in-lieu fee programs that affect the prices of compensatory mitigation "credits" faced by permittees. It also considers potential rule effects on the flexibility accorded to permittees in the development of compensatory mitigation proposals that regulators may find acceptable, which can affect the ability of permittees to minimize their compensatory mitigation costs. The evaluation of Corps administrative burdens considers rule effects on the administration of the permit program and associated costs.

A qualitative evaluation approach was used because several factors preclude the development of meaningful quantitative estimates of the possible change in social costs resulting from implementation of the final rule. One reason is the extreme variability in the types and characteristics of development projects for which DA permits are sought, both within and across Corps districts, which poses severe problems for identifying a set of "representative" permit recipients for cost analysis purposes. Another problem is that quantification of incremental changes in permittee costs and agency burdens requires detailed information on without-rule compensatory mitigation requirements and costs faced by representative permittees, which are not readily observable or quantifiable. And importantly, the final rule could change the entire structure of the compensatory mitigation program by changing the opportunities and incentives facing permit applicants and compensatory mitigation providers, and the factors that regulators can consider in determining the acceptability of compensatory mitigation proposals. The various ways that permit applicants, compensatory mitigation providers, and regulators will react to the new opportunities and incentives created by the rule are impossible to predict with any confidence.

10.1 Evaluation Approach

The descriptive analysis seeks to draw broad qualitative conclusions about how the final rule could change aggregate social costs of the DA permit program. The following analytical approach was used toward that end. First, the current permitting and compensatory mitigation profile (e.g., current uses of different compensatory mitigation providers) was characterized and used as the general baseline for analysis. The baseline characterization is noted in Section 10.2 and included in full in the Environmental Assessment (Sections 1.0 through 5.0). Second, those rule provisions that establish new requirements or that change or clarify current guidance were identified to establish the specific focus of the analysis, as outlined in Section 10.3. Third, the potential direction

and magnitude of rule-induced changes in compensatory mitigation costs incurred by permittees were evaluated and described using a several-step process; that process and its results are reported in Section 10.4. Fourth, potential rule effects on Corps administrative burdens were evaluated and described, as reported in Section 10.5. Finally, in Section 10.6 the descriptive evaluations of possible rule effects on permittee mitigation costs and Corps administrative burdens are considered together to draw broad qualitative conclusions on the possible effects of the final rule on social costs.

10.2 Baseline Permitting and Mitigation Profile

The Environmental Assessment characterizes available data and information on the current DA permitting and compensatory mitigation profile. That profile was used as the general reference point for the descriptive evaluation of rule-induced changes in permittee mitigation costs and Corps administrative burdens. That is, the without-rule scenario used for the analysis assumes that the current permitting and compensatory mitigation profile would prevail into the future if the rule was not promulgated.

10.3 Major Rule Provisions

Table 10.3-1 identifies and summarizes provisions of the final rule that impose new or revised compensatory mitigation requirements on permit applicants, compensatory mitigation providers, or regulators. Nothing in this summary suggests that the rule will change the level of DA permitting, or the share of DA permits for which compensatory mitigation is presently required. Thus, the cost analysis focuses on changes in permittee mitigation costs and Corps administrative burdens for the same set of permit applicants for which compensatory mitigation would be required in the baseline, without-rule scenario.

Table 10.3-1. Rule Provisions that Impose Major New or Revised Requirements.

Rule Provision [Section]	**New or Revised Requirements**
General compensatory mitigation requirements [Section 332.3]	
Use of mitigation bank credits [§332.3(b)(1) and (2)]	The district engineer (DE) should generally give preference to the use of mitigation bank credits over other mitigation options for permitted impacts when those impacts are located within the service areas of approved mitigation banks, and those banks have available the appropriate numbers and resource types of credits.
Use of in-lieu fee program credits [§332.3(b)(1) and (3)]	The DE should generally give preference to the use of in-lieu fee program credits over permittee-responsible mitigation for permitted impacts when those impacts are located within the service areas of approved in-lieu fee programs, and those programs have available the appropriate numbers and resource types of credits.

Rule Provision [Section]	New or Revised Requirements
Watershed approach to permittee-responsible mitigation [§332.3(b)(1) and (4)]	Where practical and likely to be successful, the resource type and location of permittee-responsible mitigation should be determined using principles of the watershed approach outlined in §332.3(c).
Watershed approach to compensatory mitigation (planning) [§332.3(c)(1)]	To the extent appropriate and practical, the DE must use a watershed approach to establish mitigation requirements for DA permits, When the DE determines that an appropriate watershed plan is available, the watershed approach should be based on that plan. Otherwise, the watershed approach should be based on information provided by the project sponsor or other sources relating to specified considerations outlined in §332.3(c)(2) and (3).
Amount of compensatory mitigation (in-lieu fee programs) [§332.3(f)(3)]	The DE must require additional in-lieu fee credits as compensation for some permitted impact when the in-lieu fee program used does not yet have available the appropriate number and resource type of credits "released" as that term is defined in §332.2.
Use of mitigation banks and in-lieu fee programs [§332.3(g)]	The DE may authorize the use of mitigation banks and in-lieu fee programs as compensation for all DA permits, including after-the-fact permits.
Preservation [§332.3(h)(1)]	Expands allowable use of preservation as compensatory mitigation for DA permits.
Relationship to other federal, state, tribal and local programs [§332.3(j)]	Compensatory mitigation projects, including those of mitigation banks and in-lieu fee programs, may be used to provide environmental offsets for programs not related to DA permitting.
Party responsible for compensatory mitigation [§332.3(l)(3)]	A permittee that is approved by the DE to use a mitigation bank or in-lieu fee program for providing the required compensatory mitigation retains responsibility for that requirement until the appropriate number and resource type of credits from the bank or in-lieu fee program is secured, and the DE receives appropriate documentation from the bank or in-lieu fee sponsor confirming the transaction.
Financial assurances (when required) [§332.3(n)(5)]	The DE may require financial assurances if necessary to ensure that compensatory mitigation projects will be successfully completed and meet performance standards, unless an alternative mechanism is available to ensure that mitigation project success.
Financial assurances (required form) [§332.3(n)(5)]	Financial assurances must be in a form that ensures that the DE is notified at least 120 days prior to any termination or revocation of the assurance mechanism.
Planning and documentation [Section 332.4]	
Public review and comment (mitigation statement & public notice) [§332.4(b)(1)]	An applicant for a section 404 standard permit (SP) must submit a statement explaining how mitigation will be achieved for the proposed activity before the DE will issue a public notice for the application.
Mitigation plan (approved final plan and permit issuance) [§332.4(c)(1)]	The DE must approve final mitigation plans before an individual permit is issued, or before work commences for an activity permitted under a general permit.
Long term management plan [§332.4(c)11]	Requires mitigation provider to submit a plan that outlines how the project will be managed after performance standards have been achieved, including the entity responsible for long term management and any required financing mechanisms.

Rule Provision [Section]	New or Revised Requirements
Adaptive management plan [§332.4(c)(12)]	Mitigation plans must include a management strategy to address unforeseen changes in sites conditions or other mitigation project components, and that will guide decisions for revising mitigation plans to address circumstances that adversely affect mitigation project success.
Monitoring [Section 332.6]	
Monitoring period (revisions) [§332.6(b)]	The DE may reduce or waive the balance of the monitoring period for a mitigation project if performance standards have been met, or extend the monitoring period if standards are not met at the end of the original monitoring period.
Monitoring reports (information required) [§332.6(c)(1)]	The DE rather than the IRT determines information required in monitoring reports for mitigation projects.
Management [Section 332.7]	
Adaptive management (reporting of problems) [§332.7(c)(1) and (2)]	Requires responsible party to notify the DE if the mitigation project can not be constructed in accordance with approved mitigation plans, or if performance standards established in approved plans are not being achieved as planned during the monitoring period.
Adaptive management (revisions to mitigation measures) [§332.7(c)(2) and (3)]	If a mitigation project is not progressing towards meeting performance standards, the DE may require measures (such as site modifications, design changes, or revisions to monitoring or maintenance requirements) to address project deficiencies.
Adaptive management (revisions to performance standards) [§332.7(c)(4)]	The DE may revise performance standards for a mitigation project to account for measures taken to address project deficiencies, or to reflect changes in management strategies and objectives if the revised standards provide for ecological benefits that are comparable or superior to the approved project.
Long term management (funding) [§332.7(d)(2) and (3)]	As deemed necessary by the DE, mitigation providers may be required to provide funding for long term management of mitigation projects using appropriate financing mechanisms.
Mitigation banks and in-lieu fee programs [Section 332.8]	
Planning framework for in-lieu fee programs [§332.8(c)]	The approved instrument for an in-lieu fee program must include a compensation planning framework for the mitigation work that supports a watershed approach to compensatory mitigation.
Review process, Prospectus (required information) [§332.8(d)(2)]	Delineates in more detail than current guidance the information requirements to be supplied in a complete mitigation bank and in-lieu fee program prospectus.
Review process, Prospectus (notification requirement and time limit) [§332.8(d)(2)]	The DE must notify a mitigation bank or in-lieu fee program sponsor within 30 days about whether or not its submitted prospectus is complete.
Review process, Preliminary review of prospectus (procedure) [§332.8(d)(3)]	If a mitigation bank or in-lieu fee program sponsor submits a draft prospectus for comment and consultation, the DE must provide copies of the draft prospectus to IRT members and must conduct a preliminary review of the prospectus and provide comments to the sponsor within 30 days of receipt of the draft prospectus; IRT members will also provide any comments they have to the sponsor within the 30 day period.
Review process, Public review and comment (procedure) [§332.8(d)(4)]	The DE must issue public notice of a proposed bank or in-lieu fee program within 30 days of receipt of its complete prospectus; the public comment period will generally be 30 days; public comments will be distributed to the IRT and the sponsor within 15 days of the close of the public comment period.

Rule Provision [Section]	New or Revised Requirements
Review process, Initial evaluation [§332.8(d)(5)]	After the end of the comment period for the public notice, the DE will review the comments and within 30 days provide the sponsor with a written initial evaluation of the potential for the proposed mitigation bank or in-lieu fee program to provide compensatory mitigation for DA permits.
Review process, Draft instrument (information and time limits) [§332.8(d)(6)]	Delineates information to be supplied by a sponsor in a draft instrument for a mitigation bank or in-lieu fee program, which includes required information that was described as optional in current (pre-rule) guidance. The DE must notify the sponsor within 30 days of receipt as to whether the draft instrument is complete.
Review process, Draft instrument (geographic service area) [§332.8(d)(6)(ii)(A)]	Service area can be a watershed, ecoregion, physiographic province, or other geographic area. Service area must be appropriately sized to ensure effective compensation for adverse environmental impacts across the entire service area and must consider applicable locally-developed standards and criteria. The economic viability of the mitigation bank or in-lieu fee program may also be considered in establishing the service area. An in-lieu fee program or an umbrella mitigation banking instrument may have multiple service areas governed by its instrument.
Review process, IRT review (procedure and time limits for review of draft instrument) [§332.8(d)(7)]	When received, the DE must promptly provide copies of the draft instrument for a mitigation bank or in-lieu fee program to IRT members for a 30 day comment period. Within 90 days of IRT members' receipt of the draft instrument, the DE must notify the sponsor of the status of the IRT review, indicate whether changes may be needed, and note any significant unresolved concerns that may lead to formal objection from one or more IRT members.
Review process, Final instrument (procedure and time limits) [§332.8(d)(8)]	The sponsor of a mitigation bank or in-lieu fee program will provide copies of the final instrument to all IRT members that address IRT comments on the draft instrument. Within 30 days of receipt of a final banking instrument, the DE must notify IRT members whether or not the DE intends to approve the instrument. IRT members will have 45 days from their receipt of the final instrument to object to the instrument through initiation of the dispute resolution process. The DE will notify the sponsor of the DE decision to approve or not after 45 days from receipt of the final instrument if the dispute resolution process is not triggered, or following the dispute resolution process if it is triggered
Dispute resolution process (procedure and time limits) [§332.8(e)]	Provides a dispute resolution process, which contains specific milestones and time limits, to be used by IRT members that object to DE decision to approve a final instrument for a mitigation bank or in-lieu fee program. The process is much more detailed than the one set out in current (pre-rule) guidance.
Extension of deadlines [§332.8(f)]	Allows the DE to extend the deadlines for the review of final instruments and the dispute resolution process under certain conditions
Modification of instruments (procedure and time limits) [§332.8(g)]	Establishes a streamlined review process for modifying final instruments that have already been approved by the DE.
Umbrella mitigation banking instruments (adding project sites) [§332.8(h)]	The DE may approve a mitigation bank instrument that envisions the eventual addition of project sites not originally identified when the instrument is approved. When a bank sponsor wishes to add new project sites, the sponsor must request a modification to the bank instrument and the DE must follow the rule process for modifying already approved bank instruments.

Rule Provision [Section]	New or Revised Requirements
In-lieu fee program account [§332.8(i)]	The sponsor of an approved in-lieu fee program must establish a program account at an appropriate financial institution for fee revenues received and expended for compensatory mitigation. Requirements for the account include: 1) disbursements from the account can only be made upon written authorization from the DE, 2) the sponsor must provide annual reports to the DE and IRT that identify all account income and disbursements, and that describe account expenditures by purpose.
In-lieu fee project approval [§332.8(j)]	As in-lieu fee project sites are identified and secured, the sponsor must submit the mitigation plans for those sites, including credit release schedule, to the DE for review and approval.
Project implementation (problems) [§332.8(l)(2)]	If a mitigation project of a mitigation bank or in-lieu fee program can not be implemented in accordance with the approved plan, the DE must consult with the sponsor and IRT to consider modifications to the bank or in-lieu fee instrument, including adaptive management, revisions to credit release schedule, and alternatives for providing compensatory mitigation associated with credits already sold.
Advance credits for in-lieu fee programs (number) [§332.8(n)(1)]	An in-lieu fee program instrument may make a limited number of advance credits for sale when the instrument is approved. The DE in consultation with the IRT will determine the number of advanced credits based on the program's compensation planning framework, the sponsor's past performance, and the financing needed to plan and implement the mitigation projects.
Advance credits for in-lieu fee programs (time constraints for work) [§332.8(n)(4)]	Land acquisition and mitigation project work leading to initial physical and biological improvements must be completed by the third full growing season after the first season after the first advance credit in that service area has been sold, unless the DE determines that more or less time is needed to plan and implement project work.
Determining credits, Credit costs (in-lieu fee programs) [§332.8(o)(5)(ii)]	Credit prices charged by in-lieu fee programs must be based on "full-cost accounting" reflecting all program expenses, including costs for contingencies, long-term management and protection of project sites, and any financial assurances necessary to ensure successful completion of mitigation projects.
Determining credits, Credit release schedule [§332.8(o)(8)]	Release of mitigation bank or in-lieu fee project credits must be tied to performance-based milestones. The credit release schedule should reserve a "significant share" of total expected credits for release only after full achievement of ecological performance standards.
Determining credits, Credit release approval [§332.8(o)(9)]	For credit release, sponsors of mitigation banks and in-lieu fee programs must submit documentation to the DE requesting release and demonstrating that the appropriate milestones for release have been met. The DE has sole authority to approve credit releases, but must provide IRT members with 15 days to review and comment on credit release requests. But if the DE determines that a site visit is needed to confirm project milestones, IRT members will have 30 days to submit comments following the visit; the DE must then decide upon the request within 30 days of the end of the IRT comment period.
Accounting procedures (In-lieu fee programs) [§332.8(p)(2)]	An in-lieu fee program sponsor must establish and maintain an annual report ledger that documents transactions involving the in-lieu fee program account, as well as individual ledgers that track the production of released credits for each in-lieu fee project.

Rule Provision [Section]	New or Revised Requirements
Reporting, Financial assurance and long-term management fund report [§332.8(q)(3)]	The DE may require a sponsor of a mitigation bank or in-lieu fee program to provide an annual report showing balances and transactions for accounts holding funds for financial assurances or long-term management activities. The report should also include information on the amount and status of required financial assurances.
IRT concerns with use of credits [§332.8(s)]	An IRT member shall notify the DE in writing of any concerns that member has with the proposed use of mitigation bank or in-lieu fee program credits as compensation for permitted impacts. The DE will promptly consult with the IRT member to resolve the concern, but the DE retains final decision-making authority.
Grandfathering of existing instruments, Mitigation banks [§332.8(v)(1)]	All mitigation bank instruments approved after ninety days after the effective date of the final rule must meet the requirements of the final rule. Mitigation banks approved prior to that date may continue to operate under the terms of their existing instruments; however, any modifications to such pre-existing mitigation bank instruments made after 90 days after the date of the final rule must meet the requirements of the rule.
Grandfathering of existing instruments, In-lieu fee programs [§332.8(v)(2)]	All in-lieu fee program instruments approved after ninety days after the effective date of the final rule must meet the requirements of the final rule. In-lieu fee programs approved prior to that date may continue to operate under their pre-existing instruments for two years after the publication date of the final rule, unless the DE in consultation with the IRT approves an extension of up to three years.

10.4 Rule Effects on Permittee Mitigation Costs

Possible effects of the final rule on compensatory mitigation costs borne by permittees are evaluated using the following process. First, the major categories of costs currently faced by permittee-responsible mitigation, commercial mitigation banks, and in-lieu fee programs—the three compensatory mitigation "types" allowable under the final rule—are identified and reviewed. Next, the possible effects of each relevant rule provision on these cost categories for the three compensatory mitigation types are evaluated qualitatively. The procedure used for this evaluation seeks to determine the possible effects of individual rule provisions on the direction in change (increase or decrease) and general magnitude (significant or insignificant) on the different categories of compensatory mitigation supply costs for each mitigation type. These evaluations consider the possible direct effects of individual rule provision on the costs faced by each compensatory mitigation type, when considered in isolation from other rule provisions, and from the possible effects of that rule provision on the costs faced by other compensatory mitigation types. Thus, the evaluation procedure used here does not consider possible interdependencies in the effects of rule provisions on compensatory mitigation supply costs for different mitigation types.[1] Once completed, these

[1] For example, a specific rule provision might be judged here to have no direct effect on compensatory mitigation supply costs incurred by mitigation banks. However, it is possible that the same provision could have an indirect effect on mitigation bank costs through its direct effects on the costs faced by other compensatory mitigation types. The evaluation procedure used here makes no attempt to evaluate such interdependencies.

evaluations of the effects of individual rule provisions on compensatory mitigation costs are then considered together to describe aggregate net effects of the rule on compensatory mitigation supply costs incurred by each mitigation type.

Next, the possible effects of the final rule's provisions on the degree of flexibility accorded to permit recipients are described. Permittee flexibility is important because it bears on the ability of permittees to fashion cost-effective compensatory mitigation solutions that minimize their compensatory mitigation costs. For example, the evaluation of permittee flexibility considers the potential for rule provisions to affect the opportunities for permittees to fashion compensatory mitigation proposals using different compensatory mitigation types and locations. As with the analysis of rule provisions on compensatory mitigation supply costs, this evaluation procedure seeks to determine the direction in change and general magnitude of each relevant rule provision on permittee flexibility considered in isolation from other rule provisions. The evaluation results for individual rule provisions are then considered together to describe the possible effect of the rule as a whole on permittee flexibility, and hence compensatory mitigation costs. Finally, the evaluation results for compensatory mitigation supply costs and permittee flexibility are considered together to describe possible rule effects on compensatory mitigation costs borne by permit recipients.

10.4.1 Compensatory Mitigation Supply Costs

Table 10.4-1 lists the various compensatory mitigation supply costs now faced by permittee-responsible mitigation as well as the costs incurred by commercial mitigation banks and in-lieu fee programs that develop large-scale compensatory mitigation projects to generate credits for sale as compensatory mitigation for multiple permit impacts. These three compensatory mitigation types can incur three categories of compensatory mitigation costs: 1) compliance costs, 2) time costs, and 3) risk costs. Although the different compensatory mitigation types can face similar component costs within each cost category, some component costs are specific to the different types, as outlined below.

Compliance costs include costs associated with developing and securing regulator approval of mitigation plans, and for implementing, monitoring, and maintaining compensatory mitigation projects in accordance with conditions established in DA permits or mitigation bank and in-lieu fee program instruments. While the three compensatory mitigation types face many similar component compliance costs (albeit at different levels), commercial mitigation banks generally face a wider range of compliance costs than permittee-responsible mitigation or in-lieu fee programs. For example, mitigation banks are almost universally required to post financial assurances for compensatory mitigation project implementation and success. Such requirements are infrequently placed on permittee-responsible mitigation, however, and traditional assurance mechanisms such as performance bonds have generally not been required for in-lieu fee programs (although contingency funds are collected by some in-lieu fee programs through a premium on the credit prices they charge).

Time costs reflect the opportunity costs (net benefits foregone) of waiting until compensatory mitigation project plans are approved as a condition for permit issuance in the case of permittee-responsible mitigation, and until mitigation bank ventures are approved and credits are released for sale in the case of commercial mitigation banks. In both cases the opportunity costs of waiting include the costs of carrying land, capital, and labor without any return on investment. In-lieu fee programs, on the other hand, generally face no significant time costs, since they are not required to commit significant resources to credit production prior to credit sales.

Risk costs are driven by uncertainty, including the possibility of compensatory mitigation project failure for which major project remediation or replacement might be required. Risks costs are much more significant for commercial mitigation banks than permittee-responsible mitigation or in-lieu fee programs, however. As with permittee-responsible mitigation and in-lieu fee programs, certified (i.e., federally-approved) commercial banks are exposed to failure risk costs for constructed compensatory mitigation projects. But during the mitigation bank proposal stage a bank also faces significant risk costs associated with uncertainty about whether the bank venture will eventually be certified by regulators. Proposed commercial mitigation banks require substantial upfront investment in time and resources before regulatory certification can be secured, and thus face significant risk costs associated with the prospect that certification may not be obtained. And even when certification is secured, mitigation banks can face significant uncertainty relating to the potential demand for the bank's credits, and whether regulators will allow the eventual demand that emerges to be met by the mitigation bank. Permittee-responsible mitigation and in-lieu fee programs face no such investment risk costs.[2]

[2] Proposed plans for a permittee-responsible mitigation project or an in-lieu fee project also face uncertainty about whether the plans will be approved by regulators. In these cases, however, there is relatively little upfront investment at risk.

Table 10.4-1 Mitigation Supply Costs Faced by Different Providers

Cost Categories	***Permittee-Responsible Mitigation***	***Commercial Mitigation Banks****	***In-Lieu Fee Mitigation Programs***
Compliance Costs	• Plan development and approval • Project implementation • Site protection (development, approval and recordation of legal instruments) • Site management during monitoring period • Monitoring and reporting (including as-built surveys) • Long term site management funding (large projects only) • Land – cost of locating and securing mitigation project lands, or opportunity costs of devoting already owned, potentially developable lands to mitigation project • Financial Assurances (infrequently required)	• Plan development and approval • Project implementation • Site protection (development, approval and recordation of legal instruments) • Site management during monitoring period • Monitoring and reporting (including as built surveys) • Long term site management funding (not standard) • Land – cost of locating and securing project lands, or opportunity cost of using already-owned lands • Bank management and administration • Permitting costs (when DA permits are required for project work) • Financial assurances (standard)	• Plan development and approval • Project implementation • Site protection (development, approval and recordation of legal instruments) • Site management during monitoring period • Monitoring and reporting (including as built surveys) • Long term site management funding (not standard) • Land – cost of locating and securing project lands, or opportunity cost of using already-owned lands • Program management and administration • Permitting costs (when DA permits are required for project work) • Financial assurances (varies between programs)
Time Costs	• Opportunity costs of any permitting delay associated with the development and approval of mitigation plans	• Opportunity costs of the time it takes to secure bank approval, any necessary permits, and release of credits for sale	
Risk Costs	• Financing – possible premium in finance costs for development projects when sponsors assume responsibility for mitigation provision • Project failure – possible future need to remediate or replace failed projects	• Bank approval uncertainty • Credit demand uncertainty • Project failure -- possible future need to remediate or replace failed projects	• Project failure -- possible future need to remediate or replace failed projects

* With the exception of certain risks costs, the costs of commercial mitigation banks are also faced by single-user (non-commercial) mitigation banks.

When a permit recipient proposes and gains regulator approval to provide compensatory mitigation (or mitigation "credits") through use a certified commercial mitigation bank or in-lieu fee program, the permittee pays the mitigation bank or in-lieu fee program a negotiated credit price in return for the transfer of legal and financial liability for mitigation credit implementation and success to the mitigation bank or in-lieu fee program. In such cases, the mitigation bank or in-lieu fee credit prices charged will in principle reflect all bank or in-lieu fee costs listed in Table 10.4-1, including charges for management time, and a return to investment risk in the case of commercial mitigation banks. When a permit recipient alternatively provides permittee-responsible mitigation, the permittee typically pays a compensatory mitigation consultant to plan and implement the required compensatory mitigation project. In this case only some of the compliance costs and none of the time and risks costs of permittee-responsible mitigation are reflected in permittee payments to the compensatory mitigation consultant. This means that a simple comparison of compensatory mitigation consultant fees for permit-specific mitigation with the credit prices charged by a mitigation bank or in-lieu fee program in some area for a comparable compensatory mitigation requirement can not indicate which compensatory mitigation type is more costly for a permit recipient. Further, a simple comparison of the credit prices charged by mitigation banks and in-lieu fee programs in some area does not necessarily indicate which mitigation bank or in-lieu fee program would be less expensive for a particular permit recipient. This is because regulators may determine that the compensatory mitigation projects provided by these mitigation providers are not equally suited to providing compensation for the permitted impacts, which in turn might lead them to require different credit amounts for those impacts according to which compensatory mitigation provider is proposed. What can be presumed is that, to the extent that regulators allow a permittee to choose between the three compensatory mitigation types, the choice made will reflect the cost-minimizing option for that permittee in consideration of all the potential costs for the three compensatory mitigation types shown in Table 10.4-1.

10.4.2 Effects on Commercial Mitigation Bank Costs

The evaluation of rule effects on mitigation supply costs for commercial mitigation banks is reported in Table 10.4-2. The effects of the rule on mitigation bank costs are relevant because they bear on the prices charged to permittees for mitigation bank credits, and thus the mitigation costs incurred by permittees who use that compensatory mitigation option. The Table 10.4-2 evaluation scheme tries to isolate the direction and general magnitude of possible changes in average unit compliance, time, and risk costs for commercial banks resulting from each individual rule provision, while holding all else constant.

Table 10.4-2. Possible Effects of Major Rule Provisions on Baseline Commercial Mitigation Banking Costs. Evaluations of the effects of rule provisions on compliance and time costs relate to both commercial mitigation banks and single user mitigation banks, while evaluations of rule provision effects of risk costs relate mainly to commercial mitigation banks. The letter "S" indicates a significant effect. The letter "I" indicates an insignificant effect. The minus sign (-) indicates decrease. The plus sign (+) indicates increase. Blank cells indicate that there is no or only a trivial effect anticipated, or that no judgment can be made. See main text and notes at the end of this table for explanations of judgments made.

Rule Provision [Section]	**Compliance Costs**	**Time Costs**	**Risk Costs**
General compensatory mitigation requirements [Section 332.3]			
Use of mitigation bank credits [§332.3(b)(1) and (2)]			S -
Use of in-lieu fee program credits [§332.3(b)(1) and (3)]			
Watershed approach to permittee-responsible mitigation [§332.3(b)(1) and (4)]			
Watershed approach to compensatory mitigation (planning) [§332.3(c)(1)]			
Amount of compensatory mitigation (in-lieu fee programs) [§332.3(f)(3)]			
Use of mitigation banks and in-lieu fee programs [§332.3(g)]			S -
Preservation [§332.3(h)(1)]	I -		I -
Relationship to other federal, state, tribal and local programs [§332.3(j)]			I -
Party responsible for compensatory mitigation [§332.3(l)(3)]			
Financial assurances (when required) [§332.3(n)(5)]			
Financial assurances (required form) [§332.3(n)(5)]	I +		
Planning and documentation [Section 332.4]			
Public review and comment (mitigation statement & public notice) [§332.4(b)(1)]			
Mitigation plan (approved final plan & permit issuance) [§332.4(c)(1)]			I -
Long term management plan [§332.4(c)(11)]	I +		
Adaptive management plan [§332.4(c)(12)]	I +		
Monitoring [Section 332.6]			
Monitoring period (revisions) [§332.6(b)]			
Monitoring reports (information required) [§332.6(c)(1)]			
Management [Section 332.7]			

Rule Provision [Section]	Compliance Costs	Time Costs	Risk Costs
Adaptive management (reporting of problems) [§332.7(c)(1) and (2)]	I +		
Adaptive management (revisions to mitigation measures) [§332.7(c)(2) and (3)]	I +		I +
Adaptive management (revisions to performance standards) [§332.7(c)(4)]			I -
Long term management (funding) [§332.7(d)(2) and (3)]	I +		
Mitigation banks & in-lieu fee programs [Section 332.8]			
Planning framework for in-lieu fee programs [§332.8(c)]			
Review process, Prospectus (required information) [§332.8(d)(2)]			
Review process, Prospectus (notification requirement and time limit) [§332.8(d)(2)]		S -	
Review process, Preliminary review of prospectus (procedure) [§332.8(d)(3)]		S -	
Review process, Public review and comment (procedure) [§332.8(d)(4)]		S -	
Review process, Initial evaluation [§332.8(d)(5)]		S -	
Review process, Draft instrument (information & time limits) [§332.8(d)(6)]	I +	S -	I -
Review process, Draft instrument (geographic service area) [§332.8(d)(6)(ii)(A)]			I -
Review process, IRT review (procedure and time limits) [§332.8(d)(7)]		S -	
Review process, Final instrument (procedure and time limits) [§332.8(d)(8)]		S -	
Dispute resolution process (procedure and time limits) [§332.8(e)]		S -	
Extension of deadlines [§332.8(f)]			
Modification of instruments (procedure and time limits) [§332.8(g)]		I -	
Umbrella mitigation banking instruments (adding project sites) [§332.8(h)]	I -	I -	
In-lieu fee program account [§332.8(i)]			
In-lieu fee project approval [§332.8(j)]			
Project implementation (problems) [§332.8(l)(2)]	I +	I +	
Advance credits for in-lieu fee programs (number) [§332.8(n)(1)]			
Advance credits for in-lieu fee programs (time constraints for work) [§332.8(n)(4)]			
Determining credits, Credit costs (in-lieu fee programs) [§332.8(o)(5)(ii)]			
Determining credits, Credit release schedule [§332.8(o)(8)]		I +	

Rule Provision [Section]	Compliance Costs	Time Costs	Risk Costs
Determining credits, Credit release approval [§332.8(o)(9)]		I +	
Accounting procedures (In-lieu fee programs) [§332.8(p)(2)]			
Reporting, Financial assurance & long-term management fund report [§332.8(q)(3)]			
IRT concerns with use of credits [§332.8(s)]		I +	
Grandfathering of existing instruments, Mitigation banks [332.8(v)(1)]	I +		
Grandfathering of existing instruments, In-lieu fee programs [332.8(v)(2)]			

Explanatory notes for the judgments made in Table 10.4-2:

1. Use of mitigation banks credits [§332.3(b)(1) and (2)] – Allowing use of mitigation bank credits, where appropriate credits are available, prior to the consideration of other options to meet compensatory mitigation requirements, could significantly increase the share of current demand for credits that regulators would allow to be met by existing mitigation banks and new mitigation banks (banks developed after rule promulgation). That result could significantly reduce credit demand uncertainty and thus mitigation bank risk costs.

2. Use of mitigation banks and in-lieu fee programs [§332.3(g)] – To the extent that regulators may now limit mitigation bank use for only certain types of permits, this provision could significantly reduce risk costs for existing and new mitigation banks by specifying that banks can be used to provide compensatory mitigation for all permit types.

3. Preservation [§332.3(h)(1)] – To the extent that this provision allows for greater use of preservation for mitigation bank credit production, this could reduce compliance costs for new mitigation banks since restoration effort is not needed, and could reduce risk costs for new mitigation banks since there is no risk of failure associated with preservation.

4. Relationship to other Federal, State, Tribal, and local programs [§332.3(j)] – Allowing existing and new mitigation banks to serve other programs could reduce overall bank investment risk, and thus mitigation bank risk costs.

5. Financial assurances (required form) [§332.3(n)(5)] – This provision, by requiring financial assurance mechanisms to include a notification clause prior to termination or revocation, could increase the costs to new mitigation banks for securing assurance mechanisms.

6. Mitigation plan (approved final plan & permit issuance) [§332.4(c)(1)] – This provision may give permittees an incentive to choose mitigation bank credits over permittee-responsible mitigation if they think this will expedite permit issuance or commencement of the permitted activity. This could translate into higher allowable demand for credits and reduced credit demand uncertainty for existing and new mitigation banks, thus decreasing bank risk costs.

7. Long term management plan [§332.4(c)(11)] – To the extent that long term management plans have not previously been required of all mitigation banks, this requirement could increase compliance costs for new mitigation banks.

8. Adaptive management plan [§332.4(c)(12)] – To the extent that mitigation banks have not been required to establish contingency plans as a condition for bank approval, this provision could increase compliance costs for new mitigation banks.

9. Adaptive management (reporting of problems) [§332.7(c)(1) and (2)] – To the extent that mitigation banks are not now required to report problems outside of regular reporting requirements, this provision could increase compliance costs for new mitigation banks.

10. Adaptive management (revisions to mitigation measures) [§332.7(c)(2) and (3)] – To the extent that regulators are not now requiring remediation measures or changes to monitoring and maintenance requirements to ensure that mitigation bank projects meet performance standards, this provision could increase the extent to which new mitigation banks are required to implement greater monitoring and maintenance requirements and remediation measures, thus increasing compliance and risk costs for new mitigation banks.

11. Adaptive management (revisions to performance standards) [§332.7(c)(4)] – This provision could potentially reduce risk costs for new mitigation banks when bank projects are not trending toward meeting the performance standards original established in the bank instrument but nevertheless are providing ecological benefits that are comparable or superior to the approved project.

12. Long term management (funding) [§332.7(d)(2) and (3)] – Depending on how regulators interpret and react to the word "necessary," this provision could increase compliance costs for new mitigation banks.

13. Review process, prospectus (notification requirement and time limits) [§332.8(d)(2)] – Time limits for IRT review could significantly reduce timeframes for mitigation bank development and thus time costs for new mitigation banks.

14. Review process (all provisions requiring milestones and time limits for review and approval of mitigation bank prospectus, draft instrument, and final instrument) [§332.8(d)] – These provisions, by requiring time limits for the review, evaluation and decision-making for proposed new mitigation banks, could significantly reduce timeframes for mitigation bank development and thus time costs for new mitigation banks.

15. Review process, draft instrument (information and time limits) [§332.8(d)(6)] – Some information that previously was optional is now required, thus increasing compliance costs for new banks. On the other hand, time limits for the DE to provide notification of completeness could reduce time costs for new mitigation banks, and delineation of information requirements could decrease approval risk and thus risk costs for new mitigation banks.

16. Review process, draft instrument (geographic service area) [§332.8(d)(6)(ii)(A)] – The consideration of economic viability when determining service areas could increase the size of mitigation bank service areas granted by regulators. This could reduce credit demand uncertainty and thus risk costs for new mitigation banks.

17. Dispute resolution process (procedure and time limits) [§332.8(e)] – Time limits for resolving disputes could significantly reduce timeframes for mitigation bank development and thus time costs for new mitigation banks.

18. Modification of instruments (procedure and time limits) [§332.8(g)] – Time limits for review and decision-making for proposed bank modifications could reduce timeframes for modifications to existing and new mitigation banks and thus bank time costs.

19. Umbrella mitigation banking instruments (adding project sites) [§332.8(h)] – The ability of bank instruments to provide for the future authorization of additional mitigation bank sites, and a procedure for adding new bank sites through bank modifications, could reduce compliance and time costs for new mitigation banks.

20. Project implementation (problems) [§332.8(l)(2)] – To the extent that regulators do not now require modifications to bank instruments when implementation problems are encountered with bank projects, this provision could increase compliance and time costs for new mitigation banks.

21. Determining credits, credit release schedule [§332.8(o)(8)] – To the extent that regulators do not now require that a "significant share" of total potential mitigation bank credits are not releasable for sale until ecological performance standards are fully met, this provision could increase timeframes for credit release and thus time costs for new mitigation banks.

22. Determining credits, credit release approval [§332.8(o)(9)] – Providing for visits to mitigation bank sites prior to credit releases for proposed bank uses, and allowing IRT members up to 30 days following site visits to review credit release requests, could increase timeframes for credit release and thus time costs for new mitigation banks.

23. Reporting, financial assurance & long-term management fund report [§332.8(q)(3)] – To the extent that mitigation banks are not currently required to provide an annual report on financial assurances or long term management funding, this provision could increase compliance costs for new mitigation banks.

24. IRT concerns with use of credits [§332.8(s)] – Providing for DE consultation when IRT members object to proposed mitigation bank uses could increase timeframes for decisions on credit uses, thus increasing time costs for new mitigation banks.

25. Grandfathering of existing bank instruments [§332.8(v)(1)] – In cases where some share of already-approved mitigation banks want to modify their mitigation banking instruments, the requirement to comply with the provisions of the final rule could increase compliance costs for those existing mitigation banks.

The Table 10.4-2 evaluation results suggest that some provisions of the final rule could increase compliance costs incurred by "new" commercial mitigation banks (that is, mitigation banks established after rule promulgation). And one rule provision could potentially increase compliance for existing commercial mitigation banks that have already secured certification. Specifically, requiring already-approved commercial mitigation banks that want to modify their mitigation banking instruments to bring those instruments into conformance with rule standards could impose non-trivial costs for some share of existing mitigation banks.

No individual rule provision is expected to have a significant effect on mitigation bank compliance costs, however, and the aggregate increase in compliance costs for new or existing mitigation banks resulting from the rule could be minimal.

While some provisions of Section 332.8 could increase mitigation bank time costs, others could significantly decrease such costs. Specifically, those rule provisions that place time limits for IRT review and DE decision-making for a mitigation bank prospectus and draft and final banking instruments could significantly reduce the time costs incurred during the mitigation bank development and approval process. On balance, the final rule could significantly reduce time costs for new mitigation banks.

The Table 10.4-2 evaluations also suggest that the final rule could significantly decrease risk costs for both new and existing mitigation banks. Rule provisions that could drive risk costs downward include those that give a regulatory preference for proposed uses of approved mitigation banks over other compensatory mitigation types, and that allow mitigation bank credits to serve as compensatory mitigation for all types of DA permits. To the extent that these provisions result in a significant increase in the share of permitted impacts for which mitigation bank credits are proposed and approved as compensatory mitigation, they could significant decrease credit demand uncertainty for mitigation banks, thus significantly reducing mitigation bank risk costs.

When the effects of the final rule on all mitigation bank costs are considered together, this suggests that, on balance, the rule could significantly decrease costs now faced by both new and existing commercial mitigation banks. This in turn could reduce the minimum prices that mitigation banks would need to charge permittees for bank credits in order to recoup all bank costs and assure a competitive return on investment. This potential outcome is driven by potentially significant rule-induced reductions in both the time and risk costs faced by commercial mitigation banks.

10.4.3 Effects on In-Lieu Fee Program Costs

The evaluation of rule effects on compensatory mitigation supply costs for in-lieu fee programs is reported in Table 10.4-2. The effects of the rule on in-lieu fee program costs are relevant because they bear on the prices charged to permittees for in-lieu fee credits, and thus the compensatory mitigation costs incurred by permittees who use that mitigation option. The Table 10.4-2 evaluation scheme tries to isolate the direction and general magnitude of possible changes in average unit compliance, time, and risk costs for in-lieu fee programs resulting from each individual rule provision, while holding all else constant.

Table 10.4-3. Possible Effects of Major Rule Provisions on Baseline In-Lieu Fee Program Costs. The letter "S" indicates a significant effect. The letter "I" indicates an insignificant effect. The minus sign (-) indicates decrease. The plus sign (+) indicates increase. Blank cells indicate that there is no or only a trivial effect anticipated, or that no judgment can be made. See main text and notes at the end of this table for explanations of judgments made.

Rule Provision [Section]	**Compliance Costs**	**Time Costs**	**Risk Costs**
General compensatory mitigation requirements [Section 332.3]			
Use of mitigation bank credits [§332.3(b)(1) and (2)]			
Use of in-lieu fee program credits [§332.3(b)(1) and (3)]			
Watershed approach to permittee-responsible mitigation [§332.3(b)(1) and (4)]			

Rule Provision [Section]	Compliance Costs	Time Costs	Risk Costs
Watershed approach to compensatory mitigation (planning) [§332.3(c)(1)]			
Amount of compensatory mitigation (in-lieu fee programs) [§332.3(f)(3)]			
Use of mitigation banks and in-lieu fee programs [§332.3(g)]			
Preservation [§332.3(h)(1)]	I -		I -
Relationship to other federal, state, tribal and local programs [§332.3(j)]			
Party responsible for compensatory mitigation [§332.3(l)(3)]			
Financial assurances (when required) [§332.3(n)(5)]	I +		
Financial assurances (required form) [§332.3(n)(5)]	I +		
Planning and documentation [Section 332.4]			
Public review and comment (mitigation statement & public notice) [§332.4(b)(1)]			
Mitigation plan (approved final plan & permit issuance) [§332.4(c)(1)]			
Long term management plan [§332.4(c)(11)]	I +		
Adaptive management plan [§332.4(c)(12)]	I +		
Monitoring [Section 332.6]			
Monitoring period (revisions) [§332.6(b)]			
Monitoring reports (information required) [§332.6(c)(1)]	I -		
Management [Section 332.7]			
Adaptive management (reporting of problems) [§332.7(c)(1) and (2)]	I +		
Adaptive management (revisions to mitigation measures) [§332.7(c)(2) and (3)]	I +		I +
Adaptive management (revisions to performance standards) [§332.7(c)(4)]			I -
Long term management (funding) [§332.7(d)(2) and (3)]	I +		
Mitigation banks & in-lieu fee programs [Section 332.8]			
Planning framework for in-lieu fee programs [§332.8(c)]	I +		
Review process, Prospectus (required information) [§332.8(d)(2)]			
Review process, Prospectus (notification requirement and time limit) [§332.8(d)(2)]			
Review process, Preliminary review of prospectus (procedure) [§332.8(d)(3)]			
Review process, Public review and comment (procedure) [§332.8(d)(4)]	I+		I+

Rule Provision [Section]	Compliance Costs	Time Costs	Risk Costs
Review process, Initial evaluation [§332.8(d)(5)]			
Review process, Draft instrument (information & time limits) [§332.8(d)(6)]	I +		
Review process, Draft instrument (geographic service area) [§332.8(d)(6)(ii)(A)]			
Review process, IRT review (procedure and time limits) [§332.8(d)(7)]			
Review process, Final instrument (procedure and time limits) [§332.8(d)(8)]			
Dispute resolution process (procedure and time limits) [§332.8(e)]			
Extension of deadlines [§332.8(f)]			
Modification of instruments (procedure and time limits) [§332.8(g)]			
Umbrella mitigation banking instruments (adding project sites) [§332.8(h)]			
In-lieu fee program account [§332.8(i)]	I +		
In-lieu fee project approval [§332.8(j)]	I +		
Project implementation (problems) [§332.8(l)(2)]	I +		
Advance credits for in-lieu fee programs (number) [§332.8(n)(1)]			
Advance credits for in-lieu fee programs (time constraints for work) [§332.8(n)(4)]			
Determining credits, Credit costs (in-lieu fee programs) [§332.8(o)(5)(ii)]	I +		
Determining credits, Credit release schedule [§332.8(o)(8)]			
Determining credits, Credit release approval [§332.8(o)(9)]			
Accounting procedures (In-lieu fee programs) [§332.8(p)(2)]	I +		
Reporting, Financial assurance & long-term management fund report [§332.8(q)(3)]	I +		
IRT concerns with use of credits [§332.8(s)]			
Grandfathering of existing instruments, Mitigation banks [332.8(v)(1)]			
Grandfathering of existing instruments, In-lieu fee programs [332.8(v)(2)]	I +		

Explanatory notes for the judgments made in Table 10.4-3:

1. Preservation [§332.3(h)(1)] – To the extent that this provision allows for greater use of preservation for credit production, this could reduce compliance costs for new in-lieu fee programs (those established after rule promulgation), since restoration effort is not needed, and could reduce risk costs for new in-lieu fee programs, since there is no risk of failure associated with preservation.

2. Financial assurances (when required) [§332.3(n)(5)] – To the extent that this provision leads regulators to require new in-lieu fee programs to maintain financial assurances for compensatory mitigation projects (perhaps through a premium on credit fees charged that are then kept in a reserve assurance fund), this provision could increase compliance costs for new in-lieu fee programs.

3. Financial assurances (required form) [§332.3(n)(5)] – This provision, by requiring financial assurance mechanisms to include a notification clause prior to termination or revocation, could increase the costs to new in-lieu fee program for securing or administering assurance mechanisms.

4. Long term management plan [§332.4(c)(11)] – To the extent that long term management plans have not previously been required of in-lieu fee programs, this requirement could increase compliance costs for new in-lieu fee programs.

5. Adaptive management plan [§332.4(c)(12)] – To the extent that in-lieu fee program have not been required to establish contingency plans as a condition for approval, this provision could increase compliance costs for new in-lieu fee programs.

6. Monitoring reports (information required) [§332.6(c)] – This provision eliminates the possibility that resource agencies could put extra monitoring burdens on new in-lieu fee programs, thus potentially reducing compliance costs for new in-lieu fee programs.

7. Adaptive management (reporting of problems) [§332.7(c)(1) and (2)] – To the extent that in-lieu fee programs are not now required to report problems outside of regular reporting requirements, this provision could increase compliance costs for new in-lieu fee programs.

8. Adaptive management (revisions to mitigation measures) [§332.7(c)(2) and (3)] – To the extent that regulators are not now requiring remediation measures or changes to monitoring and maintenance requirements to ensure that in-lieu fee projects meet performance standards, this provision could increase the extent to which new in-lieu fee programs are required to implement greater monitoring and maintenance requirements and remediation measures, thus increasing compliance and risk costs for new in-lieu fee programs.

9. Adaptive management (revisions to performance standards) [§332.7(c)(4)] – This provision could potentially reduce risk costs for new in-lieu fee programs when program projects are not trending toward meeting the performance standards original established in the program instrument but nevertheless are providing ecological benefits that are comparable or superior to the approved project.

10. Long term management (funding) [§332.7(d)(2) and (3)] – Depending on how regulators interpret and react to the word "necessary," this provision could increase compliance costs for new in-lieu fee programs.

11. Planning framework for in-lieu fee programs [§332.8(c)] – To the extent that in-lieu fee programs have not previously been required by regulators to develop and include in program instruments a planning for mitigation work that supports a watershed approach to compensatory mitigation, this provision could increase compliance costs for new in-lieu fee programs.

12. Review process – public review and comment (332.8(d)(4) – Public notices are not typically prepared at present for in-lieu fee program sites. This will increase compliance costs slightly and increase risk costs (failure to secure sites) slightly.

13. Review process, draft instrument (information and time limits) [§332.8(d)(6)] – Some information that previously was optional is now required, thus increasing compliance costs for new in-lieu fee programs.

14. In-lieu fee program account [§332.8(i)] – To the extent that in-lieu fee programs are not now required to maintain a fund account for which disbursements must be approved in writing by the DE and that is

subject to annual reporting requirements, this provision could increase compliance costs for new in-lieu fee programs.

15. In-lieu fee project approval [§332.8(j)] – To the extent that in-lieu fee programs are not now required to submit mitigation plans for new project sites to the DE for review and approval before commencing project work, this provision could increase compliance costs for new in-lieu fee programs.

16. Project implementation (problems) [§332.8(l)(2)] – To the extent that regulators do not now require modifications to in-lieu fee program instruments when implementation problems are encountered with mitigation projects, this provision could increase compliance costs for new in-lieu fee programs.

17. Determining credits, Credit costs (in-lieu fee programs) [§332.8(o)(5)(ii)] – To the extent that in-lieu fee programs are not now basing credit prices on full-cost accounting reflecting all program costs, this provision could increase compliance costs for new in-lieu fee programs.

18. Accounting procedures (In-lieu fee programs) [§332.8(p)(2)] – To the extent that in-lieu fee programs are not now required by regulators to maintain an annual report ledger that documents transactions from the in-lieu fee program account, as well as individual ledgers for each separate project site, this provision could increase compliance costs for new in-lieu fee programs.

19. Reporting, Financial assurance & long-term management fund report [§332.8(q)(3)] – To the extent that in-lieu fee programs are not currently required by regulators to provide an annual report on financial assurance or long term management funding, this provision could increase compliance costs for new in-lieu fee programs.

20. Grandfathering of existing instruments, In-lieu fee programs [332.8(v)(2)] – To the extent that some share of already-approved in-lieu fee programs elect to continue operating as in-lieu fee programs after two years following promulgation of the rule, this provision could increase compliance costs for those existing in-lieu fee programs.

The Table 10.4-3 evaluation results suggest that many different rule provisions could increase compliance costs incurred by “new” in-lieu fee programs (that is, in-lieu fee programs approved after rule promulgation). While no individual rule provision is expected to have a significant effect on compliance costs for new in-lieu fee programs, the relatively large set of rule provisions that could drive compliance costs higher could result in more than minimal cost increases for new in-lieu fee programs. And the provision requiring existing in-lieu fee programs to come into compliance with the rule within 2-5 years of rule promulgation could likewise increase compliance costs for the set of already-approved in-lieu fee programs.

10.4.4 Effects on Permittee-Responsible Mitigation Costs

The evaluation of rule effects on compensatory mitigation supply costs for permittee-responsible mitigation is reported in Table 10.4-4. The Table 10.4-4 evaluation scheme tries to isolate the direction and general magnitude of possible changes in average unit compliance, time, and risk costs for permittee-responsible mitigation resulting from each rule provision, while holding all else constant.

Table 10.4-4. Possible Effects of Major Rule Provisions on Baseline Permittee-Responsible Mitigation Costs. The letter "S" indicates a significant effect. The letter "I" indicates an insignificant effect. The minus sign (-) indicates decrease. The plus sign (+) indicates increase. Blank cells indicate that there is no or only a trivial effect anticipated, or that no judgment can be made. See main text and notes at the end of this table for explanations of judgments made.

Rule Provision [Section]	Compliance Costs	Time Costs	Risk Costs
General compensatory mitigation requirements [Section 332.3]			
Use of mitigation bank credits [§332.3(b)(1) and (2)]			
Use of in-lieu fee program credits [§332.3(b)(1) and (3)]			
Watershed approach to permittee-responsible mitigation [§332.3(b)(1) and (4)]	I -		
Watershed approach to compensatory mitigation (planning) [§332.3(c)(1)]			
Amount of compensatory mitigation (in-lieu fee programs) [§332.3(f)(3)]			
Use of mitigation banks and in-lieu fee programs [§332.3(g)]			
Preservation [§332.3(h)(1)]	I -		I -
Relationship to other federal, state, tribal and local programs [§332.3(j)]			
Party responsible for compensatory mitigation [§332.3(l)(3)]			
Financial assurances (when required) [§332.3(n)(5)]	I +		
Financial assurances (required form) [§332.3(n)(5)]	I +		
Planning and documentation [Section 332.4]			
Public review and comment (mitigation statement & public notice) [§332.4(b)(1)]	I +		
Mitigation plan (approved final plan & permit issuance) [§332.4(c)(1)]		S +	
Long term management plan [§332.4(c)(11)]	I +		
Adaptive management plan [§332.4(c)(12)]	I +		
Monitoring [Section 332.6]			
Monitoring period (revisions) [§332.6(b)]			
Monitoring reports (information required) [§332.6(c)(1)]			
Management [Section 332.7]			
Adaptive management (reporting of problems) [§332.7(c)(1) and (2)]	I +		
Adaptive management (revisions to mitigation measures) [§332.7(c)(2) and (3)]			S +

Rule Provision [Section]	Compliance Costs	Time Costs	Risk Costs
Adaptive management (revisions to performance standards) [§332.7(c)(4)]			
Long term management (funding) [§332.7(d)(2) and (3)]	I +		
Mitigation banks & in-lieu fee programs [Section 332.8]			

Explanatory notes for the judgments made in Table 10.4-4:

1. Watershed approach to permittee-responsible mitigation [§332.3(b)(1) and (4)] – Application of the watershed approach for permittee-responsible mitigation could increase potentially acceptable compensatory mitigation locations, and methods. This could increase the potential scope for permit recipients to minimize compliance costs for permittee-responsible mitigation.

2. Preservation [§332.3(h)(1)] – Greater allowance for preservation as part of permittee-responsible mitigation projects could decrease compliance costs since it could reduce project implementation costs (less need to do restoration action), and decrease risk costs (since with preservation there is substantially less risk of failure.)

3. Financial assurances (when required) [§332.3(n)(5)] – To the extent that this provision leads regulators to require financial assurances more often than they currently do for permittee-responsible mitigation, it could increase compliance costs for permittee-responsible mitigation.

4. Financial assurances (required form) [§332.3(n)(5)] – This provision, by stipulating that any required financial assurance for permittee-responsible mitigation include a notification clause prior to termination or revocation, could increase compliance costs for permittee-responsible mitigation.

5. Public review and comment (mitigation statement and public notice) [§332.4(b)(1)] – This provision could increase compliance costs for permittee-responsible mitigation in the case of standard permit (SP) applications by possibly adding another layer to mitigation plan development, since many aspects of SP applications are eventually altered as a result of public comment.

6. Mitigation plan (approved final plan and permit issuance) [§332.4(c)(1)] – This provision could significantly increase time costs for certain permitted development projects, such as large Department of Transportation projects, by delaying permit issuance and thus the beginning of development work.

7. Long term management plan [§332.4(c)(11)] – To the extent that long term management plans are not now required for all permit-specific compensatory mitigation projects, this provision could increase compliance costs for permittee-responsible mitigation.

8. Adaptive management plan [§332.4(c)(12)] – This provision could increase compliance costs for permittee-responsible mitigation associated with the development of contingency plans as part of compensatory mitigation proposals.

9. Adaptive management, reporting of problems [§332.7(c)(1) and (2)] – To the extent that permit recipients are not now required to report problems outside of regulator reporting requirements, this provision could increase compliance costs for permittee-responsible mitigation.

10. Adaptive management (revisions to mitigation measures) [§332.7(c)(2) and (3)] – To the extent that regulators currently do not often require remediation measures or changes to monitoring and maintenance requirements to ensure that permittee-responsible mitigation projects meet performance standards, this provision could significantly increase risk costs for permittee-responsible mitigation.

11. Long term management funding [§332.7(d)(2) and (3)] – Depending on how regulators interpret and react to the word "necessary," this provision could increase compliance costs for permittee-responsible mitigation since requirements for long-term management funding are now generally imposed only on relatively large permittee-responsible mitigation projects.

The Table 10.4-4 evaluations suggest that the rule provision requiring a watershed-based approach to permittee-responsible compensatory mitigation could reduce compliance costs to the extent that it broadens the scope of potentially acceptable locations and methods for permittee-responsible mitigation. At the same time, however, several rule provision may have the opposite effects on compliance costs for permittee-responsible mitigation. Further, one rule provision could significantly increase time costs for permittee-responsible mitigation by delaying the permitted activity. Specifically, the provision requiring final mitigation plans to be approved before permit issuance for standard permits, and before work commences under general permits, could significantly increase permittee-responsible mitigation time costs for some share of permitted activities (such as transportation projects). And to the extent that regulators do not currently require permit recipients to implement remediation or other measures to ensure that permittee-responsible mitigation projects meet performance standards, the rule provision requiring adaptive management to address project deficiencies could significantly increase risk costs for permittee-responsible mitigation. On balance then, the final rule could increase the compliance costs, perhaps significantly, incurred by permit recipients who implement permittee-responsible mitigation.

10.4.5 Effects on Permittee Flexibility

The evaluation of the final rule's effects on the flexibility accorded to permittees, in terms of the scope of compensatory mitigation options that regulators may deem acceptable, is reported in Table 10.4-5. Rule effects on permittee flexibility are relevant because they bear on the ability of permittees to secure acceptable compensatory mitigation solutions that minimize their compensatory mitigation costs. The Table 10.4-5 evaluation scheme tries to isolate the direction and general magnitude of possible changes in permittee flexibility resulting from each rule provision, while holding all else constant.

The Table 10.4-5 evaluation results suggest that the final rule considered as a whole could significantly increase the ability of permittees to seek out and gain regulator approval for cost-effective compensatory mitigation. The most important rule provisions driving this potential outcome are those relating to use of mitigation banks and in-lieu fee programs, and the watershed approach to permittee-responsible mitigation. These provisions, which essentially replace the current regulatory preference for on-site compensatory mitigation, could provide permittees with much greater flexibility in the development of compensatory mitigation proposals that fit their needs and minimize their costs. The rule provides permittees with greater flexibility to choose among different compensatory mitigation types, as well as greater flexibility in the choice of locations and methods for permittee-responsible mitigation, to the extent that regulators determine that

these choices could effectively compensate for permit impacts and advance overall watershed functioning.

Table 10.4-5. Possible Effects of Major Rule Provisions on the Degree of Flexibility Accorded to Permittees to Secure Cost-Effective Mitigation. The letter "S" indicates a significant effect. The letter "I" indicates an insignificant effect. The minus sign (-) indicates decrease. The plus sign (+) indicates increase. Blank cells indicate that there is no or only a trivial effect anticipated, or that no judgment can be made. See main text and notes at the end of this table for explanations of judgments made.

Rule Provision [Section]	**Permittee Flexibility**
General compensatory mitigation requirements [Section 332.3]	
Use of mitigation bank credits [§332.3(b)(1) and (2)]	S +
Use of in-lieu fee program credits [§332.3(b)(1) and (3)]	S +
Watershed approach to permittee-responsible mitigation [§332.3(b)(1) and (4)]	I +
Watershed approach to compensatory mitigation (planning) [§332.3(c)(1)]	
Amount of compensatory mitigation (in-lieu fee programs) [§332.3(f)(3)]	I +
Use of mitigation banks and in-lieu fee programs [§332.3(g)]	S +
Preservation [§332.3(h)(1)]	I +
Relationship to other federal, state, tribal and local programs [§332.3(j)]	
Party responsible for compensatory mitigation [§332.3(l)(3)]	
Financial assurances (when required) [§332.3(n)(5)]	
Financial assurances (required form) [§332.3(n)(5)]	
Planning and documentation [Section 332.4]	
Public review and comment (mitigation statement & public notice) [§332.4(b)(1)]	I -
Mitigation plan (approved final plan & permit issuance) [§332.4(c)(1)]	I -
Long term management plan [§332.4(c)(11)]	
Adaptive management plan [§332.4(c)(12)]	
Monitoring [Section 332.6]	
Management [Section 332.7]	
Mitigation banks & in-lieu fee programs [Section 332.8]	

Explanatory notes for the judgments made in Table 10.4-5:

1. Use of mitigation bank credits [§332.3(b)(1) and (2)] – This provision could provide permittees with significantly greater flexibility to use mitigation bank credits as compensatory mitigation in areas where appropriate mitigation bank credits are available.

2. Use of in-lieu fee program credits [§332.3(b)(1) and (3)] – This provision could provide permittees with significantly greater flexibility to use in-lieu fee program credits as compensatory mitigation in areas where appropriate in-lieu fee program credits are available.

3. Watershed approach to permittee-responsible mitigation [§332.3(b)(1) and (4)] – This provision could increase permittee flexibility to the extent that it broadens the range of compensatory mitigation project locations and methods for permittee-responsible mitigation.

4. Use of mitigation banks and in-lieu fee programs [§332.3(g)] – To the extent that regulators currently do not allow some types of DA permits to use mitigation banks or in-lieu fee programs to meet compensatory mitigation requirements, this provision could significantly increase permittee flexibility.

5. Preservation [§332.3(h)(1)] – This provision, by allowing for greater use of preservation as compensatory mitigation, could increase permittee flexibility.

6. Public review and comment (mitigation statement and public notice) [§332.4(b)(1)] – This provision could reduce permittee flexibility by requiring applicants for standard permits to submit a statement of proposed mitigation before avoidance and impact minimization requirements have been finalized.

7. Mitigation plan (approved final plan & permit issuance) [§332.4(c)(1)] – This provision could reduce permittee flexibility by requiring that mitigation plans be finalized before a standard permit can be issued, and before work can commence pursuant to a general permit authorization.

10.4.6 Summary of Rule Effects on Permittee Mitigation Costs

Ultimately, the net effect of the final rule on aggregate mitigation costs borne by permittees will depend on how it changes the options available to permit recipients for providing compensatory mitigation, the costs of these options, and the extent to which permittees have discretion to choose among them. The evaluation of the rule's effects on compensatory mitigation supply costs and permittee flexibility included herein, while instructive, can provide only limited clues to the rule's possible effects on the development, use, and costs of different compensatory mitigation options.

The evaluation results suggest that the final rule has the potential to significantly decrease compensatory mitigation supply costs borne by commercial mitigation banks, while potentially increasing supply costs for in-lieu fee programs and permittee-responsible mitigation. These results in turn could increase incentives for mitigation bank investment, leading to greater potential for competition among mitigation banks that could drive credit prices downward. Ultimately, however, the effects of the final rule on the incentives for mitigation bank investment and bank credit prices in different areas will depend on the demand for bank credits that emerges in those areas in the with-rule scenario. Currently, the effective demand for mitigation bank credits is restricted by regulator decisions about allowable uses of mitigation bank credits as compensation for permitted impacts. The final rule, by increasing the discretion of permittees to choose

bank mitigation and potentially raising the costs of the other compensatory mitigation types, could increase the effective demand for mitigation bank credits in many areas.

The net effect on mitigation bank credit prices of a possible structural decrease in bank mitigation supply costs, coupled with a possible structural increase in the demand for mitigation bank credits, would likely vary across different areas of the country. In some areas, investment in mitigation bank development could increase and the prices charged for mitigation bank credits could fall. In other areas, however, the prices charged for mitigation bank credits could remain roughly constant or even increase.

In the end, it is not possible to confidently predict even the direction of change in total compensatory mitigation costs incurred by permit recipients in the with-rule scenario. What can be concluded is that, to the extent that the final rule provides permittees with greater flexibility to fashion and choose among alternative compensatory mitigation opportunities, permit recipients will have greater scope to seek out and secure compensatory mitigation solutions that minimize their costs. Thus, regardless of how the rule changes aggregate compensatory mitigation costs incurred by permittees, the added flexibility introduced by the rule should ensure that compensatory mitigation costs are no higher than necessary to achieve programmatic goals.

10.5 Rule Effects on Administrative Burdens

Table 10.5-1 uses the same evaluation scheme introduced earlier to describe the potential effects of individual rule provisions on administrative burdens borne by the Corps. The results suggest that those rule provisions relating to use of the watershed approach for determining acceptable compensatory mitigation could increase agency burdens, since regulators would be required to consider broader range of factors and possible means of securing compensatory mitigation when evaluating mitigation proposals. Other parts of the rule that could increase Corps administrative burdens include various provisions of Section 332.4 (planning and documentation) and Section 332.7 (management) that add administrative tasks to the Corps and IRT processes for review and decision-making for compensatory mitigation proposals.

Of potentially more significance for increasing agency burdens are rule provisions relating to procedures for the processing of new mitigation bank and in-lieu fee program proposals, particularly those that establish time limits for the review of proposed project plans and related requirements. Currently, Corps regulators give relatively low priority to the processing of mitigation bank and in-lieu fee program proposals, since they face administratively-established timelines for the processing of DA permit applications. Under the final rule, however, regulators could be required to increase the relative priority accorded to processing new mitigation bank and in-lieu fee program proposals, thereby increasing agency burdens. And the rule provision requiring existing in-lieu fee programs to come into compliance with the rule within 2-5 years after rule promulgation could have a similar effect on agency burdens.

Table 10.5-1. Possible Effects of Major Rule Provisions on Baseline Corps Administrative Burdens. The letter "S" indicates a significant effect. The letter "I" indicates an insignificant effect. The minus sign (-) indicates decrease. The plus sign (+) indicates increase. Blank cells indicate that there is no or only a trivial effect anticipated, or that no judgment can be made. See main text and notes at the end of this table for explanations of judgments made.

Rule Provision [Section]	**Administrative Burdens**
General compensatory mitigation requirements [Section 332.3]	
Use of mitigation bank credits [§332.3(b)(1) and (2)]	S -
Use of in-lieu fee program credits [§332.3(b)(1) and (3)]	S -
Watershed approach to permittee-responsible mitigation [§332.3(b)(1) and (4)]	I +
Watershed approach to compensatory mitigation (planning) [§332.3(c)(1)]	I +
Amount of compensatory mitigation (in-lieu fee programs) [§332.3(f)(3)]	
Use of mitigation banks and in-lieu fee programs [§332.3(g)]	S -
Preservation [§332.3(h)(1)]	I -
Relationship to other federal, state, tribal and local programs [§332.3(j)]	
Party responsible for compensatory mitigation [§332.3(l)(3)]	
Financial assurances (when required) [§332.3(n)(5)]	I +
Financial assurances (required form) [§332.3(n)(5)]	
Planning and documentation [Section 332.4]	
Public review and comment (mitigation statement & public notice) [§332.4(b)(1)]	
Mitigation plan (approved final plan & permit issuance) [§332.4(c)(1)]	I+
Long term management plan [§332.4(c)(11)]	I +
Adaptive management plan [§332.4(c)(12)]	I +
Monitoring [Section 332.6]	
Monitoring period (revisions) [§332.6(b)]	
Monitoring reports (information required) [§332.6(c)(1)]	
Management [Section 332.7]	
Adaptive management (reporting of problems) [§332.7(c)(1) and (2)]	

Rule Provision [Section]	**Administrative Burdens**
Adaptive management (revisions to mitigation measures) [§332.7(c)(2) and (3)]	I +
Adaptive management (revisions to performance standards) [§332.7(c)(4)]	
Long term management (funding) [§332.7(d)(2) and (3)]	
Mitigation banks & in-lieu fee programs [Section 332.8]	
Planning framework for in-lieu fee programs [§332.8(c)]	
Review process, Prospectus (required information) [§332.8(d)(2)]	
Review process, Prospectus (notification requirement and time limit) [§332.8(d)(2)]	S +
Review process, Preliminary review of prospectus (procedure) [§332.8(d)(3)]	S +
Review process, Public review and comment (procedure) [§332.8(d)(4)]	S +
Review process, Initial evaluation [§332.8(d)(5)]	S +
Review process, Draft instrument (information & time limits) [§332.8(d)(6)]	S +
Review process, Draft instrument (geographic service area) [§332.8(d)(6)(ii)(A)]	
Review process, IRT review (procedure and time limits) [§332.8(d)(7)]	S +
Review process, Final instrument (procedure and time limits) [§332.8(d)(8)]	S +
Dispute resolution process (procedure and time limits) [§332.8(e)]	I +
Extension of deadlines [§332.8(f)]	
Modification of instruments (procedure and time limits) [§332.8(g)]	S+
Umbrella mitigation banking instruments (adding project sites) [§332.8(h)]	
In-lieu fee program account [§332.8(i)]	I +
In-lieu fee project approval [§332.8(j)]	
Project implementation (problems) [§332.8(l)(2)]	I +
Advance credits for in-lieu fee programs (number) [§332.8(n)(1)]	
Advance credits for in-lieu fee programs (time constraints for work) [§332.8(n)(4)]	
Determining credits, Credit costs (in-lieu fee programs) [§332.8(o)(5)(ii)]	
Determining credits, Credit release schedule [§332.8(o)(8)]	
Determining credits, Credit release approval [§332.8(o)(9)]	I +

Rule Provision [Section]	**Administrative Burdens**
Accounting procedures (In-lieu fee programs) [§332.8(p)(2)]	
Reporting, Financial assurance & long-term management fund report [§332.8(q)(3)]	
IRT concerns with use of credits [§332.8(s)]	
Grandfathering of existing instruments, Mitigation banks [332.8(v)(1)]	I +
Grandfathering of existing instruments, In-lieu fee programs [332.8(v)(2)]	S +

Explanatory notes for the judgments made in Table 10.5-1:

1. Use of mitigation bank and in-lieu fee program credits [§332.3(b)(1) (2) and (3)] – To the extent that these provisions move regulators to allow a significantly greater set of DA permit impacts to be served by mitigation banks and in-lieu fee programs, this could significantly increase the proposed and approved uses of mitigation banks and in-lieu fee programs for impacts, which in turn could significantly decrease administrative burdens associated with the review, approval, monitoring and enforcement of permittee-responsible mitigation projects.

2. Watershed approach to permittee-responsible mitigation [§332.3(b)(1) and (4)] – To the extent that this provision leads regulators to consider a broader range of potential types and locations for permittee-responsible mitigation options, it could increase use of permittee-responsible mitigation, which in turn could increase administrative burdens relating to the review, approval, monitoring and enforcement of permittee-responsible mitigation plans.

3. Watershed approach to compensatory mitigation (planning) [§332.3(c)(1)] – Implementation of a watershed approach in the absence of an established plan could increase burdens on regulators to evaluate watershed considerations in the determination of acceptable compensatory mitigation for permit impacts.

4. Use of mitigation banks and in-lieu fee programs [§332.3(g)] – To the extent that this provision moves regulators to allow more types of DA permits to use served by mitigation banks and in-lieu fee programs as compensatory mitigation, this could significantly increase the proposed and approved uses of mitigation banks and in-lieu fee programs for permit impacts, which in turn could significantly decrease administrative burdens associated with the review, approval, monitoring and enforcement of permittee-responsible mitigation projects.

5. Preservation [§332.3(h)(1)] – Allowing for greater use of preservation as compensatory mitigation could reduce administrative burdens relating to the review, approval, monitoring and enforcement for the projects associated with all three types of compensatory mitigation providers.

6. Financial assurances (when required) [§332.3(n)(5)] – To the extent that this provision leads regulators to more frequently require financial assurances for compensatory mitigation projects, this could increase administrative burdens.

7. Mitigation plan (approved final plan & permit issuance) [§332.4(c)(1)] – In some cases, this provision will result in delays in permit issuance until an acceptable final mitigation plan is submitted, reviewed, and approved, resulting in increases of administrative effort for larger permits (roadways, water supply projects, etc.).

8. Long term management plan [§332.4(c)(11)] – To the extent that not all compensatory mitigation projects are now required to include such plans, this provision could increase administrative review burdens.

9. Adaptive management plans [§332.4(c)(12)] – To the extent that not all compensatory mitigation projects are now required to include contingency plans, this provision could increase administrative review burdens.

10. Adaptive management (revisions to mitigation measures) [§332.7(c)(2) and (3)] – To the extent that this provision leads regulators to more frequently require remediation or other measures to address compensatory mitigation projects that are not progressing towards meeting performance standards, it could increase administrative burdens.

11. Review process (all provisions requiring milestones and time limits for review and approval of mitigation bank and in-lieu fee program prospectus, draft instrument, and final instruments) [§332.8(d)] – Currently, permit processing is the highest workload priority for Corps regulators. These provisions, by mandating time limits for the evaluation and decision-making for proposed new mitigation banks and in-lieu programs, could increase administrative priority given to processing proposed new mitigation banks and in-lieu fee programs, thus significantly increasing overall administrative burdens.

12. Dispute resolution process (procedure and time limits) [§332.8(e)] – The requirements and time limits for resolution of ITR objections to DE decisions to approve final instruments for mitigation banks and in-lieu fee programs could increase administrative burdens.

13. Modification of instruments (time limits and procedures) - [§332.8(g)] – Modifications of existing as well as future ILF program and mitigation bank instruments will be required for any addition of mitigation sites and expansion of current sites. The modification process includes public notice and comment and full coordination with the IRT. This will result in a significant additional administrative burden particularly for Districts with many third party mitigation operations.

14. In-lieu fee program account [§332.8(i)] – To the extent that regulators currently do not require written DE authorization for in-lieu fee program disbursement of funds for project work or annual review of fund transactions, this provision could increase administrative burdens.

15. Project implementation (problems) [§332.8(l)(2)] – To the extent that regulators currently do not consult with the ITR and require modifications to mitigation bank and in-lieu fee program instruments when the compensatory mitigation projects of those banks and programs can not be implemented in accordance with approved plans, this provision could increase administrative burdens.

16. Determining credits, credit release approval [§332.8(o)(9)] – This provision, by establishing a process for DE evaluation and decision-making for credit releases that includes potential site visits and ITR review and comment, could increase administrative burdens.

17. Grandfathering of existing instruments, mitigation banks [§332.8(p)] – To the extent that some currently approved mitigation banks will seek to modify their bank instruments after rule promulgation, and those banks require extra processing to come into compliance with all aspects of the new rule, this provision could increase administrative burdens for the review and decision-making for the modified instruments for those mitigation banks.

18. Grandfathering of existing instruments, In-lieu fee programs [332.8(v)(2)] – This provision, by requiring currently approved in-lieu fee programs to come into compliance with the new rule within 2-5 years after rule promulgation, could significantly increase administrative burdens associated with the review and decision-making for the modified instruments for those in-lieu fee programs.

On the other hand, various provisions of Section 332.3 (general compensatory mitigation requirements) that provide permittees with greater flexibility to choose mitigation bank and in-lieu fee program credits as compensatory mitigation could significantly reduce Corps administrative burdens over time. When a permit applicant proposes and is allowed by regulators to use a mitigation bank or in-lieu fee program as compensatory mitigation, the Corps avoids the need to expend much greater resources for the review and approval of a proposed permittee-responsible mitigation project. For example, anecdotal evidence from the Norfolk District gathered for this rulemaking suggests that Corps review and approval of permittee-responsible mitigation project plans can take forty times more Corps labor hours than that required for review and approval of a proposed use of mitigation banks or in-lieu programs. And to the extent that the rule leads to an increased use of mitigation banks and in-lieu fee program as compensatory mitigation, overall Corps burdens for monitoring and enforcing mitigation projects could decrease, since the agency would need to focus on relatively fewer compensatory mitigation sites and responsible parties.

In sum, various rule provisions could significantly increase Corps administrative burdens while other provisions could have the opposite effect. Of perhaps most importance for increasing Corps burdens are rule provisions that establish time limits for the review and decision-making of proposed new mitigation banks and in-lieu fee programs; rule provisions that appear to decrease Corps burdens include those that expand the allowable use of mitigation banks and in-lieu fee programs as compensatory mitigation. It is possible that any significant increase in new mitigation bank development under the rule would not occur until mitigation bankers see evidence that the Corps is allowing a broader set of permit recipients to use mitigation banks as compensatory mitigation. In that event, the Corps could experience a significant reduction in administrative burdens for the review, approval, monitoring and enforcement of permittee-responsible mitigation projects at the same time that it could experience a significant new burden for processing mitigation bank proposals. In the near term, these rule effects may largely balance, leaving overall Corps administrative burdens unchanged from current levels. In the longer term, however, the rule could decrease overall Corps administrative burdens to the extent that it results in a significant shift away from permittee-responsible mitigation in favor of the use of mitigation banks and in-lieu fee programs as compensatory mitigation.

10.6 Summary of Rule Effects on Social Costs

Ultimately, any change in social costs resulting from implementation of the final rule will depend on the extent to which the rule changes aggregate compensatory mitigation costs borne by permittees as well as Corps administrative burdens and associated costs. Since it is not possible to quantify possible rule-induced changes in these costs, a qualitative evaluation approach was used to describe potential incremental social costs of rule provisions, first individually and then collectively, that establish major new or revised requirements for compensatory mitigation.

The qualitative evaluation of rule effects on the two major variables that drive permittee compensatory mitigation costs—mitigation supply costs and permittee flexibility—provide only limited clues to possible rule effects on the development, use, and costs of different compensatory mitigation options. In the end, it is not possible to confidently predict even the direction of change in total permittee compensatory mitigation costs in the with-rule scenario. What can be concluded is that the added permittee flexibility introduced by the rule should ensure that aggregate permittee compensatory mitigation costs are no higher than necessary to fulfill compensatory mitigation requirements imposed by regulators.

The net effect of the final rule on Corps administrative burdens is also difficult to predict based on the descriptive evaluation presented here, since some rule provisions could increase administrative burdens while others could have the opposite effect. Rule provisions that could increase Corps burdens include those that establish time limits for processing proposed mitigation banks and in-lieu fee programs; rule provisions that could decrease Corps burdens include those that expand the allowable use of mitigation banks and in-lieu fee programs as compensatory mitigation. In the near term, rule effects that increase and decrease Corps burdens might cancel each other out, leaving overall Corps administrative burdens largely unchanged from current levels. But in the longer term, the rule could potentially decrease overall Corps administrative burdens to the extent that it results in a significant shift away from permittee-responsible mitigation in favor of the use of mitigation banks and in-lieu fee programs as compensatory mitigation. Such a shift could significantly reduce the level of Corps resources needed for the review and approval of permittees' compensatory mitigation proposals, and for the monitoring and enforcement of relatively fewer compensatory mitigation projects.

APPENDICES

Appendix A. 2005 Corps Survey of District Mitigation Practices

District Query to Characterize Current Mitigation Practices (April 28, 2005)

This questionnaire is intended to collect general information on current mitigation practices in each Corps District. The responses will be used to help finalize and evaluate the forthcoming proposed Department of the Army rulemaking on compensatory mitigation. The questionnaire has been designed so that it can be completed with minimal time and effort. Accordingly, please use best professional estimates (including ranges where you feel appropriate) in responding to questions for which hard data is not readily available.

The questionnaire seeks information on current mitigation practices. Accordingly, for those questions that do not ask about the number of something as of the current date (e.g., number of approved mitigation banks), please provide answers that correspond to the three-year time period 2002-2004. Do not provide multiple responses to any one question corresponding to each year during 2002-2004; rather, please provide one response for each question corresponding to the three year time period as a whole.

We ask that you electronically transmit your completed questionnaire to Steve Martin, CENAO-TS-REG. If any questions or uncertainty arise when filling out the questionnaire, you are welcome to contact Steve for assistance. Thank you.

A. Permitting and Compensatory Mitigation Requirements

1. Estimate the approximate percentage of all permits together (pursuant to CWA Section 404 and RHA Sections 9 & 10) in which some form of compensatory mitigation is required

General Permits	_____%
Individual Permits*	_____%

* Include both standard permits and letters of permission

B. Use of Different Mitigation Providers

1. Estimate the share of mitigation for all permits provided by:

Permit specific mitigation or DIY (Do-It-Yourself) mitigation	_____%
In-lieu fee or similar consolidated fee-based programs	_____%
Mitigation Banks	_____%

For the next 3 questions, answers can be provided as a single value or as an estimated range.

2. Estimate the share of total required mitigation fulfilled using Permit specific (DIY) mitigation
   For General Permits_____ Tidal _____ Non-Tidal wetlands _____Streams
   For Individual Permits____ Tidal _____ Non-Tidal wetlands _____Streams

3. Estimate the share of total required mitigation fulfilled using In-lieu Fee programs or similar consolidated cash contribution programs
   For General Permits_____ Tidal _____ Non-Tidal wetlands _____ Streams
   For Individual Permits_____ Tidal _____ Non-Tidal wetlands _____Streams

4. Estimate the share of total required mitigation fulfilled using mitigation banks
   For General Permits_____ Tidal _____ Non-Tidal wetlands _____Streams
   For Individual Permits_____ Tidal _____ Non-Tidal wetlands _____Streams

C. Establishment and Use of Federally-Approved Mitigation Banks

1. Has your District approved any mitigation banks? ____ Yes _____ No
   (If the answer is "No" please skip to part D below)

2. Indicate the number of approved mitigation banks
   Number of single user mitigation banks (e.g., DOT banks) _____
   Number of commercial (general use) mitigation banks _____

3. Estimate the total mitigation potentially available from these banks
   _____ Acres _____ Credits
   _____ Linear feet or _____ Square feet (streams - whichever is applicable)

4. Estimate the amount of mitigation currently available for debiting at these banks (e.g. as of April 1, 2005). If you can't answer this, please make sure to answer the next 2 questions (Questions 5 & 6).
   Wetlands _____ Acres _____ Credits
   Streams _____ Linear feet or _____ Square feet (whichever is applicable)

5. As of the current date, how many approved <u>commercial</u> banks have sold out total credit capacity (do not report on single user banks).

   _____

6. Indicate in one or more sentences your impressions about trends in the demand for commercial bank credits over the last 5 years. For example, does it appear that many commercial banks are having difficulty selling available credits?

7. Indicate the range of credit prices currently charged by commercial banks in your district, if known
   Wetlands _____ acre _____ Credit
   Streams _____linear ft/square ft _____Credit

8. Characterize the performance standards (success criteria) used for approved mitigation banks (check all that apply).

_____ 87 Manual Wetland Criteria
_____ Functional or Ecological Performance*
_____ Other (describe)

* For example, flood storage and habitat functions, woody stem counts, species diversity, etc.

9. Indicate the number of currently proposed mitigation banks that are likely to be eventually approved by the District

_____ Single User
_____ Commercial

10. Indicate in one or more sentences trends in bank proposals over the last 5 years for single user and commercial banks (report separately for each bank type). For example, have commercial bank proposals been declining, increasing (indicate by how much if possible), or holding steady in recent years?

D. Establishment and Use of Federally-Approved In-Lieu Fee & Similar Consolidated Cash Contribution Programs

1. Has your District approved any In-Lieu Fee Programs or similar Consolidated Cash Contribution programs for mitigation purposes? ____ Yes _____ No
   (If the answer is "No" please skip to part E below)

2. Number of In-Lieu Fee or similar programs in District _____ Operational
   _____ Discontinued

3. Estimate the amount of mitigation acreage actually put in the ground to date by In-Lieu Fee or similar programs (including preservation, restoration, enhancement, or creation activities)

_____ Acres
_____ linear feet (streams)
_____ square ft (streams)

4. Indicate the number of currently proposed In-Lieu Fee programs

_____

5. Characterize the performance standards (success criteria) used for In-Lieu Fee Programs (check all that apply)

_____ 87 Manual Wetland Criteria
_____ Functional or Ecological Performance*
_____ Other (describe)

* For example, flood storage and habitat functions, woody stem counts, species diversity, etc.

6. Answer one of the following 2 questions, a. or b. (whichever is most applicable):

a. Indicate the average fee or range of fee rates charged by ILF programs or payments to consolidated cash contribution programs required per unit of impact (use and indicate whatever unit measure makes sense, e.g., acre, linear foot, square foot)

Wetlands ____ Acre _____ Credit
Streams ____ linear ft _____ square foot ____ Credit

b. Estimate the amount of funds received by ILFs in a given year and the amount of impacts associated with those funds (use and indicate whatever unit measure makes sense, e.g., acre, linear foot, square foot)

$_____for Wetland impacts Amount of impacts____ Acre _____ Credit
$_____Stream impacts Amount of impacts____ linear ft _____ square foot ____ Credit

E. Use of Permit Specific (DIY) Mitigation

For the next 2 questions, you may use the following ranges: A = 0-10%, B = 11-25%, C = 26-50%, D = 51-75%, E = > 75%, or provide any range you think is appropriate (e.g., if you are confident in providing a narrower range, please do so. Alternatively, if you can only confidently provide a wider range, please do so).

1. For those permits in which permit-specific mitigation was included in permit conditions, what share of these permits stipulated that mitigation was to be conducted

_____ Entirely On-site,
_____ Entirely Off-site,
_____ Combination of on-site & off-site.

2. Characterize the performance standards (success criteria) used for permit-specific (DIY) mitigation (check all that apply)

_____ 87 Manual Wetland Criteria
_____ Functional or Ecological Performance*
_____ Other (describe)

* For example, flood storage and habitat functions, woody stem counts, species diversity, etc.

F. Compliance and Success of Required Mitigation

The questions in this section are meant to gauge the extent to which each District believes mitigation is in compliance with District requirements and is providing ecologically successful aquatic resources

1. Estimate the share of approved commercial mitigation banks that:

   Comply with permits, mitigation banking instrument and site plans _____%

   Judged to be ecologically successful aquatic resources (i.e., achieved or trending towards full functioning) _____%

2. Estimate the share of In-Lieu Fee Projects that:

   Comply with permits, in-lieu fee agreement, and site plans _____%

   Judged to be ecologically successful aquatic resources (i.e., achieved or trending towards full functioning) _____%

3. Estimate the average lag time between permit issuance and completion of In-Lieu Fee or consolidated cash contribution mitigation for a typical permit_____

4. Estimate share of permit specific (DIY) mitigation that:

   Comply with permits and site plans _____%

   Judged to be ecologically successful aquatic resources (i.e., achieved or trending towards full functioning) _____%

Appendix B. Compliance with Applicable Environmental Laws and Executive Orders

Section 176 (c) of the Clean Air Act General Conformity Rule Review

This rule has been analyzed for conformity applicability pursuant to regulations implementing Section 176(c) of the Clean Air Act. It has been determined that the promulgation of this rule will not result in activities that will exceed de minimis levels of direct emissions of a criteria pollutant or its precursors and is exempted by 40 CFR 93.153. Any later indirect emissions are generally not within the Corps continuing program responsibility and generally cannot be practicably controlled by the Corps. For these reasons, a conformity determination is not required for this proposed rule.

Paperwork Reduction Act

This action will impose a new information collection burden under the provisions of the Paperwork Reduction Act (44 U.S.C. 3501 et seq.). Applicants for Clean Water Act section 404 permits will be required, under 33 CFR 325.1(d)(7) of the final rule, to submit a statement explaining how impacts associated with the proposed activity are to be avoided and minimized. This statement must also describe any proposed compensatory mitigation for impacts to waters of the United States, or include an explanation of why compensatory mitigation should not be required. In addition, in-lieu fee program sponsors must provide additional information as part of their application for an instrument, beyond what was previously required. Specifically, they must include a compensation planning framework, and information describing their program account. Both in-lieu fee programs and mitigation banks are also subject to new annual reporting requirements, including a ledger report and, at the discretion of the district engineer, reporting on financial assurances and long-term management. Some other reporting requirements, such as monitoring reports and most of the information required to apply for an instrument, are substantially the same as existing requirements.

An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid Office of Management and Budget (OMB) control number. For the Corps Regulatory Program under section 10 of the Rivers and Harbors Act of 1899, section 404 of the Clean Water Act, and section 103 of the Marine Protection, Research and Sanctuaries Act of 1972, the current OMB approval number for information collection requirements is maintained by the Corps of Engineers (OMB approval number 0710-0003, which expires on April 30, 2008). As a result of the new information collection requirement in the final rule, we will modify our standard permit application form in accordance with the requirements of the Paperwork Reduction Act. The Corps is currently preparing a revised ICR that includes the new requirements in this final rule, along with an estimate of their associated burden. The new burden associated with this rule includes the estimated number of hours needed to: (1) prepare a compensation planning framework for a proposed in-lieu fee program, (2) provide a description of the in-lieu fee program account, (3) prepare annual reports required for mitigation banks and in-lieu fee programs, such as financial assurance and

long-term management funding reports, and (4) provide annual monitoring reports for mitigation banks and in-lieu fee projects.

We estimate that it will take approximately 80 hours for a prospective in-lieu fee sponsor to develop a compensation planning framework. A description of a proposed in-lieu fee program account will take approximately 12 hours to complete. We estimate that, over the next three years, there will be eight existing in-lieu fee programs per year that will convert to the requirements of this rule and two new in-lieu fee programs proposed per year, resulting in an annual burden of 920 hours to produce those documents. We estimate that an average of 8 hours will be needed to produce an annual report for a mitigation bank or in-lieu fee program. To produce a monitoring report for a mitigation bank or in-lieu fee project, we estimate that 80 hours will be needed. We also estimate that there will be 391 existing mitigation banks, 25 new mitigation banks, 58 existing in-lieu fee programs, and 2 new in-lieu fee programs that would be required to produce annual reports and monitoring reports each year. Based on an estimate of the number of existing and new mitigation banks and in-lieu fee programs, we estimate that the annual burden for producing these annual reports and monitoring reports will be 42,000 hours. We are in the process of preparing a new information collection request that will include the information collection burden associated with the approval and oversight of mitigation banks and in-lieu fee programs. These requirements to do not become effective until approved by OMB.

Executive Order 12866

Under Executive Order 12866 (58 FR 51735, October 4, 1993), we must determine whether the regulatory action is "significant" and therefore subject to review by OMB and the requirements of the Executive Order. The Executive Order defines "significant regulatory action" as one that is likely to result in a rule that may:

(1) Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or state, local, or tribal governments or communities;

(2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or

(4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

Pursuant to the terms of Executive Order 12866, we have determined that the final rule is a "significant regulatory action" and the draft was submitted to OMB for review.

The regulatory analysis required by E.O. 12866 has been prepared for this final rule. The regulatory analysis is available on the internet at: http://www.usace.army.mil/inet/functions/cw/cecwo/reg/citizen.htm . It is also available by contacting Headquarters, U.S. Army Corps of Engineers, Operations and Regulatory Community of Practice, 441 G Street, NW, Washington, DC 20314-1000.

Executive Order 13132

Executive Order 13132, entitled "Federalism" (64 FR 43255, August 10, 1999), requires the Corps to develop an accountable process to ensure "meaningful and timely input by state and local officials in the development of regulatory policies that have Federalism implications." The final rule does not have Federalism implications. We do not believe that the final rule will have substantial direct effects on the states, on the relationship between the federal government and the states, or on the distribution of power and responsibilities among the various levels of government. The final rule does not impose new substantive requirements. In addition, the final rule will not impose any additional substantive obligations on state or local governments. State and local governments that administer in-lieu fee programs to provide compensatory mitigation for impacts to wetlands and other aquatic resources can modify their in-lieu fee programs to conform with the requirements of this final rule. Therefore, Executive Order 13132 does not apply to this final rule. However, in the spirit of Executive Order 13132, we specifically requested comment from state and local officials on the proposed rule, and fully considered those comments when preparing this final rule.

Regulatory Flexibility Act, as Amended by the Small Business Regulatory Enforcement Fairness Act of 1996, 5 U.S.C. 601 et seq.

The Regulatory Flexibility Act generally requires an agency to prepare a regulatory flexibility analysis of any rule subject to notice-and-comment rulemaking requirements under the Administrative Procedure Act or any other statute unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small organizations and small governmental jurisdictions.

For purposes of assessing the impacts of this final rule on small entities, a small entity is defined as: (1) A small business based on Small Business Administration size standards; (2) a small governmental jurisdiction that is a government of a city, county, town, school district, or special district with a population of less than 50,000; or (3) a small organization that is any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.

The statutory basis for the final rule is section 314 of the National Defense Authorization Act for Fiscal Year 2004 (P.L. 108-136), which is discussed above. After considering the economic impacts of the final rule on small entities, we certify that this action will not have a significant impact on a substantial number of small entities. Small entities subject to the final rule include those small entities that need to obtain DA permits pursuant to section 404 of the Clean Water Act and section 10 of the Rivers and Harbors Act of 1899.

This rulemaking will not significantly change compensatory mitigation requirements, or change the number of permitted activities that require compensatory mitigation. This rule further clarifies mitigation requirements established by Corps and EPA, and is generally consistent with current agency practices. Some provisions of the rule may result in increases in compliance costs, other provisions may result in decreases in compliance costs, but most of the provisions in the rule are expected to result in little or no changes in compliance costs. To the extent that it promotes mitigation banking and in-lieu fee programs, the rule may lower compensatory mitigation costs for small projects

by making credits more widely available. For a more detailed analysis of potential economic impacts of this rule, please see the regulatory analysis in the Environmental Assessment prepared for the final rule.

Unfunded Mandates Reform Act

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Public Law 104-4, establishes requirements for federal agencies to assess the effects of their regulatory actions on state, local, and tribal governments and the private sector. Under section 202 of the UMRA, the agencies generally must prepare a written statement, including a cost-benefit analysis, for proposed and final rules with "federal mandates" that may result in expenditures to state, local, and tribal governments, in the aggregate, or to the private sector, of $100 million or more in any one year. Before promulgating a rule for which a written statement is needed, section 205 of the UMRA generally requires the agencies to identify and consider a reasonable number of regulatory alternatives and adopt the least costly, most cost-effective, or least burdensome alternative that achieves the objectives of the rule. The provisions of section 205 do not apply when they are inconsistent with applicable law. Moreover, section 205 allows an agency to adopt an alternative other than the least costly, most cost-effective, or least burdensome alternative if the agency publishes with the final rule an explanation why that alternative was not adopted. Before an agency establishes any regulatory requirements that may significantly or uniquely affect small governments, including tribal governments, it must have developed, under section 203 of the UMRA, a small government agency plan. The plan must provide for notifying potentially affected small governments, enabling officials of affected small governments to have meaningful and timely input in the development of regulatory proposals with significant federal intergovernmental mandates, and informing, educating, and advising small governments on compliance with the regulatory requirements.

The final rule is generally consistent with current agency practice and we have therefore determined that it does not contain a federal mandate that may result in expenditures of $100 million or more for state, local, and tribal governments, in the aggregate, or the private sector in any one year. Therefore, the final rule is not subject to the requirements of sections 202 and 205 of the UMRA. For the same reasons, we have determined that the final rule contains no regulatory requirements that might significantly or uniquely affect small governments. Therefore, the final rule is not subject to the requirements of section 203 of UMRA.

Executive Order 13045

Executive Order 13045, "Protection of Children from Environmental Health Risks and Safety Risks" (62 FR 19885, April 23, 1997), applies to any rule that: (1) is determined to be "economically significant" as defined under Executive Order 12866, and (2) concerns an environmental health or safety risk that we have reason to believe may have a disproportionate effect on children. If the regulatory action meets both criteria, we must evaluate the environmental health or safety effects of the proposed rule on children, and explain why the regulation is preferable to other potentially effective and reasonably feasible alternatives.

The final rule is not subject to this Executive Order because it is not economically significant as defined in Executive Order 12866. In addition, it does not concern an environmental or safety risk that we have reason to believe may have a disproportionate effect on children.

Executive Order 13175

Executive Order 13175, entitled "Consultation and Coordination with Indian Tribal Governments" (65 FR 67249, November 6, 2000), requires agencies to develop an accountable process to ensure "meaningful and timely input by tribal officials in the development of regulatory policies that have tribal implications." The phrase "policies that have tribal implications" is defined in the Executive Order to include regulations that have "substantial direct effects on one or more Indian tribes, on the relationship between the federal government and the tribes, or on the distribution of power and responsibilities between the Federal government and Indian tribes."

The final rule does not have tribal implications. It is generally consistent with current agency practice and will not have substantial direct effects on tribal governments, on the relationship between the federal government and the tribes, or on the distribution of power and responsibilities between the federal government and tribes. Therefore, Executive Order 13175 does not apply to this final rule. However, in the spirit of Executive Order 13175, we specifically requested comment from tribal officials on the proposed rule, and have fully considered those comments when preparing the final rule.

Environmental Documentation

The Corps has prepared a final Environmental Assessment (EA) and a Finding of No Significant Impact (FONSI) for the final rule. The final EA and the FONSI are available at: http://www.usace.army.mil/inet/functions/cw/cecwo/reg/citizen.htm . It is also available by contacting Headquarters, U.S. Army Corps of Engineers, Operations and Regulatory Community of Practice, 441 G Street, NW, Washington, DC 20314-1000.

Congressional Review Act

The Congressional Review Act, 5 U.S.C. 801 et seq., as added by the Small Business Regulatory Enforcement Fairness Act of 1996, generally provides that before a rule may take effect, the agency promulgating the rule must submit a rule report, which includes a copy of the rule, to each House of the Congress and to the Comptroller General of the United States. We will submit a report containing this rule and other required information to the U.S. Senate, the U.S. House of Representatives, and the Comptroller General of the United States.

Executive Order 12898

Executive Order 12898 requires that, to the greatest extent practicable and permitted by law, each federal agency must make achieving environmental justice part of its mission. Executive Order 12898 provides that each federal agency conduct its programs, policies, and activities that substantially affect human health or the environment in a manner that ensures that such programs, policies, and activities do not have the effect of excluding persons (including populations) from participation in, denying persons (including populations) the benefits of, or subjecting persons (including

populations) to discrimination under such programs, policies, and activities because of their race, color, or national origin.

The final rule is not expected to negatively impact any community, and therefore is not expected to cause any disproportionately high and adverse impacts to minority or low-income communities.

Executive Order 13211

The final rule is not a "significant energy action" as defined in Executive Order 13211, "Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use" (66 FR 28355, May 22, 2001) because it is not likely to have a significant adverse effect on the supply, distribution, or use of energy.

National Technology Transfer and Advancement Act

Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (NTTAA), Public Law No. 104-113, section 12(d), (15 U.S.C. 272 note), directs us to use voluntary consensus standards in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures, business practices) that are developed or adopted by voluntary consensus standards bodies. The NTTAA directs us to provide Congress, through the Office of Management and Budget (OMB), explanations when we decide not to use available and applicable voluntary consensus standards.

This action does not require the use of any particular technical standards. To the extent that functional and condition assessment methods are used to assess impacts to aquatic resources and determine appropriate compensation, district engineers are encouraged to use voluntary consensus methods where available.