DRAFT 2013 REGIONAL COMPENSATORY MITIGATION AND MONITORING GUIDELINES

FOR SOUTH PACIFIC DIVISION USACE

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1. INTRODUCTION AND PURPOSE

These Regional Compensatory Mitigation and Monitoring Guidelines (Guidelines) provide guidance for the regulated public in selecting appropriate compensatory mitigation sites and in preparing mitigation plans to compensate for unavoidable impacts to waters of the United States for authorized projects. The Guidelines are the product of a regional coordination effort by the South Pacific Division (SPD), including representatives from SPD and its four Corps operating districts (San Francisco, Sacramento, Albuquerque, and Los Angeles). The boundaries for the SPD Regulatory Program within the four districts encompass the states of Arizona, California, Nevada, Utah, New Mexico, as well as parts of Colorado and Texas.

In April 2008, the Corps of Engineers, together with the Environmental Protection Agency (EPA), issued new national regulations ("Mitigation Rule") governing compensatory mitigation for activities authorized by permits issued by the Department of the Army under Title 33 Code of Federal Regulations (C.F.R.) parts 325 and 332 (EPA 40 C.F.R. part 230). These Regional Compensatory Mitigation and Monitoring Guidelines are intended to supplement the national Mitigation Rule and, to that purpose, are organized similarly to the rule (33 C.F.R. § 332.1 through 332.8). The Guidelines are also intended to standardize compensatory mitigation procedures throughout the SPD region. Finally, this information is intended to assist the regulated public in preparing mitigation plans and in implementing successful compensatory mitigation projects using a watershed-based approach. Unless otherwise noted, each part of the SPD Regional Compensatory Mitigation and Monitoring Guidelines applies to mitigation banks, in-lieu fee programs, and permittee-responsible mitigation. This guidance is not intended for post-construction monitoring of permitted activities. The monitoring component is only for evaluating the effectiveness of compensatory mitigation. In the future, additional habitat-specific guidelines (for example, the pending Vernal Pool Mitigation and Monitoring Guidelines and the NOAA National Marine Fisheries Service California Eelgrass Mitigation Policy) may be referenced by or attached to these guidelines.

Note regarding other agencies' review of compensatory mitigation proposals: While the intent of these guidelines is to focus on requirements of the Corps of Engineers SPD Regulatory Program, the Corps of Engineers recognizes mitigation plans and related documents are generally subject to multiagency review.

2. DEFINITIONS

Advance credits: Any credits for an approved in-lieu fee program that are available for sale prior to being fulfilled in accordance with an approved Mitigation Plan.

Buffer: An upland, wetland, and/or riparian area that protects and/or enhances aquatic resource functions associated with wetlands, rivers, streams, lakes, marine and estuarine systems from disturbances associated with adjacent land uses.

Compensatory mitigation: The restoration (re-establishment or rehabilitation), establishment (creation), enhancement and/or in certain circumstances the preservation of aquatic resources for the purposes of offsetting unavoidable authorized adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

Compensatory mitigation project: Compensatory mitigation implemented by the permittee as a requirement of a Department of the Army permit (i.e., permittee-responsible mitigation), or by a mitigation bank or an in-lieu fee program.

Condition: The relative ability of an aquatic resource to support and maintain a community of organisms having a species composition, diversity, and functional organization comparable to reference aquatic resources in the region.

Credit: A unit of measure (e.g., a functional or areal measure or other suitable metric) representing the accrual or attainment of aquatic functions at a mitigation bank or in-lieu fee program project site. The measure of aquatic functions is based on the resources restored, established, enhanced, or preserved.

Credit release: A determination made by the Corps to make specified mitigation bank or in-lieu fee program credits available for purchase, pursuant to an approved mitigation bank or in-lieu fee program instrument.

Ecoregion: Regions with similar soils, geology, vegetation, land use, physiography, and climate. An ecoregion represents a spatial framework for ecosystem assessment, research, inventory, monitoring, and management. Ecoregions delimit large areas within which local ecosystems reoccur more or less throughout the region in a predictable pattern. Ecoregions should be thought of as multi-purpose regions designed to show areas within which the aggregate of all terrestrial and aquatic ecosystem components is different from or less variant than that in other areas.

Enhancement: Manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area.

Establishment (creation): Manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area and functions.

Functions: The physical, chemical, and biological processes that occur in ecosystems.

Functional/condition assessment method: Any approved, scientifically based method to evaluate current functions of an aquatic resource. The aquatic resource is compared to similar aquatic resources

(reference resources) that are relatively unaltered. The approach is based on combining variables that are typically structural measures or indicators that are associated with one or more ecosystem functions. Functions normally fall into one of three major categories: (1) hydrologic (e.g., storage of surface water), (2) biogeochemical (e.g., removal or transformation of elements and compounds), and (3) habitat (e.g., maintenance of characteristic plant or animal communities). Condition assessments typically combine functions, and specific functions are not assessed, whereas most functional assessments allow users to score each function.

Impact: An adverse effect.

In-kind: A resource of a similar structural and functional type to the impacted resource.

In-lieu fee program: A program involving the restoration, establishment, enhancement, and/or preservation of aquatic resources through funds paid to a governmental or non-profit natural resources management entity to satisfy compensatory mitigation requirements for DA permits. Similar to a mitigation bank, an in-lieu fee program sells compensatory mitigation credits to permittees whose obligation to provide compensatory mitigation is then transferred to the in-lieu program sponsor. However, the rules governing the operation and use of in-lieu fee programs are somewhat different from the rules governing operation and use of mitigation banks. The operation and use of an in-lieu fee program are governed by an in-lieu fee program instrument.

In-lieu fee project: Compensatory mitigation project implemented by a program sponsor under an approved in-lieu fee program. . An in-lieu fee project produces released credits that fulfill the obligations incurred by the sponsor through the sale or transfer of advance credits.

Instrument: The document that formally establishes a mitigation bank or in-lieu fee project and stipulates the terms and conditions of the construction and habitat restoration activities (in the general sense) required to be conducted on the mitigation bank or in lieu fee project site(s) to establish credits. Each approved mitigation plan will be bound by the terms and conditions of its instrument by reference.

Mitigation bank: Compensatory mitigation project implemented by a bank sponsor under an approved mitigation bank instrument. An mitigation bank project produces released credits that fulfill the obligations incurred by the sponsor through the sale or transfer of credits.

Mitigation plan: A plan describing in detail the necessary steps and requirements to construct, maintain, monitor, and bring to completion (i.e. meet performance standards) a compensatory mitigation project.

Non-aquatic mitigation: Refers to areas sometimes included in mitigation plans as a result of state or federal wildlife protection requirements (e.g., Endangered Species Act). In some cases, non-aquatic mitigation is considered compensatory mitigation for purposes of DA permits, generally when providing buffering capacity to adjacent aquatic resources. In other cases, non-aquatic mitigation is included within a mitigation plan to address the needs of a separate resource agency, but is not considered compensatory mitigation for purposes of DA permits (for example, upland mitigation for impacts to federally-listed threatened or endangered species).

Out-of-kind: A resource of a different structural and functional type from the impacted resource.

Performance standards: Observable or measurable physical (including hydrological), chemical and/or biological attributes, that are used to determine if a compensatory mitigation project meets its objectives.

Permittee-responsible mitigation: An aquatic resource restoration, establishment, enhancement, and/or preservation activity undertaken by the permittee (or an authorized agent or contractor) to provide compensatory mitigation for which the permittee retains full responsibility.

Preservation: Removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.

Program account: An account established by an in-lieu fee program sponsor at an institution that is a member of the Federal Deposit Insurance Corporation and that is used by the program sponsor to retain funds for the purpose of providing compensatory mitigation for Department of the Army permits.

Re-establishment: Manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions.

Reference site: An aquatic resource site within the same watershed, a site upstream or downstream along the same river or stream reach or within the same wetland complex, or multiple, within-watershed reference sites, possibly as part of a network of reference aquatic resources. A reference site should be similar to the targeted compensatory mitigation site condition and generally represents least-disturbed conditions.

Reference standard: The reference standard represents the aquatic resource condition in a least-disturbed setting within a watershed area.

Rehabilitation: Manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing the natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.

Restoration: Manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: reestablishment and rehabilitation.

RIBITS: The national Regulatory In-Lieu Fee and Bank Information Tracking System.

Service Area: The geographic area(s) within which permitted impacts to Waters of the United States may be compensated through the purchase of credits from an approved mitigation bank or in-lieu fee program, as designated by the instrument for the specific bank or in-lieu fee program.

Special aquatic site: Those sites identified in subpart E of the 404(b)(1) guidelines (40 CFR Part 230). Special aquatic sites include sanctuaries and refuges, wetlands, mud flats, vegetated shallows, coral reefs, and riffle and pool complexes. When proposed for impact under the Clean Water Act, special aquatic sites trigger another level of alternatives analysis under the 404(b)(1) Guidelines.

Standard permit: A standard, individual permit issued under the authority of Section 404 of the Clean Water Act and/or Sections 9 or 10 of the Rivers and Harbors Act of 1899.

Temporal loss: The time lag between the loss of aquatic resource functions caused by the permitted impacts and the replacement of aquatic resource functions at the compensatory mitigation site. Higher compensation ratios may be required to compensate for temporal loss. When the compensatory mitigation project is initiated prior to, or concurrent with, the permitted impacts, the district engineer may determine that compensation for temporal loss is not necessary, unless the resource has a long development time.

Temporary impacts: Minor impacts to aquatic resources that occur for a short-duration during authorized activities wherein, following completion of the permitted work, the affected aquatic resources are completely restored to pre-construction elevations and contours, conditions and functionality.

Umbrella mitigation banking instrument: A single mitigation banking instrument may provide for future authorization of additional mitigation bank sites. As additional sites are selected, they must be included in the mitigation banking instrument as modifications, using the procedures in paragraph (g)(1) of this section. Credit withdrawal from the additional bank sites shall be consistent with paragraph (m) of this section.

Watershed: A land area that drains to a common waterway, such as a stream, lake, estuary, wetland, or ultimately the ocean.

Watershed plan: A plan developed by federal, tribal, state, and/or local government agencies or appropriate non-governmental organizations, in consultation with relevant stakeholders, for the specific goal of aquatic resource restoration, establishment, enhancement, and preservation. A watershed plan addresses aquatic resource conditions in the watershed, multiple stakeholder interests, and land uses. Watershed plans may also identify priority sites for aquatic resource restoration and protection. Examples of watershed plans include special area management plans, advance identification programs, and wetland management plans. Habitat conservation plans and, in California, natural community conservation plans, may provide additional sources of watershed planning information.

3. GENERAL COMPENSATORY MITIGATION REQUIREMENTS

3.1. Preference hierarchy: In general, and as described in greater detail in the Mitigation Rule (33 C.F.R. § 332.3(b) and (c)), the type and location options for compensatory mitigation should comply with the hierarchy established by the Mitigation Rule (in descending order):

1) mitigation banks (if appropriate credits are available)
2) in-lieu fee programs (if appropriate credits are available)
3) permittee-responsible mitigation in consideration of a watershed approach (described below)

Divergence from the hierarchy or from the use of a watershed approach must be justified and explained in the decision document for the permit action. The written justification should include a description of the availability of banks, in-lieu fee programs and watershed plans for the watershed in which impacts are proposed. The justification should also explain the environmental preferability of the selected compensatory mitigation option. Factors considered when making a preference decision include:

1) Comparability of type(s) of aquatic resource at impact and mitigation sites;
2) Capacity of a mitigation site to offset loss or degradation of an aquatic resource feature or attribute that is distinctive to an impact site (for example, support of special status species, connectivity with other aquatic resources in proximity to the impact site).

3.2. Watershed approach: The compensatory mitigation rule (33 C.F.R. part 332) requires the Corps of Engineers to undertake a watershed approach for compensatory mitigation decisions to the extent appropriate and practicable (33 C.F.R. § 332.3(c)(1)). The ultimate goal of the watershed approach is "to maintain and improve the quality and quantity of aquatic resources within watersheds through strategic selection of compensatory mitigation sites." It is expected that the use of a watershed approach will result in ecologically successful compensatory mitigation that more effectively offsets losses of aquatic resource functions and services. In undertaking the watershed approach, the Corps will consider watershed needs and how the location of compensatory mitigation sites would address those needs. The type of aquatic resource proposed for mitigation should be ecologically suitable to the location and complement the diversity (including spatial distribution) of aquatic resources in a project watershed. These considerations will include evaluation of the appropriate size watershed (e.g. Hydrologic Unit Code (HUC) 8 versus HUC 10 or 12 subdivisions, or the use of topographic watersheds) depending on the project size, type, and level of project impacts.

3.2.1 Watershed plans: According to the Mitigation Rule, watershed plans should be used when available and appropriate.

33 CFR 332.4(c):

"Where a watershed plan is available, the district engineer will determine whether the plan is appropriate for use in the watershed approach for compensatory mitigation. In cases where the district engineer determines that an appropriate watershed plan is available, the watershed approach should be based on that plan. Where no such plan is available, the watershed approach should be based on information provided by the project sponsor or available from other sources."

3.2.2 Considerations in using watershed approach: The Mitigation Rule describes the elements of a watershed approach. Section 332.3(c)(2) outlines major considerations of the watershed approach. A watershed approach to compensatory mitigation considers the importance of landscape position and resource type of compensatory mitigation projects for the sustainability of aquatic resource functions within the watershed. This approach considers important species, habitat loss or trends of aquatic resources, sources of impairment, future development trends, and other non-regulatory programs including stormwater management programs and habitat conservation plans. The watershed approach also considers terrestrial resources, as well as how such resources contribute to aquatic resource functions. The watershed approach considers the suite of functions provided by the affected aquatic resources allowing for strategic replacement of functions. In some cases, it may be appropriate to locate compensatory mitigation for habitat loss away from the impact site (off-site) while compensating for impacts to water quality and water storage functions at the impact site (on-site). Section 332.3(c)(3)(iii) states the level of information and analysis needed to support a watershed approach must be commensurate with the scope and scale of the proposed impacts requiring a Department of the Army permit, as well as the functions lost as a result of those impacts.

3.2.3 Watershed condition and needs: The Mitigation Rule (Section 332.3(c)(3)) emphasizes decisions based on the watershed approach and should consider watershed conditions and needs. The latter would focus on potential sites for aquatic resource restoration and priorities for aquatic resource restoration and preservation. In making such determinations, the watershed approach should consider trends in habitat loss, cumulative impacts from past activities, current development trends, the needs of sensitive species, site conditions that favor or hinder compensatory mitigation, and chronic aquatic resource problems such as flooding or poor water quality. Resources that may be useful for implementing

the watershed approach include National Wetland Inventory maps, U.S. Geologic Survey topographic and hydrologic maps, species maps for threatened and endangered species, land use maps, EPA 303(d) listings, aerial photographs, local biological surveys, and other studies. Other studies may include watershed plans developed under CWA Section 319 grants, which typically identify impairments, their sources, and may include potential projects/locations for aquatic resource restoration or preservation activities.

33 CFR 332.3(c)(3)

"Compensatory mitigation requirements determined through the watershed approach should not focus exclusively on specific functions (e.g., water quality or habitat for certain species), but should provide, where practicable, the suite of functions typically provided by the affected aquatic resource." "A watershed approach may include on-site compensatory mitigation, off-site compensatory mitigation (including mitigation banks or in-lieu fee programs), or a combination of on-site and off-site compensatory mitigation."

3.2.4 Role of Landscape and Consideration of Cumulative Impacts: Implementing a watershed approach for decisions on aquatic resource compensatory mitigation involves understanding the role of landscape condition and processes in determining aquatic resource condition. Aquatic resource condition is partially dependent on on-site characteristics such as vegetation, soils, and the degree of on-site disturbances. In addition, landscape- or watershed-scale characteristics such as land use, presence or absence of buffers, and proximity to human stressors (e.g., roads, urban areas, agricultural lands) have an important influence on aquatic resource condition and aquatic resource functions. These characteristics have a cumulative impact on the overall abundance, diversity and condition of aquatic resources in a project watershed. At the watershed scale, mitigation decisions should reflect the need to sustain and improve aquatic resource abundance, condition and diversity over time.

In some cases, cumulative impacts should be considered when determining if compensatory mitigation should be required. The extent of cumulative impacts should be documented using available information, such as analyses or data associated with a Special Area Management Plan (SAMP), Watershed Management Plan, land use/land cover scenario assessment, hydrologic modeling, etc. The information used should be fully cited in the mitigation plan. The assessment should focus on the proposed action's direct and indirect impacts (i.e., incremental impact of the proposed activity) in the context of the cumulative effects caused by past, present, and reasonably foreseeable actions, to reduce the proposed activity's contribution to cumulative effects in the region.

For example, studies about fish communities suggest that much of the effect to aquatic resource condition originates from the overall watershed (Roth et al., 1996; Snyder et al., 2003; Roy et al., 2007). For riparian bird communities, there have been similar observations on the importance of larger landscape level processes (Rottenborn, 1999; Saab, 1999; Rodewald and Bakermans, 2006). Aquatic resources within watersheds with much degradation or imperviousness may not be the best candidates for restoration given the intense hydrological modifications (Claytor 1995; Schueler 1995; Booth et al. 2004). In these landscape settings, site-specific actions taken in these areas may not result in any meaningful functional lift because any restoration action at the site level scale may be negated by landscape stressors. Under such circumstances, restoration of key wildlife movement linkages (corridors) or restoration of sites outside of the smaller watershed (and in a larger watershed) may be more appropriate.

At the other end of the spectrum, aquatic resources within less disturbed watersheds would be expected to exhibit higher functional capacity. Consequently, preservation and long-term management may be the

only aquatic resource management actions needed to conserve the aquatic resource functions in those watersheds. At such locations, rehabilitation, re-establishment, or enhancement at specific sites may not be warranted; preservation of high-value aquatic resources may be sufficient to address both direct and indirect impacts of a proposed project, although it will not result in a net-gain of aquatic resource function or area.

The aquatic resources with the best potential for successful rehabilitation, re-establishment, or enhancement are those where the cause(s) of degradation are easily reversed. These aquatic resources are degraded enough to warrant such work but not so degraded where the likelihood of compensatory mitigation success may be compromised. In directing compensatory mitigation to such sites, appropriate buffer and stormwater management plans would be pivotal to reaching success and sustainability, while minimizing the need for active management to sustain aquatic resource functions.

In addition, the role of landscape should also play a role in marine ecosystems. Although technically not 'landscape', the spatial context of marine habitats may affect aquatic resource functions.

3.2.5 Functions: According to the Mitigation Rule, (33 C.F.R. 332.3(c)(2), consideration of aquatic resource function objectives is important given that different landscape positions and landscape stressors influence fulfillment of hydrology, water quality, and habitat functions in the context of compensatory mitigation. In planning compensatory mitigation from a watershed perspective, consider that different compensatory mitigation sites can be used to address different functions. Under this framework, habitat functions can be sited in larger tracts of land outside of urban or suburban areas (although in some cases habitat linkages/corridors through developed areas may be appropriate), and water quality and hydrology functions can be sited near the authorized activity to minimize changes in watershed hydrology and maintain water quality (Zedler 2003).

3.2.6 Conclusions:

(1) If a watershed plan exists and has been determined to be appropriate by the Corps because it provides information that can be used to select compensatory mitigation sites that will be ecologically successful and sustainable, it should be used in determining the type and location of compensatory mitigation.

(2) If an appropriate watershed plan is not available, compensatory mitigation proposals should be selected using the watershed approach and any available information.

(3) Compensatory mitigation may be located on-site, off-site, or both.

(4) On a case-specific basis, different functions may be compensated for at a single or multiple locations, provided the overall plan compensates for the full suite of impacted functions.

3.3 Marine-related compensatory mitigation: Pursuant to 33 CFR §332.3(c)(2)(v), a watershed approach is not appropriate in areas where watershed boundaries do not exist, such as marine areas (however, embayments and estuaries are cases where a watershed approach may be more applicable). In such cases, an appropriate spatial scale should be used to replace lost functions and services within the same ecological system (e.g., reef complex, littoral drift cell).

As elsewhere, the marine environment along the South Pacific Division's coastline supports a variety of aquatic habitat types. Common marine habitat types include salt marsh, brackish marsh (where marine and freshwater mix), beach, mud flat, salt flat, soft-bottom habitat, hard bottom or rocky intertidal habitat, reef, aquatic submerged vegetation (SAV), and open water. Because of their recognized value and sensitivity to anthropogenic activities, the various marine habitats and associated fishery resources are

protected by the National Marine Fisheries Service as Essential Fish Habitat (EFH), pursuant to the Magnuson-Stevens Fishery Conservation and Management Act of 1996, as amended. As defined in the Act, EFH includes those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity.

In addition to representing a vast assemblage of fishery resources, these marine habitats provide a broad suite of physical, biogeochemical, and biological functions and values to the California coastal environment. As such, the South Pacific Division usually requires mitigation for any proposed marine habitat loss. Consistent with Corps policy, applicants for Corps permits have to demonstrate their efforts to avoid impacts, minimize unavoidable impacts through design changes or timing, and provide compensatory mitigation for remaining impacts.

What follows is a discussion of marine SAV, specifically seagrasses and kelp, and mud flats, as these are considered special aquatic sites (40 C.F.R. § 230 Section 404(b)(1) Guidelines). This status provides special consideration when evaluating permits for dredged or fill material pursuant to Section 404 of the Clean Water Act. This is not to suggest that compensatory mitigation would not be required for impacts proposed to other marine habitats in the South Pacific Division. In fact, compensatory mitigation is routinely required for marine habitat losses not involving SAV or mud flat even in heavily industrialized and modified areas of South Pacific Division, such as the ports. In some of these situations, multi-agency agreements or formal Mitigation Banks have been established among various Federal, State, and local agencies to specify the terms and conditions for offsetting or compensating for proposed marine habitat losses.

3.3.1 Seagrasses: Compensatory mitigation for eelgrass impacts in southern California coastal waters is routinely required pursuant to the *Southern California Eelgrass Mitigation Policy*, dated July 31, 1991, as amended. Pursuant to this policy, a 1.2 to 1 mitigation ratio (compensatory mitigation area to impact area) is typically required for section 10 and/or section 404 activities that result in eelgrass impacts; however, there may be instances in which higher eelgrass mitigation ratios are warranted. The higher ratio is intended to address the time it takes for eelgrass to reach full fishery utilization (i.e., generally 3 years) and to offset any productivity losses during this recovery period. There is an exception when the impact is temporary and the total area of temporary impact is less than 100 square meters. Historically, there have been much fewer surfgrass compensatory mitigation projects.

3.3.2 Kelp: Approaches to restoration of kelp in California have generally focused on increasing or restoring hard substrate suitable for growth or reducing the main grazers (sea urchins) (Hawkins et al., 2002). There have also been attempts to couple these approaches with reseeding treatment areas with adult or juvenile kelp. Artificial reefs have also been used to support kelp in the vicinity of existing kelp stands, which can serve as a source of propagules. However, in many cases there has been uncertainty whether the approaches taken themselves resulted in improvement or whether large-scale natural recovery occurred. A key complicating factor is that kelp beds in California fluctuate in response to large-scale changes in sea-water temperature, which is affected episodically by El Niño oceanographic events. Other cyclical factors, such as changes in grazer populations, can also affect kelp size and distribution. Broader-scale cyclical fluctuations can couple with more localized impacts, such as increased coastal sediment or pollutant loading, to further increase uncertainty in understanding the driving factors in restoration success or failure. Corps Districts should consider these complicating factors in establishing performance standards for kelp compensatory mitigation projects.

3.3.3 Mud flats: Mud flat restoration has not been extensively studied. Key considerations are achieving and maintaining elevations to support mud flats, ensuring appropriate sediment composition (high in silts and clays with approximately 2% organic matter and 2,000 mg/kg dry weight nitrogen), and

limiting pollution and eutrophication. Study of nearby reference sites can provide useful target characteristics.

3.4. Amount of compensatory mitigation: According to the Mitigation Rule, compensatory mitigation should be sufficient to replace the lost aquatic resource functions as assessed using an appropriate functional or condition assessment, when available.

> 33 CFR 332.3(f)
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> "If the district engineer determines that compensatory mitigation is necessary to offset unavoidable impacts to aquatic resources, the amount of required compensatory mitigation must be, to the extent practicable, sufficient to replace lost aquatic resource functions. In cases where appropriate functional or condition assessment methods or other suitable metrics are available, these methods should be used where practicable to determine how much compensatory mitigation is required. If a functional or condition assessment or other suitable metric is not used, a minimum one-to-one acreage or linear foot compensation ratio must be used."

If a suitable assessment method or other metric is not available, a minimum of a one-to-one acreage or linear foot mitigation ratio must be used. Historically, compensatory mitigation requirements have typically included the use of "mitigation ratios." In most cases, the ratio used is the area of aquatic resource to be mitigated in relation to the area of aquatic resource impacted. While other ratios are possible (length of streambed, metrics of functional gain to loss, etc.), area has been the predominant ratio. When using area as a basis for setting a stream mitigation ratio a careful comparison is made between the type of stream impacted and the type proposed for mitigation. A determination of whether the streams are "in-kind" is based on factors such as stream order, stream flow duration, and overall geomorphologic character (e.g., Rosgen Classification). Commonly, the Corps has required a ratio greater than 1:1, in part due to scientific observations (NRC, 2001) that compensatory mitigation sites often provide reduced functions compared to the impacted aquatic resources. Additional variables such as temporal loss, the difficulty of restoring the aquatic resource type, and the distance from the impact site also would affect how much compensatory mitigation would be required for specific projects. Final compensatory mitigation ratios, as applicable to DA permits, are determined by the Corps using the Corps Quality Management System Document 12501: SPD Standard Operating Procedure for Determination of Mitigation Ratios.

3.4.1 Use of functional/condition assessments: These guidelines recommend the use of an appropriate functional/condition assessment for all projects which will result in an impact greater than 0.5 acre or greater than 300 linear feet of waters of the U.S. In these cases, use of an approved functional/condition assessment would aid in determining the appropriate mitigation ratio for a compensatory mitigation proposal. The assessment should compare conditions at the proposed impact and compensatory mitigation site(s) both before (as measured) and after (estimated) the proposed activities. More information regarding functional/condition assessments can be found below in Section 3.8, Functional or condition assessment methods (FCAM).

3.4.2 Variables to consider: As applicable to a project, an applicant should consider and address the following variables in the development of a mitigation plan (for more information, see Corps Quality Management System Document 12501: SPD Standard Operating Procedure for Determination of Mitigation Ratios).

- Comparison of the functional loss at the proposed impact site and the functional gain at the proposed compensatory mitigation site: This comparison may be made qualitatively or quantitatively using a functional/condition assessment (see Section 3.8 below). A suite of potential functions includes: short- or long-term surface water storage, subsurface water storage, moderation of groundwater flow or discharge, dissipation of energy, cycling of nutrients, removal of elements and compounds, retention of particulates, export of organic carbon, and maintenance of plant and animal communities. Generally, functional gain is correlated to improving aquatic resource condition. As a basis of comparison, an aquatic resource in good ecological condition is functioning at rates typical of its type in a least-disturbed setting (reference standard). The expected functional gain at the compensatory mitigation site will vary depending on the method of compensatory mitigation proposed (see definitions of compensatory mitigation methods in Section 2, Section 4.2.3, and also Appendix A, Compensatory mitigation methods). For preservation, the main purpose is to prevent a future loss of aquatic resources and not to provide a gain. For this reason, higher compensation ratios are generally required for this compensatory mitigation method.

- Compensatory mitigation site location: In order to offset cumulative loss of ecological functions within a watershed, compensatory mitigation should be located within the same watershed as for the proposed impacts whenever practicable. Compensatory mitigation located outside impacted watershed generally warrants a higher mitigation ratio;

- Aquatic resource area: Different types of compensatory mitigation result in varying net losses of aquatic resource area. For definitions of compensatory mitigation types, see the Mitigation Rule (33 C.F.R. § 332.2).

- Type conversion: Out-of-kind compensatory mitigation (i.e., the habitat type of the compensatory mitigation project is different from the habitat type impacted by the proposed activity) may warrant a higher mitigation ratio. In some cases, out-of-kind compensatory mitigation may be appropriate if the proposed compensatory mitigation habitat type would serve the aquatic resource needs of the watershed/ecoregion (see Section 3.2 above, watershed approach). In proposing out-of-kind compensatory mitigation, consideration should be given as to whether permitted impacts or compensatory mitigation would consist of rare or regionally significant habitat types (e.g., vernal pools).

- Risk and uncertainty of compensatory mitigation success: Mitigation ratios should reflect the inherent uncertainty of the proposed compensatory mitigation. Factors which may increase uncertainty include: 1) permittee-responsible mitigation; 2) compensatory mitigation site did not formerly support targeted aquatic resources; 3) difficult-to-replace resources (see 33 C.F.R. § 332.3(e)(3) and (f)(2)); 4) modified hydrology (e.g., high-flow bypass); 5) artificial hydrology (e.g., pumped water as the hydrology source, etc.); 6) structures requiring maintenance (outfalls, drop structures, weirs, bank stabilization structures, etc.; 7) planned vegetation maintenance; 8) shallow, buried structures.

- Temporal loss: Constructed habitats take time to mature and replace aquatic functions, which typically would warrant a higher mitigation ratio in cases where a delay is planned between impacts and full replacement of functions. Ratios should account for the time between when the authorized impacts occur and constructed compensatory mitigation is expected to replace lost functions. Planned "temporal advances" where mitigation monitoring is completed prior to impacts may warrant a lesser ratio due to the absence of temporal loss (for Permittee-responsible only). Unexpected delays would be handled as compliance actions.

- Indirect impacts: Compensatory mitigation may be required to offset predictable indirect impacts.

3.5. Financial assurances: According to the Mitigation Rule, financial assurances provide the Corps the ability to obtain contingency funding in cases where the permittee cannot or will not provide the required compensatory mitigation. In those cases, the Corps may elect to exercise the financial assurance and a third party would use those financial assurance funds to complete the compensatory mitigation. Generally, financial assurances are provided as either bonds or letters of credit, although other types may be acceptable (see 33 CFR 332.3(n)(2)). The amount of the financial assurance should include sufficient funds such that replacement compensatory mitigation could be constructed at another site if the originally-proposed compensatory mitigation project were to fail. For compensatory mitigation projects proposed by non-private entities (cities, counties, agencies, etc.), the Mitigation Rule states: "In making a determination on whether or not to require a financial assurance or some other alternate mechanism, an important consideration is whether the district engineer can have a high level of confidence that the compensatory mitigation project will be successfully completed, in accordance with applicable performance standards." The applicant should provide information to support such an alternate mechanism (e.g., a formal, documented commitment from a government agency or public authority). Examples include identification of past compensatory mitigation projects successfully completed by the applicant, permit conditions for smaller compensatory mitigation projects (including permittee-responsible mitigation), and a documented plan to explain how the applicant would ensure alternative compensatory mitigation requirements would be funded if the original compensatory mitigation project, as proposed, ultimately fails to meet the Corps-approved performance standards despite any attempted adaptive management measures.

33 CFR 332.3(n)

"The district engineer shall require sufficient financial assurances to ensure a high level of confidence that the compensatory mitigation project will be successfully completed, in accordance with applicable performance standards." Furthermore, "The amount of the required financial assurances must be determined by the district engineer, in consultation with the project sponsor, and must be based on the size and complexity of the compensatory mitigation project, the degree of completion of the project at the time of project approval, the likelihood of success, the past performance of the project sponsor, and any other factors the district engineer deems appropriate. Financial assurances may be in the form of performance bonds, escrow accounts, casualty insurance, letters of credit, legislative appropriations for government sponsored projects, or other appropriate instruments, subject to the approval of the district engineer. The rationale for determining the amount of the required financial assurances must be documented in the administrative record for either the DA permit or the instrument. In determining the assurance amount, the district engineer shall consider the cost of providing replacement mitigation, including costs for land acquisition, planning and engineering, legal fees, mobilization, construction, and monitoring."

3.5.1 Amount of financial assurance: The district engineer may require a permittee to secure financial assurances to cover the costs of implementing compensatory mitigation (33 CFR 332.3(n)). Mitigation plans should include an itemized budget to assist in calculating an appropriate amount for a required financial assurance. At a minimum, a budget should include: costs of land acquisition, implementation, long-term monitoring, adaptive management, and contingency funds. In some cases, through use of a long-term protection document (e.g., a conservation easement) providing legal access to a compensatory mitigation site property for a third party specified by the Corps, the cost of land acquisition may be deducted from the required financial assurance amount. However, a 20 percent

contingency generally should be included in the proposed amount of the financial assurance to account for any unanticipated adaptive management or other contingency expenses.

33 CFR 332.3(n)(1)
"In cases where an alternate mechanism is available to ensure a high level of confidence that the compensatory mitigation will be provided and maintained (e.g., a formal, documented commitment from a government agency or public authority) the district engineer *may* determine that financial assurances are not necessary for that compensatory mitigation project."

3.5.2 Financial assurance approval process: District engineers may require financial assurances to ensure the initiation and successful completion of compensatory mitigation obligations. However, in cases where an alternate mechanism is available to ensure a high level of confidence that the compensatory mitigation will be provided and maintained (e.g., a formal, documented commitment from a government agency or public authority) or permit conditions are sufficient for ensuring successful completion of the compensatory mitigation requirements, the district engineer may determine that financial assurances are not necessary for that compensatory mitigation project. When a permit condition requires a financial assurance, the permittee shall submit a draft financial assurance document, in the required form, to the Corps regulatory project manager for approval. After completing an initial review of the financial assurance, the regulatory project manager generally forwards the draft financial assurance document to the Office of Counsel for legal review. After resolution of any issues identified by the regulatory project manager and Office of Counsel, the regulatory project manager will notify the applicant that the proposed financial assurance is acceptable. Upon receipt of approval of the financial assurance by the Corps, the permittee will execute the financial assurance. The executed financial assurance must be submitted to the Corps regulatory project manager prior to the commencement of the authorized activity, unless the district engineer grants an exception.

3.5.3 Financial assurance release process: The Mitigation Rule states that financial assurances shall be phased out once the compensatory mitigation project has been determined by the district engineer to be successful in accordance with its performance standards. The Department of the Army permit or instrument must clearly specify the conditions under which the financial assurances are to be released to the permittee, sponsor, and/or other financial assurance provider, including, as appropriate, linkage to achievement of performance standards, adaptive management, or compliance with special conditions. Permittees may request to have a financial assurance released when they believe all compensatory mitigation requirements in their permits have been met. Once the Corps determines the compensatory mitigation has been successfully completed, the Corps regulatory project manager will release the financial assurance.

3.6 Aquatic resource description: All compensatory mitigation proposals and plans should provide a detailed description of aquatic resource sites in table format (see example tables B-1 and B-2 in Appendix B), both for "pre-construction" conditions (baseline conditions before impacts and implementation of the compensatory mitigation) and proposed "post-construction" conditions (after impacts and implementation of the compensatory mitigation). Units of measure should be provided in acres or square feet (and also linear feet, if appropriate). Impact and compensatory mitigation site information should be organized according to Corps jurisdictional status (wetlands or non-wetlands waters of the U.S., buffer areas, non-aquatic mitigation). Buffer areas are located outside of waters of the U.S., and may be aquatic habitats (e.g., areas with hydrophytic vegetation and/or hydric soils that do not meet the Corps three-factor

wetland definition) or upland habitats. Non-aquatic mitigation refers to areas sometimes included in mitigation plans as a result of state or federal wildlife protection requirements (e.g., Endangered Species Act).

In addition, information should be provided for hydrologic regime, vegetation type, general habitat type, compensatory mitigation method, and wetland class. Hydrologic regime should be described differently for wetlands (for example, saturated (groundwater driven) wetlands, seasonally flooded, permanently flooded, etc.) as opposed to rivers and streams (perennial, intermittent, or ephemeral). Vegetation type should be described using the most recent, widely-accepted classification system for a given region (e.g., Sawyer & Keeler-Wolf for California). The general habitat type should be provided and may be referred to by common name (i.e., a qualitative description of the resource such as vernal pool, tidal open water, seasonal wetland, etc.). The method of compensatory mitigation method should be listed (establishment, re-establishment, rehabilitation, enhancement, or preservation). Finally, wetland/aquatic resource class should be provided using the Cowardin Classification system (Cowardin et al., 1979), the Hydrogeomorphic (HGM) Classification of Wetlands (Brinson, 1993), and a functional or condition assessment method (if used). State or other federal agencies may require additional information.

3.7 Restoration of temporary impacts: In general, for impacts due to temporary activities (e.g., vegetation clearing, access road construction, etc.), the affected area should be restored to pre-construction contours and elevations within one month of completion of work within waters of the United States. Re-vegetation with appropriate native plants should commence within three months after restoration of pre-construction contours and elevations and be completed within one growing season. Re-vegetation should also include installation of erosion and sediment control best management practices before the regular rainy season. If re-vegetation is delayed for seasonal considerations, exposed earth surfaces should be stabilized immediately with jute-netting (note: netting should not contain plastic monofilament.), straw matting, or other applicable best management practice to minimize any interim erosion. In some cases, on-site restoration efforts for temporary impacts may require preparation of a restoration plan to be approved by the Corps. Furthermore, in some cases, for substantial temporary impacts (for example, more than a six month delay between impact and restoration or for habitats with long development times) the district engineer may require additional compensatory mitigation to offset temporal loss. In such cases, the Corps will notify the permittee or other responsible party when such compensatory mitigation will be required for substantial temporary impacts.

3.8 Functional or condition assessment methods (FCAM): According to the Mitigation Rule (33 C.F.R. § 332.3(f)), appropriate functional or condition assessment methods or other suitable metrics should be used where practicable to determine how much compensatory mitigation is required. Additionally, they may also be used as part of mitigation monitoring to evaluate achievement of ecological performance standards. EPA developed a technical framework for wetland monitoring and assessment that incorporates a three-level approach (EPA, 2006). The fundamental elements of EPA's framework are as follows:

- Landscape assessment (Level 1) consists of map-based inventories of wetlands and related habitats, including rivers, streams, and riparian areas, plus landscape characteristics that affect the distribution, abundance, and condition of wetlands and related habitats. Regional and California statewide efforts are underway to develop Level 1 maps (e.g., California Wetland and Riparian Area Monitoring Plan (WRAMP) and the National Wetland Inventory).

- Rapid wetland assessment (Level 2) consists of rapid, field-based assessments of the overall condition or functional capacity of wetlands and non-wetland aquatic resources and/or their likely stressors (e.g., Multi-Scale Assessment of Watershed Integrity (MAWI), California Rapid Assessment Method (CRAM), Training Manual to Evaluate Habitat Quality of Vernal Pool Ecosystem Sites in Santa Rosa Plain (CH2M Hill, 1998) or "HQE", Hydrogeomorphic (HGM) Approach for areas with approved guidebooks.

- Intensive site assessment (Level 3) consists of quantitative measurement of specific wetland or aquatic resource functions or stressors (e.g., Avian Index of Biotic Integrity (IBI), Instream Benthic Macroinvertebrate Assessments).

Within SPD, the Corps is participating in regional and statewide efforts to adopt a common set of assessment and data management tools. By adopting such tools to be used over large areas (watersheds, ecoregions, states, etc.), a common "baseline" of comparable data can then be developed for use in regional habitat and impact assessments, compensatory mitigation site selection under a watershed approach, and better gauging of compensatory mitigation site performance by comparing to other similar sites. In general, an FCAM should be developed and calibrated for the wetland type(s) and geographic area within which it is being applied. Appropriate FCAMs must be aquatic resource-based, repeatable, standardized, comparable from site to site, based on sound science, and must receive prior project-specific approval from the Corps. In addition, the Corps encourages peer review of proposed FCAM and prefers such methods to be used when available and when it is practicable to use those methods. In general, an FCAM should be used, where available and appropriate, for larger, more complex projects (generally those having permanent impacts greater than 0.5 acre and/or greater than 300 linear feet). For activities authorized by general permits, including nationwide permits, it may not be practicable to use an FCAM in many circumstances. Project proponents should contact the appropriate Corps district office to determine whether a FCAM should be used for a particular permit application. As a general rule, the same FCAM should be used to assess impacts and proposed compensatory mitigation.

Recommended FCAM methods are described below:

3.8.1 California: The California Rapid Assessment Method (CRAM).

CRAM is a standardized, cost-effective tool for assessing the health of wetlands and riparian habitats. The overall goal of CRAM is to provide a rapid, scientifically defensible, and repeatable assessment method that can be used routinely for wetland monitoring and assessment. CRAM consists of assessing wetlands with respect to four overarching "attributes:" buffer/landscape context, hydrology, physical structure, and biotic structure. A number of "metrics" address more specific aspects of wetland condition within each of these attributes. Each metric is assigned a numeric score based on either narrative or schematic descriptions of condition, or thresholds across continuous values. Metric descriptions are based on characteristics of wetlands observed across a range of conditions, such that the highest score for each metric represents the theoretical optimum condition obtainable for the wetland feature being evaluated.

Trained practitioners can use CRAM to assess the condition of a wetland or riparian site over a half-day period using visual indicators in the field. In practice, the practitioners use the indicators to choose the best-fit narrative description of habitat condition among a standardized set of mutually exclusive descriptions for each metric. CRAM scores can be used to compare sites within a wetland class, but not between classes. CRAM also provides guidelines for identifying the stressors that help explain why wetlands may have received specific scores. The CRAM stressors may also be used to qualitatively describe the watershed conditions and/or the sites sustainability (impact and mitigation sites).

CRAM is applicable to wetlands and streams throughout the state of California. The general approach and metric categories are consistent across wetland types, but the specific narratives used to score each metric are customized for the characteristics of the specific wetland type being assessed. Metric scores are aggregated up to the level of attributes as well as into a single overall score via simple arithmetic relationships. Categories have been developed based on implied equivalence in the sense that a change in score of one level (or step) is regarded as equivalent, in terms of overall condition, from one attribute to the next. CRAM has been validated in the field and verified against more intensive (Level 3) measures of condition for estuaries and riverine wetlands. Validation of CRAM for depressional wetlands, including individual vernal pools and vernal pool complexes, has been completed. New modules are being developed for low gradient ephemeral streams and other CRAM wetland types.

CRAM is supported a series of software, technical documents and implementation guidelines that are available on the CRAM website. Applications of CRAM include: (1) assessments of impacted wetlands to help determine appropriate mitigation measures, including additional avoidance, minimization, and compensatory mitigation; (2) preliminary assessments of wetland conditions and stressors to determine the need for intensive monitoring; (3) evaluation of wetland project performance under the Coastal Zone Management Act, Section 1600 of the California State Fish and Game Code, Sections 401 and 404 of the CWA, and local government wetland regulations; (4) assessment of compensatory mitigation progress relative to ambient conditions, reference conditions, and performance standards (e.g. projected CRAM metric and submetric scores established for specific monitoring intervals such as years 1, 3, and 5 following implementation); eCRAM for uploading CRAM scores for populating the State-wide database.

CRAM is a component of a broader wetland assessment toolkit that has been developed in California based on EPA's Level 1-2-3 Framework for wetland monitoring and assessment (EPA 2002). CRAM can be an effective tool for assessing the overall condition of a wetland when used as directed by trained professionals in a comprehensive program of wetlands monitoring that also includes accurate mapping of wetlands and careful quantification of essential wetland functions. CRAM is not intended to be used as a single, independent tool to meet all wetland monitoring and assessment needs. If CRAM is utilized to support the DA permit decision process, CRAM scores must be uploaded to eCRAM for mitigation, impact, and where applicable, reference sites, to allow for random auditing. Studies validating CRAM include Stein et. al. (2009a, b), a report by the U.S. Army Engineer Research and Development Center (Klimas 2008), and a report by the California State Water Resources Control Board on the peer review of CRAM (2011).

3.8.2 New Mexico: The New Mexico Rapid Assessment Method (NMRAM). NMRAM is available as an assessment tool for unconfined alluvial riverine systems in elevations ranging from approximately 6000 to 8000 feet msl. The method was developed and validated in the Upper Rio Grande watershed, but is anticipated to apply in other watersheds in New Mexico with similarly-located unconfined alluvial riverine systems. NMRAM uses a select set of observable and relatively easy-to-measure landscape and field indicators (metrics) to express the relative condition of a particular wetland site. NMRAM metrics have been developed in the context of a "reference set" of wetlands that vary along an anthropogenic-disturbance gradient. The underlying premise is that wetland condition among similar wetlands will vary along this disturbance gradient, from high quality and functionality with low disturbance to the most degraded with high disturbance. Based on this, the ecological condition of a site is then evaluated and ranked based on a preponderance of evidence from a suite of landscape, biological, and abiotic attributes that are sensitive to the gradient. The outcome is that wetlands can be compared equitably across many scales and jurisdictions, and in a variety of project contexts.

The Corps has reviewed the NRAM method in a report by the U.S. Army Engineer Research and Development Center (Klimas 2012). The NRAM method and field manual may be found on-line. Future versions will include riverine resources in larger, lower-elevation systems such as the lower Rio Grande within New Mexico.

3.8.3 Utah: UDOT Wetland Functional Assessment Method. The Utah Department of Transportation (UDOT) Wetland Functional Assessment Method (April 2006) was developed by UDOT, Utah State University and an advisory team that included the Utah Division of Wildlife Resources, the US Fish and Wildlife Service and the Corps. The method was finalized in April 2006 and included a suite of biological and hydrological functions as well as visual and recreational values. The objective was to provide a science-based, rapid, economical and repeatable wetland evaluation method applicable to Utah. The method is based extensively on the Montana Wetland Assessment Method (1999); however, the UDOT method incorporates changes to accommodate Utah specific wetland types, wildlife and issues. This method was primarily designed to address wetland functions and values on highways and other lineal projects. As such this method is approved for use in UDOT or Federal Highways Administration projects. Additional information, including a digital copy of the UDOT method is available on-line.

3.8.4 Colorado: The Grand Mesa Wetland Function and Value Assessment (Grand Mesa Method). The Grand Mesa Wetland Function and Value Assessment (Grand Mesa Method) is a protocol for assessing existing wetland functions and values on Grand Mesa in western Colorado between 9,000 and 11,000 feet elevation. The purpose of this tool is to provide experienced natural resource specialists with a systematic, qualitative approach to evaluating wetlands. This approach minimizes subjectivity by considering a wide range of potential functional conditions common to wetlands on the Grand Mesa. The assessment provides a relative comparison of wetlands in a consistent format. The Grand Mesa Method is comprised of basic site specific information followed by seven scoring indices, individually weighted as a percentage of the total score. These indices are: 1) Hydrogeomorphology; 2) Vegetation; 3) Water Quality; 4) Wildlife Habitat; 5) Threatened and Endangered and Special Status Species; 6) Recreation, and 7) Buffer Condition. Each of these indices is assigned a percentage (or weight factor) of the total. The Grand Mesa Method provides a relative comparison of wetlands to help determine whether wetland functions are diminished and identify potential restoration or enhancement opportunities using quantitative values. A digital copy of the Grand Mesa Method is available on-line at.

3.8.5 Colorado: The Functional Assessment of Colorado Wetlands (FACWet) Method. The Functional Assessment of Colorado Wetlands (FACWet) Method is a stressor-based rapid assessment method, founded on hydrogeomorphic theory and classification. In overall structure, it is strongly influenced by the California Rapid Assessment Methodology. In approach, FACWet is the formalization of an investigative process, in which evidence is gathered to support a best professional judgment on the condition of nine ecological forcing factors (i.e., "State Variables") that control wetland functioning. FACWet then relates State Variable condition to functional capacity. Functional capacity is a relative index that gauges the departure from the expected level of functioning exhibited by the Reference Standard. State Variables include 1) Neighboring Wetland Habitat Loss; 2) Migration/Disperal Barriers; 3) Buffer Capacity; 4) Water Source; 5) Water Distribution; 6) Water Outflow; 7) Geomorphology; 8) Chemical Environment; and 9) Vegetation Structure and Complexity. The degree of State Variable degradation is rated according to the estimated severity and extent of the stressor(s) acting upon it. The outcome of a FACWet evaluation is a best professional judgment rating of the condition of wetland's State Variables and level functional impairment, as evidenced by the presence of detectable stressors. The Corps has reviewed the FACWet method in a report by the U.S. Army Engineer Research and Development Center (Klimas 2011), Additional information, including a digital copy of the FACWet method is available on-line.

4. PLANNING AND DOCUMENTATION

As part of a complete application for a DA permit, applicants are responsible for proposing an appropriate compensatory mitigation approach to offset unavoidable impacts or providing a statement explaining why compensatory mitigation is not warranted. The applicant's proposal can be a simple statement that compensatory mitigation will be provided per requirements of the District, the purchase of credits from an approved mitigation bank or in-lieu fee program, or a conceptual, detailed or draft plan for development of a permittee-responsible compensatory mitigation site. In addition, it is preferred the applicant include, at a minimum, basic information on the location and method of mitigation to be provided for inclusion in the Corps' public notice. Once the compensatory mitigation proposal is approved by the District, the permittee can purchase the specified mitigation bank or in-lieu fee credits or further develop the conceptual, detailed or draft plan, as appropriate, for general permits and a draft plan for standard individual permits. An approved final plan is required prior to commencing work in waters of the U.S. authorized by a general permit and prior to the District issuing standard individual permits.

To initiate the development of a mitigation bank, a prospective sponsor would submit a prospectus, which would include a conceptual mitigation plan. An in-lieu fee program sponsor would submit a proposed mitigation plan for an in-lieu fee project, which, if approved and implemented successfully, would be used to fulfill the obligations incurred through the sale or transfer of advance credits.

Regardless of the source of compensatory mitigation (mitigation bank, in-lieu fee program, or permittee-responsible), creating, refining, and finalizing a mitigation plan is a multi-step process. Overall, the process of developing a mitigation plan can be described as having the following stages: determination of compensatory mitigation source, determination of objectives, site selection, design, determination of credits, other considerations (including development of performance standards and monitoring protocols), and completion (see flowchart and checklist in Appendix B).

4.1 Determination of compensatory mitigation source (also see 33 C.F.R. § 332.3(b)): The preference hierarchy should be used when determining the appropriate source of compensatory mitigation for a given project; however, the Mitigation Rule allows for deviation from the preference hierarchy when using a watershed approach (see language from 33 CFR 332.3(b)(2) excerpted below). For permittees who intend to fulfill their compensatory mitigation obligations by securing credits from approved mitigation banks or in-lieu fee programs, their mitigation plans need include only the items described in paragraphs (c)(5) and (c)(6) of this section, and the name of the specific mitigation bank or in-lieu fee program to be used. For Permittee-responsible mitigation proposals, plans should include items (c)(2) through (c)(14), as discussed below.

4.2 Determination of objectives (also see 33 C.F.R. § 332.4(c)(2)): The first step in preparing a Permittee-responsible mitigation plan is clarification of the compensatory mitigation objectives. Generally, this takes place in three stages: (1) determination of the resource types subject to mitigation activities (including whether the mitigation type(s) will be in-kind or out-of-kind), (2) determination of the method of compensatory mitigation (establishment, rehabilitation, re-establishment, enhancement, and/or preservation) and (3) determination of the amount of compensatory mitigation to be provided (for each method proposed). However, the order of these steps may vary.

33 CFR 332.3(b)(2)

"However, these same considerations may also be used to override this preference, where appropriate, as, for example, where an in-lieu fee program has released credits available from a specific approved in-lieu fee project, or a permittee-responsible project will restore an outstanding resource based on rigorous scientific and technical analysis."

mitigation is preferred. However, out-of-kind mitigation can be as or more appropriate if the proposed mitigation resource type serves the aquatic resource needs of the watershed/ecoregion, and is supported by an acceptable watershed plan, when available, or an watershed approach-based analysis.

4.2.2 Determination of amount of compensatory mitigation: In determining the appropriate amount of compensatory mitigation, it is necessary to consider the aquatic resource proposed to be impacted, the functions it provides, the level of those functions, and the needs of the watershed (i.e., the watershed approach). For specific factors to consider in arriving at a proposed amount of compensatory mitigation, applicants should review the eight variables listed above in Section 3.4 (Amount of compensatory mitigation). For more information on determining the amount of compensatory mitigation, see Corps Quality Management System Document 12501: SPD Standard Operating Procedure for Determination of Mitigation Ratios.

4.2.3 Method(s) of compensatory mitigation: The different methods of implementing compensatory mitigation result in varying degrees of functional lift. Generally, establishment and re-establishment provided the most functional lift across the full suite of functions, followed by rehabilitation, enhancement (lift of one or a few selected functions), and finally preservation which provides no functional lift. Restoration (re-establishment and rehabilitation) is the generally preferred mechanism (see § 332.3(a)(2)), and for difficult to replace resources the preferred mechanisms are in-kind rehabilitation, enhancement, or preservation (see §332.3(e)(3)). The Mitigation Rule lists five criteria that must be met for consideration of preservation (see 33CFR 332.3(h)(1). Preservation is often used to complement the other mitigation methods; however, it is rarely approved as the sole form of compensatory mitigation.

33 CFR 333.2(h)

"Where preservation is used to provide compensatory mitigation, to the extent appropriate and practicable the preservation shall be done in conjunction with aquatic resource restoration, establishment, and/or enhancement activities. This requirement may be waived by the district engineer where preservation has been identified as a high priority using a watershed approach described in paragraph (c) of this section, but compensation ratios shall be higher."

4.2.4 Manner in which the resource functions of the compensatory mitigation project will address the needs of the watershed: The mitigation plan should document how the resource functions to be provided would support the needs of the surrounding watershed (or alternatively: ecoregion, physiographic province, or other geographic area of interest). Such documentation may include explanation of the relative value of aquatic functions based on specific types of aquatic resources and their geographical location within a watershed. When available and appropriate, watershed plans should be cited.

4.3 Site selection (see 33 C.F.R. § 332.3(c) and (d) and 332.4(c)(3)): Locating compensatory mitigation sites in the appropriate part of the watershed and landscape position for the desired aquatic resource type and functional lift is critical to long-term sustainability (NRC, 2001; Mitsch and Gosselink, 2000). Landscape position influences the geologic and soil characteristics of a wetland including the slope, thickness, permeability, and chemistry of soils as well as water source(s) and hydrodynamics (NRC, 2001; Brinson, 1993) (also see Section 3.2 of these guidelines). The watershed approach should be used to select an appropriate site to provide compensatory mitigation, with consideration of the method(s) that

would be used to offset losses of waters of the United States caused by permitted activities (i.e., re-establishment, establishment, rehabilitation, enhancement, or preservation). In selecting the proposed compensatory mitigation site(s) the plan preparer should identify sites within the watershed whose landscape position would meet the plan objectives. The mitigation plan must also provide baseline data to support the site-specific need for the proposed method of compensatory mitigation and its probability of success. For example, if the proposed mitigation method is enhancement through removal of invasive species, the plan should include vegetation mapping of the site and adjacent buffer areas, as well as some information on invasive distribution within the upstream watershed, to document the on-site presence of invasive exotic vegetation and provide assurance invasives removal won't be negated by re-colonization. Another example is to provide historic aerial photographs indicating the general time and extent of fill material that is proposed for removal for re-establishment or rehabilitation.

4.4 Design: Once a compensatory mitigation site has been selected, baseline information should be collected and used to design the compensatory mitigation project. A mitigation work plan (or "development plan" for mitigation banks and ILF programs) is then developed to convey how the design would be implemented in terms of actual construction, engineering, planting, etc. The conceptual design process includes the steps of compiling existing data and collecting an adequate amount of site-specific data to provide the Corps with confidence the proposed compensatory mitigation project would fulfill its objectives. An appropriate reference site or sites should be used to inform specific design parameters and performance standards (for more on performance standards see Corps Quality Management System Document 12505-SPD Regulatory Program Uniform Performance Standards for Compensatory Mitigation Requirements).

4.4.1 Design recommendations: A mitigation plan for wetland compensatory mitigation projects should consider the National Research Council recommendations (National Research Council, 2001). This succinct document provides some useful guidelines on factors to consider in planning wetland compensatory mitigation. In addition, examination of existing compensatory mitigation sites has provided information that can be used to ensure the success of proposed compensatory mitigation sites. In general, compensatory mitigation sites should be designed with the following in mind:

4.4.1.1 General Design Recommendations for compensatory mitigation:

- Ensure an adequate buffer subject to minimal or no human disturbance is established and protected adjacent to any aquatic resources in the compensatory mitigation site.
- Integrate macro and micro-topographic features to create a diversity of hydrologic conditions, plant communities, and animal habitat.
- Design the mitigation approach to mimic an intact local reference site that provides the desired habitat features and functionality.
- Incorporate mitigation plantings of species native to the local area.
- Avoid or minimize impacts to special-status species and other biological resources.

4.4.1.2 Design recommendations for wetland compensatory mitigation:

- Select compensatory mitigation sites with natural, self-sustaining sources of hydrology (surface water, groundwater, precipitation). The use of engineered structures such as pumps, water control structures, or diversions is strongly discouraged. Securing water rights and/or understanding the risks of existing or future water diversions is critical.

4.4.1.3 Design recommendations for stream compensatory mitigation:

- Ensure the main channel through the compensatory mitigation site is free to migrate laterally over its active and terrace floodplain.
- Ensure channel geometry (plan, profile and cross-section) of the compensatory mitigation site is appropriate for the watershed location and physical/hydrological condition.
- Use local, native materials as fill material to the extent practicable.
- Use bioengineering techniques to the extent practicable.

4.4.2 Design Pitfalls: Past experience has shown that poor compensatory mitigation designs often result from compensatory mitigation proposals with insufficient analysis or where the compensatory mitigation design is forced to accommodate conflicting objectives (e.g., compensating for aquatic resource impacts while seeking to maintain flood protection). Below is a list of conflicts or questionable design features that should be avoided. It should also be noted if any of these constraints apply to a given mitigation proposal, this may warrant seeking alternative sites to provide compensatory mitigation in accordance with the desired objectives:

- Selection of a site unsuitable for fulfilling mitigation objectives: in such cases even the best design and engineering work will not result in an ecologically successful compensatory mitigation project. There should be an existing water source that can be used, and the amount of earthwork needed should be minimal.
- Inadequate number or placement of soil pits to determine soil and subsoil characteristics that will allow for an analysis of the suitability of a site to support the targeted wetland restoration or creation activity. This is particularly important for vernal pool projects.
- Presence of structures that require long term maintenance and/or disrupt or replace natural hydrology such as drop structures; high-flow bypass structures; gabions or levees; buried structures (e.g. riprap); artificial hydrology (permanent irrigation, pumped water sources); and engineered slopes.
- Presence of competing/conflicting uses (e.g. existing or proposed transportation, flood control structures or planned flood control-related maintenance activities and easements, existing or proposed fuel modification areas).
- Insufficient buffers: insufficient buffer area to achieve plan objectives; buffers with mechanically or chemically manipulated fire breaks, i.e. disking, scraping, mowing, or spraying, buffers that are bypassed by pipes or other conveyances.
- Insufficient connectivity with other aquatic resources, and/or a compensatory mitigation project sited where future land uses in the immediate area would have a large impact on the physical, chemical, or biological components of the wetland (increase in runoff, close proximity to future urban development, etc.).
- Placement where surface water can be diverted in the future or groundwater table lowered due to future land uses upstream or upslope.
- Insufficient analysis of hydrology and soil interaction. For example:

    1. Planning a groundwater supported depressional wetland in clay soils that act as an aquiclude, and would prevent groundwater from reaching the surface or near surface of the wetland to satisfy the wetland hydrology factor;
    2. Over-excavation to reach groundwater table resulting in open water; or
    3. Under-excavation resulting in the absence of wetland hydrology conditions (i.e., the compensatory mitigation wetland is not inundated or saturated to the surface for sufficient duration to satisfy the wetland hydrology factor).
- Planting vegetation species in unsuitable locations without appropriate hydrologic regimes or soil types (texture and chemistry). For example, “floodplain” wetlands lacking a surface water connection to the primary stream due to the presence of a berm or other barrier. No barriers, including berms or banks, should be left in place isolating or limiting proposed

floodplain wetlands from receiving overbank flows from the primary channel during high flow events. Wetlands proposed in the floodplain should flood on a regular basis typical for the wetland type in question. Alternatively, regular flooding can be accomplished by establishing breakout/secondary channels to convey flows through any barriers that cannot be removed.

4.4.3 Wetland Design Goals from the 2001 National Research Council Report:

- Restore or develop naturally variable hydrological conditions. Promote naturally variable hydrology, with emphasis on enabling fluctuations in water flow, level, duration and frequency of change that would be representative of other comparable wetlands in the same landscape setting. Preferably, natural hydrology should be allowed to become reestablished rather than finessed through active engineering devices to mimic a natural hydroperiod. When restoration is not an option, favor the use of passive devices that would have a higher likelihood to sustain the desired hydroperiod over the long term. Try to avoid designing a system dependent on water control structures or other artificial infrastructure that must be maintained in perpetuity in order for wetland hydrology to meet the specified design. In situations where direct (in-kind) replacement is desired, candidate compensatory mitigation sites should have the same basic hydrological attributes as the impacted site.

- Avoid over-engineered structures in the wetland design. Design the system for minimal maintenance. Whenever possible, avoid manipulating wetland processes using approaches that require continual maintenance. Avoid hydraulic control structures and other engineered structures that are vulnerable to chronic failure and require maintenance and replacement. Set initial conditions and let the system develop. Natural systems should be planned to accommodate biological systems. The system of plants, animals, microbes, substrate, and water flows should be developed for self-maintenance and self-design. If necessary to include design structures, such as to prevent erosion until the wetland has developed soil stability, do so using natural features, such as large woody debris. Be aware that more specific habitat designs and planting will be required where rare and endangered species are among the specific restoration targets.

4.5 Determination of credits (also see 33 C.F.R. § 332.4(c)(6)): The mitigation plan should include a description of the number of credits to be provided, including a brief explanation of the rationale for this determination. For permittee-responsible mitigation, this should include an explanation of how the compensatory mitigation project will provide the required compensation for unavoidable impacts to aquatic resources resulting from the permitted activity (see 33 C.F.R. § 332.3(f) and Section 3.4 above). For permittees intending to secure credits from an approved mitigation bank or in-lieu fee program, it should include the number and resource type of credits to be secured and how these were determined (see Section 3.4 above and Section 8.6 below).

4.6 Other considerations (also see 33 C.F.R. § 332.4(c)(4) through (c)(14)): Once the compensatory mitigation project has been designed, additional considerations are necessary as listed under 33 CFR Part 332.4(c)(2)-(14), including the appropriate long-term site protection mechanism, the need for maintenance during the monitoring period, selection of appropriate ecological performance standards, monitoring requirements, adaptive management, and the need for a financial assurance (see Section 4.8.18) below and also 33 C.F.R. 332.4(c)(2) through (c)(14)), and, if appropriate and necessary, long-term management. In states where water rights are an important issue, water rights must be addressed explicitly in the mitigation plan, to ensure that the necessary hydrology will be available for a self-sustaining compensatory mitigation project. In addition, water and/or mineral rights or other potential

easements that could adversely affect the long-term sustainability of the site must be disclosed and in many cases may need to be terminated or subordinated for the site to be used for compensatory mitigation.

4.7 Completion: Once the draft mitigation plan is completed, it should be submitted to the Corps for review. Once the draft mitigation plan has been reviewed by the Corps, a final mitigation plan, incorporating any required revisions, is submitted for Corps approval. Once approved, the final mitigation plan should be implemented in accordance with any applicable permit conditions. A final mitigation plan should include finalized and Corps-approved requirements, such as the amount, type, and location of the proposed compensatory mitigation. In addition, a final mitigation plan should include all applicable elements listed in 33 CFR 332.4(c)(2)-(14) and include sufficient detail such that the Corps can approve the mitigation plan with confidence that it will have a high certainty of success.

4.8 Mitigation Plan Outline: Mitigation plans should follow a consistent format and structure. Towards that end, a discussion of required content follows:

4.8.1 Title page:

- Project name.
- Corps permit file number.
- Applicant/permittee name, address, phone number, and email address.
- Preparer (Consultant) name, address, phone number, and email address.
- Date of most recent revision.

4.8.2 Contributor page: List the principal persons who prepared plan, collected baseline data, and/or wrote or edited the text with name(s), address, phone number, and email address.

4.8.3 Distribution Page: List names, titles, and companies/agencies of all persons receiving a copy of the report.

4.8.4 Table of Contents.

4.8.5 Brief description of proposed compensatory mitigation project and proposed source of compensatory mitigation.

4.8.6 Objectives (see 33 C.F.R. § 332.4(c)(2)). Objectives should include:

- Amount of aquatic resource to be provided: This section should include the proposed amount of aquatic resource(s) to be provided, including detailed consideration of the eight factors from section 3.4 above used to determine the mitigation ratio(s) for permittee-responsible mitigation.
- Method(s) of compensation (i.e., type(s) of compensatory mitigation): re-establishment, establishment, rehabilitation, enhancement, and/or preservation. Each discrete compensatory mitigation "sub-site" (i.e., discrete areas of different compensatory mitigation activities within the overall compensatory mitigation site or project) should be assigned to one category. Mixed categories of compensatory mitigation activities (e.g., re-establishment/enhancement) should not be used.
- Resource type(s): aquatic resources should be described in table format (see Section 3.6 above; also see example tables B-1 and B-2 in Appendix B) with corresponding figures (maps) and cross-sections. For each proposed impact/mitigation site (note: for mitigation bank and in lieu fee projects, impact information may not be available):

- Identify as impact (temporary or permanent loss of waters of the U.S.) or compensatory mitigation.
    i. For each impact site:
        i. Identify "pre-construction" (baseline) condition.
        ii. Identify the corresponding activity (building pads, bridge abutments, road crossing, etc.).
    ii. For each compensatory mitigation site:
        i. Identify "pre-construction" (baseline) condition and "post-construction" condition (proposed conditions after implementation and ecosystem/habitat development).
        ii. Identify the mitigation method: establishment (ES), re-establishment (RE), rehabilitation (RH), enhancement (EN), or preservation only (PO).
- Total extent of non-wetland waters of the U.S. (acreage, and linear feet if appropriate). The total area should be further defined by the following categories:
    i. Habitat type (habitats may be referred to by common name (i.e., a qualitative description of the resource such as tidal open water, mud flat, desert wash , etc.).
    ii. Vegetation community type (vegetation communities should be described using the most recent, widely-accepted classification system for a given region (e.g., Sawyer & Keeler-Wolf for California).
    iii. Cowardin class.
    iv. HGM class.
    v. Hydrologic regime: perennial, intermittent, or ephemeral.
- Total extent of wetland waters of the U.S. (acreage).
    i. Habitat type (habitats may be referred to by common name (i.e., a qualitative description of the resource such as vernal pool, seasonal wetland, etc.).
    ii. Vegetation community type (vegetation communities should be described using the most recent, widely-accepted classification system for a given region (e.g., Sawyer & Keeler-Wolf for California).
    iii. Cowardin class.
    iv. HGM class.
    v. Hydrologic regime: saturated (groundwater driven), seasonally flooded, or permanently flooded.
- Buffer area (acreage and average width from edge of ordinary high water mark or wetlands).
    i. Vegetation community type (vegetation communities should be described using the most recent, widely-accepted classification system for a given region (e.g., Sawyer & Keeler-Wolf for California).
    ii. Compensatory mitigation method: establishment (ES), re-establishment (RE), rehabilitation (RH), enhancement (EN), or preservation only (PO).
- Non-aquatic mitigation excluding buffer areas (acreage).
    i. Vegetation community type (vegetation communities should be described using the most recent, widely-accepted classification

system for a given region (e.g., Sawyer & Keeler-Wolf for California).

- Explanation of the manner in which the resource functions of the compensatory mitigation project will address the needs of the watershed, ecoregion, physiographic province, or other geographic area of interest. The level of detail should be commensurate with the proposed impacts and compensatory mitigation. For example, a mitigation plan should not require a highly detailed explanation for a small permittee-responsible mitigation project (generally projects with permanent impacts less than 0.5 acre), whereas larger projects with more substantial impacts may need to incorporate a functional or condition assessment.

4.8.7 Description of site selection criteria (also see Section 3.2 above, 33 C.F.R. § 332.3(d), and 332.4(c)(3)).

4.8.7.1 Watershed* Overview:

- Proposed location of compensatory mitigation site(s) relative to impact site(s).
- For watersheds with available watershed plans, general watershed condition (e.g., historic and existing land uses, habitat loss or conversion trends, sources of impairment, development trends, percent of imperviousness, etc.). For watersheds without an available watershed plan, a general watershed analysis should be completed for large projects with substantial impacts. For example, a watershed profile can be conducted to characterize the abundance, types and condition of aquatic resources in the project watershed in order to provide information to evaluate direct, indirect and cumulative effects and provide an ecological reference for mitigation alternatives.
- Provide a description and approximate locations of non-native invasive plant species within the watershed and how these species are being treated or otherwise managed (most important for stream compensatory mitigation sites).
- Drainage basin size
- *For some projects and/or locations, analysis of an ecoregion, physiographic province, or other geographic area of interest may be considered in place of a watershed overview.

4.8.7.2 Landscape Setting and Position:

- Landscape position (e.g., depression, fringe, slope, flat, riverine)
- Land uses surrounding proposed compensatory mitigation site(s) (e.g., existing and reasonably foreseeable land uses, ownership).
- Connectivity of proposed compensatory mitigation site(s) to other aquatic resources.
- Extent of open space areas abutting proposed compensatory mitigation site(s).
- Existing and proposed buffer width and condition.

4.8.7.3 Site-specific information:

- Ownership information including existing easements, rights or entitlements.
- Estimate of existing and anticipated sources of hydrology.
- Soil characteristics
- Strahler stream order and hydrologic regime (e.g., ephemeral, intermittent, perennial).
- Existing habitat type(s), including the presence of any known species or habitats of concern (for example, federally-endangered or threatened species, State-listed species, invasive exotic species, federally-designated critical habitat).

- Discussion of water rights (where applicable), including water right type, owner needed to create and preserve aquatic resource, and the water decree number.
- Discussion of mineral rights (where applicable), including mineral type, owner needed to create or preserve the aquatic resource, and deed or lease to be terminated if necessary.

4.8.8 Baseline information (for impact, compensatory mitigation and (if applicable) reference sites) (also see 33 C.F.R. § 332.4(c)(5)): This section should include information regarding historic and existing plant communities (i.e., habitat assessment); historic and existing hydrology; soil conditions; a map showing locations of impact and compensatory mitigation sites, a delineation of waters of the U.S. and any non-jurisdictional aquatic resources on the site, and other site characteristics and information that would be useful to evaluate the proposed compensatory mitigation project.

4.8.8.1 Historic and existing hydrology: The water source and its characteristics of an aquatic resource (for example, direction of flow, volumetric flow rate, duration, depth, and frequency) are typically the primary determinants of aquatic resource type or class (Cowardin, 1979; Brinson, 1996). Therefore, hydrology is the most important aspect of designing the compensatory mitigation site and must be accurately analyzed in order to design a successful compensatory mitigation project.

- Existing hydrologic regime of each aquatic resource feature.
- Surface hydrology and hydraulics (modeling and/or direct observations/field evidence such as gages).
- Sub-surface hydrologic monitoring (shallow groundwater wells, peizometers).
- Water budget (depth, duration and timing of hydrology).
- For streams: Brief assessment of channel stability (aggrading, degrading, stable).
- For streams: Discussion of historic changes to channel morphology, such as incision/aggradation and anthropogenic channel confinement or straightening.

4.8.8.2 Soil characteristics:

- Soil conditions: Soil surveys may only provide general information, and soil characteristics should be determined at the site to provide more detailed information that can help inform whether a proposed compensatory mitigation project will have suitable soils to be successful.
- Soil samples tests (confirm soil survey and show texture/permeability). Examples include:

  (1) Soil fertility testing: Should include partial organic amendment evaluation (pH, salinity, as received/dry bulk density, moisture content, total nitrogen, organic % dry weight, organic matter lbs./cu. yd., particle sizes, half saturation percentage, dilute acid extractable iron, estimated carbon to nitrogen ratio). Also include "Major element fertility package" (half saturation percentage, pH, salinity, nitrate, nitrogen, ammonium nitrogen, phosphate phosphorus, potassium, calcium, magnesium and sodium).

  (2) Soil permeability testing: Field test methods to assess saturated hydraulic *conductivity for the "Dynamic Field" method must simulate the "field-saturated"* condition. See ASTM D5126-90 (2010) Standard Guide for Comparison of Field Methods for Determining Hydraulic Conductivity in the Vadose Zone. The saturated hydraulic conductivity analysis must be conducted by a Competent Soils Professional. Acceptable tests include: Guelph permeameter - ASTM D5126-90 Method; Falling head permeameter – ASTM D5126-90 Method; Double ring permeameter or

infiltrometer - ASTM D3385-03, D5093-02, D5126-90 Methods; Amoozemeter or Amoozegar permeameter – Amoozegar 1992.

- Assessment of whether soils are appropriate for the aquatic resource proposed as compensatory mitigation.
- Description of geology, including a geology survey review, and geotechnical studies if applicable (identify if faults, landslides, seeps, or other formations are present which may limit or expand on restoration activities).

4.8.8.3 Other baseline information:

- Map showing locations of impact and compensatory mitigation sites.
- Delineation of waters of the U.S, as well as non-jurisdictional aquatic resources.
- Delineation should include jurisdictional boundaries of all agencies involved in approving the mitigation plan.
- Functional/condition assessment, if appropriate.
- Species of concern (state and/or federal).
- Existing and planned land uses within and surrounding the proposed compensatory mitigation site(s).
- Existing site topography/elevations.
- Historic and existing conditions: Historic aerial review; land uses (open space, agriculture, grazing, etc.); site changes (agricultural diversions, impoundments, channel straightening or realignment, land-leveling, deep-ripping, mining).
- Interviews with adjacent landowners, ranchers, managers: location of seeps, observations of flood events, interval of overbank flows, sources of non-native species, occurrences trespassing/homeless use and vandalism, opportunities for education and outreach.

4.8.9 Mitigation work plan (also see 33 C.F.R. § 332.4(c)(7)): The work plan (or "development plan" for mitigation banks and ILF programs) should consist of the practical "how-to" details necessary to take the compensatory mitigation project from a design on paper to "in-the-ground" implementation. These should include:

- Geographic boundaries of the project.
- Construction methods.
- Timing (implementation schedule).
- Sequence.
- Source(s) of water, including connections to existing waters and uplands.
- Methods for establishing the desired plant community, including the proposed source of seed/plants.
- List of species to be planted/seeded in table format.
- Planting plan describing where and when species will be planted.
- Plans to control invasive exotic plant species.
- The proposed grading plan, including elevations and slopes of the substrate
- Soil management.
- Erosion control measures.
- Itemized budget including total estimated cost of proposed compensatory mitigation.
- For stream compensatory mitigation projects:
  - Planform geometry.
  - Channel form (e.g., typical channel cross-sections).

- Longitudinal profile.
- Characterization of sediment grain sizes.
- Watershed size.
- Design discharge.
- Discussion of use of native materials and bioengineering.
- Riparian area plantings.
- Description of any riffle-pool complexes and/or other special aquatic sites present.
- Discussion of the aquatic fauna, such as the resident fish with their times of breeding and spawning.

- Avoidance measures: description of measures to be taken to avoid any non-impacted aquatic resources or other sensitive resources within the compensatory mitigation site (e.g., use of construction monitor, flagging, fencing, contractor training, etc.).

4.8.10 Determination of credits (also see 33 C.F.R. § 332.3(f) and 332.4(c)(6)): The mitigation plan should include an explanation of how the compensatory mitigation project will provide the required compensation for unavoidable impacts to aquatic resources resulting from the permitted activity.

4.8.11 Description of site protection instrument (e.g., conservation easements). (also see 33 C.F.R. § 332.4(c)(4) and 332.7(a), as well as Section 7.0 below.)

4.8.12 Maintenance plan (also see 33 C.F.R. § 332.4(c)(8)); Maintenance inspection schedule.

4.8.13 Ecological performance standards (in table format); (also see 33 C.F.R. § 332.4(c)(9) and 332.5, as well as Section 5.0 below).

4.8.14 Monitoring requirements (also see 33 C.F.R. § 332.4(c)(10) and 332.6, as well as Section 6.0 below); Monitoring schedule.

4.8.15 Long-term management plan (also see 33 C.F.R. § 332.4(c)(11) and 332.7(d)).

4.8.16 Long term funding (endowment): If long-term management will be required after the monitoring period has ended, the district engineer has issued a written determination the compensatory mitigation project has been successfully completed and, for permittee-responsible mitigation, the compensatory mitigation requirements in the DA permit have been fulfilled, the following information should be provided to the district engineer:

- Budget analysis and expected funding need for long-term management (see Section 7.4 Funding for long-term management below).
- Endowment Agreement or documentation of other funding mechanism.
- For endowments, documentation verifying endowment funds are in place.

4.8.17 Adaptive management plan (also see 33 C.F.R. § 332.4(c)(12) and 332.7(c)). An integral part of a successful compensatory mitigation project is early detection of problems during implementation, determining the cause(s) of those problems, and attempt to correct those problems so that the compensatory mitigation project achieves its objectives and ecological performance standards. Interim performance standards are crucial to ensuring mitigation performance follows a trajectory to attain final mitigation success. The adaptive management plan should identify responsible parties who will identify problems and contact the Corps to develop appropriate measures in the event performance standards are not met. The adaptive management plan should identify a process for determining measures to correct deficiencies in compensatory mitigation projects, such as site modifications, design changes,

revisions to maintenance requirements, and revisions to monitoring requirements (see 33 CFR 332.7(c)(3)). Potential problems that may trigger a need for adaptive management include failure to attain interim and/or final performance standards, fire, unanticipated channel instability, substantial infestation by invasive, non-native plants and animals, and unanticipated anthropogenic problems such as large scale trespassing and vandalism. Once problems are identified, the responsible parties are required to coordinate with the Corps to identify potential courses of action and/or corrective measures. Based on coordination with the Corps, the responsible parties will recommend a course of action and develop a plan for implementing the measures. Minor problems, such as trash, vandalism, isolated instances of plant mortality, or small-scale weed or pest infestations should be rectified as they are discovered during routine site monitoring and maintenance and included in annual reporting, and do not require reporting to the Corps. Large scale corrective measures require coordination with the Corps, and such measures may include, but are not limited to, regrading part or all of the compensatory mitigation site, replanting more than 20 percent of the site to improve species cover or diversity, supplemental soil amendments, or installation of new or replacement of fencing and signage at a new location or with a new design, or modification of management activities such as large scale weeding or supplemental irrigation. In some cases, performance standards may be modified in accordance with 33 CFR 332.7(c)(4).

4.8.18 Financial assurance(s) (also see Section 3.5 above and 33 C.F.R. § 332.4(c)(13)). The mitigation plan should include the type and amount of financial assurance proposed.

4.8.19 Other information typically required by district engineer: Maps, drawings, figures, and geographic information system (GIS) data:

- Compensatory mitigation plans must comply with the SPD Map and Drawings Standard.
- List of required maps/drawings (please note this is a minimum list and additional items may be required by the district engineer for a particular permit application):
  - Project (requiring compensatory mitigation) map(s):
    - Habitat map.
    - Corps-approved jurisdictional map.
  - Reference site(s) map (if applicable).
  - Compensatory mitigation site map(s) depicting existing/pre-construction habitat.
  - Compensatory mitigation site map(s) depicting proposed/post-construction habitat..
  - Photo station map.
  - Soils map or a map showing locations of soil profile sample points provided as supporting documentation.
  - GIS data: Compensatory mitigation-related GIS data should be provided to the Corps, if practicable, within 60 days following permit issuance for standard individual permits or within 60 days following written Corps approval of the mitigation plan for general permits (Nationwide Permits, Regional General Permits, Programmatic General Permits). Submitted GIS data (polygons only) must depict the boundaries of all compensatory mitigation sites, as authorized in the final mitigation plan. All GIS data and associated metadata must be provided on a digital medium (CD or DVD) or via file transfer protocol (FTP), preferably using the Environmental Systems Research Institute (ESRI) shapefile format. GIS data for compensatory mitigation sites must conform to the data dictionary, as specified in the current SPD Map and Drawing Standards (available on SPD district websites), and shall include a text file of metadata, including datum, projection, and mapper contact information. Within 60 days following completion of compensatory mitigation construction activities, if any deviations have occurred, as-built GIS data (polygons only) should be submitted accompanied by a narrative description listing and explaining each deviation.

- Department of the Army permit number.
- Other resource agency permits (if required).
- Real Estate Records and Assurances, if applicable:
  - Preliminary Title Report, Legal Description, and Parcel Map(s)
  - Property Assessment and Warranty
  - Plat Map(s)
  - Real Estate Instrument (conservation easement or grant deed)
  - Title Insurance
- Phase I Environmental Site Assessment.
- Biological Resources Survey.
- Biological Opinion, if applicable.
- Cultural, Historical, Archeological, and Native American Resources: i.e., Identification, Inventory and Evaluation; Compliance Documentation; and Historic Properties Treatment Plan (HPTP), if applicable.

5. ECOLOGICAL PERFORMANCE STANDARDS

5.1 Documentation of performance standards: Performance standards must be referenced in the mitigation plan. Ecological performance standards are also required for Corps-approved mitigation banks and in-lieu fee programs. For in-lieu fee programs, ecological performance standards will be established for each in-lieu fee project as it is approved by the district engineer. Finally, ecological performance standards must be both measurable and verifiable.

5.2 Recommended range and formulation of performance standards: In general, ecological performance standards for compensatory mitigation should measure a range of environmental variables and ecological functions. Compensatory mitigation plans should include performance standards related to the physical characteristics, hydrology, flora, fauna, and in certain cases water quality (within an ecological context). While some of these ecological performance standard categories may not be applicable to all aquatic resource types and/or compensatory mitigation types, each category should be included unless it is clearly inapplicable. In addition, for very slow developing habitats, ecological performance standards should be based on the early stages of ecosystem development because of the limited monitoring period (generally 5 years or longer). Successful attainment of ecological performance standards depends on the expected stage of ecological development, and the length of the monitoring period. For purposes of DA permitting, the district engineer makes the final decision on the ecological performance standards for a specific mitigation plan. (For more information, see Corps Quality Management System Document 12505: SPD Uniform Performance Standards for Compensatory Mitigation Requirements).

5.3 Setting performance targets using reference sites: The objective of compensatory mitigation is to offset losses of aquatic resource functions through compensatory mitigation projects. The success of compensatory mitigation projects in providing aquatic resource functions, and sustaining those functions over time, depends in part on having well defined and realistic targets for those functions. Comparison to a reference site can help in the development of effective, objective, and realistic performance standards that account for changes in compensatory mitigation performance due to regional phenomena (e.g., floods, droughts, wildfires, etc.) and regional variability in aquatic resource characteristics. Reference sites are a well-established tool to establish targets for compensatory mitigation projects, in the context of the current regional environmental conditions. In the context of this guidance, the reference standard represents the aquatic resource condition in a least-disturbed setting within a watershed area, and taking into consideration the intensity of land use. In general and where applicable, compensatory mitigation

plans should incorporate reference sites as part of performance standards. The reference standard for that watershed should be considered in selecting reference sites and establishing performance standard targets. As part of its review of the overall mitigation plan, the Corps must review and approve proposed reference sites, including identification of the applicable reference standard. Where appropriate, mitigation plans may include multiple reference sites rather than a single reference site. In general, and where applicable, each performance standard should be measured (monitored) in relation to the approved reference site(s) (see Section 6.6 below).

5.4 Interim performance standards: Interim performance standards are crucial to ensuring mitigation performance follows a trajectory to attain final mitigation success. Mitigation plans should include interim performance standards whose targets are based, whenever possible, on the results of scientific studies documenting how a particular aquatic resource type develops over time. In the absence of such studies, professional judgment and available guidance should be used to establish interim performance targets (For more information, see Corps Quality Management System Document 12505: SPD Uniform Performance Standards for Compensatory Mitigation Requirements).

5.5 Performance standards format: Ecological performance standards should be listed in table format and clearly document the interim and final performance requirements of the compensatory mitigation site (for example table, see Corps Quality Management System Document 12505: SPD Uniform Performance Standards for Compensatory Mitigation Requirements).

5.6 Functional/condition assessment data: For projects where a functional/condition assessment method is used to assess a mitigation project's "before" and "after" conditions, the projected "after" score shall be included as a performance standard.

6. MONITORING

Monitoring is an essential aspect of compensatory mitigation as it provides information on whether the compensatory mitigation project is meeting its objectives and ecological performance standards. The information gained is constrained by the duration, frequency, and type of monitoring.

> 33 C.F.R. § 332.6
>
> "Monitoring the compensatory mitigation project site is necessary to determine if the project is meeting its performance standards, and to determine if measures are necessary to ensure that the compensatory mitigation project is accomplishing its objectives. The submission of monitoring reports to assess the development and condition of the compensatory mitigation project is required, but the content and level of detail for those monitoring reports must be commensurate with the scale and scope of the compensatory mitigation project, as well as the compensatory mitigation project type. The mitigation plan must address the monitoring requirements for the compensatory mitigation project, including the parameters to be monitored, the length of the monitoring period, the party responsible for conducting the monitoring, the frequency for submitting monitoring reports to the district engineer, and the party responsible for submitting those monitoring reports to the district engineer."

6.1 Monitoring methods: In general, mitigation monitoring methods should include quantitative sampling methods following established, scientific protocols (e.g., California Native Plant Society protocols) (Also see the 1987 Wetland Delineation Manual and applicable regional supplement.) Sampling documentation, as part of monitoring reports, should include maps showing locations of sampling points, transects, quadrants, etc. In addition, permanent photo stations should be established coincident with sampling locations.

6.2 Contingency measures: The Corps must be notified as soon as possible if applicable ecological performance standards are not met for all or any portion of the compensatory mitigation project in any year. The applicant shall prepare an analysis of the cause(s) of failure(s) and, if determined necessary by the Corps, propose remedial actions for approval. Changes to or modifications of the Corps-approved mitigation plan require approval by the Corps.

> 33 CFR 332.6(b)
>
> "The mitigation plan must provide for a monitoring period that is sufficient to demonstrate that the compensatory mitigation project has met performance standards, but not less than five years. A longer monitoring period must be required for aquatic resources with slow development rates (e.g., forested wetlands, bogs)."

6.3 Monitoring Period: Selection of an appropriate monitoring period is crucial to the evaluation of the long-term success of a compensatory mitigation project. Nationally, compensatory mitigation projects are required to have a minimum monitoring period of five years (33 C.F.R. § 332.6(b)). Within a few years post-implementation, compensatory mitigation wetlands are often similar to but do not fully function like their natural counterparts. The observations that many compensatory mitigation sites are still changing after five years and some functions seem to be converging on the levels seen in natural wetlands have led several researchers to conclude a monitoring period of five years may be an insufficient amount of time to assess wetland success (Talley and Levin, 1999; NRC, 2001).

6.3.1 Extended monitoring periods: Evaluation of compensatory mitigation sites over time indicates monitoring for the standard five-year period can be insufficient to ensure long-term habitat viability. Monitoring periods of more than five years are warranted for aquatic resources with slow development rates. Requirements for longer monitoring periods for categories of aquatic resources with slow development rates should based on documentation in the scientific literature. Monitoring periods may also be extended if the compensatory mitigation project is not meeting its ecological performance standards and the district engineer determines more time is needed to assess success. As an option to make extended monitoring periods more practicable, monitoring periods exceeding the 5-year minimum may have less frequent monitoring (e.g., quantitative monitoring every 2 years for a 10-year monitoring period, every 3 years for a 15-year monitoring period, etc.). In deciding on monitoring periods differing from the minimum five years, one should consider the aquatic resource type required as compensatory mitigation, as well as the method of compensatory mitigation. For example, wetland rehabilitation may take less time to achieve ecological performance standards than wetland re-establishment at a highly disturbed site. If a natural disaster occurs during the monitoring period, the monitoring period may be extended. Finally, monitoring should be adaptive such that the frequency and type of monitoring can be adjusted as performance standards and other conditions are met, while ensuring that long-term success is still likely to occur.

6.4 Project status and monitoring report submittal process: In order to facilitate management of monitoring data, the following policies are being implemented within the South Pacific Division:

6.4.1 Commencement and completion of construction and compensatory mitigation: In order to facilitate efficient review of monitoring reports by the Corps, Permittees should submit to the Corps a memo indicating the dates authorized impacts to waters of the U.S. commenced and ceased. In addition, Permittees should notify the Corps when construction of compensatory mitigation has been completed

(generally completion of earthwork and planting). In the latter notification, the Permittee should include the following information:

- Date(s) all compensatory mitigation construction activities were completed;
- Schedule for future mitigation monitoring, implementation and reporting pursuant to final, Corps-approved mitigation plan;
- Summary of compliance status with each special condition of the associated Corps permit or verification (including any noncompliance previously having occurred or currently occurring and corrective actions taken to achieve compliance);
- Color photographs of the aquatic habitats constructed at the compensatory mitigation site For those aspects directly associated with pre-existing waters of the U.S., before photos shall also be provided;
- One copy of "as built" drawings for the entire compensatory mitigation project prepared in accordance with SPD Map and Drawing Standards).

6.4.2 Timing of monitoring report submittal: The Corps will establish schedules for conducting monitoring activities appropriate to specific habitat types. Monitoring reports shall be submitted to the Corps by the date specified in the permit or verification special conditions.

6.4.3 SPD monitoring report form: To allow for greater efficiency by the Corps in reviewing monitoring reports, all annual monitoring reports must be submitted using the new SPD mitigation monitoring form (see Appendix C). Supporting data must be attached to the form, including:

- As-built drawing(s).
- Vicinity map(s)
- Compensatory Mitigation Site Map(s) (including the following information): Polygons by compensatory mitigation type as described in the approved mitigation plan; photo station locations; and annotated locations of sample points/transects/quadrants/soil pits/monitoring stations. Note: maps must comply with the SPD Map and Drawings Standard.
- Critical survey elevations, properly benchmarked.
- Photographic record of the site during most recent monitoring visit at designated photo stations.
- Results of functional/condition assessments if required to be used for the compensatory mitigation project.
- Narrative report (optional).

6.5 Third Party Monitoring: To obtain objective monitoring of compensatory mitigation projects, the Corps may require monitoring by approved third-party entities. Typically the third-party monitor will be the easement holder or a similar conservation-oriented organization. The third-party monitor would be responsible for preparing monitoring reports in accordance with the requirements specified in the approved mitigation plan or permit conditions and will submit the reports directly to the Corps for review. To obtain Corps approval within the boundaries of the South Pacific Division such organizations will have obtained accreditation from the Land Trust Accreditation Commission or be able to demonstrate adoption of the Land Trust Alliance's Standards and Practices.

6.6 Monitoring and reference sites: Reference site condition provides the standard against which local and regional changes in current biological and environmental (abiotic) conditions are evaluated. Defining reference condition provides a scientifically defensible basis upon which to describe this inherent natural variability. In general and where applicable, compensatory mitigation plans should incorporate reference sites as part of performance monitoring. As part of its review of the overall mitigation plan, the Corps

must review and approve proposed reference sites. Where practicable, mitigation plans should include multiple reference sites rather than a single reference site. Reference site comparisons may be made using similar aquatic resource sites within the same watershed; similar sites up- or downstream along the same river, stream reach, or wetland complex ; or a comparison to multiple, similar reference sites within a reference network. Reference sites may be monitored by the permittee in tandem with compensatory mitigation site monitoring or by a third party approved by the Corps (see Section 6.5 above). As an alternative, regional reference networks may be used, if available. Reference networks would provide long-term data on conditions across gradients of disturbance and over time scales that encompass climatic (and other temporal) patterns. Individual projects would be able to use the information from these reference networks to help establish project-specific targets and to interpret site-specific monitoring data.

6.7 Attainment of compensatory mitigation success and release from monitoring requirements: The Corps ultimately determines if a compensatory mitigation site is successful. For permittee-responsible mitigation projects, compensatory mitigation requirements will not be considered fulfilled until the permittee has received written concurrence from the district engineer that the compensatory mitigation project has met its objectives and no additional monitoring is required, unless long-term management is required and monitoring reports are part of the long-term management plan. Before determining success there should be at least two consecutive annual monitoring reports where all the performance standards are met without human intervention. A final site inspection should also be conducted to determine compensatory mitigation success.

7. MANAGEMENT

Long-term protection of the aquatic habitats, riparian areas, buffers, and uplands that comprise the overall compensatory mitigation project is required, as appropriate (33 C.F.R. § 332.7(a)). A description of the legal arrangements and instrument, including site ownership, that will be used to ensure long-term protection of the compensatory mitigation project site are to be included in the mitigation plan.

7.1 Long-term site protection: May be provided through real estate instruments such as conservation easements or deed restrictions (a.k.a., restrictive covenants).

33 CFR 332.7

"To provide sufficient site protection, a conservation easement or restrictive covenant should, where practicable, establish in an appropriate third party (e.g., governmental or non-profit resource management agency) the right to enforce site protections and provide the third party the resources necessary to monitor and enforce these site protections."

In order to determine whether a third party easement holder with sufficient resources to enable enforcement and management is warranted, the following items should be considered: risk, the need for management, ecological value of the site in a watershed context, and practicability. Risk may vary depending on the proposed long-term land owner as well as the potential value of the site were it to be developed. As land owners, public entities (cities and counties) or non-profit organizations generally present less risk, especially when management of the site as an aquatic resource preserve or wildlife habitat is specifically described in municipal management plans and budgets. The need for long-term management activities can include removal of invasive exotics if such species are present or expected to

colonize the site, maintenance of any signage, fencing, or structures within the site, as well as trash removal for sites in close proximity to potential sources of trash. The value of the site should be considered, with more valuable sites that provide high-value habitat types or landscape connectivity warranting the greater management oversight provided by a third party. Finally, practicability should be considered. For example, documented, unsuccessful attempts to identify a third party willing to assume management duties may demonstrate the impracticability of enlisting a third party manager if all potential parties have been contacted and declined. In cases where a third party easement holder is required, a financial mechanism (for example, a non-wasting endowment) is typically required to provide the easement holder resources to monitor and enforce the site protections in perpetuity. Subdividing compensatory mitigation sites into individual lots owned by multiple landowners is strongly discouraged as this can complicate attainment of compliance with mitigation requirements (specifically long-term protection and management).

7.2 For compensatory mitigation projects on federal lands: Where federal facility management plans or integrated natural resources management plans are used to provide long-term protection and changes in statute, regulations, agency needs or mission result in an incompatible use on public lands originally set aside for compensatory mitigation, the federal agency authorizing the incompatible use is responsible for providing alternative compensatory mitigation that is acceptable to the Corps for any loss in functions resulting from the incompatible use. In some cases, non-federal public agencies may also forgo real estate instruments by implementing long-term management plans.

7.3 Real estate instrument or management: The real estate instrument or management plan providing long-term protection of the compensatory mitigation site shall, to the extent practicable, prohibit incompatible uses that might otherwise jeopardize the objectives of the compensatory mitigation project. The permittee shall disclose in advance all pre-existing or proposed easements, rights (e.g., utility easements, water and mineral rights, etc.) on and under the site in question.

7.3.1 Approval process: In general, real estate instruments or management plans shall be reviewed and approved by the District Office of Counsel, in coordination with the District's Regulatory Division, in advance of, or concurrent with, the activity causing the authorized impacts. Draft instruments should include all referenced exhibits, as well as detailed map(s) showing the exact, approved boundary of the protected area. Maps must comply with the SPD Map and Drawings Standard (available on SPD district websites).

7.3.2 Templates: Templates for draft conservation easements may be obtained from Office of Counsel. Microsoft Word is the preferred format for providing draft documents for review. Deviating from those templates may result in longer review and approval times as well as potential rejection of such documents.

7.3.3 Exhibits: In general, the following exhibits should be provided in support of site protection mechanisms:

- Metes and bounds of surveyed plot;
- Survey plot overlay of parcel map;
- Aerial photograph of site, with overlay of compensatory mitigation site boundaries and existing easements over property;
- Recent title report, including tax payments;
- Color photographs of representative site conditions and of man-made structures and facilities.

7.4 Funding for long-term management: If a third party easemement holder is required, the third party must be provided resources necessary to monitor and enforce site protections. One method for accurately estimating the cost of long-term preservation and maintenance of a compensatory mitigation site is the Property Analysis Record (PAR) method developed by the Center for Natural Lands Management. The PAR is a computerized database methodology that is effective in helping land managers calculates the costs of land management for a specific project. The PAR helps analyze the characteristics and needs of the property from which management requirements are derived. It helps pinpoint management tasks and estimates their costs as well as the necessary administrative costs to provide the full cost of managing any property. The PAR generates a concise report which serves as a well-substantiated basis for long-term funding including endowments, special district fees, and other sources. These measures are generally accepted methods that are formed in part from terrestrial habitat conservation models, which have identified the following key elements to assure long-term conservation: a conservation easement; a long-term management plan; adequate funding and a funding mechanism (e.g., non-wasting endowment) to carry out the long term management (based on a PAR or comparable method to estimate cost); and a land manager. Information on PAR is available online.

8. MITIGATION BANKS AND IN-LIEU FEE PROGRAMS

8.1 Establishment of Mitigation Banks and In-Lieu-Fee Programs: In accordance with 33 C.F.R. § 332.3(b) of the Mitigation Rule, when permitted impacts to waters of the U.S., including wetlands, are within the service area of an approved mitigation bank (MB) or in-lieu-fee program (ILF) and appropriate credits are available, the preferred method of compensatory mitigation is through the purchase of credits from an approved MB or ILF program over permittee-responsible mitigation. To that end, specific procedures have been developed within the Rule to approve existing and future MBs and ILF programs in order to provide compensatory mitigation for activities authorized by DA permits, including general permits. An approved MB or ILF must have an instrument, which governs the establishment, operation, and use of that MB or ILF program. In-lieu fee programs shall also include a compensation planning framework (watershed plan). The specific requirements of those documents are indicated below.

8.1.1 Prospectus: A prospectus is a proposal to establish a mitigation bank or in-lieu fee program. A checklist for the Prospectus is available on RIBITS and on the district websites. At a minimum, a prospectus shall include the following information: objectives; how the MB or ILF program will be established and operated; proposed service area; general need for and technical feasibility; proposed ownership arrangements and long-term management; and qualifications of the sponsor. In addition to the abovementioned items, the MB prospectus shall also address both ecological suitability and the assurance of sufficient water rights for the proposed compensatory mitigation project(s) to be used as a mitigation bank. For the ILF program prospectus, a compensation planning framework (CPF) (see Section 8.1.3) and a description of the ILF program account required in 33 C.F.R. § 332.8(i) are required in addition to the items listed above. In general, submittal of a draft prospectus is encouraged and may result in more efficient establishment of banks and ILF programs.

8.1.2 Banking and In Lieu Fee Program Instruments: The Instrument shall include the proposed geographic service area; accounting procedures; provision stating that legal responsibility/liability will be transferred to the sponsor upon sale or transfer of credits to permittees; default and closure provisions; reporting protocols; and any other information deemed necessary by the District Engineer. In addition to the abovementioned items, a Banking Instrument shall also include mitigation plans that include all applicable items in 33 C.F.R. § 332.4(c)(2) through (14), and a credit release schedule. An ILF program Instrument should also include a compensation planning framework

(see Section 8.1.3), advance credits, fee schedule, method for determining future project-specific credits/fees, and a description of the ILF program account (33 C.F.R. § 332.8(i)).

8.1.3 Compensation Planning Framework (CPF): The CPF is an integral part of the ILF program and shall consist of the following components:

- Geographic service area(s) (watershed-based).
- Threats to aquatic resource(s) and how they are addressed.
- Analysis of historic aquatic resource loss in the service area.
- Analysis of current aquatic resource conditions in the service areas(s).
- Statement of aquatic resource goals and objectives.
- Prioritization strategy for selection and implementation of compensatory mitigation activities.
- Use of preservation (see 33 C.F.R. § 332.3(h)).
- Description of any public/private stakeholder involvement.
- Long-term protection and management strategies.
- Evaluation and reporting.
- Any other information deemed necessary by the district engineer.

8.2 Review Process for MBs and ILF Programs:

8.2.1 Interagency Review Team (IRT): An IRT shall be established by the district engineer to review documentation for the establishment, management, and use of MBs and ILF programs. The district engineer or appointed representative serves as IRT chair. The IRT includes members from appropriate federal/state/tribal/local regulatory and resource agencies. A Memorandum of Agreement (MOA) may be developed with IRT members. The Corps makes the final decision on whether to approve the instrument and other aspects of MB and ILF program operation associated with impacts to waters of the U.S., including credit releases.

Specific timeframes for submittals and completion of review have been provided as part of 33 C.F.R. § 332 (see IRT review timeline flowchart in Appendix E). Please note that these timeframes apply to the steps controlled by the Corps and may be extended for a variety of reasons (see 33 C.F.R. § 332.8(f). The timeframes do not generally apply to steps controlled by the sponsor, such as responding to comments by the Corps or other members of the IRT.

8.2.2 Specific Review Process: The following steps shall be completed during development of MB and ILF programs [33 C.F.R. § 332.8(d)]:

- Optional: submittal of draft prospectus by sponsor.
- Preliminary review of optional draft prospectus by IRT.
- Submittal of prospectus to Corps and IRT.
- Public review and comment upon prospectus.
- Notification of the findings of the initial review, in which the sponsor may be advised to proceed with preparing a draft instrument, or informed about the Corps concerns that the proposed MB or ILF program would not be acceptable for providing compensatory mitigation for DA permits.
- Submittal of draft instrument.
- Review of draft instrument by IRT.
- Submittal of final instrument to Corps and IRT.
- Corps notification to IRT of proposed decision on final instrument.

- Dispute resolution process, as necessary [33 C.F.R. § 332.8(e)].

8.3 Grandfathering of Existing MBs and ILF Programs:

8.3.1 Existing Mitigation Banks: In accordance with 33 C.F.R. § 332.8(v)(1), existing MB instruments approved on or before July 9, 2008 may continue to operate under the terms of existing instruments. However, proposed modifications to existing MB instruments must comply with 33 C.F.R. § 332.8, including the addition of sites under an umbrella mitigation banking instrument, the expansion of an existing MB site, or the addition of different type(s) of resource credits.

8.4 General MB and ILF Program Requirements: The following is required pursuant to the Mitigation Rule and SPD policy:

- Long-term site protection [33 C.F.R. § 332.8(t)] through real estate instruments, management plans, or other long-term mechanisms.
- Long-term management plans [33 C.F.R. § 332.4(c) (12)] to include associated endowment for long-term management needs, such as annual inspections, site maintenance (if included in protective instrument), legal enforcement, and GIS updates.
- Establishment and maintenance of annual report ledgers (33 C.F.R. § 332.8(p)].
- Reporting ledger accounts (including bank statements) and site monitoring reports [33 C.F.R. § 332.8(q)].
- Financial assurance in the form of performance bonds, escrow accounts, casualty insurance, letters of credit, or legislative appropriations [33 C.F.R. § 332.3(n)(1)].
- Financial assurance and long-term management funding reports [33 C.F.R. § 332.8(q)(3)].

8.5 Service Area: The primary factor the Corps will use when determining service areas for proposed banks and in-lieu fee programs will be the needs of the surrounding watershed taking into consideration the type(s) of aquatic resources associated with proposed mitigation bank or in lieu fee program. This guidance refers to three scales of watershed referred to by the number of digits in their hydrologic unit codes (HUC): the 10-digit ‘watershed’, the 8-digit ‘sub-basin’, and the 6-digit ‘basin’. This guidance suggests use of the U.S. Department of Agriculture’s Major Land Resource Areas to define ecoregion boundaries, but does not preempt use of another ecoregion definition with justification. In accordance with 33 CFR 332.8(d)(6)(ii)(A), the economic viability of the bank or in-lieu fee program may also be a consideration when determining service area.

When preparing a mitigation bank or in-lieu fee program prospectus, the sponsor must include a map and a detailed narrative description of the geographic boundary and the criteria used to determine the proposed service area or service areas. At a minimum, the service area will be the 10-digit watershed containing the Site(s) (hereinafter “Site” or “Sites” is used to refer generically to mitigation bank sites and in-lieu fee sites). Documentation and justification must be provided for expansion of the service area from the 10-digit watershed containing the Site. The level of documentation and justification the sponsor must provide increases in a step-wise progression with each additional 10-digit watershed, or portion thereof. Additions where all of the following are true require minimal justification: a) areas abutting the 10-digit watershed in which the Site is located, b) within the same 8-digit sub-basin as the Site and c) within the same ecoregion as the Site. Depending upon the characteristics of the Sites and the needs of the watersheds in the area, it may be appropriate to add portions of adjacent 8-digit sub-basins within the same ecoregion rather than expanding the service area into adjacent ecoregions within the same 8-digit sub-basin. Considerable justification is required for any additions that are outside either the 8-digit sub-basin or ecoregion containing the Site. Documentation and justification again is required in a step-wise progression with each addition of a 10-digit watershed or portion thereof. The burden for demonstrating

and justifying service area expansion lies entirely with the Sponsor. This guidance does not support expansion of a service area into 6-digit basins other than the one in which the Site is located. The Corps will use this information and the following considerations to determine the appropriate service area for proposed banks and in-lieu fee programs.

> 33 CFR 332 Preamble page 19606
>
> "to ensure the benefits of thirdparty mitigation, economic factors should not supersede ecological considerations in the final service area determination."

8.5.1 Secondary Service Areas: In some cases, a secondary service area may be authorized by the Corps for a bank or ILF. If a district determines a secondary service area is appropriate, the sponsor requesting a secondary service area should provide an ecological justification for how impacts within a secondary service area would be offset by restoration of aquatic resource functions at the bank or ILF project site. A secondary service area, if authorized by the Corps as part of a bank or ILF instrument, may be used if:

- The impact site is not within the primary service area of an approved bank or ILF with available credits;
- Permittee-responsible mitigation has been determined by the Corps to be impracticable and/or inconsistent with a watershed approach, and;
- The number of credits to be purchased would be greater to account for the increased distance from the impact site to the bank or ILF project site.

8.5.2 Tertiary Service Areas: The use of tertiary service areas is generally discouraged for compensating impacts to waters of the U.S.; however, tertiary service areas may provide a mechanism for providing other types of compensatory mitigation (for example, for State species of concern).

8.6 Credit Determination: The Mitigation Rule defines a credit as: "Credit means a unit of measure (e.g., a functional or areal measure or other suitable metric) representing the accrual or attainment of aquatic functions at a compensatory mitigation site." A credit may be further defined as the ecological equivalent of one unit area (an acre, for example) of successful establishment or re-establishment whereby a site containing no aquatic resource functions is modified such that it exhibits optimal functioning (as defined by the reference standard). In this case, a credit represents the most functional lift per unit area that could be expected in a given watershed or service area.

The Mitigation Rule preamble expresses a strong preference for the use of FCAM in determining bank credits:

> 33 CFR 332 Preamble page 19601
>
> "With this rule, we are moving towards greater reliance on functional and condition assessments to quantify credits and debits, instead of surrogates such as acres and linear feet. We believe that more frequent use of such assessment methods will help improve the quality of aquatic resources in the United States."

While an FCAM is not required in all cases of compensatory mitigation, it is required when practicable. Generally, it is assumed that for large endeavors such as mitigation banks and ILF programs, use of an FCAM would be practicable. Therefore, in order to determine the number of credits available at a proposed bank or ILF Program, a sponsor should incorporate data from an FCAM to estimate the functional gain expected to be achieved for each particular aquatic resource method. Estimated functional gain would be verified using the same FCAM as part of the bank or ILF Program's performance standards. When practicable, in order to use a bank or ILF Program, permit applicants should estimate functional loss using the same FCAM as used by the bank or ILF Program. Similarly, if debits are calculated, this should be done using the same FCAM as used by the bank or ILF program.

One example of using an FCAM to determine credits is as follows: A bank sponsor would carry out an FCAM analysis to estimate expected functional gain (estimated scores less existing baseline scores), scale the scores using the optimal score for that aquatic resource type in the service area, and multiply the scaled scores by the acreage (or linear feet for streams, if preferred) (See Appendix F for example credit determination table).

In addition, other factors may be incorporated in credit determination, including temporal loss during the period before a bank or ILF site achieves maturity (i.e., meets its final performance standards).

8.7 Credit Release: Credit release schedules for banks and ILF programs should reflect the amount of risk involved with a specific bank or ILF project. For example, for projects with higher risk, a slower credit release schedule tied more closely to attainment of interim performance standards would be appropriate.

8.8. Additional Information: Standardized templates, policies, and processes have been or will be established for use in the evaluation of proposed mitigation banks and ILF programs within SPD. These templates, policies, and processes, once established, will be subject to periodic review and modified as necessary. Regulatory In-lieu Fee and Bank Information Tracking System (RIBITS) is a nationwide Regulatory database used for transactions/management of third-party mitigation programs. RIBITS provides data from a given service area that indicates whether there is a MB or ILF, whether there are credits available, and what type of credits are available. RIBITS is used to share mitigation bank documents and information among the IRT via a public website (user id/password not required for public access).

9. SPECIAL AREA MANAGEMENT PLAN COMPENSATORY MITIGATION CONSIDERATIONS

The Corps has used an innovative regulatory tool called a Special Area Management Plan (SAMP) to undertake a comprehensive review of aquatic resources in an entire watershed and develop a permitting strategy to protect important aquatic resources within that watershed. The SAMP approach facilitates Corps analysis of potential impacts at the watershed scale in order to identify priority areas for preservation, identify potential restoration areas, determine the least environmentally damaging locations for proposed projects, and establish alternative permitting processes (e.g., regional general permits) appropriate for the SAMP areas.

The goals of SAMPs are to achieve a balance between the need for aquatic resource protection and reasonable economic development and infrastructure needs. SAMPs are designed to be conducted in geographic areas of special sensitivity under intense development pressure. These comprehensive and

complex efforts usually require the participation of multiple local, state, and federal agencies. In addition, the Corps considers public and key stakeholder involvement an essential part of a successful SAMP.

In Southern California, SAMPs have been completed for the San Diego Creek watershed, and San Juan Creek and portions of San Mateo Creek watersheds in Orange County. SAMPs are underway in western Riverside County including portions of San Jacinto River and upper Santa Margarita River watersheds, and the Otay River watershed in San Diego County.

SAMPs may include watershed-specific regulatory tools, such as conditions or best management practices, to be incorporated into CWA Section 404 permits to be issued within the SAMP watersheds, to protect aquatic resources in that watershed. Pre-application procedures and watershed-specific compensatory mitigation policies may also be imposed.

Proposed and future projects that involve regulated activities within a SAMP watershed should contact the appropriate District's Regulatory Division to find out specific procedures related to compensatory mitigation and permit applications within the SAMP watershed.

10. DOCUMENT FORMATTING REQUIREMENTS

Dual paper and electronic document submissions are preferred.

10.1 Paper Documents: Except for full-size drawings, all plans, reports and proposals should be submitted as single, stand-alone, separately-bound documents. All bound materials should be submitted as, or be folded to, 8.5 by 11-inch pages.

10.2 Electronic Documents: Draft documents submitted for Corps review should be presented in Microsoft Word (.doc or .docx) format. Submission in Adobe Acrobat (.pdf) format is preferred for final documents.

11. APPLICABILITY AND EFFECTIVE DATE

Applicability. These Guidelines became effective on _____ and supersede all previous district-specific compensatory mitigation and monitoring guidelines issued within SPD. These Guidelines are applicable for all permit applications received after _____. Permit applications received prior to the effective date must also comply with these guidelines except for cases where compensatory mitigation has already been constructed or where the applicant can otherwise fully demonstrate substantial resources have been expended or committed in reliance on previous guidance governing compensatory mitigation for DA permits within SPD.

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APPENDICES

A. Compensatory Mitigation Types

B. Aquatic Resource Description Tables

C. Process of Developing a Mitigation Plan

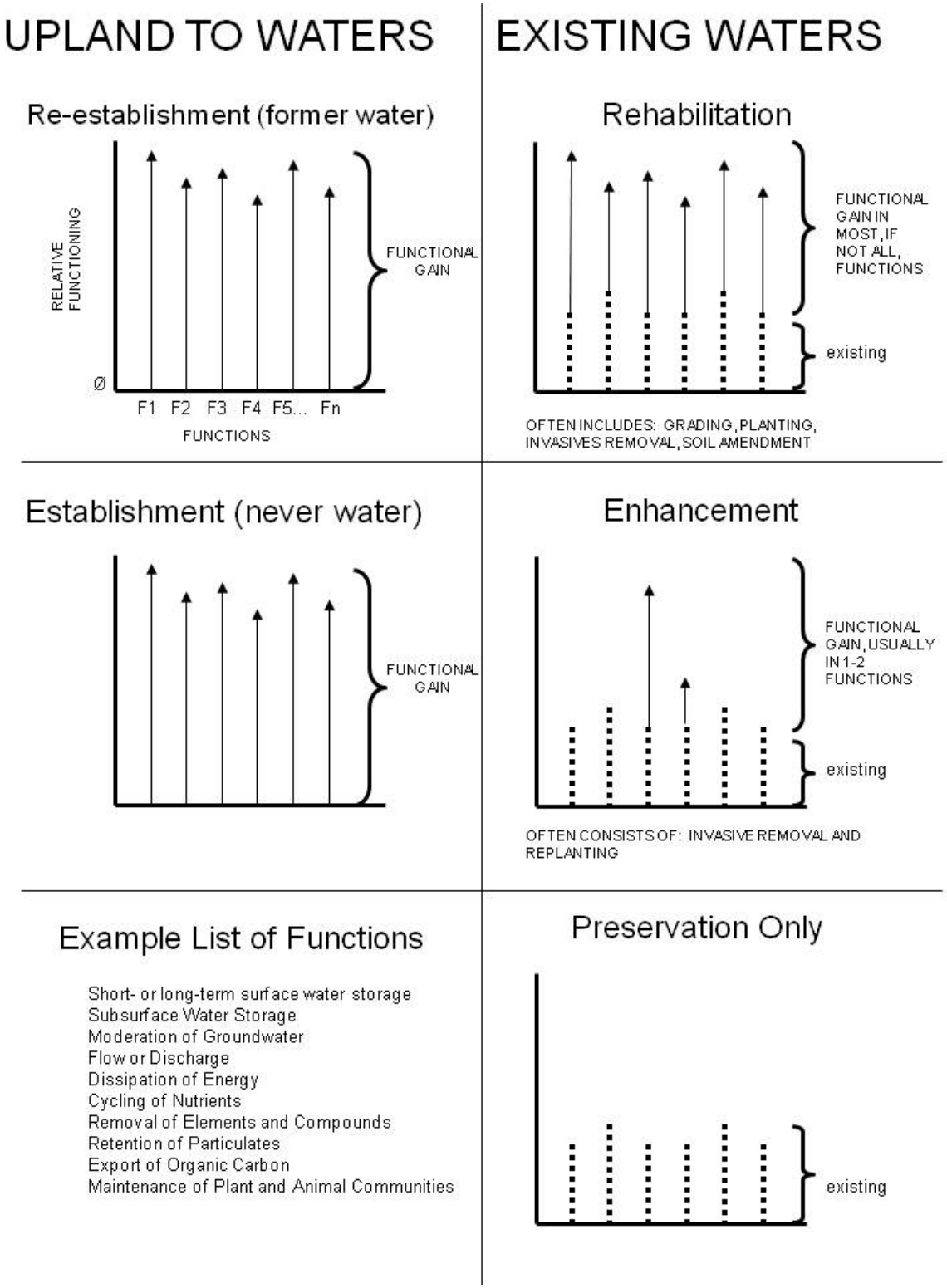
D. Mitigation Monitoring Form

E. IRT Review Timeline

F. Example credit determination table

G. List of Acronyms

APPENDIX A: Compensatory Mitigation Methods



Appendix B: Aquatic Resource Description Tables (See Section 3.6). Note: Acreages should be represented on each table only once (i.e., do not double-count sites).

Table B-1: Impact Site Description

Pre-Construction Site Conditions							Post-Construction Site Conditions			
Site No.[1]	**Habitat Types[2]**	**Vegetation Communities[3]**	**Cowardin[4]**	**HGM[5]**	**Hydrology**	**FCAM[6] CRAM (if used)**	**Activity**	**Permanent Loss[7]**	**Temporary Loss[7]**	**Lin. Ft**
Wetland Waters of the U.S.										
1	Alkali meadow	Saltgrass series	PUB	Slope	saturated	wet meadow	road crossing	0.3	N/A	N/A
2	Freshwater marsh	Bulrush-cattail series	R2UB	Depressional	seasonally flooded	depression	building pads	2.1	N/A	N/A
						Total:		2.4	N/A	N/A
Non-Wetland Waters of the U.S.										
3	Mulefat	Mulefat series	R4SB	Riverine	intermittent	riverine	utility line	N/A	0.27	673
4	Riparian scrub	Arroyo willow series	R4SB	Riverine	intermittent	riverine	building pads	0.7	N/A	1202
						Total:		0.7	0.27	1875
Upland Habitats										
5	Native grassland	Purple needlegrass series	N/A	N/A	N/A	N/A	grading	N/A	1.2	N/A
6	Sage scrub	California encelia series	N/A	N/A	N/A	N/A		4.5	N/A	N/A
						Total:		4.5	1.2	N/A

Table B-2: Mitigation Site Description

Site No.	Pre-Construction Site Conditions	Post-Construction Site Conditions								
	Habitat Types[1]	**Habitat Types**[2]	**Vegetation**[3]	**Hydrology**	**Mitigation Method**	***Acres***	***Lin. Ft***	**Cowardin**[4]	**HGM**[5]	**FCAM**[6] **CRAM** (if used)
		Wetland Waters of the U.S.								
1	Alkali meadow	Alkali meadow	Saltgrass series	saturated	EN	3.0	N/A	PUB	Slope	wet meadow
2	Freshwater marsh	Freshwater marsh	Bulrush-cattail series	seasonally flooded	EN	1.0	N/A	R2UB	Depressional	depression
3	Annual grassland	Riparian forest	Black willow series	seasonally flooded	ES	1.0	500	PEM	Riverine	riverine
					Total:	5.0	500			
		Non-Wetland Waters of the U.S.								
4	Annual grassland	Mulefat	Mulefat series	intermittent	ES	1.2	100	R4SB	Riverine	riverine
5	Disturbed riparian scrub	Riparian scrub	Arroyo willow series	intermittent	ES	1.0	2,400	R4SB	Riverine	riverine
6	Tamarisk scrub	Riparian scrub	Arroyo willow series	intermittent	RH	1.6	1,401	R4SB	Riverine	riverine
					Total:	3.8	3,901			
		Buffer Habitats								
7	Annual grassland	Native grassland	Purple needlegrass series	upland	RE	1.38	2,400	N/A	N/A	N/A
8	Annual grassland	Native grassland	Purple needlegrass series	upland	RE	1.38	2,400	N/A	N/A	N/A
9	Ruderal habitat	Sage scrub	CA encelia series	upland	RE	4.5	N/A	N/A	N/A	N/A
10	Sage scrub	Sage scrub	CA buckwheat-white sage series	upland	EN	0.5	N/A	N/A	N/A	N/A
					Total:	7.6				
		Non-Aquatic Mitigation Excluding Buffer Areas[7]								
11	Annual grassland	Native grassland	Purple needlegrass series	upland	restoration	5	N/A	N/A	N/A	N/A
12	Ruderal habitat	Sage scrub	CA buckwheat-white sage series	upland	restoration	5	N/A	N/A	N/A	N/A
13	Chaparral	Chaparral	Chamise series	upland	preservation	13	N/A	N/A	N/A	N/A
					Total:	23				

Table B-1 Instructions:

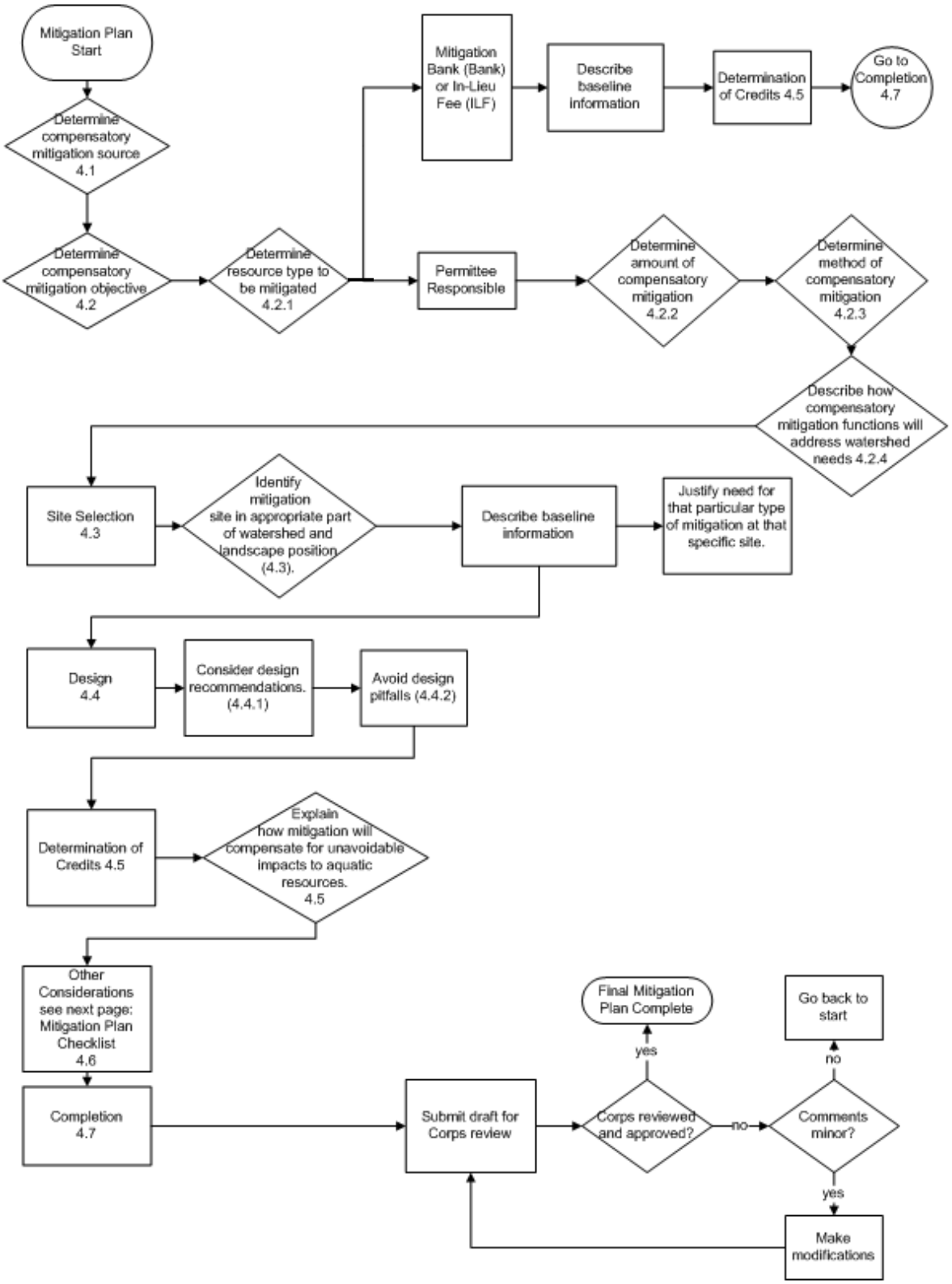
1. Site numbers should correspond to discrete sites shown and labeled on enclosed figure(s) (maps), cross-section(s), and GIS layer(s).
2. Habitat Types: Habitat types are general common qualitative descriptions such as riparian, marsh, tidal wetlands, open water, seasonal wetland, vernal pools, or annual grassland.
3. Vegetation Classification: Vegetation community types are based on the most recent widely accepted classification system. The communities used in this example are from A Manual of California Vegetation by Sawyer and Keeler-Wolf.
4. Cowardin: Use the Classification of Wetlands and Deepwater Habitats of the United States to identify the System, Subsystem, and Class. For example: The Riparian scrub in this example table is classified as System Riverine (R), Subsystem Intermittent (4), and Class Streambed (SB). The Alkali meadow would be System Palustrine (P), there is no Subsystem for Palustrine wetlands, and Class Unconsolidated Bottom (UB). Freshwater Marsh would be System Riverine (R), Subsystem Lower Perennial (2), and Class Unconsolidated Bottom (UB).
5. HGM: Use the Hydrogeomorphic (HGM) Classification of Wetlands to identify the appropriate class. There are seven HGM classes: Riverine, Slope, Mineral Soil Flats, Organic Soil Flats, Depressional, Estuarine Fringe, and Lacustrine Fringe. For Example: The Mulefat habitat in this example table is classified as Riverine and the Alkali meadow is classified as Slope.
6. FCAM: If a functional or condition assessment method (FCAM) is used, identify the FCAM in the column header and complete that column by entering FCAM subclasses. The California Rapid Assessment Method (CRAM) is used as an example.
7. Impact duration: each row, corresponding to a discrete impact site, must be either permanent or temporary loss but not both. Loss is in acres.

Table B-2 Instructions:

1. Site numbers should correspond to discrete sites shown and labeled on enclosed figure(s) (maps), cross-section(s), and GIS layer(s).
2. Habitat Types: Habitat types are general common qualitative descriptions such as riparian, marsh, tidal wetlands, open water, seasonal wetland, vernal pools, or annual grassland. Habitat types for pre-construction condition can be listed multiple times if the habitat is being utilized for multiple post-construction mitigation requirements.
3. Vegetation Classification: Vegetation community types are based on the most recent widely accepted classification system. The communities used in this example are from A Manual of California Vegetation by Sawyer and Keeler-Wolf.
4. Cowardin: Use the Classification of Wetlands and Deepwater Habitats of the United States to identify the System, Subsystem, and Class. For example: The Southern willow scrub in this example table is classified as System Riverine (R), Subsystem Intermittent (4), and Class Streambed (SB). The alkali marsh would be System Palustrine (P), there is no Subsystem for Palustrine wetlands, and Class. Unconsolidated Bottom and the Freshwater Marsh would be System Palustrine (P) and Class Emergent Marsh (EM).
5. HGM: Use the Hydrogeomorphic (HGM) Classification of Wetlands to identify the appropriate class. There are seven HGM classes, including Riverine, Slope, Mineral Soil Flats, Organic Soil Flats, Depressional, Estuarine Fringe, and Lacustrine Fringe. For Example: The Sothern willow scrub in this example table is classified as Riverine and so is alkali marsh.
6. FCAM: If a functional or condition assessment method (FCAM) is used, identify the FCAM in the column header and complete that column by entering FCAM subclasses. The California Rapid Assessment Method (CRAM) is used as an example.

7. Refers to areas sometimes included in mitigation plans as a result of state or federal wildlife protection requirements (e.g., Endangered Species Act). Non-aquatic mitigation is included within a mitigation plan to address the needs of a separate resource agency, but is not considered compensatory mitigation for purposes of DA permits.

Appendix C: Process of Developing a Mitigation Plan (Flowchart and Checklist)



Mitigation Plan Checklist

Section	Required content	YES	NO
4.6.1	Title Page		
4.6.2	Contributor Page		
4.6.3	Distribution Page		
4.6.4	Table of Contents		
4.6.5	Brief description of overall project		
4.6.6	Objectives 33 CRF §332.4(c)(2)		
4.6.7	Determination of Credit 33 CRF §332.3(f) and 332.4(c)(6)		
4.6.8	Description of site selection criteria §332.3(d) and 332.74(c)(3)		
4.6.9	Baseline information §332.4(c)(5)		
4.6.10	Mitigation work plan §332.4(c)(7)		
4.6.11	Description of site protection instrument §332.4(c)(4) and 332.7(a))		
4.6.12	Maintenance plan §332.4(c)(8)		
4.6.13	Ecological performance standards §332.4(c)(9) and 332.5		
4.6.14	Monitoring requirements §332.4(c)(4)(10) and 332.6		
4.6.15	Long-term management plan §332.4(c)(11) and 332.7(d)		
4.6.16	Long-term funding (endowments)		
4.6.17	Adaptive management plan §332.4(c)(12) and 332.7(c)		
4.6.18	Financial assurance(s) §332.4(c)(13)		
4.6.19	Other information required by district engineer		

Appendix D: Mitigation Monitoring Form

South Pacific Division - Annual Compliance and Mitigation Monitoring Report Form Page 1 of 5
Version date: August X, 2012

Section A: Project/Mitigation Bank/In-lieu Fee Name (fill only sections 1-3 if mitigation was not required)		
1. Project Name: Click here to enter text.	2. Permit number(s): Click here to enter text.	3. Project type: Choose an item.
4. Permittee, Bank or In Lieu Fee Sponsor Name and Work Phone Number: Click here to enter text.	5. Permittee, Bank or In Lieu Fee Sponsor Mailing Address: Click here to enter text.	6. Permittee, Bank or In Lieu Fee Sponsor E-mail/Address: Click here to enter text.
7. Agent Name and Work Phone Number: Click here to enter text.	8. Agent Mailing Address: Click here to enter text.	9. Agent E-mail Address: Click here to enter text.
Section B: Notice of Commencement/Completion of Work for Permit, Mitigation Bank, or In-Lieu Fee Program		
1. Commencement: Y ☐ N ☐ Click here to enter a date.	2. Completion: Y ☐ N ☒ Click here to enter a date.	3. Financial Assurance Required : Y ☐ N ☐
4. Requesting Release of a Financial Assurance? Y ☐ N ☐	5. Date of Work in Water of the U.S. Commencement/ Completion: Click here to enter a date.	6. Estimated Construction Period: Click here to enter text.
7. Name and Phone Number of Contractor (if any): Click here to enter text.		
Please note that your permitted activity is subject to a compliance inspection by a U.S. Army Corps of Engineers representative. If you fail to comply with this permit you may be subject to permit suspension, modification, or revocations.		
SECTION C: MITIGATION MONITORING STATUS		
1. Mitigation Monitoring required: Y ☐ N ☐		
2. Date Mitigation Installed: Click here to enter text.		
3. Final Monitoring completed and Agency Verification Requested? Y ☐ N ☐		
4. Date Compensatory Mitigation Installed: Click here to enter a date.	5. Date Monitoring Completed: Click here to enter a date.	6. Date of Last Monitoring Inspection Conducted: Click here to enter a date.
7. Management and Maintenance Activities Completed (for example: fencing installation/ repair trash removal (include dates): Click here to enter text.		
8. Adaptive Management Activities Completed (Include dates): Click here to enter text.		

SECTION C: MITIGATION MONITORING STATUS (continued from page 1)

9. Performance Standards

Year	Performance Standard	Goal	Results
Click here to enter text.	Click here to enter text.	Click here to enter text.	Click here to enter text.
Click here to enter text.	Click here to enter text.	Click here to enter text.	Click here to enter text.
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Click here to enter text.	Click here to enter text.	Click here to enter text.	Click here to enter text.
Click here to enter text.	Click here to enter text.	Click here to enter text.	Click here to enter text.

10. Short statement on whether the performance standards are being met: Click here to enter text.

11. Conclusions and adaptive management activities proposed (addressing unresolved issues, failure to meet performance standards): Click here to enter text.

SECTION D: PHOTO LOG	
1. Number: Click here to enter text. **2. Date:** Click here to enter a date. **3. Compass direction taken:** **Degrees:** Click here to enter text. **Cardinal/intercardinal:** Click here to enter text. **4. Coordinates (decimal degrees):** **Latitude:** Click here to enter text. **Longitude:** Click here to enter text. **5. Photographer name:** Click here to enter text. **6. Description:** Click here to enter text.	
1. Number: Click here to enter text. **2. Date:** Click here to enter a date. **3. Compass direction taken:** **Degrees:** Click here to enter text. **Cardinal/intercardinal:** Click here to enter text. **4. Coordinates (decimal degrees):** **Latitude:** Click here to enter text. **Longitude:** Click here to enter text. **5. Photographer name:** Click here to enter text. **6. Description:** Click here to enter text.	

Section E: Map of photograph locations	Map Number: Click here to enter text.

Instructions for the Status Update Report Form

General instructions:

This form should be returned annually to the Corps project manager via electronic or physical mail (see District Regulatory websites for contact information).

Detailed instructions:

Section A: Please insert the most current information annually.

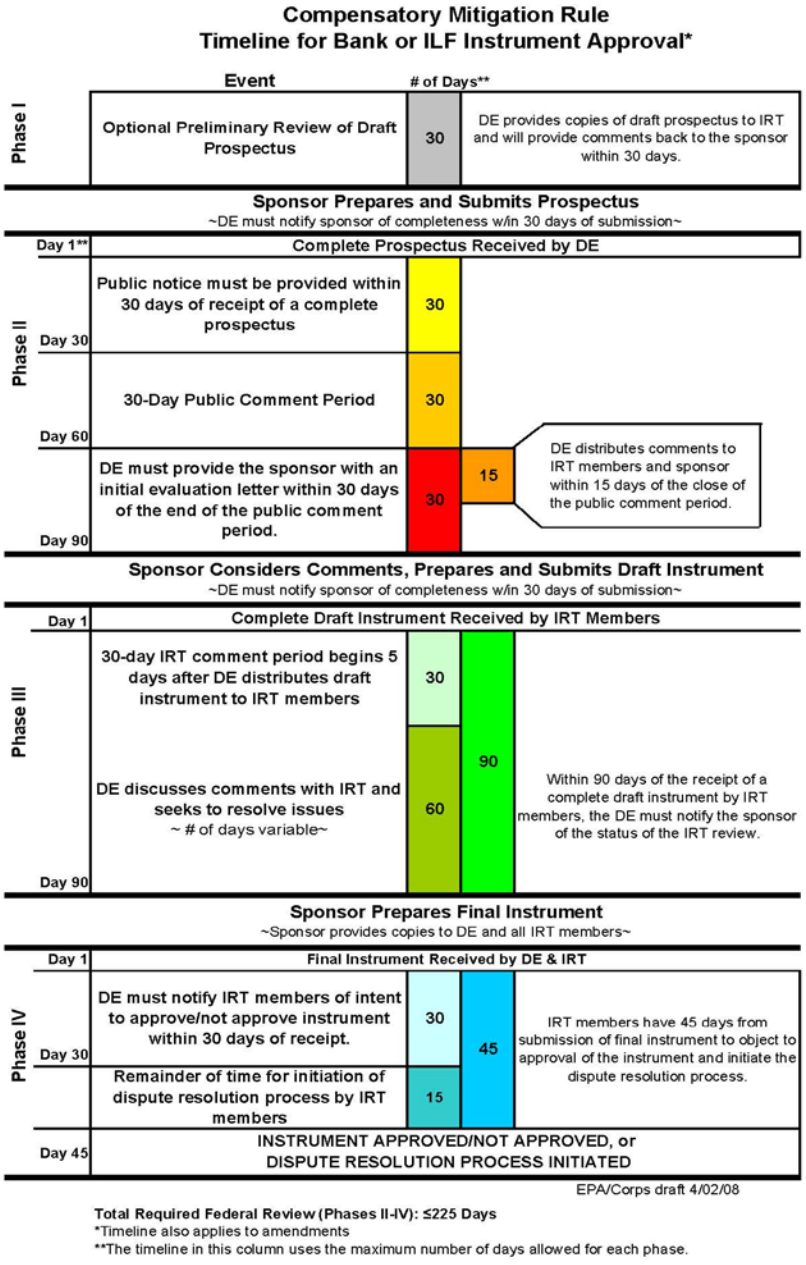
Section B: Complete Section A as well as this Section. All information in Section B must be completed at least (10) days prior to commencement or upon completion of the activity.

Section C: Update Section A and Complete Section C, as applicable (item 1 required).

Section D: Color Photographs should be inserted with all corresponding information completed (items 1-6). Photograph locations should be identified on a map (See Section E).

Section E: Insert photograph map(s), one per a page. Portrait or landscape orientations are acceptable.

Appendix E: IRT Review Timeline



Appendix F: Example credit determination table.

Feature type	Mitigation Type	Multiplier: Percent functional lift based on FCAM analysis	Acreage	Credits (%lift x acreage)
Intermittent stream (riverine), riparian vegetation				
	Re-establishment/ Establishment	0.8	5	4
	Rehabilitation	0.6	3	1.8
	Enhancement	0.3	7	2.1
Ephemeral stream, unvegetated				
	Re-establishment/ Establishment	0.5	3	1.5
	Rehabilitation	0.2	2	0.4
	Enhancement	0.1	12	1.2
Depressional wetland				
	Re-establishment/ Establishment	0.7	3	2.1
	Rehabilitation	0.65	1	0.65
	Enhancement	0.4	4	1.6

Appendix G: List of Acronyms.

Avian Index of Biotic Integrity (IBI)
California Native Plant Society (CNPS)
California Rapid Assessment Method (CRAM)
Clean Water Act (CWA)
Code of Federal Regulations (C.F.R.)
Compensation Planning Framework (CPF)
Compensation planning framework (CPF)
Department of the Army (DA)
District Engineer (DE)
Endangered Species Act (ESA)
Enhancement (EN)
Environmental Systems Research Institute (ESRI)
Essential Fish Habitat (EFH)
Establishment (ES)
File transfer protocol (FTP),
Functional Assessment of Colorado Wetlands (FACWet)
Functional or condition assessment methods (FCAM)
Geographic Information System (GIS)
Historic Properties Treatment Plan (HPTP)
Hydrogeomorphic (HGM)
Hydrologic Unit Code (HUC)
In-Lieu Fee Program (ILF)
Interagency review team (IRT)
Memorandum of Agreement (MOA)
Mitigation Bank (MB)
Multi-Scale Assessment of Watershed Integrity (MAWI)
National Research Council (NRC)
New Mexico Rapid Assessment Method (NMRAM)
Ordinary High water mark (OHWM)
Preservation only(PO).
Property Analysis Record (PAR)
Re-establishment (RE)
Regulatory In-Lieu Fee and Bank Information Tracking System (RIBITS)
Rehabilitation (RH)
South Pacific Division (SPD)
Special Area Management Plan (SAMP)
Standard Individual Permit (SIP)
Standard Operating Procedure (SOP)
Submerged aquatic vegetation (SAV)
The Rapid Stream Riparian Assessment (RSRA)
U.S. Army Corps of Engineers (Corps)
U.S. Environmental Protection Agency (EPA)
Utah Department of Transportation (UDOT)