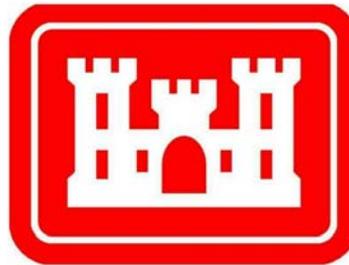




**US Army Corps
of Engineers**
Jacksonville District

Compensatory Wetland Mitigation Plan

Río de La Plata Flood Control Project,
Dorado, Puerto Rico



**US Army Corps
of Engineers**
Jacksonville District

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RIO DE LA PLATA FLOOD CONTROL PROJECT, DORADO, PUERTO RICO

COMPENSATORY WETLAND MITIGATION PLAN

1.0 BACKGROUND

The Río de La Plata basin drains an area of 241 square miles into the Atlantic Ocean at a point approximately 11 miles west of San Juan, Puerto Rico. The Rio de La Plata basin is located in the north central region of Puerto Rico. The 63-mile river flows generally west and north through the municipalities of Cayey, Comerío, Toa Alta, Toa Baja and Dorado. The entire municipality of Toa Baja and portions of the municipalities of Dorado and Toa Alta and the communities of Levittown, Mameyal, Toa Ville, Ingenio, Campanilla and San José are subject to flooding even from high-frequency events such as the 10-year flood. The Standard Project Flood (SPF) would result in about 10 feet of water above ground level for most of the urban developments, while the 10-year flood would produce a depth of 3 feet in many of them. Under existing conditions floodwaters would remain for over 12 hours throughout most of the flood plain, thus, creating a threat to the lives and health of the population in the area, damaging property, and disrupting all productive economic activities.

The Río de la Plata Survey Investigation was conducted under a resolution adopted by the Committee on Public Works of the House of Representatives on May 5, 1966. Preliminary investigations were conducted during the late 1960's and early 1970's but were halted. In 1982, the studies were resumed at the request of the Puerto Rico government. A Final Environmental Impact Statement (FEIS) for the subject project was filed in September 1988, and the project was authorized under the Water Resources Development Act (WRDA) of 1990. In May 1993, an Environmental Assessment/Finding of No Significant Impact (EA/FONSI) was circulated documenting the resolution of issues deferred at the time of the FEIS for the design phase of the project and to respond to new environmental laws and regulations that became effective after the date of filing the FEIS. On the basis of evaluations presented and agency responses, the District Engineer signed a FONSI on 4 May 1993. A Draft of the EA that updated and supplemented the EA/FONSI of 1993 in conjunction with a Design Memorandum for the project and a Draft of the FONSI were circulated by the USACE in 2004. This EA documented minor design modifications to the authorized project. A FONSI for the 2004 EA was signed by the District Engineer on 7 February 2005. In addition, the Statement of Findings of 18 September 2008 concludes with a Finding of No Significant Impact based on coordination with the public and agencies in a Public Notice dated 16 May 2008. This Public Notice references the 7 February 2005 EA/FONSI.

The authorized plan provides 100-year protection upstream of PR Highway 2 and Standard Project Flood (SPF) protection downstream. Project features consist of approximately 7.0 miles of channel improvements, 7.6 miles of levee construction, replacement of 3 bridges, recreation facilities, and mitigation to compensate irretrievably

impacts to estuarine and freshwater wetlands. The US Army Corps of Engineers' (USACE) goal for this project is to implement flood control measures to alleviate the flooding problem in the area caused by the overflow of the Río de la Plata. The non-Federal sponsor is the Puerto Rico Department of Natural and Environmental Resources (DNER).

In 2007, the DNER notified the USACE of their intent to move ahead with construction of Contract 1A and seek reimbursement through Section 21, WRDA 1996. Applicable permits/endorsements for construction of this project were obtained using the design described in the 1993 Design Memorandum. Department of the Army (DA) Permit No. SAJ-2008-00123(IP-CGR) was issued for this project by the USACE Antilles Regulatory Office. DNER began construction for the work associated with Contract 1A in October 2008. In April 2009, the USACE was notified of Río de la Plata's inclusion in the American Recovery & Reinvestment Act of 2009 (ARRA). The ARRA approved work included two Work Packages. The first Work Package provided the award for "Phase 1" and the second Work Package was approved to complete design and land acquisition and award construction contract for Reach 1B. After coordination with DNER, they officially terminated their construction contract and USACE began to move forward with Contract 1A under ARRA guidelines.

In 2008, DNER in collaboration with Taylor Engineering Inc., developed and coordinated the Compensatory Wetland Mitigation Plan for Río de la Plata Flood Control Project. The USACE reviewed the approved Wetland Mitigation Plan and determined to move forward with the plan implementation. Results of the 2-D Hydraulic Design Modeling for Contract 1A (2010) showed that constructing the wetland mitigation plan as coordinated could cause an adverse effect to the project and adjacent lands. Therefore, herbaceous vegetation was recommended to be planted on certain portions of the mitigation sites. Based on the water stages and conveyance of the hydraulic design model, the following changes were recommended:

1. The vegetation to be planted in some areas of the mitigation sites within the flow-way will need to change to avoid an adverse impact to the project and the adjacent areas outside of immediate project area. The changes to the mitigation areas will apply to all of the eastern mitigation parcels and to a small portion of the wetland mitigation parcel number 1 along the west bank of the river.
2. The type of vegetation will need to change from mangrove trees to wetland herbaceous/grass species that will not impede the flow in the overbank area between the levee and the channel, and will not increase water stages. The remaining mitigation areas can continue to be planted with mangrove trees because these will not adversely affect the flows and water stages.

All wetland mitigation construction proposed in this plan will be a part of Contract 1A construction. For detailed information please refer to the Plans for Construction of Flood Damage Reduction Project Contract 1A, Dorado, Puerto Rico.

2.0 EXISTING ENVIRONMENTAL CONDITIONS AND MITIGATION GOALS

The long-term goal of the mitigation plan is to provide self-sustaining, high quality mangrove, herbaceous and estuarine open water wetland habitats to increase the overall health of the ecosystem including the estuary and adjacent reefs.

The mouth of the Río de la Plata includes relatively little estuarine physical or biological habitat. This results in part from long-term effects of agriculture throughout the entire basin, and because of intensive agriculture and urbanization that has occurred locally within the basin. Deforestation throughout the basin caused by agriculture over a 150-year period has eliminated floodplain forests and deposited large amounts of sediment in the coastal plain of the Río de la Plata. Intensive farming, including dairy and sugar cane, has dominated floodplain land use. Since 1950, reforestation of the larger basin and multiple dams along the river has dramatically reduced sediment transport to the project area and the mouth of the river. In addition, the floodplain around the channel will generally remain in agricultural use.

3.0 MANGROVE, HERBACEOUS AND ESTUARINE LAGOON HABITAT CREATION/ENHANCEMENT

The mitigation project proposes a significant increase in estuarine habitat. This has the potential to improve the diversity, biomass, and production of the inshore reef immediately adjacent to the river mouth and has the potential to improve the general ecological wellbeing of this area. The project site expands the existing habitat, providing a larger contiguous natural area. Therefore, one large natural area will likely be more beneficial, may increase the resiliency for the entire site, and may allow more species habitat and diversity.

3.1 Mangrove Habitat Creation

Estuarine plant communities, particularly mangroves, support the local estuarine detritus food chain that sustains a wide variety of species. Those species in return act as prey for larger species, and are of particular human interest, since these species support fisheries both in the estuary and in and around reefs. Red mangroves (*Rhizophora mangle*), which represent a small portion of the cover in the mangrove stands at the mouth of the river, provide the widest range of services, as they typically grow in standing water below mean low tide and support a wider range of species compared to black mangroves. While the project plan mitigates directly for impacted black mangroves (*Avicennia germinans*) and white mangroves (*Laguncularia racemosa*), the mitigation plan also creates an optimal habitat for the potential colonization of red mangroves.

The mitigation plan proposes approximately 21.30 acres of mangrove habitat creation west of the river mouth. The creation areas west of the river mouth would tie into existing mangrove habitat to the north, a mangrove-filled linear depression that leads southwest from the main body of the mangroves, the proposed estuarine lagoon, and the river edge. Existing elevations within the creation areas are higher than the adjacent mangrove communities that support a vegetation community dominated by Venezuelan grass (*Paspalum fasciculatum*). Wetland creation would occur by shaping and grading these lands to provide the proper

elevations for successful development of mangroves. Varying ground contours will allow a mixed growth of red, black, and white mangroves. Existing elevations within the adjacent mangrove stand serve as the best elevation guide. Existing topographic data suggests that mangroves along the fringe adjacent to the mitigation sites west of the river mouth grow at an elevation around 0 ft (NGVD 1929) while the existing mangroves at the east side of the river mouth commonly grow at -0.5 ft. The plan proposes regrading the mangrove creation sites west of the river mouth to 0 ft +/- 0.25 ft. Planting and seeding the graded areas would begin the development of forested mangrove wetlands. For detailed information please refer to the Plans for Construction of Flood Damage Reduction Project Contract 1A, drawings C3-10 to C3-12 and C3-40 to C3-42.

3.2 Estuarine Lagoon Creation

The proposed 10-acre estuarine lagoon would be located north of the Mameyal ditch and within the mangrove creation site west of the river mouth. The lagoon would tie directly to the existing linear depression and the Río de la Plata via a 100-ft wide channel extending off the east side of the lagoon basin. For detailed information please refer to the Plans for Construction of Flood Damage Reduction Project Contract 1A, drawings C3-10 to C3-12 and C3-40 to C3-42.

The lagoon design proposes a -4 ft (NGVD 1929) bottom elevation for the basin and the channel. The design proposes 10H:1V side slopes for the basin to support red and black mangrove colonization and 4H:1V side slopes for the channel leading from the main lagoon body to the river edge. Depths from slightly below the mean low water to at least midway between mean low and mean high water would provide habitat for red mangroves. Higher elevations would favor colonization by black and white mangroves. Colonization of all edges of the lagoon is likely. Open water throughout the majority of the basin will provide habitat for fishes, other aquatic organisms and wading bird species.

3.3 Herbaceous Habitat Creation/Enhancement

Herbaceous vegetation has the potential to provide habitat for aquatic organism, insects, fish, frogs and birds. They are very beneficial at providing food, nesting and shelter for many organisms, can reduce erosion, can filter runoff waters, and can assimilate excess nutrients from agricultural drainage.

The mitigation plan proposes approximately 53.70 acres of herbaceous habitat creation/enhancement located east of the river mouth and a small portion at parcel number 1 along the west bank of the river. The areas designated for the establishment of herbaceous wetlands will be graded down to achieve the elevations required for the successful establishment of wetland species and to ensure they conform to required hydrologic requirements. The creation/enhancement areas east of the river would also adjoin existing mangrove habitats and connect to the river edge. The suggested elevation for the herbaceous sites east of the river mouth is 0.60 meters. For detailed information please refer to the Plans for Construction of Flood Damage Reduction Project Contract 1A, drawings C3-10 to C3-12 and C3-40 to C3-42.

The herbaceous clumps to be planted in these areas will include the following species: *Paspalidium geminatum* (Egyptian panicgrass or Yerba de Pantano), *Spartina patens* (Saltmeadow cordgrass or Yerba de sal), *Acrostichum spp.*, *Cyperus spp.* and *Eleocharis spp.* It is expected that salinity levels will increase in these areas, thus it is required that the herbaceous species to be planted can tolerate salinity ranges.

4.0 MANGROVE AND ESTUARINE LAGOON SITES PREPARATION, CONSTRUCTION AND PLANTING

4.1 Mangrove Creation Sites

The site preparation, construction and planting shall include, but is not limited to, the following tasks:

- a) The Contractor, in coordination with the USACE Contracting Officer and the Environmental Branch point of contact (POC), will establish the mangrove area limits. Permanent limit marks and location coordinates shall be provided.
- b) If necessary, chemical treatment will be applied to exotic vegetation to eliminate both existing vegetation and seeds. This may be accomplished by using emergent and pre-emergent applications as the first step in the restoration construction project. Prior to any product application, the Contractor shall provide data on all products to be used. All products should be approved by EPA and the Contractor's personnel must have the appropriate trainings/certifications.
- c) Clear and grub area as necessary. The clearing and grubbing will avoid the removal of existing mangroves within the mitigation areas. Construction may require some mangrove pruning to allow equipment operation near existing vegetation. Care will be taken not to damage any existing mangroves or other wetland vegetation adjacent to the sites, when present.
- d) Grade the sites (grade to 0 ft +/- 0.25 ft west of river mouth) to the lines and grades indicated on project drawings for the establishment of a mix of red, black and white mangroves. Sites to be prepared are shown in the project plans. This work will occur with the channel widening and levee construction to avoid future disturbance to the mitigation areas. The construction plan may allow disposal of scraped soil by placement on the levee or disposal elsewhere on designated disposal areas or off-site. It is important to highlight that, although the USACE is providing the project drawings and recommended elevations, the Contractor will be responsible for obtaining elevations of mangrove stands nearby in order to use it as reference level for the "floor" preparation of the planting sites. Both data will be used by the Contractor to recommend and determine the appropriate elevations for shaping and grading the planting areas. The recommended elevations must be allowed by USACE prior to initiation. Successful mangrove planting depends on the initial elevation above the datum, to assure frequent flooding and flushing.

- e) If necessary, some areas will be filled to obtain the appropriate elevation for mangrove planting. The excavated material without debris that exhibit hydric characteristics could be used to fill these areas.
- f) The Contractor will survey the planting sites to assure that the proper elevations, gradient and acreages have been obtained. The survey shall be provided for USACE revision prior to planting mangroves.
- g) Salvage mangroves in the construction path of the north end of the west levee. Both black and white mangroves (which predominate in the brackish channels to be cleaned) can re-sprout vigorously after even severe pruning. Black and white mangrove seedlings are also very hardy and will likely survive transplanting.
- h) Salvage surface organic soils within the levee construction footprint to provide a high quality surface soil to spread over the mangrove mitigation area and increase desired plant density.
- i) If during the site preparation any listed threatened or endangered species is found, the Contractor will immediately cease the work and will notify the USACE Contracting Officer and Technical POC for the appropriate coordination with FWS and DNER. The site preparation will not continue until the USACE Contracting Officer authorizes the Contractor.
- j) The Contractor will be responsible for providing the required amount of seedlings/saplings for this project. The seedlings/saplings could be collected from appropriate nearby sites, but must be coordinated with the USACE Contracting Officer, the Environmental Branch POC and DNER staff. If required, the Contractor will be responsible for obtaining all necessary permits or authorizations for harvesting mangrove seedling/saplings from the DNER. Peak season for harvesting propagules of all mangrove species is late summer and early fall, i.e. August, September and October, but some propagules are available at any season. As an alternative, the Contractor could collect propagules as soon as the project is approved for construction and propagate and maintain seedlings/saplings at appropriate facilities. If the required amount of seedlings/saplings are not available, the Contractor will have to coordinate with local nurseries to obtain them.
- k) Care will be taken by the Contractor to protect propagules from damage. Propagules can be stored in plastic buckets or garbage pails covered with moist burlap, styrofoam containers, or in wet burlap or plastic sacks, keeping them moist but not saturated, for no more than 10 days prior planting. However, it is recommended to collect only the number of propagules that can be planted with 1-2 days, so as to avoid heat and/or sun damage during storage and transport.
- l) The mitigation planting will consist of red, black and white mangroves. Spacing for red, black and white mangroves is 1.0 meter on center spacing (or approximately 4,000 per acre) in a staggered distribution. As an option, after planting is completed,

seeds (propagules) can be broadcast-sown at 8,000 per acre. Red, black or white mangroves should be planted as seedlings or saplings as shown on the project plans. Planting can begin as soon as site grading has been completed. The mitigation project shall be completed within 24 months from the Notice to Proceed.

4.2 Estuarine Lagoon

Construction of the estuarine lagoon should occur in the following order:

- a) Lagoon construction will occur concurrently with mangrove habitat creation.
- b) Grade and level as per plan view and cross-sections.
- c) Red, black and white mangroves will be planted at suitable elevations along basin edges. Spacing for mangroves is 1.0 meter on center spacing in a staggered distribution. Rapid re-colonization of intervening species is expected in this moist tropical climate, thus appropriate maintenance must be performed.

4.3 Herbaceous Creation/Enhancement Sites

Construction of the areas to be planted with herbaceous vegetation should occur in the order presented below. It should be noted that several of the requirements described in Section 4.1 also apply in this section.

- a) It is recommended that as soon as the project is awarded to the Contractor that the sources of herbaceous vegetation are located and coordination is initiated to ensure the required clumps are available for the planting phase. The Contractor will be responsible for providing the required amount of clumps for this project. The clumps could be collected from appropriate nearby sites, but must be coordinated with the USACE Contracting Officer, the Environmental Branch POC and DNER staff. If required, the Contractor will be responsible for obtaining all necessary permits or authorizations from the DNER.
- b) Herbaceous habitat creation sites construction should occur concurrently with the channel widening and east levee construction, to avoid future disturbance to the mitigation areas.
- c) Clear and grub area as necessary. The clearing and grubbing will avoid removal of existing mangroves.
- d) Grade and level as per plan view and cross-sections. If the existing ground is below the recommended elevation, it will not be filled and only the soil above the recommended elevation will be removed. It should be noted that although the USACE is providing the project drawings and recommended elevations, the Contractor will be responsible for obtaining elevations of near wetland areas in order to use it as reference level for the “floor” preparation of the herbaceous planting

sites. Both data will be used by the Contractor to recommend and determine the appropriate elevations for shaping and grading the planting areas. The recommended elevations must be agreed by the USACE prior to initiation.

- e) Spacing for herbaceous clumps planting is 2 feet on center spacing in a staggered distribution.

5.0 MAINTENANCE AND MONITORING

5.1 Maintenance

The Contractor shall implement a two (2) year maintenance and control program, starting after planting completion for unwanted/nuisance species, to prevent colonization by these species until the planted vegetation can compete and survive without further control. 'Unwanted/nuisance species' refers to species not planted as part of the mitigation project and can cause or is likely to cause detrimental effect to the mitigation sites or planted vegetation. Manual removal is the preferred method to control nuisance species. Nevertheless, if herbicides are necessary to control the growth of nuisance species, these must be applied by certified personnel in order to avoid damage to the planted vegetation. Also, the herbicides to be used will need to be approved by EPA. Some examples of nuisance or not desired species within the mitigation sites are: *Paspalum fasciculatum* (Venezuelan grass), *Typha domingensis* (Cattail) and *Mimosa pigra* (Black mimosa), among others. Early implementation of the control program is essential for long-term success of the mitigation project. Site inspection and removal of unwanted species shall be performed, at least, monthly. In addition, the Contractor shall perform the following maintenance actions:

- a) In the event that the site becomes dry after planting or is dry during site monitoring visits, water from the channel/ditches will be delivered to the site by pump, ditch, among others.
- b) In the areas to be planted with mangroves, a minimum of 80% survival is required for two years after initial planting. For the areas to be planted with herbaceous vegetation, 80% ground cover will be required for two years after initial planting. If less than 80% is achieved after the first two years, replanting, filling and/or re-grading may be necessary.
- c) Unwanted/nuisance species shall be less than 5 percent cover of total area.
- d) After flood events the planting sites should be inspected.

5.2 Monitoring:

Vegetation monitoring should be performed to document the establishment and cover of the planted species, and to document the presence and cover of unwanted, nuisance species. The vegetation monitoring should occur in at least, eight locations (plots) within the mitigation, including the planted edge of the estuarine lagoon. These locations shall represent

site conditions and should be representative areas of the mitigation planting sites. The dimensions of each plot should be at least 5 meters by 5 meters. The following actions shall be performed by the Contractor during monitoring:

- a) Monitoring data such as; estimated cover by species, estimate of survival of planting, average height of planted species, casual observations, survival rates and identification of nuisance species, shall be recorded on a standardized form during monitoring events. In addition, monitoring will also detail observations regarding the hydrologic connectivity to the river, sedimentation and flushing of the estuarine lagoon.
- b) Permanent monitoring and photographic stations will be established at the mitigation site. The stations' location coordinates shall be provided. At least, four photographs of the mitigation sites from each control points facing north, east, south and west must be provided.
- c) Monitoring and photographic stations' identification markers should be maintained for location reference during successive monitoring.
- d) Monitoring reports shall include photographic documentation of the site.

5.3 Monitoring Reports

The Contractor shall submit monitoring reports for USACE Technical POCs review. The monitoring reports shall be prepared in accordance with the USACE Regulatory Guidance Letter 08-03 (attached) and shall be submitted as follow:

- a) The Contractor shall submit a time-zero monitoring report within 30 days of planting completion.
- b) Monitoring and reports should be performed every three months after planting completion, during two (2) years.
- c) The monitoring reports shall be submitted no later than 30 days from completion of the monitoring event.
- d) A closeout monitoring report shall be performed two years after planting completion.

As the site matures, the success of the mitigation project will be evaluated in terms of the percent of the total ground cover and the percent of survival (through planting and natural recruitment). The goal is to establish a mature mangrove forest and herbaceous wetland areas.

Regulatory Guidance Letter No. 08-03



US Army Corps
of Engineers®

REGULATORY GUIDANCE LETTER

No. 08-03

Date: 10 October 2008

SUBJECT: Minimum Monitoring Requirements for Compensatory Mitigation Projects Involving the Restoration, Establishment, and/or Enhancement of Aquatic Resources.

1. Purpose and Applicability

a. Purpose. This Regulatory Guidance Letter (RGL) provides the Districts and regulated public guidance on minimum monitoring requirements for compensatory mitigation projects, including the required minimum content for monitoring reports. This RGL replaces RGL 06-03.

b. Applicability. The final Mitigation Rule published on April 10, 2008, states that the submission of monitoring reports to assess the development and condition of compensatory mitigation projects is required, but the content and level of detail for those reports must be commensurate with the scale and scope of the compensatory mitigation projects as well as the compensatory mitigation project type (see 33 CFR 332.6(a)(1)).

This RGL applies to all Department of the Army (DA) permit authorizations under Section 404 of the Clean Water Act and Sections 9 and 10 of the Rivers and Harbors Act that contain special conditions requiring compensatory mitigation provided through aquatic resource restoration, establishment and/or enhancement. This guidance also applies to monitoring reports that are prepared for mitigation bank sites and in-lieu-fee project sites.

This RGL supports the Program Analysis and Review Tool (PART) program goals for the Regulatory Program. Specifically, this RGL supports the PART performance measures for mitigation site compliance and mitigation bank/ in-lieu-fee compliance. These measures apply to active mitigation sites, mitigation banks, and in-lieu-fee project sites that still require monitoring.

2. Background

Recent studies by the Government Accountability Office (GAO) and National Research Council (NRC) indicated that the U.S. Army Corps of Engineers (Corps) was not providing adequate oversight to ensure that compensatory mitigation projects were successfully replacing the aquatic resource functions lost as a result of permitted activities. For example, the GAO study determined that many project files requiring

mitigation lacked monitoring reports despite the fact that such reports were required as a condition of the permit. Similarly, the NRC study documented that a lack of clearly stated objectives and performance standards in the approved compensatory mitigation proposals made it difficult to ascertain whether the goal of no net loss of wetland resources was achieved.

On April 10, 2008, the Corps and Environmental Protection Agency published the “Compensatory Mitigation for Losses of Aquatic Resources: Final Rule” (Mitigation Rule) which governs compensatory mitigation for activities authorized by permits issued by the Department of the Army (33 CFR Parts 325 and 332). This RGL complements and is consistent with the final Mitigation Rule.

3. Discussion

Inconsistent approaches to monitoring compensatory mitigation projects are one of several factors that have affected the ability of Corps project managers (PMs) to adequately assess achievement of the performance standards of Corps-approved mitigation plans. Standardized monitoring requirements will aid PMs when reviewing compensatory mitigation sites, thereby allowing the Corps to effectively assess the status and success of compensatory mitigation projects.

This RGL addresses the minimum information needed for monitoring reports that are used to evaluate compensatory mitigation sites. Monitoring requirements are typically based on the performance standards for a particular compensatory mitigation project and may vary from one project to another.

Monitoring reports are documents intended to provide the Corps with information to determine if a compensatory mitigation project site is successfully meeting its performance standards. Remediation and/or adaptive management used to correct deficiencies in compensatory mitigation project outcomes should be based on information provided in the monitoring reports and site inspections.

4. Guidance

a. Monitoring guidelines for compensatory mitigation.

i. Performance Standards. Performance standards, as defined in 33 CFR 332.2, and discussed in more detail at 33 CFR 332.5, will be consistent with the objectives of the compensatory mitigation project. These standards ensure that the compensatory mitigation project is objectively evaluated to determine if it is developing into the desired resource type and providing the expected functions. The objectives, performance standards, and monitoring requirements for compensatory mitigation projects required to offset unavoidable impacts to waters of the United States must be provided as special conditions of the DA permit or specified in the approved final mitigation plan (see 33 CFR 332.3(k)(2)). Performance standards may be based on functional, conditional, or other suitable assessment methods and/or criteria and may be incorporated into the

special conditions to determine if the site is achieving the desired functional capacity. Compensatory mitigation projects offset the impacts to diverse types of aquatic resources, including riverine and estuarine habitats. Special conditions of the DA permits will clearly state performance standards specific to the type and function of the ecosystem in relation to the objectives of the compensatory mitigation project.

ii. Monitoring Timeframe. The special conditions of the DA permit (or the mitigation plan as referenced in the special conditions) must specify the length of the monitoring period (see 33 CFR 332.6(a)(1)). For mitigation banks, the length of the monitoring period will be specified in either the DA permit, mitigation banking instrument, or approved mitigation plan. For in-lieu fee projects, the length of the monitoring period will be specified in either the DA permit or the approved in-lieu fee project plan.

The monitoring period must be sufficient to demonstrate that the compensatory mitigation project has met performance standards, but not less than five years (see 33 CFR 332.6(b)). The District determines how frequently monitoring reports are submitted, the monitoring period length, and report content. If a compensatory mitigation project has met its performance standards in less than five years, the monitoring period length can be reduced, if there are at least two consecutive monitoring reports that demonstrate that success. Permit conditions will support the specified monitoring requirement and include deadlines for monitoring report submittal. Longer monitoring timeframes are necessary for compensatory mitigation projects that take longer to develop (see 33 CFR 332.6(b)). For example, forested wetland restoration may take longer than five years to meet performance standards.

Annual monitoring and reporting to the Corps is appropriate for most types of compensatory mitigation projects, though the project sponsor may have to monitor progress more often during the project's early stages. Certain compensatory mitigation projects may require more frequent monitoring and reporting during the early stages of development to allow project managers to quickly address problems and/or concerns. Annual monitoring can resume once the project develops in accordance with the approved performance standards. In cases where monitoring is required for longer than five years, monitoring may be conducted on a less than annual timeframe (such as every other year), though yearly monitoring is recommended until the project becomes established as a successful mitigation project. In this case, off-year monitoring should include some form of screening assessment such as driving by the mitigation site, telephone conversations regarding condition of the mitigation site, etc. On-site conditions, the complexity of the approved mitigation plan, and unforeseen circumstances will ultimately determine whether the monitoring period should be extended beyond the specified monitoring time frame for a particular project. Complex and/or ecologically significant compensatory mitigation projects should have higher priority for site visits.

As discussed above, the remaining monitoring requirements may be waived upon a determination that the compensatory mitigation project has achieved its performance standards. The original monitoring period may be extended upon a determination that

performance standards have not been met or the compensatory mitigation project is not on track to meet them (e.g., high mortality rate of vegetation). Monitoring requirements may also be revised in cases where adaptive management or remediation is required.

iii. Monitoring Reports. Monitoring requirements, including the frequency for providing monitoring reports to the District Commander and the Interagency Review Team (IRT), will be determined on a case-by-case basis and specified in either the DA permit, mitigation banking instrument, or approved mitigation plan. The content of the monitoring reports will be specified in the special conditions of the DA permit so that the requirements are clearly identified for the permittee or third-party mitigation sponsor. In addition, the monitoring reports should comply with the timeframes specified in the special conditions of the DA permit. Monitoring reports will not be used as a substitute for on site compliance inspections. The monitoring report will provide the PM with sufficient information on the compensatory mitigation project to assess whether it is meeting performance standards, and to determine whether a compliance visit is warranted. The party responsible for monitoring can electronically submit the monitoring reports and photos for review.

Visits to mitigation sites will be documented in the administrative record and will count toward District performance goals. An enforcement action may be taken if the responsible party fails to submit complete and timely monitoring reports.

b. Contents of Monitoring Reports. Monitoring reports provide the PM with a convenient mechanism for assessing the status of required compensatory mitigation projects. The PM should schedule a site visit and determine potential remedial actions if problems with the compensatory mitigation project are identified in a monitoring report.

The submittal of large bulky reports that provide mostly general information should be discouraged. While often helpful as background, reiteration of the mitigation and monitoring plan content, lengthy discussions of site progress, and extensive paraphrasing of quantified data are unnecessary. Monitoring reports should be concise and effectively provide the information necessary to assess the status of the compensatory mitigation project. Reports should provide information necessary to describe the site conditions and whether the compensatory mitigation project is meeting its performance standards.

Monitoring reports will include a Monitoring Report Narrative that provides an overview of site conditions and functions. This Monitoring Report Narrative should be concise and generally less than 10 pages, but may be longer for compensatory mitigation projects with complex monitoring requirements. Monitoring Report Narratives may be posted on each District's Regulatory web site.

Monitoring reports will also include appropriate supporting data to assist District Commanders and other reviewers in determining how the compensatory mitigation project is progressing towards meeting its performance standards. Such supporting data may include plans (such as as-built plans), maps, and photographs to illustrate site

conditions, as well as the results of functional, condition, or other assessments used to provide quantitative or qualitative measures of the functions provided by the compensatory mitigation project site.

c. Monitoring Report Narrative:

i. Project Overview (1 page)

(1) Corps Permit Number or Name of the Mitigation Bank or In-Lieu Fee Project
(2) Name of party responsible for conducting the monitoring and the date(s) the inspection was conducted.

(3) A brief paragraph describing the purpose of the approved project, acreage and type of aquatic resources impacted, and mitigation acreage and type of aquatic resources authorized to compensate for the aquatic impacts.

(4) Written description of the location, any identifiable landmarks of the compensatory mitigation project including information to locate the site perimeter(s), and coordinates of the mitigation site (expressed as latitude, longitudes, UTM's, state plane coordinate system, etc.).

(5) Dates the compensatory mitigation project commenced and/or was completed.

(6) Short statement on whether the performance standards are being met.

(7) Dates of any recent corrective or maintenance activities conducted since the previous report submission.

(8) Specific recommendations for any additional corrective or remedial actions.

ii. Requirements (1 page)

List the monitoring requirements and performance standards, as specified in the approved mitigation plan, mitigation banking instrument, or special conditions of the DA permit, and evaluate whether the compensatory mitigation project site is successfully achieving the approved performance standards or trending towards success. A table is a recommended option for comparing the performance standards to the conditions and status of the developing mitigation site.

iii. Summary Data (maximum of 4 pages)

Summary data should be provided to substantiate the success and/or potential challenges associated with the compensatory mitigation project. Photo documentation may be provided to support the findings and recommendations referenced in the monitoring report and to assist the PM in assessing whether the compensatory mitigation project is meeting applicable performance standards for that monitoring period. Submitted photos should be formatted to print on a standard 8 ½" x 11" piece of paper, dated, and clearly labeled with the direction from which the photo was taken. The photo location points should also be identified on the appropriate maps.

iv. Maps and Plans (maximum of 3 pages)

Maps should be provided to show the location of the compensatory mitigation site relative to other landscape features, habitat types, locations of photographic reference points, transects, sampling data points, and/or other features pertinent to the mitigation plan. In addition, the submitted maps and plans should clearly delineate the mitigation site perimeter(s), which will assist PMs in locating the mitigation area(s) during subsequent site inspections. Each map or diagram should be formatted to print on a standard 8 1/2" x 11" piece of paper and include a legend and the location of any photos submitted for review. As-built plans may be included.

v. Conclusions (1 page)

A general statement should be included that describes the conditions of the compensatory mitigation project. If performance standards are not being met, a brief explanation of the difficulties and potential remedial actions proposed by the permittee or sponsor, including a timetable, should be provided. The District Commander will ultimately determine if the mitigation site is successful for a given monitoring period.

d. Completion of Compensatory Mitigation Requirements. For permittee-responsible mitigation projects, compensatory mitigation requirements will not be considered fulfilled until the permittee has received written concurrence from the District Commander that the compensatory mitigation project has met its objectives and no additional monitoring reports are required. PMs will review the final monitoring reports to make this determination. A final field visit should be conducted to verify that on-site conditions are consistent with information documented in the monitoring reports.

e. Special Condition. The following condition should be added to all DA permits that require permittee-responsible mitigation. This condition does not apply to mitigation banks or in-lieu-fee programs:

Your responsibility to complete the required compensatory mitigation as set forth in Special Condition X will not be considered fulfilled until you have demonstrated compensatory mitigation project success and have received written verification of that success from the U.S. Army Corps of Engineers.

5. Duration

This guidance remains in effect unless revised or rescinded.



STEVEN L. STOCKTON, P.E.
Director of Civil Works