



REPLY TO
ATTENTION

DEPARTMENT OF THE ARMY

MISSISSIPPI VALLEY DIVISION, CORPS OF ENGINEERS

P.O. BOX 80

VICKSBURG, MISSISSIPPI 39181-0080

CEMVD-PD-N

20 Jun 201

MEMORANDUM FOR Commander, New Orleans District

SUBJECT: Review Plan Approval for Environmental Mitigation for Lake Pontchartrain and Vicinity, Hurricane and Storm Damage Risk Reduction System Louisiana, Project and West Bank and Vicinity, New Orleans, Louisiana Hurricane and Storm Damage Risk Reduction System Louisiana Project

1. References:

a. EC 1165-2-209, Civil Works Review Policy, 31 Jan 10.

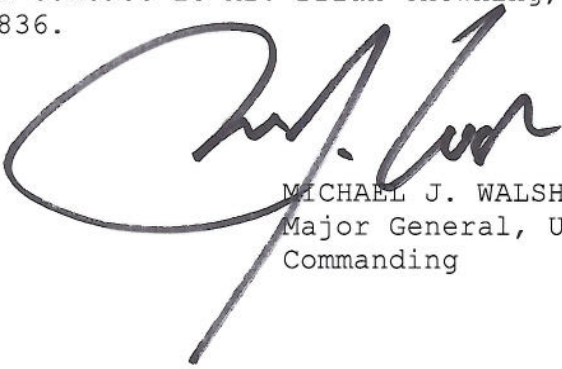
b. Memorandum, CEPCX-CSDR, 28 Apr 11, subject: Environmental Mitigation for Lake Pontchartrain and Vicinity, HSDRRS Louisiana, Project and West Bank and Vicinity, New Orleans, Louisiana HSDRRS Louisiana Project (encl 1).

2. I hereby approve subject Review Plan (RP) (encl 2) and concur in the conclusion that an external peer review of this project is necessary. The proposed RP has been coordinated with the National Planning Center of Expertise for Coastal Storm Damage Reduction (PCX-CSDR) and the National Planning Center of Expertise for Ecosystem Restoration (ECO-PCX) and complies with applicable policy for review of Civil Works products. Non-substantive changes to this RP do not require further approval.

3. The District should take steps to post the RP to its website and to provide a link to the FRM-PCX for their use.

4. Point of contact is Mr. Brian Chewning, CEMVD-PD-N, at (601) 634-5836.

2 Encls



MICHAEL J. WALSH
Major General, USA
Commanding



DEPARTMENT OF THE ARMY
NORTH ATLANTIC DIVISION, CORPS OF ENGINEERS
FORT HAMILTON MILITARY COMMUNITY
BROOKLYN, NY 11252-6700

REPLY TO
ATTENTION OF

CEPCX-CSDR

28 Apr 2011

MEMORANDUM FOR: Commander, New Orleans District, ATTN: CEMVN-ED-F

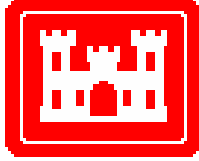
SUBJECT: Environmental Mitigation for Lake Pontchartrain and Vicinity, HSDRRS Louisiana, Project and West Bank and Vicinity, New Orleans, Louisiana Pre-Katrina and HSDRRS Louisiana, Project

1. The National Planning Center of Expertise for Coastal Storm Damage Reduction (PCX-CSDR) has reviewed the Review Plan (RP) for the subject projects and concurs that the RP complies with current peer review policy requirements contained in EC 1165-2-209, entitled "Civil Works Review Policy". The RP was coordinated with the National Planning Center of Expertise for Ecosystem Restoration (ECO-PCX).
2. The review was performed by Mr. Larry Cocchieri of PCX-CSDR and Mr. James Baker of ECO-PCX.
3. PCX-CSDR has no objection to RP approval by the Commander, Mississippi Valley Division. Upon approval of the RP, please provide a copy of the approved RP, a copy of the MVD Commander approval memorandum and the link to where the RP is posted on the MVN or MVD website to Mr. Cocchieri.
4. Thank you for the opportunity to assist in the preparation of the RP. PCX-CSDR is prepared to lead the peer reviews for the subject projects and will continue to coordinate with the PDT and ECO-PCX. For further information, please contact me at 347-370-4571.

Encls
as

A handwritten signature in black ink, appearing to read "Larry Cocchieri".

LARRY COCCHIERI
Deputy, National Planning Center of
Expertise for Coastal Storm Damage
Reduction



US Army
Corp of Engineers
New Orleans District

Review Plan
For

Decision and Implementation Documents for

Environmental Mitigation for Lake Pontchartrain and
Vicinity, Hurricane and Storm Damage Risk Reduction
System Louisiana, Project and West Bank and Vicinity, New
Orleans, Louisiana Hurricane and Storm Damage Risk
Reduction System Louisiana, Project

Mississippi Valley Division
New Orleans District

1 June 2011

Review Plan

Decision and Implementation Documents for Environmental Mitigation for Lake Pontchartrain and Vicinity, Hurricane and Storm Damage Risk Reduction System Louisiana, Project and West Bank and Vicinity, New Orleans, Louisiana Hurricane and Storm Damage Risk Reduction System Louisiana, Project

***Mississippi Valley Division
New Orleans District
1 June 2011***

Table of Contents

1	INTRODUCTION.....	1
1.1	Purpose	1
1.2	References	2
1.3	Review Requirements	2
2	PROJECT DESCRIPTION.....	4
2.1	Authority	4
2.2	Location.....	5
2.3	Description	6
3	WORK PRODUCTS	6
4	SCOPE OF REVIEW.....	7
4.1	District Quality Control Activities.....	8
4.2	Agency Technical Review	9
4.2.1	Work Items for Decision Documents and Implementation Documents.....	10
4.3	Independent External Peer Review.....	11
4.4	Policy Compliance and Legal Review	11
4.5	Other Peer Reviews.....	11
5	REVIEW TEAM	12
5.1	District Quality Control Activities.....	12
5.2	Agency Technical Review	12
5.3	Independent External Peer Review.....	14

6	Model Certification	15
7	PUBLIC COMMENT	16
8	SCHEDULE and COSTS	18
9	DOCUMENTATION OF REVIEWS	21
10	POINTS OF CONTACT.....	23
11	SUMMARY OF REVIEW PLAN UPDATES	23

Appendices

Appendix A: Authority

Appendix B: List of Project Delivery Team Members

Appendix C: St. Louis District IER ATR Team Qualifications

Appendix D: HSDRRS QMP ATR Matrix

Appendix E: LPV/WBV Mitigation Habitat Modeling Approach

Appendix F: Ecosystem Output Application Agency Technical Review Guide

Appendix G: Sample Statement for Technical Review of Decision Documents

Review Plan

Decision and Implementation Documents for Environmental Mitigation for Lake Pontchartrain and Vicinity, Hurricane and Storm Damage Risk Reduction System Louisiana, Project and West Bank and Vicinity, New Orleans, Louisiana Hurricane and Storm Damage Risk Reduction System Louisiana, Project

Mississippi Valley Division

New Orleans District

1 June 2011

1 INTRODUCTION

1.1 Purpose

This Review Plan defines the scope and level of quality management activities for the Environmental Mitigation for Lake Pontchartrain and Vicinity (LPV), Hurricane and Storm Damage Risk Reduction System Louisiana, Project and West Bank and Vicinity (WBV), New Orleans, Louisiana Hurricane and Storm Damage Risk Reduction System Louisiana, Project. This Review Plan is a component of the Environmental Mitigation Project Management Plan (see Section 1.2 References) in accordance with EC 1165-2-209.

1.2 References

a.	ER 1110-2-1150	<i>Engineering and Design for Civil Works</i> , 31 August 1999
b.	ER 1110-1-12	<i>Engineering and Design - Quality Management</i> , 21 July 2006, incorporating Change 1, 30 September 2006
c.	EC 1165-2-209	<i>Civil Works Review Policy</i> 31 January 2010, with Errata Sheet 1 dtd 15 July 2010
d.	EC 1105-2-412	<i>Planning Assuring Quality of Planning Models</i> , 30 December 2009
d.	Environmental Mitigation Project Management Plan of Lake Pontchartrain and Vicinity, Hurricane and Storm Damage Risk Reduction System Louisiana, Project and West Bank and Vicinity, New Orleans, Louisiana Pre-Katrina and Hurricane and Storm Damage Risk Reduction System Louisiana, Project.- June 2010	
e.	Hurricane and Storm Damage Risk Reduction System (HSDRRS) Quality Management Plan 30 October 2009	
f.	Peer Review Plan, Implementation of Section 2035 of WRDA 2007 for the Greater New Orleans (GNO) Hurricane and Storm Damage Risk Reduction System (HSDRRS). 22 Oct 08 – Revised HQ Approval Date. Latest revision going through approval process.	
g.	Army Regulation 15–1, <i>Committee Management</i> , 27 November 1992 (Federal Advisory Committee Act Requirements)	
h.	National Academy of Sciences, <i>Background Information and Confidential Conflict Of Interest Disclosure, BI/COI FORM 3</i> , May 2003	

1.3 Review Requirements

This QC Review Plan (RP) was developed in accordance with EC 1165-2-209, which establishes the procedures for ensuring the quality and credibility of US Army Corps of Engineers (USACE) decision and implementation documents through independent review. This RP describes the scope of review for the current phase of work. All appropriate levels of review (DQC, ATR, IEPR and Policy and Legal Review) will be included in this RP and any levels not included will require documentation in the RP of the risk-informed decision not to undertake that level of review. The RP identifies the most important skill sets needed in the reviews and the objective of the review and the specific advice sought, thus setting the appropriate scale and scope of review for the individual project.

- (1) District Quality Control/Quality Assurance (DQC). All **decision documents** (including supporting data, analyses, environmental compliance documents, etc.) shall undergo DQC.

DQC is an internal review process of basic science and engineering work products focused on fulfilling the project quality requirements defined in the Project Management Plan (PMP). The home district shall manage DQC. Documentation of DQC activities is required and should be in accordance with the Quality Manual of the District and the home Major Subordinate Command (MSC).

- (2) Agency Technical Review (ATR). ATR is mandatory for all **decision documents** (including supporting data, analyses, environmental compliance documents, etc.). The objective of ATR is to ensure consistency with established criteria, guidance, procedures, and policy. The ATR will assess whether the analyses presented are technically correct and comply with published US Army Corps of Engineers (USACE) guidance, and that the document explains the analyses and results in a reasonably clear manner for the public and decision makers. ATR is managed within USACE by a designated Planning Center of Expertise (PCX) and is conducted by a qualified team from outside the home district that is not involved in the day-to-day production of the project/product. ATR teams will be comprised of senior USACE personnel and may be supplemented by outside experts as appropriate. To assure independence, the leader of the ATR team shall be from outside the home MSC.

- (3) Independent External Peer Review (IEPR). IEPR may be required for **decision documents** under certain circumstances. IEPR is the most independent level of review, and is applied in cases that meet certain criteria where the risk and magnitude of the proposed project are such that a critical examination by a qualified team outside of USACE is warranted. A risk-informed decision, as described in EC 1165-2-209, is made as to whether IEPR is appropriate. IEPR panels will consist of independent, recognized experts from outside of the USACE in the appropriate disciplines, representing a balance of areas of expertise suitable for the review being conducted. There are two types of IEPR: Type I is generally for decision documents and Type II is generally for implementation products.
 - (a) Type I IEPR. Type I IEPR reviews are managed outside the USACE and are conducted on project studies. Type I IEPR panels assess the adequacy and acceptability of the economic and environmental assumptions and projections, project evaluation data, economic analysis, environmental analyses, engineering analyses, formulation of alternative plans, methods for integrating risk and uncertainty, models used in the evaluation of environmental impacts of proposed projects, and biological opinions rendered on the proposed projects. Type I IEPR will cover the entire decision document or action and will address all the underlying engineering, economics, and environmental work, not just one aspect of the study. For decision documents where a Type II IEPR (Safety Assurance Review) is anticipated during project implementation, safety assurance shall also be addressed during the Type I IEPR per EC 1165-2-209.
 - (b) Type II IEPR. Type II IEPR, or Safety Assurance Review (SAR), are managed outside the USACE and are conducted on design and construction activities for hurricane, storm, and flood risk management projects or other projects where existing and potential hazards pose a significant threat to human life. Type II IEPR panels will conduct reviews

of the design and construction activities prior to initiation of physical construction and, until construction activities are completed, periodically thereafter on a regular schedule. The reviews shall consider the adequacy, appropriateness, and acceptability of the design and construction activities in assuring public health safety and welfare.

- (4) Policy and Legal Compliance Review. All **decision documents** will be reviewed throughout the study process for their compliance with law and policy. Guidance for policy and legal compliance reviews is addressed in Appendix H, ER 1105-2-100. These reviews culminate in determinations that the recommendations in the reports and the supporting analyses and coordination comply with law and policy, and warrant approval or further recommendation to higher authority by the Chief of Engineers. DQC and ATR augment and complement the policy review processes by addressing compliance with pertinent published Army policies, particularly policies on analytical methods and the presentation of findings in decision documents.
- (5) Cost Engineering Review and Certification. All **decision documents** shall be coordinated with the Cost Engineering Directory of Expertise (DX), located in the Walla Walla District. The DX, or in some circumstances regional cost personnel that are pre-certified by the DX, will conduct the cost ATR. The DX will provide certification of the final total project cost.
- (6) Model Certification/Approval. EC 1165-2-209 mandates the use of certified or approved models for all planning activities to ensure the models are technically and theoretically sound, compliant with USACE policy, computationally accurate, and based on reasonable assumptions. Planning models, for the purposes of the EC, are defined as any models and analytical tools that planners use to define water resources management problems and opportunities, to formulate potential alternatives to address the problems and take advantage of the opportunities, to evaluate potential effects of alternatives and to support decision making. The use of a certified/approved planning model does not constitute technical review of the planning product. The selection and application of the model and the input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR. EC 1165-2-209 does not cover engineering models used in planning. The responsible use of well-known and proven USACE developed and commercial engineering software will continue and the professional practice of documenting the application of the software and modeling results will be followed. Use of engineering models is also subject to DQC, ATR, and IEPR.

2 PROJECT DESCRIPTION

2.1 Authority

General authority for the mitigation of environmental impacts caused by water resources projects is provided to the Secretary of the Army by the Water Resources Development Act of 1986 Section 906, as amended, along with other statutes, including National Environmental Policy Act (NEPA), Clean Water Act (WCA), and Fish & Wildlife Coordination Act. Additionally, mitigation features are project features of the parent construction project which generated the mitigation requirements—in this case LPV and WBV Hurricane Protection Projects authorized or funded under the 3rd through the 7th Supplemental

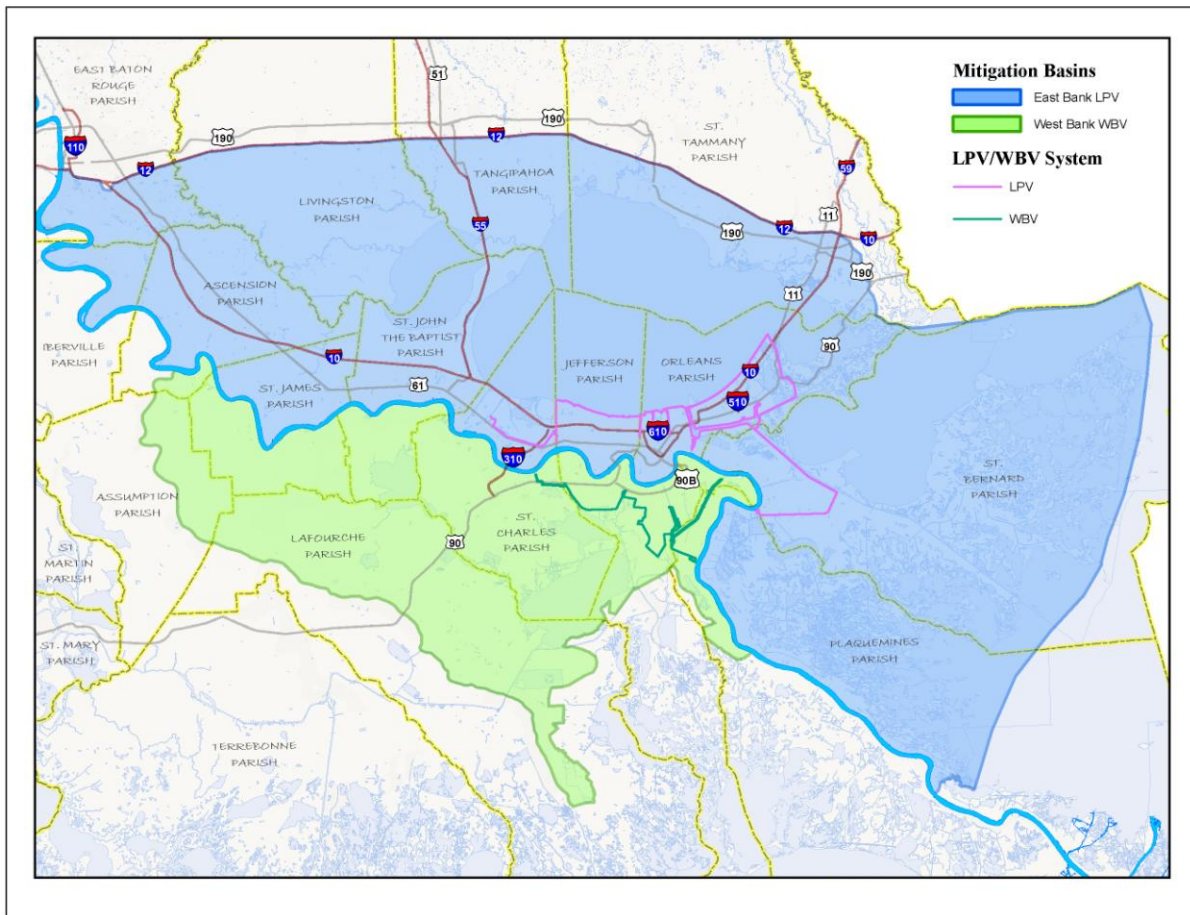
Appropriation Acts. Therefore, the mitigation features are governed by the LPV and WBV project authorities and associated Project Partnership Agreements (PPA), under which the parent project was executed. LPV was authorized by the Flood Control Act of 1965. WBV was authorized by the Water Resources Development Act of 1986. The HSDRRS mitigation effort is budgeted at approximately \$27M for WBV and \$85M for LPV, funded through the 3rd through 7th Supplemental Appropriation Acts.

A more detailed review of the authority can be found in Appendix A.

2.2 Location

Generally mitigation should occur within the watershed in which the environmental impacts occurred. Environmental regulations and USACE policies establish preferences for mitigating for habitat losses in-kind and in close proximity to the location of the environmental impacts. Mitigation sites will be generally located within coastal Louisiana and east of the Mississippi River for LPV impacts and between the Mississippi River and Bayou Lafourche for WBV impacts. The following figure presents the mitigation basins.

Figure 1. Proposed LPV and WBV Mitigation Basins



2.3 Description

The purpose of this project is to provide compensatory mitigation for environmental impacts associated with LPV and WBV construction work and is funded through the 3rd through the 7th Supplemental Appropriations. Activities include but are not limited to plan formulation, environmental clearance, real estate acquisition, development of plans and specifications, construction, monitoring, Operations, Maintenance, Repair, Replacement and Rehabilitation (OMRR&R), and adaptive management. Currently the LPV and WBV unavoidable impacts have occurred to five habitat types—marsh, bottomland hardwood wet, bottomland hardwood dry, swamp, and water bottoms. USACE will mitigate for impacts to marsh, bottomland hardwood wet, bottomland hardwood dry, and swamp. At this time the Mississippi Valley, New Orleans District is not planning to mitigate for open water impacts incurred from the upgrades to HSDRRS. Although open water areas may be productive for estuarine fisheries, there are continuing annual gains in various open water habitats due to the relatively high rates of wetland loss in Louisiana. Interspersed open water within and adjacent to marsh were assessed along with marsh impacts using the Wetland Value Assessment community model. Mitigation was included for lost functions of those aquatic habitats.

The non-Federal Sponsor (NFS) for this project is the Coastal Protection and Restoration Authority of Louisiana (CPRA) with a relevant cost share.

A sufficient number of potential mitigation sites were identified through the PDT, interagency participation, and public/stakeholder input. In cooperation with the NFS and resource agencies, the sites underwent an initial screening process based on existing information and best professional judgment. The remaining sites will be compared using Alternative Evaluation Process (AEP) by habitat type by LPV/WBV (i.e. LPV swamp sites will be compared to other LPV swamp sites). AEP is a five step project management business process for Civil Works project development. The steps include project alternative development, alternative analysis and comparison, project team recommendation, command decision, and implementation. The result of the AEP will be ranking of the LPV marsh sites, the LPV swamp sites, the WBV marsh sites, etc. The rankings will be used to logically combine alternative sites into alternative mitigation plans composed of large-scale projects. The alternative mitigation plans will meet the compensatory mitigation requirements. The compensatory mitigation requirements are defined in previous IER documents by project footprints. These previous IER footprints will be updated for impact footprints in the IERs generated by this mitigation project. Alternative plans will be compared using the AEP process to identify the tentatively selected plan (TSP). Annualization of costs will be needed to compare plans and aid in screening; but no National Economic Development (NED), National Ecosystem Restoration (NER), or incremental cost analysis will be required. The TSP will address all LPV and WBV compensatory mitigation requirements for HSDRRS including all habitat types plus a required LPV National Wildlife Refuge mitigation site for impacts incurred on refuge land and a National Park/404 (c) mitigation site for impacts incurred on the National Park and 404c area. AEP will be used to choose a recommended mitigation plan. Both an Engineering Alternatives Report (EAR) and Project Description Document (PDD) will be prepared as the decision document in lieu of a traditional feasibility report. Environmental clearance will be provided by the preparation of an Individual Environmental Report (IER) under the NEPA Alternative Arrangements.

3 WORK PRODUCTS

All decision documents and supporting documents will be produced in-house by the USACE New Orleans District. Two Engineering Alternative Reports (EARs) will be generated; one for LPV and one for WBV. The EARs, the purpose of which is to present the various engineering aspects of each alternative, will be

signed-off on by the Chief of Engineering at the New Orleans District. Following, two Project Description Documents (PDDs) will be prepared; one for WBV and one for LPV. The PDD serves as the decision document for mitigation projects utilizing 4th Supplemental Appropriations Act funds (HSDRRS Quality Management Plan and HSDRRS Environmental Mitigation PgMP). The purpose of the PDD is to describe the alternatives evaluated and to document in detail the approved plan. The PDDs will be approved by the Mississippi Valley Division Commanding General. The EARs and PDDs will serve as decision documents in lieu of the traditional feasibility report.

An Individual Environmental Report (IER) is the NEPA document being utilized by the US Army Corps of Engineers, Mississippi Valley Division for all HSDRRS work as part of NEPA alternative arrangements approved by the Council for Environmental Quality (CEQ). An IER describes a range of alternatives for fulfilling the purpose and need of the project; contains a thorough analysis of direct, indirect, and cumulative impacts for these alternatives; and presents rationale for the selection of the alternative to be implemented. IERs are being used in lieu of an Environmental Assessment (EA) or an Environmental Impact Statement (EIS) for compliance with NEPA. Environmental clearance will be provided for this project by the preparation of two IERs under the NEPA Alternative Arrangements; one IER for each WBV and LPV.

There will be no work-in-kind provided by the NFS for review under this RP. The supporting documents for these decision documents to be reviewed under this RP will be identified in Section 4 Scope of Review.

4 SCOPE OF REVIEW

Factors including Safety Factors affecting the scope and level of review:

- The study for the Environmental Mitigation is not considered to be challenging by technical, institutional, or social standards. Mitigation is generally viewed positively by social standards. USACE has institutional knowledge on the subject and no new technical aspects will be implemented.
- Depending on selected mitigation measures, swamp mitigation may have risk and uncertainty regarding achievement of ecological success criteria, possibly affecting project turnover to the NFS and may trigger need for adaptive management.
- No significant economic, environmental, and/or social effects to the Nation are anticipated from construction of the project. No adverse impacts on scarce or unique cultural, historic, or tribal resources are anticipated. No adverse impacts on fish and wildlife species or their habitat are anticipated. No adverse impacts on species listed as endangered or threatened, or to the designated critical habitat of such species, under the Endangered Species Act are anticipated. Typically, sites chosen for the construction of an approved mitigation plan exist in a degraded or less than desirable state in terms of quality and productive habitat. The purpose of the mitigation will be to improve overall quality of environmental areas. Furthermore, every effort will be made to avoid and minimize adverse impacts to any significant resource previously mentioned.
- The project is not anticipated to be highly controversial in regards to significant public dispute as to the size, nature, or effects of the project or to the economic or environmental costs or benefits of the project.
- The project will not involve significant threat to human life/safety assurance. Construction of a mitigation project does not produce a structure that presents a threat to life or safety.

Construction may include, but is not limited to the rehabilitation of site hydrology, deposition of fill material, and the planting of desirable trees, shrubs, or grasses. None of the features listed typically presents an adverse risk potential during or post-construction.

- The interagency team will be involved in mitigation plan development is a subunit of the PDT (see Appendix B). Various agencies have responsibility for compliance with various aspects of mitigation laws and policies, specifically the Fish and Wildlife Coordination Act and Clean Water Act Section 404 regulations.
- The NFS preferred projects (i.e. LCA) will not be part of the selected plan which may lead to controversy. Projects already authorized under the LCA authority have been deemed legally ineligible to serve as HSDRRS mitigation features by USACE Counsel.
- The project will not contain influential scientific information or be a highly influential scientific assessment.
- The information in the decision document and proposed project plan will not be based on novel methods, will not involve the use of innovative materials or techniques, will not present complex challenges for interpretation, containing precedent-setting methods or models, and will not present conclusions that are likely to change prevailing practices. Wetland Valuation Assessment (WVA) will be used to measure the ecological output of each proposed mitigation project. WVA is a widely accepted desktop analytical tool which produces habitat quality measurements expressed in terms of Average Annual Habitat Units. The project will not contain influential scientific information or be a highly influential scientific assessment. The study/project is not expected to be a source of profound or influential scientific information on which future studies/projects will rely.
- The proposed project design will not require redundancy, resiliency, and/or robustness. Mitigation sites are not intended to be constructed to reduce risk. Project features commonly associated with flood protection projects would not apply to mitigation.
- The project is proceeding under the approved HSDRRS PgMP process which has some overlapping planning, design, and Right of Entry (ROE) for construction activities in order to streamline pre-construction activities and achieve mitigation as concurrently as possible with the impacts that are being mitigated. The intention is to minimize the time that a habitat unit is lost without replacement through implementation of compensatory mitigation.
- The project lacks the need for more conservative assumptions to increase capacity to compensate for greater degrees of uncertainty and risk.
The project construction is not unique nor is the acquisition plan. Construction of a mitigation plan will utilize current best management practices, reforestation methods and survivorship thresholds. Similar mitigation projects have been implemented within USACE. The general acquisition plan is part of the HSDRRS PgMP and has been utilized for all HSDRRS contracts.

4.1 District Quality Control Activities

DQC will be managed by the home district in accordance with the Major Subordinate Command (MSC) and district Quality Management Plans.

DQC will be performed by each MVN Engineering Division (ED), Planning Division, Real Estate Division, Operations Division, Construction Division, and Office of Counsel for the EARs, IERs, and PDDs. The MVN ED will perform the DQC for each ED deliverable, including 95% Hydraulics Report; 95% Geotech Report; 95% MII Cost Estimates; Engineering Alternative Report, 65% P&S and BCOE Reviews.

DQC will be done throughout the design process; in particular, at the identified milestones. Greater details for the DQC effort will be presented in the Quality Control Plan (QCP).

4.2 Agency Technical Review

Decision Document

The ATR of Decision Document Technical Appendices and the Engineering Alternatives Report (EAR) will be managed by the lead, [Review Management Organization (RMO)], Planning Center of Expertise for Coastal Storm Damage Reduction (PCX-CSDR). The purpose of the project is Environmental Mitigation and the lead PCX will coordinate with the Planning Center of Expertise for Ecosystem Restoration (ECO-PCX) as necessary.

The Project Description Documents (PDD) will not undergo an official ATR as all of its technical appendices will have already undergone the ATR.

Documents. CEMVN will prepare the following documents that will provide the technical basis for the Environmental Mitigation project PDDs. Each document will be sent in its entirety for review.

- Hydraulics Report
- Geotechnical Report
- Engineering Alternatives Report (EAR)
- Individual Environmental Report (IER)
- MII Cost Estimates

The Individual Environmental Report (IER) ATRs will be conducted by the St. Louis District (MVS) per the HSDRRS PgMP despite its contradiction that the ATR should be conducted outside of the home MSC. The decision to utilize MVS for the ATRs of HSDRRS IERs stems from the Commanding General's direction to engage regional/U5 support for this mission. As the mission is not yet complete, St. Louis would still apply as the most appropriate district for the HSDRRS' IER ATRs. This is supported by Mississippi Valley Division. The decision to use St. Louis for the review of the IERs is supported by Division. The St. Louis team qualifications are presented in Appendix C.

The MII Cost Estimate ATRs will be conducted by the Walla Wall District who serves as the Cost Engineering Directory of Expertise (DX).

Implementation Documents

Document. CEMVN will prepare the following document for the Environmental Mitigation projects. This document will be sent in its entirety for review.

- Plans and Specifications (P&S) 65%

The Hydraulics Report, Geotechnical Report, P&S, MII Cost Estimates, EARs and IERs, all combine into the PDD decision document. All of these documents require an official ATR; therefore, an ATR of the PDD would be redundant and unnecessary. The ATR Certification forms will be included in the PDD to verify the extensive quality control that went into producing the PDD. No new information will be produced between the ATRs and creation of the PDD that would require further ATR efforts. This is stipulated in the ATR Provider Matrix of the approved HSDRRS Quality Management Plan (Appendix D). The PDD will undergo a review at Division prior to its approval.

Review team composition requirements are discussed in Section 5.2. Cost and scheduling is discussed in Section 8.

4.2.1 Work Items for Decision Documents and Implementation Documents.

Specific work items shall include but not be limited to the following:

- Review of all documents identified.
- Review of design calculations.
- Enter and resolve all review comments resulting from reviews of the work through DrChecks.
- ATR certification upon completion of each review. ATR certification should be signed by the ATR team leader as well as the ED chief for the agency performing the review. The ATR certificates should be used for certifying all reviews. Each certification will include copies of DrChecks review comments showing that all comments are resolved and closed.
- Specific submission requirements will be coordinated with the MVN POC.

The primary objectives of the review are to ensure that:

- a. The project meets the Government's scope, intent and quality objectives.
- b. Design concepts are valid.
- c. The design is feasible and will be safe, functional, and constructible.
- d. Appropriate methods of analysis were used and basic assumptions are valid and used for the intended purpose.
- e. The source, amount, and level of detail of the data used in the analysis are appropriate for the complexity of the project.
- f. The project complies with accepted practice and design criteria within the industry.
- g. All relevant engineering and scientific disciplines have been effectively integrated.
- h. Content is sufficiently complete for the current phase of the project and provides an adequate basis for future development effort.

4.3 Independent External Peer Review

Type I IEPR. Type I IEPR reviews are managed outside the USACE and are conducted on project studies. Type I IEPR panels assess the adequacy and acceptability of the economic and environmental assumptions and projections, project evaluation data, economic analysis, environmental analyses, engineering analyses, formulation of alternative plans, methods for integrating risk and uncertainty, models used in the evaluation of environmental impacts of proposed projects, and biological opinions rendered on the proposed projects. Type I IEPR covers the entire decision document or action and addresses all the underlying engineering, economics, and environmental work, not just one aspect of the study. For decision documents where a Type II IEPR (Safety Assurance Review) is anticipated during project implementation, safety assurance shall also be addressed during the Type I IEPR per EC 1165-2-209.

Type II IEPR. Type II IEPR, or Safety Assurance Review (SAR), are managed outside the USACE and are conducted on design and construction activities for hurricane, storm, and flood risk management projects or other projects where existing and potential hazards pose a significant threat to human life. Type II IEPR panels will conduct reviews of the design and construction activities prior to initiation of physical construction and, until construction activities are completed, periodically thereafter on a regular schedule. The reviews consider the adequacy, appropriateness, and acceptability of the design and construction activities in assuring public health safety and welfare.

Factors affecting the decision of the necessity for an IEPR Type I and Type II are discussed Section 4 Scope of Review.

Decision on IEPR. The PDDs and all their necessary appendices will undergo a Type I IEPR. The IEPRs will be conducted by Louisiana Water Resources Council (LWRC). There will be one PDD for the LPV HSDRRS mitigation and another PDD for the WBV HSDRRS mitigation.

4.4 Policy Compliance and Legal Review

All decision documents will be reviewed throughout the study process for their compliance with law and policy. Guidance for policy and legal compliance reviews is addressed in Appendix H, ER 1105-2-100. These reviews culminate in determinations that the recommendations in the reports and the supporting analyses and coordination comply with law and policy, and warrant approval or further recommendation to higher authority. The technical review efforts addressed in this RP, i.e. DQC and ATR, are to augment and complement the policy review processes by addressing compliance with pertinent published Army policies, particularly policies on analytical methods and the presentation of findings in decision documents.

4.5 Other Peer Reviews

There are no known additional Peer Review requirements specific to the home MSC or district or unique to this project study.

5 REVIEW TEAM

5.1 District Quality Control Activities

The DQC will be managed by the home district in accordance with Major Subordinate Command (MSC) and District Quality Management Plans. The detailed lists of team members will be included in the Quality Control Plan (QCP).

5.2 Agency Technical Review

The Planning Center of Expertise (PCX)/RMO will be tasked in providing the specific ATR team members as the project develops for the decision and implementation documents for this single purpose project. The ATR of all documents listed in Section 4.2 will be managed by the lead, Planning Center of Expertise for Coastal Storm Damage Reduction (PCX-CSDR) possibly in coordination with the Planning Center of Expertise for Ecosystem Restoration (ECO-PCX). The ATR team members will be from outside of the home district, MVN. The home district will not recommend team members. The ATR team leaders will be from outside of the home district as well as outside of the home MSC.

Required ATR Team Expertise. Team members will demonstrate senior-level competence in the type of work being reviewed. Junior-level staff cannot be members of the team. All team members should have a minimum of 10 years of experience within their discipline and should be registered in their field of expertise. The following table presents the disciplines and their required level of expertise.

Table 1: ATR Team Requirements

ATR Team Members/Disciplines	Expertise Required
ATR Lead	The ATR lead should be a senior professional with extensive experience in preparing Civil Works decision documents and conducting ATR. The ATR Lead should be from outside of the Mississippi Valley Division (MVD). The lead should also have the necessary skills and experience to lead a virtual team through the ATR process. Typically, the ATR lead will also serve as a reviewer for a specific discipline (such as planning, economics, environmental resources, etc).
Hydraulic Engineering	Hydraulic team member will demonstrate senior-level competence in the type of work being reviewed. Hydraulics team member should have a minimum of 10 years of experience within their discipline and should be registered in their field of expertise.

Geotechnical Engineering	Geotechnical team member will demonstrate senior-level competence in the type of work being reviewed. Geotechnical team member should have a minimum of 10 years of experience within their discipline and should be registered in their field of expertise.
Civil Engineering	Civil team member will demonstrate senior-level competence in the type of work being reviewed. Civil team member should have a minimum of 10 years of experience within their discipline and should be registered in their field of expertise.
Structural Engineering	Structural team member will demonstrate senior-level competence in the type of work being reviewed. Structural team member should have a minimum of 10 years of experience within their discipline and should be registered in their field of expertise.
Real Estate	Real Estate team member must be an appraiser at the GS-12 level with at least 5 years of federal appraisal experience. Team member should have experience in review of feasibility studies, real estate plans, and gross appraisals.
Biologist/Environmental	Biologist team member will demonstrate senior-level competence in the type of work being reviewed. Biologist should have a minimum of 10 years experience within their discipline and be adept at environmental impact analysis, NEPA compliance and environmental benefits
Plan Formulator	Plan formulator team member will demonstrate senior-level competence in the type of work being reviewed. Plan formulator should have a minimum of 10 years experience within their discipline. Plan formulator should be familiar with environmental benefits/model applications, particularly with those models listed in

	Section 6.
--	------------

St. Louis District will be on the review team for the ATR of IERs in accordance with past HSDRRS IER reviews. This decision is supported by MVD. The team’s qualifications are presented in Appendix C. The St. Louis District ATR lead is Thomas Keevin.

All cost estimates are reviewed by and certified by the Cost DX as in accordance with EC 1165-2-209. The ATR effort for the MII Cost Estimates, construction schedules and contingencies for all documents requiring congressional authorization are coordinated with the Cost Engineering Directory of Expertise (DX) in the Walla Walla District and will not need to be discussed in further detail for this RP. The LPV HSDRRS and WBV HSDRRS Environmental Mitigation has been authorized and funded.

5.3 Independent External Peer Review

The PDDs and their necessary appendices, will undergo a Type I IEPR. This will be conducted by Louisiana Water Resources Council (LWRC). There will be one PDD for the LPV HSDRRS mitigation and another PDD for the WBV HSDRRS mitigation. Requested team disciplines should resemble all the necessary disciplines to conduct the ATRs of the mitigation documents.

6 Model Certification

Planning Models. The following planning models are anticipated to be used in the development of the decision document in accordance with EC 1105-2-412:

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Certification / Approval Status
Institute for Water Resources Planning Suite	Plan formulation purposes	Certified
Wetland Value Assessment community models (April 2011 version) -Bottomland Hardwood -Brackish Marsh -Swamp -Fresh-Intermediate	Will be used to calculate mitigation benefits	In Review. As of 5/18/2011 ECO-PCX is preparing recommendation for HQ for certification of Barrier Island, Barrier Headland, Bottomland Hardwood, Coastal Chenier/Ridge and Swamp Community Models. Not ready to recommend Coastal Marsh model.
Wetland Value Assessment community models (2010 and earlier versions) -Bottomland Hardwood -Brackish Marsh -Swamp -Fresh-Intermediate	Were used and will continue to be used to calculate impacts to be mitigated	Review Complete. Use of 2010 and prior versions should be submitted to ECO-PCX as request for single-use approval.

See Appendix E for detail of the LPV/WBV HSDRRS Mitigation Habitat Modeling Approach. See Appendix F for the Ecosystem Output Application Agency Technical Review Guide.

Engineering Models. The following table includes engineering models anticipated to be used in the development of the decision document:

Table 2: Engineering Models

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study
TABS-MD	The TABS-MD (Multi-Dimensional) Numerical Modeling System is a collection of generalized computer programs and utility codes, designed for studying multi-dimensional hydrodynamics in rivers, reservoirs, bays, and estuaries. These models can be used to study project impacts on flows, sedimentation, constituent transport, and salinity. It could be used in this study to analyze hydrologic impacts of various mitigation area alternatives.
HEC-RAS 4.1	The Hydrologic Engineering Centers River Analysis System (HEC-RAS) software package HEC-RAS allows analysis of one-dimensional steady flow, unsteady flow, sediment transport/mobile bed computations, and water temperature modeling. It could be used in this study to analyze hydrologic impacts of various mitigation area alternatives.

HEC-RAS and TABS are on the HH&C Community of Practice list of preferred software. Both softwares are nationally accepted by FEMA for use in the National Flood Insurance Program (NFIP) studies.

No other engineering modeling is expected at this time.

7 PUBLIC COMMENT

To ensure that the peer review approach is responsive to the wide array of stakeholders and customers, both within and outside the Federal Government, this Review Plan will be published on the district’s public internet site following approval by MVD at <http://www.mvn.usace.army.mil/> and www.nolaenvironmental.gov. This is not a formal comment period and there is no set timeframe for the opportunity for public comment. If and when comments are received, the PDT will consider them and decide if revisions to the review plan are necessary. The public is invited to review and submit comments on the plan as described on the web site.

Public Reviews. The Public will have a 30 day period to review and provide comments for the IER. The IER is scheduled to begin public review by May 7, 2012. Comments will be addressed before finalization of the IER.

The public, including scientific or professional societies, will not be asked to nominate potential external peer reviewers.

8 SCHEDULE and COSTS

The following tables present the schedules, disciplines needed, and cost estimates of the ATR efforts. DQC schedules and costs will be developed in the QCP.

Table 3: LPV ATR

Document	Quantity	Date Document Ready for ATR	# of Each Discipline Needed for Each Document					Cost Estimate
			Geotechnical	Structural	Civil	Hydraulic	Other	
Engineering Alternative Report (EAR)	1	1-Aug-11	1	1	1	1	(1) Real Estate, (1) Biologist, (1) Plan Formulator	██████
Plans and Specifications (P&S) (65%)	5	9-Jan-12	1	1	1	1	(1) Biologist	██████
MCACES Second Generation (MII) Cost Estimate	≤ 5	23-Jan-12	Walla Walla	Walla Walla	Walla Walla	Walla Walla		██████
Hydraulics Report	≤ 5	17-Feb-12	0	0	1	1		██████
Geotechnical Report	≤ 5	14-Mar-12	2	0	0	0		██████
Individual Environmental Report (IER)	1	1-Apr-12	0	0	0	0	(1) Biologist, (1) Plan Formulator	██████

*Number of each discipline required for each document

Table 4: WBV ATR

Document	Quantity	Date Document Ready for ATR	# of Each Discipline Needed for Each Document					Cost Estimate
			Geotechnical	Structural	Civil	Hydraulic	Other	
Engineering Alternative Report (EAR)	1	8-Aug-11	1	1	1	1	(1) Real Estate, (1) Biologist, (1) Plan Formulator	██████
Plans and Specifications (P&S) (65%)	5	9-Jan-12	1	1	1	1	(1) Biologist	██████
MCACES Second Generation (MII) Cost Estimate	≤ 5	23-Jan-12	Walla Walla	Walla Walla	Walla Walla	Walla Walla		██████
Hydraulics Report	≤ 5	17-Feb-12	0	0	1	1		██████
Geotechnical Report	≤ 5	14-Mar-12	2	0	0	0		██████
Individual Environmental Report (IER)	1	1-Apr-12	0	0	0	0	(1) Biologist, (1) Plan Formulator	██████

*Number of each discipline required for each document

Documents will be produced in-house and the ATR will be conducted at 95% completion for the EAR, MII Cost Estimates, Hydraulics Report, and Geotechnical Report. The P&S ATR will be performed at 65% completion. The IER will undergo the ATR before being released for public comment. Quality control measures will be implemented throughout project development internally as well as the formal DQC effort.

It is currently unknown exactly how many Hydraulics and Geotechnical documents will be produced; however, it will not exceed five each for LPV, nor will it exceed five each for WBV. The cost estimate is expected to be currently sufficient for the reviews. The number of disciplines presented in the table will be required for each document to be reviewed.

In accordance with the HSDRRS PgMP and Quality Management Plan, St. Louis District will be reviewing all HSDRRS IERs which will involve a plan formulator and a biologist. Their qualifications are presented in Appendix C.

The ATR effort for the cost estimates, construction schedules and contingencies are coordinated with the Cost Engineering Directory of Expertise (DX) in the Walla Walla District per EC 1165-2-209.

The PDDs for LPV and WBV are scheduled for Division review by May 7, 2012, and the final PDD to Division on September 15, 2012. The ATR Certification forms will be included with the PDD when it is sent to Division for review. HSDRRS project PDDs do not require an official ATR as they are reviewed and approved by Division and all the documents that formulate the PDD undergo a prior ATR (HSDRRS Quality Management Plan).

All costs presented in this section are intended to be estimates only at this time and are subject to change depending on the complexity of the documentation and reviews. Further ATR costs would be ██████ for the ATR Lead/PCX for their management of the process in this FY 2011 and an additional ██████ in FY 2012. The ATR Lead/PCX will need no less than 30 days notice for providing review team members and beginning the reviews.

Independent External Peer Review

The ATRs of the aforementioned documents will be completed prior to the completion of the PDD which will then undergo a Type I IEPR by the Louisiana Water Resources Council (LWRC). The estimated cost of the IEPR for each PDD (LPV and WBV) is ██████ total IEPR cost ██████. The two PDDs are scheduled to be completed and ready for IEPR on 7 May 2012. The PDDs will be sent to both Division and IEPR concurrently and comments will be coordinated appropriately.

Additional IERP costs include the contract management for the IEPR. The PCX will manage the contract with LWRC at a labor cost of ██████ per PDD (total labor cost for PCX ██████). The PCX will need three months of notice for leading the IEPR.

9 DOCUMENTATION OF REVIEWS

The District Quality Control documentation will be defined in the QCP. The DQC will document comments and backchecks using Document Review and Checking System (DrChecks). These records will be passed to the ATR team to aid in their review process.

The Agency Technical Review activities for Environmental Mitigation will be completed by a District named by the PCX. The review teams will use the Document Review and Checking System (DrChecks) to document the review process. Reviewers will be responsible for backchecking responses to the review comments and either close the comment or attempt to resolve any disagreements. For each of the reviews, a copy of the DrChecks comments and their responses for this project will be attached to this Review Plan as an Appendix.

a. Documentation of ATR. DrChecks review software will be used to document all ATR comments, responses and associated resolutions accomplished throughout the review process. Comments should be limited to those that are required to ensure adequacy of the product. The four key parts of a quality review comment will normally include:

1. The review concern – identify the product’s information deficiency or incorrect application of policy, guidance, or procedures;
2. The basis for the concern – cite the appropriate law, policy, guidance, or procedure that has not been properly followed;
3. The significance of the concern – indicate the importance of the concern with regard to its potential impact on the plan selection, recommended plan components, efficiency (cost), effectiveness (function/outputs), implementation responsibilities, safety, Federal interest, or public acceptability; and
4. The probable specific action needed to resolve the concern – identify the action(s) that the reporting officers must take to resolve the concern.

In some situations, especially addressing incomplete or unclear information, comments may seek clarification in order to then assess whether further specific concerns exist.

The ATR documentation in DrChecks will include the text of each ATR concern, the Project Delivery Team response, a brief summary of the pertinent points in any discussion, including any vertical team coordination (the vertical team includes the district, PCX, MSC, and HQUSACE), and the agreed upon resolution. If an ATR concern cannot be satisfactorily resolved between the ATR team and the PDT, it will be elevated to the vertical team for further resolution in accordance with the policy issue resolution process described in either ER 1110-1-12 or ER 1105-2-100, Appendix H, as appropriate. Unresolved concerns can be closed in DrChecks with a notation that the concern has been elevated to the vertical team for resolution.

At the conclusion of each ATR effort, the ATR team will prepare a Review Report summarizing the review. Review Reports will be considered an integral part of the ATR documentation and shall:

- Identify the document(s) reviewed and the purpose of the review;

- Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;
- Include the charge to the reviewers;
- Describe the nature of their review and their findings and conclusions;
- Identify and summarize each unresolved issue (if any); and
- Include a verbatim copy of each reviewer's comments (either with or without specific attributions), or represent the views of the group as a whole, including any disparate and dissenting views.

ATR may be certified when all ATR concerns are either resolved or referred to the vertical team for resolution and the ATR documentation is complete. The ATR Lead will prepare a Statement of Technical Review certifying that the issues raised by the ATR team have been resolved (or elevated to the vertical team). A Statement of Technical Review should be completed, based on work reviewed to date. A sample Statement of Technical Review is included in Appendix F.

The St. Louis District IER ATR lead, Thomas Keevin, will be responsible for the reviews in DrChecks and also will document the completed reviews of the IERs for the PCX. Documentation of the IERs reviews will contain major issues or concerns that arose during the reviews. A printout of DrChecks comments (which should be closed upon resolution) will be attached. This documentation is necessary for PCX-CSDR to sign the Statement of Technical Review. PCX guidelines for ATR available for the IER ATR lead if needed.

b. Documentation of Type I IEPR. The IEPR panel will be selected and managed by the Louisiana Water Resources Council, an Outside Eligible Organization (OEO) per EC 1165-2-209, Appendix D. Panel comments will be compiled by the OEO and should address the adequacy and acceptability of the economic, engineering and environmental methods, models, and analyses used. IEPR comments should generally include the same four key parts as described for ATR comments in Section 4.d above. The OEO will prepare a final Review Report that will accompany the publication of the final decision document (if available upon submission of the PDD to Division otherwise it will be sent subsequently) and shall:

- Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;
- Include the charge to the reviewers;
- Describe the nature of their review and their findings and conclusions; and
- Include a verbatim copy of each reviewer's comments (either with or without specific attributions), or represent the views of the group as a whole, including any disparate and dissenting views.

USACE shall consider all recommendations contained in the Review Report and prepare a written response for all recommendations adopted or not adopted. The final decision document will summarize the Review Report and USACE response if available by the time of the decision documents submission. The Review Report and USACE response will be made available to the public, including through electronic means on the internet.

The IEPR shall not alter the schedule of the decision documents approval process. All IEPR review documentation that is not available by the time the PDD is submitted for approval will be noted and addressed accordingly when provided.

10 POINTS OF CONTACT

Questions about this Review Plan may be directed to the applicable District Project Delivery Team.

- Review Plan POC: John Templeton – (504) 862-1021
- Mitigation Senior Project Manager: Soheila Holley – (504) 862-1007
- District Quality/Review Manager: Danny Thurmond – (504) 862-1214
- Chief, Engineering Division: Walter Baumy – (504) 862-2240
- Lead PCX/RMO: CSDR-PCX, NY District: Larry Cocchiere – (347) 370-4571
- Supporting PCX: ECO-PCX, Vicksburg District: Jodi Staebell – (309) 794-5448
- ATR IER MVN Coordinator – Sandy Stiles (504) 862-1583
- ATR IER Team St. Louis District - Thomas Keevin: (314-331-8462)
- ATR MII Cost Estimates Team Walla Walla District

11 SUMMARY OF REVIEW PLAN UPDATES

Revision No.	Date	Description of major change(s)

Appendix A

Authority

LPV MITIGATION PROJECT AUTHORITY (current as of 20 Jan 2011)

The LPV project was authorized by the Flood Control Act of 1965 (P.L.[Public Law] 89-298, Title II, Sec. 204) which authorized a “project for hurricane protection on Lake Pontchartrain, Louisiana ... substantially in accordance with the recommendations of the Chief of Engineers in House Document 231, Eighty-ninth Congress.” The original statutory authorization for the LPV Project was amended by the Water Resource Development Acts (WRDA) of 1974 (P.L. 93-251, Title I, Sec. 92), 1986 (P.L. 99-662, Title VIII, Sec. 805), 1990 (P.L. 101-640, Sec. 116), 1992 (P.L. 102-580, Sec. 102), 1996 (P.L. 104-303, Sec. 325), 1999 (P.L. 106-53, Sec. 324), and 2000 (P.L. 106-541, Sec. 432); and the Energy and Water Development Appropriations Acts of 1992 (P.L. 102-104, Title I, Construction, General), 1993 (P.L. 102-377, Title I, Construction, General), and 1994 (P.L. 103-126, Title I, Construction, General), 1993 (PL 102-377, Title I, Construction, General), and 1994 (PL 103-126, Title I, Construction, General).

The DOD (Department of Defense) Emergency Supplemental Appropriations to Address Hurricanes in the Gulf of Mexico, and the Pandemic Influenza Act of 2006 (Public Law 109-148, Chapter 3, Construction, and Flood Control and Coastal Emergencies) or “3rd Supplemental,” appropriated funds to accelerate the completion of the previously authorized project, and to restore and repair the project at full Federal expense.

In June 2006, the Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and the Hurricane Recovery of 2006 (Public Law 109-234, Title II, Chapter 3, Construction, and Flood Control and Coastal Emergencies) or “4th Supplemental,” appropriated funds and added the authority to raise levee heights where necessary, reinforce and replace floodwalls, and otherwise enhance the project to provide the levels of protection necessary to achieve the certification required for participation in the National Flood Insurance Program (NFIP). With the enactment of this law, Congress also authorized improvements to LPV protection at the Inner Harbor Navigation Canal.

In May 2007, the U.S. Troop Readiness, Veterans’ Care, Katrina Recovery, and Iraq Accountability Appropriations Act, 2007 (Public Law 110-28, Title IV, Chapter 3, Flood Control and Coastal Emergencies and Sec. 4302) or “5th Supplemental,” provided \$1,300,000,000 to carry out projects and measures for the LPV and WBV projects as described in Public Law 109-148 above, and provided flexibility to the Secretary to reallocate un-obligated funds from the Public Law 109-234 projects funded under the Flood Control and Coastal Emergencies heading, subject to coordination with the House and Senate Committees on Appropriation.

The Water Resources Development Act (WRDA) of 2007 (Public Law 110-114 at Section 7012) authorized the raising of levee heights and repair and replacement of floodwalls to achieve certification required for a 100-year level of protection in accordance with the NFIP.

The 6th Supplemental, “Supplemental Appropriations Act, 2008,” (Public Law 110-252, Title III, Chapter. 3, Civil Construction) provided LPV \$1,077,000,000 (funds that became available October 1, 2008) subject to a Federal 65% and 35% non-Federal cost share "to modify authorized projects in southeast Louisiana to provide hurricane, storm and flood damage reduction in the greater New Orleans and

surrounding areas to the level of protection necessary to achieve the certification required for participation in the NFIP under the base flood elevations current at the time of enactment of this Act". This Act was passed on 30 June 2008.

The 7th Supplemental, "Consolidated Security, Disaster Assistance, and Continuing Appropriations Act, 2009," (Construction heading, Division B, Title I, Chapter 3 of Public Law 110-329) provides that the Secretary of the Army is directed to use \$700,000,000 of the \$1,500,000,000 appropriated under that heading to fund the estimated amount of non-Federal cash contributions to be financed in accordance with Section 103(k) of WRDA of 1986, over a period of 30 years from the date of completion of the work undertaken pursuant to the LPV PPA, or separable element thereof.

Authority for the mitigation of environmental impacts caused by water resources projects is provided to the Secretary of the Army by the Water Resources Development Acts (WRDA) 1986 Section 906, as amended, along with other statutes, including National Environmental Policy Act (NEPA), Clean Water Act (CWA), and Fish & Wildlife Coordination Act. Additionally, mitigation features are project features of the parent construction project which generated the mitigation requirements-in this case LPV. Therefore, the mitigation features are governed by the LPV project authorities and associated Project Partnership Agreements (PPA), under which the parent project is being executed.

WBV MITIGATION PROJECT AUTHORITY (current as of 20 Jan 2011)

The Westwego to Harvey Canal Hurricane Protection Project was authorized by the Water Resources Development Act (WRDA) of 1986 (Public Law 99-662, Sec. 401(b)). The WRDA of 1996 (Public Law 104-303, Sections 101(a)(17) and 101(b)(11)) modified the project and added the Lake Cataouatche area to the project. WRDA 1996 also authorized the East of Harvey Canal Hurricane Protection Project. WRDA 1999 (PL 106-53, Sec. 328) combined the three projects under the name, the West Bank and Vicinity, New Orleans, Hurricane Protection Project.

The DoD (Department of Defense) Emergency Supplemental Appropriations to Address Hurricanes in the Gulf of Mexico, and the Pandemic Influenza Act of 2006 (Public Law 109-148, Chapter 3, Construction, and Flood Control and Coastal Emergencies) or "3rd Supplemental," appropriated funds to accelerate the completion of the previously authorized project, and to restore and repair the project at full Federal expense.

In June 2006, the Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and the Hurricane Recovery of 2006 (Public Law 109-234, Title II, Chapter 3, Construction, and Flood Control and Coastal Emergencies) or "4th Supplemental," appropriated funds and added the authority to raise levee heights where necessary, reinforce and replace floodwalls, and otherwise enhance the project to provide the levels of protection necessary to achieve the certification required for participation in the NFIP.

In May 2007, the U.S. Troop Readiness, Veterans' Care, Katrina Recovery, and Iraq Accountability Appropriations Act, 2007 (Public Law 110-28, Title IV, Chapter 3, Flood Control and Coastal Emergencies and Sec. 4302) or "5th Supplemental," provided \$1,300,000,000 to carry out projects and measures for the WBV and Lake Pontchartrain projects as described in Public Law 109-148 above, and provided flexibility to the Secretary to reallocate un-obligated funds from the Public Law 109-234 projects funded

under the Flood Control and Coastal Emergencies heading, subject to coordination with the House and Senate Committees on Appropriation.

The Water Resources Development Act (WRDA) of 2007 (Public Law 110-114 at Section 7012) authorized the raising of levee heights and repair and replacement of floodwalls to achieve certification required for a 100-year level of protection in accordance with the NFIP. Section 3084 of WRDA 2007 further amended the existing project by striking "operation and maintenance" and inserting "operation, maintenance, rehabilitation, repair, and replacement," and by striking "Algiers Channel" and inserting "Algiers Canal Levees." It further changed the non-Federal cost share of the Algiers Canal portion of the project to 35 percent.

The 6th Supplemental, "Supplemental Appropriations Act, 2008," (Public Law 110-252, Title III, Chapter. 3, Civil Construction) provided WBV \$920,000,000 (funds that became available October 1, 2008) subject to a Federal 65% and 35% non-Federal cost share "to modify authorized projects in southeast Louisiana to provide hurricane, storm and flood damage reduction in the greater New Orleans and surrounding areas to the level of protection necessary to achieve the certification required for participation in the NFIP under the base flood elevations current at the time of enactment of this Act". This Act was passed on 30 June 2008.

The 7th Supplemental, "Consolidated Security, Disaster Assistance, and Continuing Appropriations Act, 2009," (Construction heading, Division B, Title I, Chapter 3 of Public Law 110-329) provides that the Secretary of the Army is directed to use \$350,000,000 of the \$1,500,000,000 appropriated under that heading to fund the estimated amount of non-Federal cash contributions to be financed in accordance with Section 103(k) of WRDA of 1986, over a period of 30 years from the date of completion of the work undertaken pursuant to the WBV PPA, or separable element thereof.

Authority for the mitigation of environmental impacts caused by water resources projects is provided to the Secretary of the Army by the Water Resources Development Acts (WRDA) 1986 Section 906, as amended, along with other statutes, including National Environmental Policy Act (NEPA), Clean Water Act (CWA), and Fish & Wildlife Coordination Act. Additionally, mitigation features are project features of the parent construction project which generated the mitigation requirements-in this case WPV. Therefore, the mitigation features are governed by the WPV project authorities and associated Project Partnership Agreements (PPA), under which the parent project is being executed.

Appendix B

List of Project Delivery Team Members

Brett Herr	Branch Chief (LPV)
Beth Wiggins	Branch Chief (WBV)
Soheila Holley	Senior Project Manager (Mitigation)
Carl Anderson	Senior Project Manager (LPV Project)
Julie Vignes	Senior Project Manager (WBV Project)
Brad Drouant	Project Manager (LPV Project)
John Templeton	Project Manager (WBV Project)
Patrick Erwin	Project Manager (PRO Mitigation)
Tutashinda Salaam	Project Manager (PRO Mitigation)
Clarice Sundeen	HPO Liaison LPV (PM)
Laura Lee Wilkinson	HPO Liaison LPV (Environmental)
Lee Walker (contractor)	HPO Liaison LPV (Environmental)
Carol Burke	Program Analyst (LPV)
Tanja Doucet	Program Analyst (WBV)
Greg Miller	Senior Plan Formulator
Joan Exnicios	Environmental Branch Chief
Elizabeth Behrens	Environmental Manager
Angie Minton (contractor)	Plan Formulation Lead
Susan Mabry	Scheduler
Maurya Kilroy	Office of Counsel (LPV)
Lisa Evans	Office of Counsel (WBV)
Aven Bruser	Office of Counsel (Environmental)
Daryl Glorioso	Office of Counsel (HSDRRS)
Bob Northey	Office of Counsel (Environmental)
Erin Clark	Real Estate Planning (lead)
Linda Thompson	Real Estate Acquisition (lead)
Alexandra Chatters	Engineering - Project Engineer (Engineering Control)
Rodney Mach	Engineering - Hydraulics Lead
Shung Chiu	Engineering - Geotech Lead
Keith O’Cain	Engineering - Civil
Jason Binet	Engineering - Civil Lead
John Petitbon	Engineering - Cost Lead
Christopher Talbert	Engineering - Relocations Lead
Andre Dehaan	Engineering - GIS Lead

Michele Aurand (contractor)	Engineering - GIS
Chris Dunn	Engineering - Structures Lead
Stephen Pfeffer	Operations/Regulatory (lead)
Anna Lann	Contracting (lead)
Charles Everhardt	Construction (lead)
Allan Hebert	Economics (lead)
Shantel Washington (contractor)	Public Affairs Office (lead)
Frank Vicidomina	Value Engineering (lead)
See HSDRRS Mitigation PgMP	Mitigation Program Management Team
OCPR	Non-Federal Sponsor
SLFPA-E	Non-Federal Sponsor
SLFPA-W	Non-Federal Sponsor

Interagency Team:

Elizabeth Behrens (Team Lead)	USACE Environmental
John Ettinger	Environmental Protection Agency
Barbara Keeler	Environmental Protection Agency
David Muth	National Park Service
Dusty Haigler	National Park Service
Pat Williams	NOAA
Richard Hartman	NOAA
James Barlow	USACE Regulatory
Brian Breaux	USACE Regulatory
Cathy Breaux	USFWS
David Castellanos	USFWS
David Walther	USFWS
Heather Finley	LA Wildlife and Fisheries
Kyle Balkum	LA Wildlife and Fisheries
Frank Cole	State of LA
Elizabeth Davoli	State of LA
Dave Fruge	State of LA
Mandy Green	State of LA
Jeff Harris	State of LA
Charles Killebrew	State of LA
Tim Killeen	State of LA
Barry Bleichner	State of LA

Kirk Rhinehart	State of LA
Stephanie Zumo	State of LA

Note: The current PDT will be supplemented by additional PDT members as individual contract P&S are started. These tables will be updated occasionally as team members change.

Appendix C

St. Louis District IER ATR Team Qualifications

Teri C. Allen, Aquatic Ecologist GS-12, 314-331-8084

Education: B.S. in Marine Ecology in 1991, Florida Atlantic University; M.S. Aquatic Ecology in 1994, Florida Atlantic University; Ph.D. Aquatic Ecology and Conservation Biology at the University of Missouri – St. Louis, Graduate Certificate (In Progress) NEPA Compliance – Utah State University

Unique Capabilities: NEPA, environmental compliance, environmental impact assessment, fish ecology.

Experience: I serve as an environmental project leader and biological specialist with the responsibility of leading a team of technical specialists in the accomplishment of project studies or reports during development of Division input to broader District projects. I plan programs, conduct investigations, and prepare reports related to environmental and biological aspects of District projects. I prepare environmental impact statements (EIS) or assessments (EA) required by P.L. 91-190 for Corps projects. I coordinate with Federal, state, and local agencies in making an inventory of project resources, analyzing the impact on project resources, and recommending optimum use of land, water, fish, and wildlife being affected. I make field investigations to visualize, review existing conditions, and recommend use of Government-owned land under control of the Corps of Engineers.

Among other things, I am interested in the life history attributes of native and exotic Upper Mississippi River fishes. I am interested in the use of multivariate analyses to study the relationships between aquatic organisms and environmental variables. In addition, I am particularly interested in the zoogeography of North American fishes and herpetofauna. I am currently working on my Ph.D. with Dr. Brooks M. Burr of Southern Illinois University at Carbondale. My research involves studying the fishes of the Cache River, Illinois, within the context of watershed scale ecosystem restoration.

Timothy K. George, Chief Environmental Compliance Section GS-13, 314-331-8459

Education: B.S. Biological Sciences - Western Illinois University; M.S. Zoology - University of Illinois at Urbana-Champaign, Graduate Certificate (In Progress) NEPA Compliance – Utah State University

Unique Capabilities: Ecosystem Restoration, Geospatial Analysis, Environmental Impact Assessment, Plan Formulation, Cost Effectiveness/Incremental Cost Analysis,

Threatened and Endangered Species, Habitat Evaluation, Mitigation Development, NEPA Documentation

Experience: 28 years St. Louis District, current position 1991 to present.

East St. Louis and Vicinity, Illinois, Ecosystem Restoration and Flood Damage Reduction Study. Led interagency team of biologists to formulate, evaluate, and recommend alternatives to restore floodplain habitats and reestablish hydrologic connectivity. Performed geospatial analyses including change

detection analysis of aquatic habitats, evaluation of alternative plans, and assessment of project impacts. The study was selected in 2003 for the Mississippi Valley Division Outstanding Planning Achievement Award.

Habitat Rehabilitation and Enhancement Projects, Environmental Management Program (EMP), Upper Mississippi River System. Worked with interagency team of biologists on numerous projects to develop measures to restore riverine, backwater, and terrestrial habitats. Led teams to conduct habitat evaluations. Stump Lake, Batchtown, Stag Island,

Swan Lake, Pools 25 and 26 Islands, Calhoun Point, Cuivre Island

Wetland Identification, Restoration, and Development for numerous Corps projects (Flood Damage Reduction, EMP, Ecosystem Restoration). Field delineation of wetland resources. Watershed-scale identification of wetland resources using multiple GIS coverages. Wetland evaluation and restoration along large-scale rivers. Planning and development of wetland mitigation for Corps projects.

Thomas Keevin, Chief, Planning & Environmental Branch, GS-14, 314-331-8462

Education: B.S. Biology – University of Missouri-St. Louis, M.S. Biology Southern Illinois University-Edwardsville, Ph.D. University of Illinois-Urbana/Champaign, Graduate Certificate (In Progress) NEPA Compliance – Utah State University

Unique Capabilities: Previously MVD's Regional Technical Specialist for Environmental Compliance; NEPA; Endangered Species Act; Environmental Effects of Underwater Explosions-Impact Assessment and Mitigation Strategies; Environmental Effects of Towboat Traffic; Certified Fisheries Biologist/Ichthyology.

Experience: Over the last 28 years, I have been responsible for environmental planning and compliance with environmental laws and regulations related to water resource development projects for the St. Louis District. I have prepared over 75 environmental compliance documents dealing with a wide range of Corps' water resource development projects, including a number of ecosystem restoration projects.

For the past 10 years, I was responsible for study design, implementation, and review of contract reports for approximately twenty-five studies addressing the environmental effects of increased commercial navigation traffic for the Upper Mississippi River-Illinois Waterway System Navigation Study. The Navigation Study, one of the Corps of Engineers largest Feasibility Studies, addresses the need for increasing lock capacity on the Upper Mississippi River and the associated environmental impacts. Based on this work, I was appointed by the Assistant Secretary of the Army for Civil Works as the Principal U.S. Representative to the Inland Navigation Commission Work Group 27, "Guidelines for Environmental Impacts of Vessels", of the International Navigation Association (PIANC). This is an international working group. As part of my navigation traffic effects work, I have published two scientific papers on the environmental effects of navigation traffic and seven ERDC reports.

I am a nationally recognized expert on the environmental effects of underwater blasting and pile driving acoustic impacts and have completed projects for the New York, Jacksonville, Huntington, and St. Louis districts, TVA, U.S. Navy. I have published over ten scientific papers in this area.

Kip Runyon, Fishery Biologist GS-12, 314-331-8396

Education: B.S. Zoology – Southern Illinois University at Carbondale, 1995;

M.S. Zoology – Southern Illinois University at Carbondale, 1997, Graduate Certificate (In

Progress) NEPA Compliance – Utah State University

Unique Capabilities: Fish biology; Habitat restoration; Geographic Information Systems

Experience: I recently completed a feasibility study and Environmental Impact Statement for the Louisiana Coastal Area Convey Atchafalaya River Water to Northern Terrebonne Marshes project. I have served as a fishery biologist on interdisciplinary planning teams working mainly on Environmental Management Program (EMP) Habitat Rehabilitation and Enhancement Projects (HREP). Projects typically focus on backwater restoration, sedimentation, wetland water level management, side channel restoration, and bottomland reforestation. I have extensive experience with multiple habitat models including WVA, HEP, WHAG, and AHAG.

Prior to working for the Corps of Engineers, I worked for 2 ½ years as an environmental restoration project manager for the Florida Fish and Wildlife Conservation Commission (FWC). Projects typically involved removal of organic deposits from lake bottoms and stormwater treatment. I also worked for 2 ½ years as a fishery biologist for FWC, monitoring and managing fish populations in lakes and streams in northern Florida. I also have 2 years of experience as a hazardous materials manager for a private environmental firm.

Appendix D
HSDRRS QMP ATR Matrix

Appendix I - ITR Provider Matrix

(17 Apr 09)

PRODUCT	PREPARED BY			ITR BY
	A-E	MVN/PRO/HPO	Other Including U5	
IER	X			St Louis District
		X		St Louis District
			N/A	N/A
EAR*	X			Other A-E or District other than MVN or same A-E different group
		X		Other District - not MVN
			X	District other than MVN or other than preparing District
Project CWE*	X	X	X	MVD Regional Cost Team
PDD	X	X	X	No ITR required since IERs and EARs already ITR'd
P&S*	X			Other A-E or District other than MVN or same A-E different group
		X		Other District - not MVN
			X	District other than MVN or other than preparing District

* ITRs shall be commensurate with the complexity and risk of the project (ER 1110-1-12). On a case-by-case basis, a design product may undergo an in-house ITR if an analysis of the product determines it to be non-complex with a low level of risk. The associated risks and justification for such a determination shall be documented in the Design Quality Control Plan (DQCP) for the product and the DQCP shall be signed by the Senior Project Manager and Engineering Chief to indicate concurrence.

CWE - Current Working Estimate
 EAR - Engineering Alternatives Report
 HPO - Hurricane Protection Office
 IER - Individual Environmental Report
 ITR - Independent Technical Review
 MVD - Mississippi Valley Division
 MVN - Mississippi Valley (Division) New Orleans (District)

P&S - Plans and Specifications
 PDD - Project Description Document
 PRO - Protection and Restoration Office
 U5 - Upper 5 Districts in MVD above New Orleans (Vicksburg, Memphis, St Louis, Rock Island, and St Paul)

I-1

*ATR formerly referred to as ITR (EC 1165-2-209, Appendix C, 3.)

Appendix E
LPV/WBV HSDRRS Mitigation Habitat Modeling Approach

LPV/WBV HSDRRS Mitigation Habitat Modeling Approach

Lake Pontchartrain and Vicinity (LPV)/West Bank and Vicinity (WBV) Hurricane Storm Damage Risk Reduction System (HSDRRS) Mitigation Habitat Modeling

LPV/WBV HSDRRS impacts were assessed using various versions (2010 and earlier) of Wetland Value Assessment (WVA) community models. Mitigation project benefits would be assessed using the April 2011 versions of the WVA. A sensitivity analysis would be completed to determine differences between the 2010 and earlier versions with the April 2011 version of the WVA models. If the difference is not diminimus, a conversion factor would be applied to reconcile the differences; however, impacts would continue to be calculated using the 2010 and earlier versions.

LPV/WBV HSDRRS Mitigation Period of Analysis

The period of analysis is defined by ER 1105-2-100 as follows: The period of analysis shall be the time required for implementation plus the lesser of: (1) the period of time over which any alternative plan would have significant beneficial or adverse effects, (2) a period not to exceed 50-years except for major multiple purpose reservoir projects, or, (3) a period not to exceed 100 years for major multiple purpose reservoir projects.

For LPV/WBV HSDRRS, the period of analysis would include implementation plus 50 years. Implementation would be the first year of construction impacts (2007) through the first year of mitigation construction (2013). The additional 50 years begins with the first year mitigation benefits begin accruing (2014). The total period of analysis for LPV/WBV HSDRRS would be 2007-2063 with a base year of 2006 in which no impacts occurred.

Application of this period of analysis to the WVA would correspond with the following WVA spreadsheet years:

WVA Year	Calendar Year	Construction Impacts/Mitigation Benefits
0	2006	No HSDRRS impacts/benefits
1	2007	1st year of HSDRRS construction impacts
7	2013	1st year mitigation construction
8	2014	1st year of mitigation benefits/begin 50 year post-implementation period
57	2063	last year of impacts and benefits/end 50 year post-implementation period

Use of Mitigation Banks

In addition to potential USACE-constructed mitigation projects, purchase of credits from mitigation banks is being considered for bottomland hardwood and swamp mitigation. Mitigation banks under consideration were assessed over a 50-year period of analysis using a pre-2010 version of the WVA community model created by the Louisiana Department of Natural Resources (DNR). A sensitivity analysis for swamp WVA models was conducted to compare outputs between the DNR version and the

April 2011 version of the WVA. The sensitivity analysis revealed some differences that could be significant if applied to large acreages. Therefore, benefits for mitigation banks would be recalculated by placing the data from the pre-2010 WVAs into the April 2011 WVA model. This would ensure consistency in the calculation of benefits between the various mitigation alternatives (i.e. banks and USACE-constructed). Because original data would be utilized, benefits would be calculated over the 50-year period of performance relative to each of the individual banks and would capture the habitat improvements from the beginning of each bank's operation. No consideration would be given to temporal differences between the occurrence of construction impacts and the time period in which the mitigation bank credits are/were created.

Appendix F:
Ecosystem Output Application
Agency Technical Review Guide



Qualifications for ATR member for Ecological Outputs:

- Experience with 2 or more methods of conducting ecological output evaluation
- Had some sort of HEP or Eco Output training/expertise
- Senior-level experience in ER projects
- Familiarity with spreadsheets (familiar with standard best programming practices is the optimal but not required)

Things to provide to ATR Reviewer for model application review:

- full decision document draft
- model appendices
- model documentation (e.g. bluebook regional guidebook) link or PDF
- Table 2
- Model Review Report (if available)
- Program files (spreadsheets/input data)

Application of the Model Generic Charge for ATR

- Is it an appropriate model – is the model being used within its design objectives and intended uses?
- Is the rationale for model selection provided? Do you concur that this is the correct model for this project based on the rationale? **KEY FSM QUESTION**
- Do the inputs and outputs comply with model design assumptions? Are the inputs within acceptable ranges for the model?
- Is the model used off the shelf or was it calibrated to some modified application within the study area. If so, how is the model calibrated (reference data, BPJ, etc.)?
- Were modifications required to the model for this project? Is there documentation that supports these modifications?
- Is preference given to one cover type or variable due to the number of performance measures (number of models per cover type/variable)? Is it appropriate and supportable?
- Did the PDT apply any weights to specific performance measures based on value judgment? Is it clear how the weighting effects the decision? Is it supported by the documentation and a sensitivity analysis?
- Is the spreadsheet computing the numbers correctly?
- Spot-check the math in the spreadsheet and document what you spot-checked. What, if any, computational errors did you identify? Does this error have a significant influence on the outputs?

- Are target years selected based on anticipated rates of change in inputs? Is rationale described and acceptable?
- Is there consistent annualization across all alternatives and the without project condition? Is there implicit or explicit discounting? Note that discounting on ER projects is inconsistent with Corps policy. ***(link to FWS manual for annualization and second method as well)***.
- Are graphs of the habitat units over time for the alternatives and the without project condition included in the report?
- Does the model include recreation or other social effects built into it? If so, can it be pulled out of the model and have CE/ICA run on that alone?
- Are there different runs for the different Sea Level Rise scenarios (if applicable)? Does the model consider lateral shift of benefits with respect to the project boundary?
- Are the ecosystem outputs acres-based? If not, what is the rationale for outputs used and is it supportable?
- If Habitat Units are used, are the Habitat Units consistent with area of impacts (i.e. 10,000 HU's for 100 acres is not consistent)?

Appendix G

SAMPLE STATEMENT OF TECHNICAL REVIEW FOR DECISION DOCUMENTS

COMPLETION OF AGENCY TECHNICAL REVIEW

The Agency Technical Review (ATR) has been completed for the <type of product> for <project name and location>. The ATR was conducted as defined in the project's Review Plan to comply with the requirements of EC 1165-2-209. During the ATR, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing US Army Corps of Engineers policy. The ATR also assessed the District Quality Control (DQC) documentation and made the determination that the DQC activities employed appear to be appropriate and effective. All comments resulting from the ATR have been resolved and the comments have been closed in DrCheckssm.

SIGNATURE

Name

Date

ATR Team Leader

Office Symbol/Company

SIGNATURE

Name

Date

Project Manager

Office Symbol

SIGNATURE

Name

Date

Architect Engineer Project Manager¹

Company, location

SIGNATURE

Name

Date

Review Management Office Representative

Office Symbol

CERTIFICATION OF AGENCY TECHNICAL REVIEW

Significant concerns and the explanation of the resolution are as follows: [Describe the major technical concerns and their resolution.](#)

As noted above, all concerns resulting from the ATR of the project have been fully resolved.

SIGNATURE

[Name](#)

Date

Chief, Engineering Division

[Office Symbol](#)

SIGNATURE

[Name](#)

Date

Chief, Planning Division

[Office Symbol](#)

¹ Only needed if some portion of the ATR was contracted

STATEMENT OF TECHNICAL REVIEW

COMPLETION OF QUALITY ASSURANCE REVIEW AND AGENCY TECHNICAL REVIEW

The [name of ATR team leader's district] Agency Technical Review (ATR) team has completed the ATR of [type of product] for [project name and location]. Notice is hereby given that (1) a Quality Assurance review has been conducted as defined in the [name of home district] Quality Assurance Plan and (2) an agency technical review, appropriate to the level of risk and complexity inherent in the project, has been conducted. The ATR has been conducted as defined in the project's Review Plan. During the agency technical review, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the result, including whether the product meets the customer's needs consistent with law and existing US Army Corps of Engineers policy. All comments resulting from this QA review and ATR have been resolved.

[name]
QA Review Team Leader
[name of home district]

Date

[name]
Project Manager
[name of home district]

Date

CERTIFICATION OF QUALITY ASSURANCE REVIEW AND AGENCY TECHNICAL REVIEW

Significant concerns and the explanation of the resolution are as follows:
(Describe the major technical concerns, possible impact, and resolution)

[name]
Chief, Engineering Division
[name of home district]

Date