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

REPLY TO
ATTENTION OF

CEPCX-CSDR

JAN 28 2011

MEMORANDUM FOR: Chief, CEMVN-PPPMD, Attention: Mr. Jeffrey J. Varisco

SUBJECT: West Shore-Lake Pontchartrain, Louisiana Hurricane Protection St. Charles, St. John the Baptist, and St. James Parishes, Louisiana Integrated Feasibility Report/Environmental Impact Statement

1. The National Planning Center of Expertise for Coastal Storm Damage Reduction (PCX-CSDR) has reviewed the Review Plan (RP) for the subject study and concurs that the RP complies with current peer review policy requirements contained in EC 1165-2-209, entitled "Civil Works Review Policy".

2. The review was performed by Mr. Larry Cocchieri, Deputy, CEPCX-CSDR. The RP checklist documenting the review is attached.

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 SAD 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 Agency Technical Review and Type I Independent External Peer Review for the subject study and will continue to coordinate with the PDT. For further information, please contact me at (917) 613-3873 or Mr. Cocchieri at 347-370-4571.

Encl

JOSEPH R. VIETRI
Director, National Planning Center of
Expertise for Coastal Storm Damage
Reduction

REVIEW PLAN

West Shore-Lake Pontchartrain, Louisiana Hurricane Protection
St. Charles, St. John the Baptist, and St. James Parishes, Louisisana
Integrated Feasibility Report/Environmental Impact Statement

US Army Corps of Engineers, New Orleans District

September 22, 2010
MSC Approval Date: Pending
Last Revision Date: None

US Army Corps
of Engineers ®

REVIEW PLAN

West Shore-Lake Pontchartrain, Louisiana Hurricane Protection
St. Charles, St. John the Baptist, and St. James Parishes, Louisiana
Integrated Feasibility Report/Environmental Impact Statement

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1. PURPOSE AND REQUIREMENTS

a. Purpose. This Review Plan defines the scope and level of peer review for the West Shore-Lake Pontchartrain, Louisiana Hurricane Protection feasibility study.

b. References

(1) Engineering Circular (EC) 1165-2-209, Civil Works Review Policy, 31 Jan 2010
(2) EC 1105-2-407, Planning Models Improvement Program: Model Certification, 31 May 2005
(3) EC 1105-2-412, Assuring Quality of Planning Models, xxx 2010
(4) Engineering Regulation (ER) 1110-1-12, Quality Management, 30 Sep 2006
(5) ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 Nov 2007
(6) West Shore-Lake Pontchartrain, Louisiana Hurrican Protection Project Feasibility Study, Project Management Plan Addendum 1, 28 May 2008
(7) Quality Management Plan, US Army Corps of Engineers, New Orleans District, 6 Oct 2006
(8) Quality Control and Peer Reivew Plan (PRP), West Shore Lake Pontchartrain, LA Hurricane Protection Project Feasibility Study, Approved 4 Apr 2008

c. Requirements. This review plan was developed in accordance with EC 1165-2-209, which establishes an accountable, comprehensive, life-cycle review strategy for Civil Works products by providing a seamless process for review of all Civil Works projects from initial planning through design, construction, and operation, maintenance, repair, replacement and rehabilitation (OMRR&R). The EC outlines four general levels of review: District Quality Control/Quality Assurance (DQC), Agency Technical Review (ATR), Independent External Peer Review (IEPR), and Policy and Legal Compliance Review. In addition to these levels of review, decision documents are subject to cost engineering review and certification (per EC 1165-2-209) and planning model certification/approval (per EC 1105-2-412).

(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 Risk Management Organization (RMO) 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 an biological opinions of the project study. 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 1105-2-412 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 1105-2-412 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.

(7) National Planning Center of Expertise Coordination. EC 1165-2-209 outlines PCX coordination in conjunction with preparation of the Review Plan. This Review Plan is being coordinated with the National Planning Certer of Expertise for Coastal Storm Damage Reduction (PCX-CSDR). The PCX-CSDR is responsible for the accomplishment of IEPR for the West Shore-Lake Pontchartrain, Louisiana Hurricane Protection feasibility study. The DQC is the responsibility of the MSC/District. The PCX-CSDR will manage the IEPR review to be conducted by others.

(8) Review Plan Approval and Posting. In order to ensure the Review Plan is in compliance with the principles of EC 1165-2-209 and the MSC's Quality Management Plan, the Review Plan must be endorsed by the PCX-CSDR and approved by the applicable MSC, in this case the Commander, Mississippi Valley Division (MVD). Once the Review Plan is approved, the District will post it to its district public website and notify MVD and the PCX-CSDR.

2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

The RMO is responsible for managing the overall peer review effort described in this Review Plan. The RMO for decision documents is typically either a Planning Center of Expertise (PCX) or the Risk Management Center (RMC), depending on the primary purpose of the decision document. The RMO for the peer review effort described in this Review Plan is the National Planning Center of Expertise for Coastal Storm Damage Reduction (PCX-CSDR).

The RMO will coordinate with the Cost Engineering Directory of Expertise (DX) to conduct ATR of cost estimates, construction schedules and contingencies.

3. STUDY INFORMATION

a. Decision Document. The title of the decision document to be prepared is “West Shore Lake Pontchartrain Hurricane Protection, St. Charles, St. John the Baptist, and St. James Parishes, Louisiana, Integrated Feasibility Report/Environmental Impact Statement.”

b. Study/Project Description. The West Shore Lake Pontchartrain, LA feasibility study includes portions of St. Charles, St. John the Baptist, and St. James Parishes and is located west of the Bonnet Carre' Spillway between the Mississippi River to the south and Lakes Ponchartrain and Maurepas to the north. Communities within the study area include Laplace, Lutcher, Gramercy, Reserve, and Garyville. The location of the study area is shown in Figure 3-1.

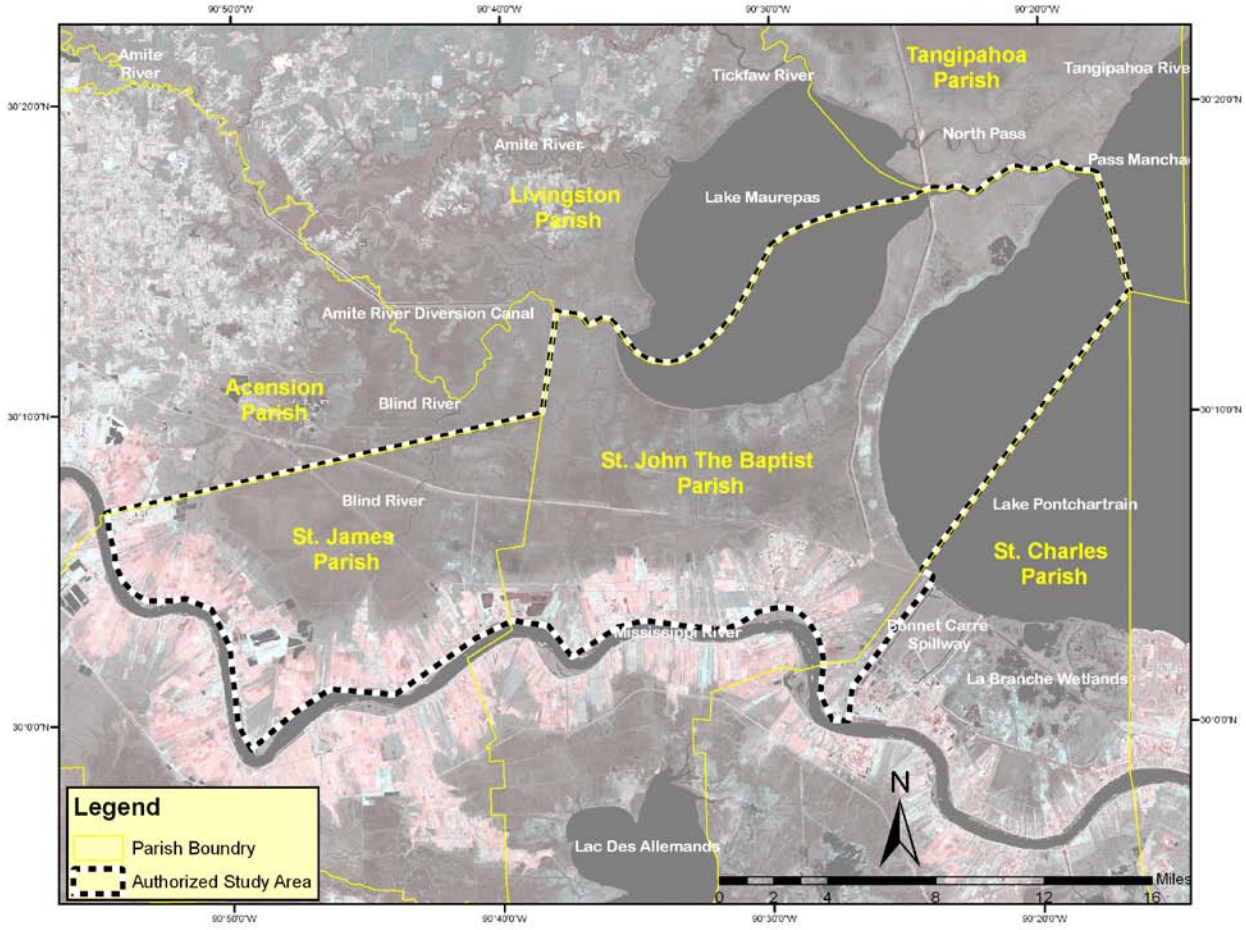

Figure 3.1. Study Area Location

The purpose of the feasibility study is to determine the Federal interest in implementing a hurricane protection levee system to provide protection to St. Charles, St. John the Baptist, and St. James Parishes against hurricane-induced tidal surges originating from Lake Pontchartrain and Lake Maurepas.

The specific plan formulation rationale for the feasibility study has evolved over the course of the many prior studies regarding hurricane and storm damage risk reduction in the study area. Due to the changing natural and social dynamics in the area, all prior formulations and rationales are being revisited during this feasibility study. These include the previously developed non-structural measures — evacuation, elevation of structures, and property acquisitions, and the structural measures — levees, floodwalls, flood gates, pump stations, tidal exchange structures and water storage areas. Since the authorizations for this study provide for hurricane protection and flood control in St. Charles, St. John the Baptist and St. James Parishes, the alternatives to be evaluated

are being limited to needs in these three parishes. The rough order magnitude estimate of total project cost for the levees being investigated in the feasibility study range from $275 million to $450 million.

The non-Federal sponsor for the feasibility study is the Pontchartrain Levee District.

This study was authorized by two resolutions, the first of which was adopted on July 29, 1971, by the Committee on Public Works of the U.S. House of Representatives at the request of Congressmen "Speedy" O. Long and Patrick T. Caffery. The resolution reads as follows:

> "RESOLVED BY THE COMMITTEE ON PUBLIC WORKS OF THE HOUSE OF REPRESENTATIVES, UNITED STATES, that the Board of Engineer's for Rivers and Harbors is hereby requested to review the report of the Chief of Engineers on Lake Pontchartrain and Vicinity, Louisiana, published as House Document No. 231, 89th Congress, First Session, and other pertinent reports, with a view to determining whether modifications to the recommendations contained therein are advisable at this time, with particular reference to providing additional levees for hurricane protection and flood control in St. John the Baptist Parish and that part of St. Charles Parish west of the Bonnet Carre' Spillway."

The second resolution dated September 20, 1974, was adopted by the Committee on Public Works of the U.S. Senate at the request of Senators Russell B. Long and J. Bennett Johnston, and reads as follows:

> "RESOLVED BY THE COMMITTEE ON PUBLIC WORKS OF THE UNITED STATES SENATE, that the Board for Rivers and Harbors is hereby requested to review the report of the Chief of Engineers on Lake Pontchartrain and Vicinity, Louisiana, published as House Document No. 231, 89th Congress, First Session, and other pertinent reports, with a view to determining whether modifications to the recommendations contained therein are advisable at this time, for hurricane protection and flood control in St. James Parish."

c. Factors Affecting the Scope and Level of Review. The proposed construction components of the project are typical of hydrologic, geotechnical, and structural reliability of levee systems. The construction methods are not expected to pose any significant challenges or risks.

Some of the potential project locations are in close proximity to commercial businesses, schools, private residences, roads (Interstates 10 and 55, US Highways 51 and 61, etc.) and/or marsh areas that may pose challenges for real estate access and construction operations. Proper coordination with the property owners should alleviate these concerns.

Other than access and coordination concerns and physical risks typical of construction sites, other project risks include the potential for schedule delays if a weather system (fronts, tropical systems, etc.) impacts the area and potential tie-ins with existing levee systems.

Significant interests have been expressed regarding potential impacts to wetlands behind the levee alignments and associated flood gates for flushing the wetlands during period of non-flood events. Other interests expressed the need for protection of the I-10/I-55 interchange.

The study enjoys broad support from the NFS. This support could become a point of contention should study efforts reveal that a Federal interest is not supportable for the St. James Parish portion of the study area.

It will be important to conduct design reviews with internal district quality review teams and agency technical review teams concurrent with design activities. This approach is intended to provide a shorter feedback loop to the PDT. These shorter loops will result in more near real-time input to design by reviewers and faster design throughput. The risk to this approach is the dependence on regular and efficient communications between the reviewers and the PDT. Should a divergent conflict arise between the DQC and ATR and the PDT, the issue will be raised to the Mississippi Valley Division office for resolution.

The sufficiency of the ADCIRC model and the storm surge and wave analysis will require special attention. This will be true especially with regard to the levee alignment and heights.

Reviewers will need to carefully evaluate the constructability of the design with regard to the availability of sufficient borrow material. Due to the on-going work on the Hurricane Storm Damage Risk Reduction System design and construction in the vicinity of the study area, sufficient borrow material may not be readily available.

d. In-Kind Contributions. Products and analyses provided by non-Federal sponsors as in-kind services are subject to DQC, ATR, and IEPR. The in-kind products and analyses to be provided by the non-Federal sponsor include: geotechnical (determinate boring locations and request ROE, drill undisturbed borings, visual classification of borings, choose samples for shear and consolidation testing, laborary testing, determine surface and subsurface geological conditions, develop geotechnical design paramenters and prepare geotechnical report, idenfity borrow sources), levee design, structures design (levees, floodwalls, pump stations), mechanical and electrical design of pump stations, cost estimates, surveys, geospacial data, relocations input, residential and commercial inventory, first floor elevations, rights-of-entry, real estate cost estimates, real estate plan, and O&M cost estimates.

4. DISTRICT QUALITY CONTROL (DQC)

a. Documentation of DQC. District Quality Control will be conducted by the New Orleans District for all in-house prepared products. In accordance with District Quality Management Plans, internal reviews or design checks will constitute quality control for each deliverable product. It is the responsibility of each product development team member, their supervisors, and the project manager to ensure that every product receives an internal quality control review. It is the responsibility of the supervisor or section chief for each team member to ensure that a qualified DCQ Reviewer that has not been involved with the preparation of the technical product under review is selected and conducts a review of their product prior to delivery to the project manager, or prior to completion.

A Certification of Independent Technical Review will be prepared for each product that undergoes DQC. A DrChecks report showing all comments by reviewer and comment resolutions shall be

attached to the ITR Certification. ITR documentation shall be submitted concurrently with the product.

b. Products to Undergo DQC. District Quality Reviews will evaluate the sufficiency of designs presented and the quality of studies used to select alternatives. Technical products that will be reviewed include:

(1) Environmental (notice of intent, scoping meeting documents, scoping meeting report, environmental settings, wetlands value assessment or habitat evaluation procedure, mitigation plan, 404(b)(1) evaluation, 404(b)(1) public notice, water quality certification application, coastal zone consistency determination, air quality determination, preliminary draft EIS and environmental appendix, draft EIS and environmental appendix, final EIS and environmental appendix, record of decision, etc.),
(2) Cultural, socioeconomic andrecreations (cultural resources analysis, land use history evaluation, recreation resources setting, direct and indirect impacts to resources),
(3) Geotechnical investigations (boring locations, boring classifications, shear and consolidation testing, laboratory testing, surface and subsurface geological conditions, geotechnical design parameters and report, borrow source locations), levee designs, structures design (levees, floodwalls and pump stations),
(4) Mechanical and electrical design (pump station),
(5) Hydrology and hydraulics (ADCIRC modeling, storm surge and wave analysis, interior hydraulic analysis, water quality assessment and 404(b)(1) input, circulation and water quality modeling),
(6) Construction cost estimates and operation and maintenance cost estimates,
(7) Surveys and mapping,
(8) GIS data,
(9) Relocations requirements,
(10) Economics (historical flood damages, residential and commercial structure inventory, first floor elevations, structure values, net benefit analysis, depth damage relationships, contents to structure value ratios, flood damage model input, average annual damage calculations, transportation benefits, financial analysis, benefit-to-cost ratios),
(11) Real estate (real estate costs, gross appraisal, real estate plan), and
(12) Plan formulation reports (feasibility scoping meeting, alternative formulation briefing, draft and final feasibility reports).

Where practicable, these technical products that support subsequent analyses should be reviewed prior to being used in the study.

Additionally, the PDT will be responsible for a complete reading of the report to assure the overall integrity of the report, technical appendices and the recommendations before the approval by the District Commander.

The products developed by the NFS will undergo DQC review by the appropriate discipline team member.

c. Required DQC Expertise. The DQC reviewers will be chosen from a pool of reviewers submitted by each technical element. The team will be made up of individuals who are familiar with the feasibility study design procedures but were not involved in the feasibility study. A copy of the QCP will be

distributed to each member of the team. The QC process will be structured to maintain the principle of one level of technical review, with the number and type of Review Team members actually used dependent upon the level of detail in the report, the focus of the product, the consequence of errors, the overall technical complexity of the project features, and the project risk.

The DQC Team will be comprised of the same discipilines on the PDT and will have experience in the type of analysis in which they are responsible for reviewing. Each DQC Reviewer will be senior or equal in experience to the analyst or production person. The makeup of the DQC Team may be modified as the study progresses to match the review requirements.

DCQ Reviewers will consist of representatives from Plan Formulation Branch (Plan Formulation), Economics and Social Analysis Branch (Economics, Socio-Economics), Environmental Planning and Compliance Branch (NEPA, Cultural Resources, Recreation, HTRW), Civil Branch (Levee Design, Relocations), Cost Engineering Branch (Cost Estimates), Design Services Branch, General Engineering Branch, Geotechnical Branch (Geotechnical), Hydraulics and Hydrology (ADCIRC modeling, storm surge and wave analysis, interior drainage modeling, water quality), Structures Branch (structural), and Acquisition and Leasing Branch (real estate plan, appraisals).

5. AGENCY TECHNICAL REVIEW (ATR)

a. Products to Undergo ATR. Specific products to undergo ATR include the following:

(1) Geotechnical Design Report
(2) H&H ADCIRC and Wave modeling
(3) Interior Hydraulic Analysis
(4) Construction and Operation & Maintenance Cost Estimates
(5) Economic Analysis
(6) Feasibility Scoping Meeting documentation
(7) Alternative Formulation Briefing documentation
(8) Draft Integrated Feasibility Report/Environmental Impact Statement with supporting appendicies
(9) Final Integrated Feasibility Report/Environmental Impact Statement with supporting appendiceis

b. Required ATR Team Expertise. Additional team members for expertise in other disciplines may be added by the ATR Lead as the review progresses.

ATR Team Members/Disciplines	Expertise Required
ATR Lead/Planning	The ATR Lead/Planning reviewer should be a senior professional/water resources planner with extensive experience in preparing Civil Works decision documents and conducting ATR. The ATR Lead/Planning reviewer should also have the necessary skills and experience to lead a virtual team through the ATR process. The ATR Lead/Planning reviewer should have 10 – 15 years experience as a plan formulator who has worked with project teams to identify and evaluate measures and alternatives using appropriate planning methodologies to address hurricane storm damage risk reduction system studies in accordance with ER 1105-2-100, the Planning Guidance Notebook. Must have extensive plan formulation experience reviewing the analysis with which the measures and alternatives were evaluated and determining that they are sufficiently comprehensive and complete to result in approval of a recommended alternative. Review the documentation of the selection of a recommended plan and ensure the team used an approved plan selection methodology.
Economics	The Economics reviewer should have 5-10 years USACE economics experience or equivalent education. Should have extensive experience in analyzing flood risk management projects in accordance with ER 1105-2-100, the Planning Guidance Notebook. Should have economics experience working with the USACE risk informed approach to decision making, risk models and disaster scenarios with regard to economic impact. Should also have at least two years experience working with the HEC-FDA modeling software.
Environmental Resources	The Environmental Resources reviewer should have 5-10 years environmental resources experience or equivalent education. Should have extensive experience working with the assessment of construction impacts in marsh and urban areas and related ecosystem species and habitat. Should have environmental resources experience working on design or construction teams that worked on hurricane storm damage risk reduction projects including levees, floodwalls, retaining walls, pump stations, gatewell structures, utility penetrations, stoplog and sandbag gaps and other closure structures, interior drainage, drainage structures, etc. Should have detailed knowledge of the National Environmental Protection Act, Endangered Species Act with regional knowledge of south Louisiana specific regulatory requirements, and Federal services regulations.

ATR Team Members/Disciplines	Expertise Required
Hydrology & Hydraulic (H&H) Engineering	The H&H Engineering reviewer should have 10 years H&H experience or equivalent education. Should have extensive H&H experience on a design on construction team that worked on hurricane storm damage risk reduction projects including levees, floodwalls, retaining walls, pump stations, gatewell structures, utility penetrations, stoplog and sandbag gaps and other closure structures, interior drainage, drainage structures, etc. Must be experience in computer modeling techniques for storm surge and wave analysis modeling and interior hydraulic modeling such as ADCIRC, HEC-RAS, etc.
Geotechnical Engineering	The Geotechnical Engineering reviewer should have at least 10 years geotechnical engineering experience and graduate study in engineering or a related field. Should have several years of direct geotechnical experience on design or construction teams that worked on hurricane storm damage risk reduction projects including levees, floodwalls, retaining walls, pump stations, gatewell structures, utility penetrations, stoplog and sandbag gaps and other closure structures, interior drainage, drainage structures, etc.
Civil Engineering	The Civil Engineering reviewer should have at least 10 years civil engineering experience or equivalent education. Should have extensive civil engineering experience on design or construction teams related to hurricane storm damage risk reduction projects including levees, floodwalls, retaining walls, pump stations, gatewell structures, utility penetrations, stoplog and sandbag gaps and other closure structures, interior drainage, drainage structures, etc.
Structural Engineering	The Structural Engineering reviewer should have at least 10 years structural engineering experience or equivalent education. Should have extensive structural engineering experience on design or construction teams related to hurricane storm damage risk reduction projects including levees, floodwalls, retaining walls, pump stations, gatewell structures, utility penetrations, stoplog and sandbag gaps and other closure structures, interior drainage, drainage structures, etc.
Electrical Engineering	The Electrical Engineering reviewer should have 5-10 years electrical engineering experience or equivalent education. Should have extensive electrical engineering experience on design or construction teams related to hurricane storm damage risk reduction projects including levees, floodwalls, retaining walls, pump stations, gatewell structures, utility penetrations, stoplog and sandbag gaps and other closure structures, interior drainage, drainage structures, etc.

ATR Team Members/Disciplines	Expertise Required
Mechanical Engineering	The Mechanical Engineering reviewer should have 5-10 years mechanical engineering experience or equivalent education. Should have extensive mechanical engineering experience on design or construction teams related to hurricane storm damage risk reduction projects including levees, floodwalls, retaining walls, pump stations, gatewell structures, utility penetrations, stoplog and sandbag gaps and other closure structures, interior drainage, drainage structures, etc.
Cost Engineering	The Cost Engineering reviewer should have 5-10 years experience working with estimating complex, phased costing of multi-year civil construction projects. Should have direct experience working with hurricane storm damage risk reduction projects including levees, floodwalls, retaining walls, pump stations, gatewell structures, utility penetrations, stoplog and sandbag gaps and other closure structures, interior drainage, drainage structures, etc. in a design or construction management capacity. (Cost Dx)
Construction/Operations	The Construction/Operations reviewer should have 10 years construction/operations experience or equivalent education assessing hurricane storm damage risk reduction systems. Should have direct construction or operations management experience with hurricane storm damage risk reduction systems projects including levees, floodwalls, retaining walls, pump stations, gatewell structures, utility penetrations, stoplog and sandbag gaps and other closure structures, interior drainage, drainage structures, etc.
Real Estate Planner	The Real Estate Planner reviewer should have 5-10 years real estate experience or equivalent education. Should have direct real estate experience on design or construction teams with knowledge of policies, guidance and procedures in accordance with ER 405-1-2, Real Estate Handbook.

c. 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 be 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 may exist.

The ATR documentation in DrChecks will include the text of each ATR concern, the PDT response, a brief summary of the pertinent points in any discussion, including any vertical team coordination (the vertical team includes the district, RMO, 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, for the AFB, draft report, and final report. A sample Statement of Technical Review is included in Attachment 2.

6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)

a. Decision on IEPR. In accordance with EC 1165-2-209, Paragraph 11.d.(1), a Type I IEPR will be mandatory for the West Shore-Lake Pontchartrain, Louisiana Hurricane Protection feasibility study as the cost of the project will exceed the $45 million threshold. Additionally, the potential alignment of the levee could be controversial as alternatives that enclose a significant amount of marsh area within the protected area and provide for long-term activie management of those marshes. Enclosing these marsh areas within the protected area with the intent to maintain these areas as marsh through long-term management may set precedents. An Environmental Impact Statement will be prepared as part of the feasibility study.

A Type II IEPR to include safety assurance will not be performed during the feasibility phase but will be required during the design (Preconstruction Engineering and Design) and construction phase.

b. Products to Undergo Type I IEPR. Products to undergo the Type I IEPR include:

(1) Alternative Formulation Briefing documentation, and
(2) Draft Integrated Feasibility Report/Environmental Impact Statement with supporting documentation.

c. Required Type I IEPR Panel Expertise. Additional team members for expertise in other disciplines may be added by the RMO as the review progresses.

IEPR Panel Members/Disciplines	Expertise Required
Planning	The Planning panel member should be from academia, a public agency, a non-governmental entity, or an Architect-Engineer or Consulting Firm with at least a Bachelors degree and have 15 years demonstrated experience as a senior water resources planner who has worked with project teams to identify and evaluate measures and alternatives using appropriate planning methodologies to address hurricane storm damage risk reduction system studies. Must have extensive experience reviewing the analysis with which the measures and alternatives were evaluated and determining that they are sufficiently comprehensive and complete to result in approval of a recommended alternative. Review the documentation of the selection of a recommended plan and ensure the team used an approved plan selection methodology. Five years experience directly dealing with USACE planning process as outlined in ER 1105-2-100, Planning Guidance Notebook, is highly recommended.
Economics	The Economics panel member should 15 years demonstrated experience or combined equivalent of education and experience. Should have MS degree or higher in economics and be recognized in applied economices related to water resource economic evaluation (flood damage risk reduction analysis) or review. Should have experience working with risk informed approaches to decision making, risk models and disaster scenarios with regard to economic impact. At least two years experience working with the HEC-FDA modeling software and two years reviewing Federal water resources economics documents justifying construction efforts. At least 5 years experience directly working for or with USACE is highly recommended.

IEPR Panel Members/Disciplines	Expertise Required
Environmental	The Environmental panel member should be a scientist from academia, a public agency, a non-government entity, or an Architect-Engineer or Consulting Firm with a minimum 15 demonstrated experience working with the NEPA impact assessment of construction impacts in marsh and urban areas and related ecosystem species and habitat. The panal member should have a minimum MS degree or higher in an appropriate field of study. Should have experience working on design or construction teams that work in or around marsh and urban areas. Should have detailed knowledge of the National Environmental Protection Act, Endangered Species Act with regional knowledge of south Louisiana specific regulatory requirements, and Federal services regulations. Active participation in related professional societies is encouraged.
Hydrology and Hydraulic (H&H) Engineering	The H&H Engineering panel member should have 15 years demonstrated experience or combined equivalent of education and experience assessing hurricane storm damage risk reduction system projects. Member should be a Registered Professional Engineer from academia, a public agency, or an Architect-Engineer or Consulting Firm with at least a Bachelors degree. Should have direct H&H design or construction management experience with regard to levees, floodwalls, retaining walls, pump stations, gatewell structures, utility penetrations, stoplog and sandbag gaps and other closure structures, interior drainage, drainage structures, etc. Should also have 5-10 years experience working with numerical modeling applications for storm surge and wave analysis modeling and interior hdraulic modeling. Should be familiar with USACE applications of risk and uncertainty analysis in hurricane storm damage risk reduction studies. Active participation in related professional societies is encouraged.
Geotechnical Engineering	The Geotechnical Engineering panel member should have a minimum 20 years demonstrated experience and graduate study in soils engineering or related field. Member should be a Registered Professional Engineer from academia, a public agency, or an Architect-Engineer or Consulting Firm with at least a MS degree. Must have hurricane storm damage risk reduction system design experience. Should have several years of direct experience with regard to levees, floodwalls, retaining walls, pump stations, gatewell structures, utility penetrations, stoplog and sandbag gaps and other closure structures, interior drainage, drainage structures, etc. as either a designer or construction project engineer. Must be skillful with the USACE risk informed approach to hurricane storm damage risk reduction system projects. Active participation in related professional societies is encouraged.

IEPR Panel Members/Disciplines	Expertise Required
Civil Engineering	The Civil Engineering panel member should have a minimum 15 years demonstrated civil engineering experience or combined equivalent of education and experience assessing hurricane storm damage risk reduction system projects. Member should be a Registered Professional Engineer from academia, a public agency, or an Architect-Engineer or Consulting Firm with at least a Bachelors degree. Should have direct civil engineering design or construction management experience with regard to levees, floodwalls, retaining walls, pump stations, gatewell structures, utility penetrations, stoplog and sandbag gaps and other closure structures, interior drainage, drainage structures, utility relocations, nonstructural measures, etc. Active participation in related professional societies is encouraged.
Mechanical Engineering	The Mechanical Engineering panel member should have a minimum 15 years demonstrated mechanical engineering experience or combined equivalent of education and experience assessing hurricane storm damage risk reduction system projects. Member should be a Registered Professional Engineer from academia, a public agency, or an Architect-Engineer or Consulting Firm with at least a Bachelors degree. Should have direct mechanical engineering design or construction management experience with regard to pump stations, closure structures, etc. Active participation in related professional societies is encouraged.

d. Documentation of Type I IEPR. The IEPR panel will be selected and managed by 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.

In accordance with EC 1165-2-209, the IEPR panel must be provided with a statement of work and charge questions. Below are the charge questions which need to be answered. HQ is currently coordinating an effort to develop standardized list of questions for IEPR and this list will be updated accordingly.

(1) In accordance with ER 1110-2-1150, are the quality and quantity of the surveys, investigations, and engineering sufficient for the design?

(2) Are the engineering and planning models used to assess hazards appropriate, properly certified and used consistent with their intended purpose?

(3) Are the assumptions made for the hazards appropriate?

(4) Does the analysis adequately address the uncertainty given the consequences associated with the potential for loss of life for this type of project?

(5) Do the assumptions made during the decision document phase for hazards remain valid through the completion of design as additional knowledge is gained and the state-of-the-art evolves?

(6) Do the project features adequately address redundancy, robustness, and resiliency with an emphasis on interfaces between structures, materials, members, and project phases?

(7) Do the assumptions made during design remain valid through construction?

(8) Have the proper alternatives to meet the project objectives been adequately considered?

(9) Is the recommended plan the most prudent development of the selected alternative?

The OEO will prepare an interim Review Report on the draft decision document. The interim Review Report 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.

If the OEO agrees, DrChecks review software will be used to document all IEPR 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 USACE draft responses may be conveyed back to the OEO informally (orally) to facilitate discussion but will ultimately be conveyed in writing. Upon conveyance of the USACE draft responses to the OEO, a conference will be held, modifications made to the draft response document as necessary, and then finalized in a final interim Review Report.

The OEO will prepare a final Review Report that will accompany the publication of the final decision document 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.

The final Review Report will be submitted by the OEO no later than 60 days following the close of the public comment period for the draft decision document. 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. The Review Report and USACE response will be made available to the public, including through electronic means on the internet.

7. MODEL CERTIFICATION AND APPROVAL

a. Planning Models. The following planning models are anticipated to be used in the development of the decision document:

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Certification / Approval Status
HEC-FDA 1.2.4 (Flood Damage Analysis)	The Hydrologic Engineering Center's Flood Damage Reduction Analysis (HEC-FDA) program provides the capability for integrated hydrologic engineering and economic analysis for formulating and evaluating flood risk management plans using risk-based analysis methods. The program will be used to evaluate and compare the future without- and with-project plans in the West Shore-Lake Pontchartrain study area to aid in the selection of a recommended plan to manage flood risk.	Certified

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

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study
ADCIRC Model	The Advanced Circulation Model (ADCIRC) is a hydrodynamic circulation numerical model that simulates water level and current over an unstructured gridded domain. Run as a two-dimensional or three-dimensional (2-D or 3-D) model, ADCIRC is used for modeling tidally driven and wind and wave driven circulation in coastal waters; forecasting hurricane storm surge and flooding; and for modeling inlet sediment transport/morphology change studies, and dredging/material disposal studies. ADCIRC applications have included: modeling tides and wind driven circulation; analysis of hurricane storm surge and flooding; dredging feasibility and material disposal studies; larval transport studies; and nearshore marine operations. By simulating tidal circulation and storm surge propagation over large computational domains, ADCIRC eliminates the need for imposing approximate open-water boundary conditions that can create inaccuracies in model results, while providing high resolution in areas of complex shoreline and bathymetry. Its predictive capabilities support activities to minimize dredging, maintain channel reliability, manage inlet and adjacent beach sediment, and predict navigation project performance. Its prediction of potential storm water levels is critical in the design of flood and storm damage reduction projects, protection of facilities and infrastructure, and to planning and evacuation procedures. ADCIRC is ideal for system-wide applications because resolution can be varied to reflect the fidelity of solution required in each area of the system. ADCIRC is linked to STWAVE to calculate wave-induced setup, in addition to the wind-induced setup. ADCIRC is being applied under this study to evaluate the wave and water level impacts on the levees in St. Charles, St. John the Baptist, and St James Parishes.

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study
HEC-HMS	The Hydrologic Modeling System (HEC-HMS) is designed to simulate the precipitation-runoff processes of dendritic watershed systems. It is designed to be applicable in a wide range of geographic areas for solving the widest possible range of problems. This includes large river basin water supply and flood hydrology, and small urban or natural watershed runoff. Hydrographs produced by the program are used directly or in conjunction with other software for studies of water availability, urban drainage, flow forecasting, future urbanization impact, reservoir spillway design, flood damage reduction, floodplain regulation, and systems operation. The program is a generalized modeling system capable of representing many different watersheds. A model of the watershed is constructed by separating the hydrologic cycle into manageable pieces and constructing boundaries around the watershed of interest. Any mass or energy flux in the cycle can then be represented with a mathematical model. In most cases, several model choices are available for representing each flux. Each mathematical model included in the program is suitable in different environments and under different conditions. Making the correct choice requires knowledge of the watershed, the goals of the hydrologic study, and engineering judgment. The program features a completely integrated work environment including a database, data entry utilities, computation engine, and results reporting tools. A graphical user interface allows the seamless movement between the different parts of the program. Program functionality and appearance are the same across all supported platforms.
SWMM	The EPA Storm Water Management Model (SWMM) is a dynamic rainfall-runoff simulation model used for single event or long-term (continuous) simulation of runoff quantity and quality from primarily urban areas. The runoff component of SWMM operates on a collection of subcatchment areas that receive precipitation and generate runoff and pollutant loads. The routing portion of SWMM transports this runoff through a system of pipes, channels, storage/treatment devices, pumps, and regulators. SWMM tracks the quantity and quality of runoff generated within each subcatchment, and the flow rate, flow depth, and quality of water in each pipe and channel during a simulation period comprised of multiple time steps.

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study
Adaptive Hydrology/Hydraulics (ADH) Model	Adaptive Hydrology/Hydraulics (ADH) is a modular, parallel, adaptive finite-element model for one-, two-, and three-dimensional flow and transport. ADH is a module of the Department of Defense (DoD) Surface-Water Modeling System and Ground-Water Modeling System. ADH simulates groundwater flow, internal flow, and open channel flow. The ADH module was developed in the Engineer Research and Development Center's Coastal and Hydraulics Laboratory and is a product of the System-Wide Water Resources Program. There are two approaches for open channel flow: nonhydrostatic and hydrostatic pressure methods. The nonhydrostatic pressure module is the same as that used for internal flow and is 3-D. The free surface is updated dynamically. This module is more appropriate for domains near structures where the vertical inertial terms are significant. The shallow-water equations represent the hydrostatic approach. This includes 2-D and 3-D with variable density flow (baroclinic). The 2-D module includes that capability for wetting-drying, dam-break, supercritical, and subcritical flow. The 2-D shallow-water module includes sediment transport and bed change. The 2-D module can include the long-wave vessel effects.
Microputer Aided Cost Engineering System (MCACES) II	MII is the second generation of the Micro-Computer Aided Cost Estimating System (MCACES). MII is used by the USACE for the preparation of detailed construction cost estimates. The software is used for the preparation of programming estimates, current working estimates, bid opening estimates and construction modification estimates in support of the MILCON, Civil Works, and Hazardous, Toxic Waste programs. MII is one of several modules of an integrated suite of cost engineering tools called Tri-Services Automated Cost Engineering System (TRACES). It interfaces with other PC based support modules and databases used by the Tri-Service Cost Engineering community. MII provides an integrated cost estimating system (software and databases) that meets the USACE requirements for preparing cost estimates. MII will be used to develop construction and operation and maintenance cost estimates.

8. REVIEW SCHEDULES AND COSTS

a. ATR Schedule and Cost. ATR is currently estimated to be $110,000. ATR is a project cost and will be cost-shared expenses. The current schedule for the ATR milestones are shown below.

To be determined once an ATR team has been established.

Product	Start Date	Finish Date
H&H ADCIRC and Wave modeling	April 2011	September 2011

Product	Start Date	Finish Date
Feasibility Scoping Meeting documentation	June 2011	July 2011
Alternative Formulation Briefing documentation	January 2012	March 2012
Construction and Operation & Maintenance Cost Estimates of the TSP	August 2012	September 2012
Draft Integrated Feasibility Report/Environmental Impact Statement with supporting documentation	November 2012	December 2012

The ATR schedule and milestones will be reviewed by the PDT and the ATR team after the ATR team has been established. Scheduled milestones will be reviewed on a regular basis to accurately determine study progress.

Additionally, the ATR budget will be reviewed by the PDT and ATR team and reviewed regularly for progress reporting.

b. Type I IEPR Schedule and Cost. The cost of IEPR is currently estimated to be $200,000. IEPR is a 100% federally-funded project cost. In-house costs associated with facilitating the IEPR, obtaining the IEPR panel contract as well as responding to IEPR comments will be cost-shared expenses. The current schedule for the IEPR is shown below.

To be determined once an IEPR team has been established.

Product	Start Date	Finish Date
Draft Integrated Feasibility Report/Environmental Impact Statement with supporting documents	January 2013	April 2013

The IEPR schedule and milestones will be reviewed by the PDT team and the PCS-CSDR Lead after the IEPR team has been established. Scheduled milestone will be reviewed on a regular basis to accurately determine study progress.

Additionally, the IEPR budget will be reviewed by the PDT team and PCX-CSDR Lead and reviewed regularly for progress reporting.

c. Model Certification/Approval Schedule and Cost. To be determined.

9. PUBLIC PARTICIPATION

The public will have several opportunities to comment on the feasibility study documents through a public involvement plan implemented through a notice of study initiation, public meetings, and public workshops. This will allow the USACE the opportunity to exchange information with the public and insure that individuals with an inherent interest in the study are identified and contacted allowing them to voice their views and concerns relative to the study process.

Public meetings and workshops will be conducted to gather and provide feedback from the public, formulate a consensus, and generally keep interested parties informed. A public meeting will be scheduled subsequent ot the pbulci release of the draft feasibility report and environmental impact

statement to present the study conclusions. Throughout the study other public meetings and workshops will be held as necessary.

Although all comments will not be provided to the ATR team, significant and relevant public comments will have been addressed prior to ATR submittal. Any major changes in the study resulting from these comments will be made available to the PCX.

10. REVIEW PLAN APPROVAL AND UPDATES

The Mississippi Valley Division Commander is responsible for approving this Review Plan. The Commander's approval reflects vertical team input (involving district, MSC, RMO, and HQUSACE members) as to the appropriate scope and level of review for the decision document. Like the PMP, the Review Plan is a living document and may change as the study progresses. The home district is responsible for keeping the Review Plan up to date. Minor changes to the review plan since the last MSC Commander approval are documented in Attachment 3. Significant changes to the Review Plan (such as changes to the scope and/or level of review) should be re-approved by the MSC Commander following the process used for initially approving the plan. The latest version of the Review Plan, along with the Commanders' approval memorandum, should be posted on the Home District's webpage. The latest Review Plan should also be provided to the RMO and home MSC.

11. REVIEW PLAN POINTS OF CONTACT

Public questions and/or comments on this review plan can be directed to the following points of contact:

- Jeffrey J Varisco
  Project Manager
  U.S. Army Corps of Engineers, New Orleans District
  (504) 862-2853

- Marti M Lucore
  Senior Project Manager
  U.S. Army Corps of Engineers, New Orleans District
  (504) 862-2057

- name
  title
  U.S. Army Corps of Engineers, Mississippi Valley Division
  (601) 634-xxxx

- name
  title
  National Planning Center of Expertise for Coastal Storm Damage Reduction (RMO)
  (718) 765-xxxx

ATTACHMENT 1: TEAM ROSTERS

Project Delivery Team Members			
Discipline	**Name**	**Phone**	**Email**
USACE			
Project Management			
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Hydraulic Engineer (ADCIRC Modeling)	Hasan Pourtaheri	(504) 862-2444	Hasan.Pourtaheri2@usace.army.mil

Project Delivery Team Members

Discipline	Name	Phone	Email
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Agencies			
LADOTD	James McMenis		
	Brad Miller		brad.miller@la.gov

Vertical Team Members			
Name	**Discipline**	**Phone**	**Email**

District Quality Control Team Reviewers			
Name	**Discipline**	**Phone**	**Email**

Agency Technical Review Team Members			
Name	**Discipline**	**Phone**	**Email**
	PCX-CSDR Lead		

Independent External Peer Review Panal Members		
Name	**Discipline**	**Education & Experience**

ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW FOR DECSION 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 DrChecks[sm].

SIGNATURE _____ Date _____

Name
ATR Team Leader
Office Symbol/Company

SIGNATURE _____ Date _____

Name
Project Manager
Office Symbol

SIGNATURE _____ Date _____

Name
Architect Engineer Project Manager[1]
Company, location

SIGNATURE _____ Date _____

Name
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 _____ Date _____

Name
Chief, Engineering Division
Office Symbol

SIGNATURE _____ Date _____

Name
Chief, Planning Division
Office Symbol

[1] Only needed if some portion of the ATR was contracted

ATTACHMENT 3: REVIEW PLAN REVISIONS

Revision Date	Description of Change	Page / Paragraph Number

ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS

NOTE: This attachment is optional. If included, it should define the acronyms used in the Review Plan. Acronyms used in this template or that might typically be used in a review plan (to be modified as necessary for specific review plans) are provided in the table below. DELETE THIS TEXT BOX BEFORE FINALIZING THE REVIEW PLAN.

Term	Definition	Term	Definition
AFB	Alternative Formulation Briefing	NED	National Economic Development
ASA(CW)	Assistant Secretary of the Army for Civil Works	NER	National Ecosystem Restoration
ATR	Agency Technical Review	NEPA	National Environmental Policy Act
CSDR	Coastal Storm Damage Reduction	O&M	Operation and maintenance
DPR	Detailed Project Report	OMB	Office and Management and Budget
DQC	District Quality Control/Quality Assurance	OMRR&R	Operation, Maintenance, Repair, Replacement and Rehabilitation
DX	Directory of Expertise	OEO	Outside Eligible Organization
EA	Environmental Assessment	OSE	Other Social Effects
EC	Engineer Circular	PCX	Planning Center of Expertise
EIS	Environmental Impact Statement	PDT	Project Delivery Team
EO	Executive Order	PAC	Post Authorization Change
ER	Ecosystem Restoration	PMP	Project Management Plan
FDR	Flood Damage Reduction	PL	Public Law
FEMA	Federal Emergency Management Agency	QMP	Quality Management Plan
FRM	Flood Risk Management	QA	Quality Assurance
FSM	Feasibility Scoping Meeting	QC	Quality Control
GRR	General Reevaluation Report	RED	Regional Economic Development
HQUSACE	Headquarters, U.S. Army Corps of Engineers	RMC	Risk Management Center
IEPR	Independent External Peer Review	RMO	Review Management Organization
ITR	Independent Technical Review	RTS	Regional Technical Specialist
LRR	Limited Reevaluation Report	SAR	Safety Assurance Review
MSC	Major Subordinate Command	USACE	U.S. Army Corps of Engineers
		WRDA	Water Resources Development Act