



DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, MISSISSIPPI VALLEY DIVISION
1400 WALNUT STREET
VICKSBURG, MS 39180-3262

12 JUL 2019

CEMVD-ZA

MEMORANDUM FOR Commander, New Orleans District

SUBJECT: Approval of the Review Plan for the Lake Pontchartrain and Vicinity (LPV), Louisiana, General Reevaluation Report (GRR)

1. References:

a. Memorandum, CEMVN-PMO-L, 3 June 2019, subject: Request for Approval of the Review Plan for the Lake Pontchartrain and Vicinity, Louisiana, General Reevaluation Report (encl 1).

b. Memorandum, CEIWR-RMC, 7 March 2019, subject: Risk Management Center Endorsement – Lake Pontchartrain and Vicinity, General Reevaluation Report, Review Plan (encl 2).


c. EC 1165-2-217, Review Policy for Civil Works, 20 February 2018.

2. The enclosed Review Plan (RP) for the Lake Pontchartrain and Vicinity, Louisiana, General Reevaluation Report has been prepared in accordance with EC 1165-2-217 and has been coordinated with MVD's Program Support Division, the Business Technical Division, and Planning Division. A Type I Independent External Peer Review will be required.

3. I hereby approve this RP, which is subject to change as circumstances require, consistent with project development under the Project Delivery Business Process. Subsequent revisions to this RP or its execution will require new written approval from this office. Non-substantive changes to this RP do not require further approval. The district should post the approved RP to its website.

4. The MVD point of contact for these actions is Ms. Nicole Harris, CEMVD-PDM, (601) 634-5829.

2 Encls


RICHARD G. KAISER
Major General, USA
Commanding



DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NEW ORLEANS DISTRICT
7400 LEAKE AVE
NEW ORLEANS, LA 70118-3651

CEMVN-PMO-L

35.19

MEMORANDUM FOR Commander, Mississippi Valley Division (CEMVD-PDM/
N. Harris)

SUBJECT: Request for Approval of the Review Plan for the Lake Pontchartrain and
Vicinity, Louisiana, General Reevaluation Report

1. References:

a. Review Plan (RP) Template, 31 July 2018, from the USACE Planning Community
Toolbox <https://planning.erdc.dren.mil/toolbox/current.cfm?ThisPage=Peer&Side=No>.

b. Engineering Circular (EC) 1165-2-217, Review Policy for Civil Works,
20 February 2018.

c. Civil Works Director's Policy Memorandum, CW 2019-01, 9 January 2019,
subject: Policy and Legal Compliance Review.

d. Endorsement Memorandum, CEIWR-RMC, 7 March 2019, subject: Review Plan
for Lake Pontchartrain and Vicinity (LPV) General Reevaluation Report (GRR) (Encl 1).

2. This memo transmits the RP for the LPV GRR (Encl 2) for your review and approval.
The subject RP and RP Checklist (Encl 3) are based on the Review Plan Template
Package Memorandum and EC 1165-2-217 referenced above.

3. Based on the requirements outlined in EC-1165-2-217, a Type I IEPR is anticipated
to be required for this project.

4. If you have any questions regarding this transmittal package, please contact
Mr. Bradley Drouant, P.E., Senior Project Manager, at (504) 862-1516.

3 Encls


MICHAEL N. CLANCY
COL, EN
Commanding

REVIEW PLAN

18 June 2019

Project Name: Lake Ponchartrain and Vicinity, LA

P2 Number: 452002

Decision Document Type: General Reevaluation Report

Project Type: Coastal Storm Risk Management

District: New Orleans District

District Contact: Project Manager, 504-862-1516

Major Subordinate Command (MSC): Mississippi Valley Division

MSC Contact: Lower District Support Team, 601-634-5829

Review Management Organization (RMO): Risk Management Center

RMO Contact: Risk Management Center Review Manager, 304-399-5217

Coordinating Planning Center of Expertise (PCX): Coastal Storm Risk Management (CSRM)

Coordinating PCX Contact: CSRM-PCX Deputy Director, 347-370-4571

Key Review Plan Dates

Date of RMC Endorsement of Review Plan: 7 March 2019

Date of MVD Approval of Review Plan: Pending

Date of IEPR Exclusion Approval: N/A

Has the Review Plan changed since RMC Endorsement? N/A

Date of Last Review Plan Revision: NONE

Date of Review Plan Web Posting: TBD

Date of Congressional Notifications: TBD

Milestone Schedule

	<u>Scheduled</u>	<u>Actual</u>	<u>Complete</u>
<u>Alternatives Milestone:</u>	14 February 2019	14 February 19	Yes
<u>Tentatively Selected Plan:</u>	9 October 2019	(enter date)	No
<u>Release Draft Report to Public:</u>	December 2019	(enter date)	No
<u>Agency Decision Milestone:</u>	March 2020	(enter date)	No
<u>Final Report Transmittal:</u>	February 2021	(enter date)	No
<u>Senior Leaders Briefing:</u>	May 2021	(enter date)	No
<u>Chief's Report or Director's Report:</u>	October 2021	(enter date)	No

Project Fact Sheet

18 June 2019

Project Name: Lake Ponchartrain and Vicinity, LA

Location: Generally, the project is located in Orleans, Jefferson, St. Bernard, and St. Charles Parishes, LA.

Authority: This General Reevaluation Report Study is being performed under the authority of the Water Resources Reform and Development Act of 2014 (P.L. 113-121, Section 3017) which authorizes the Secretary of the Army to carry out measures that address consolidation, settlement, subsidence, sea level rise, and new datum to restore certain federally authorized hurricane and storm damage reduction projects to their authorized levels of protection, if the Secretary determines the necessary work is technically feasible, environmentally acceptable, and economically justified. The authorization of Section 3017 of WRRDA 2014 terminates on 10 June 2024.

Sponsor: Coastal Protection and Restoration Authority

Type of Study: General Reevaluation Report

SMART Planning Status: The study is 3x3x3 compliant.

Project Area: The LPV project currently spans four parishes and includes 80 miles of perimeter levee, floodwalls, and other appurtenant facilities roughly bordering Lake Ponchartrain on the north, tying in to the Bonne Carre Spillway on the west and wrapping around by Lake Borgne on the east to tie into the Mississippi River and Tributaries (MR&T) levee on the south. On the south, the MR&T project levee, as an ancillary benefit, provides perimeter hurricane and storm damage risk reduction. The project area is highly urbanized. Figure 1 shows the LPV and WBV study areas and their physical relation to each other.

Problem Statement: The LPV project, along with the WBV project is part of the Greater New Orleans Hurricane and Storm Damage Risk Reduction System (HSDRRS). The WBV project will be covered under a separate review plan. The project is authorized to provide risk reduction from a storm surge that has 1% annual probability of exceedence under the authority provided by the 4th and 6th supplemental appropriations (P.L. 109-234 and P.L. 110-252) in order to provide the level of risk reduction required for participation in the National Flood Insurance Program (NFIP). While the project currently provides this 1% level of risk reduction, if future measures to address the combined effects of consolidation, settlement, subsidence, and sea level rise are not carried out to maintain the project grade, it can be concluded that in the future the system could no longer exclude the base flood.. Additional future levee lifts are anticipated to be required to maintain the 1% level of risk reduction but current project authorities do not include future levee lifts for LPV. However, Section 3017 of P. L. 113-121 does provide this authorization, until it terminates on January 10, 2024. The purpose of the study is to identify whether a National Economic Development (NED) plan exists to reduce life safety risk, economic damages, and risk to the environment and human health due to the combined effects of subsidence, consolidation, and sea level rise on the LPV levee systems.

Federal Interest: The Federal interest is evident from past investments in the system, as well as the future increasing risk to lives and property. The latest total project cost estimate (2010 price level) for future levee lifts on LPV, if fully funded, projected through 2057 is estimated at \$390 million.

Risk Identification: The nighttime population at risk is estimated to be more than 450,000 with preliminary life loss estimates in the thousands. Economic assets at risk are in excess of \$70 billion. The combined effects of subsidence, settlement, consolidation and sea level rise will result in life safety and economic risks increasing in the future if no action is taken.

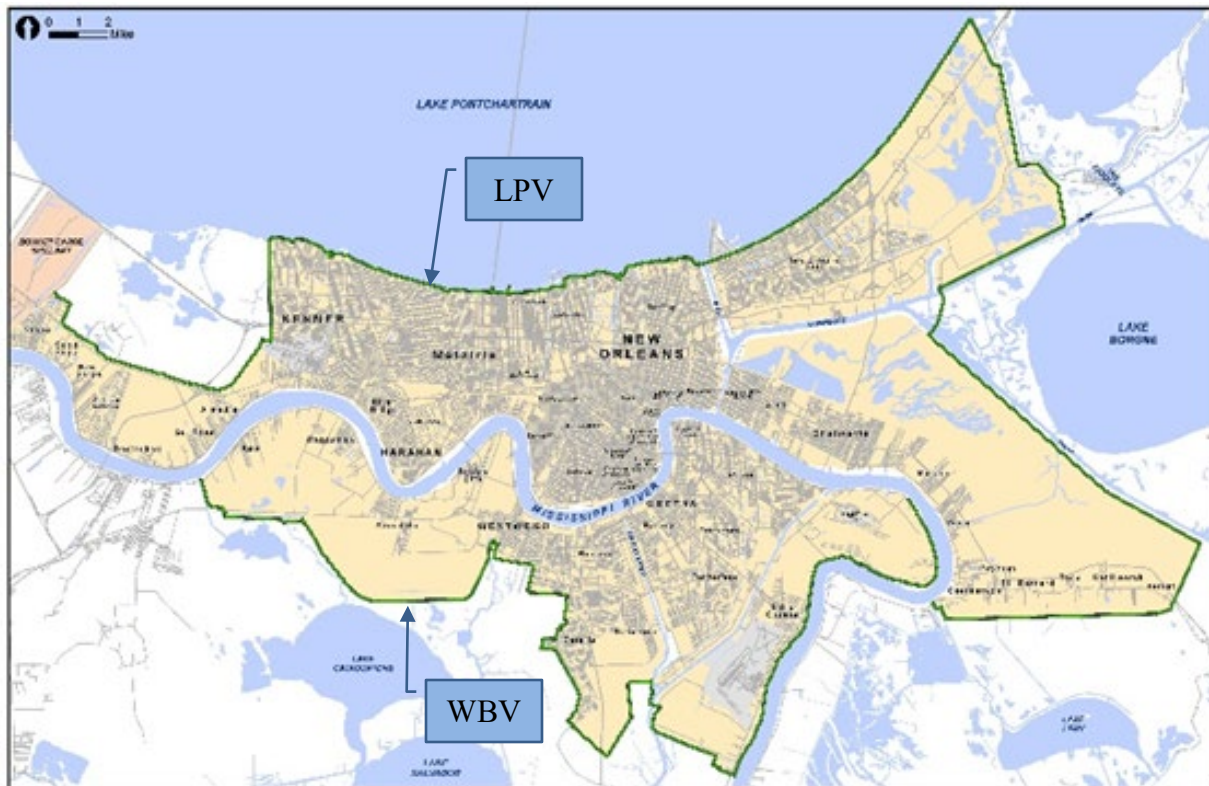


Figure 1. LPV and WBV study areas.

1. FACTORS AFFECTING THE LEVELS OF REVIEW

Scope of Review. This section discusses factors affecting the risk informed decisions on the appropriate levels of review.

- Will the study likely be challenging? The study will be somewhat challenging but will not present unusual challenges. Challenges include assessing the likelihood and projecting the potential effects of concurrent dynamic processes including consolidation, subsidence, settlement, and sea level rise.
- Provide a preliminary assessment of where the project risks are likely to occur and assess the magnitude of those risks. There is high to medium risk and uncertainty involving assumptions made regarding 1) hurricane storm surge modeling, 2) interior flood routing in a breach or overtopping scenario, 3) subsidence rates, 4) sea level rise, and 5) limited structure-specific information for the non-structural analysis.
- Is the project likely to be justified by life safety or is the study or project likely to involve significant life safety issues? The New Orleans District's Chief of Engineering has determined that there is life safety risk associated with the project. The project area is urbanized and consequently there are significant public safety concerns. The LPV project will not continue to provide the current level of risk reduction in the future if no action is taken, therefore the risk to life safety will increase in the future. Project failure or overtopping could result in loss of life in the hundreds. Economic assets at risk total over \$70 billion.
- Has the Governor of an affected state requested a peer review by independent experts? No Governor of any state has specifically requested a Type I or Type II IEPR be conducted for this study. However, Louisiana Revised Statutes 49:214.6.3(B)9(4) and 49:214.5.2(D) require that before a state agency or entity may enter into an agreement with USACE, in which the state agency or entity assumes liability for or provide the cost of operation and maintenance, that there must be an independent third-party review and evaluation to confirm the project's anticipated level of risk reduction.
- Will the project likely involve significant public dispute as to the project's size, nature, or effects? No. The public has a desire to maintain the project at the current or higher level of risk reduction. Efforts will be made to minimize increasing the project's footprint, thereby avoiding additional impacts to adjacent landowners.
- Is the project/study likely to involve significant public dispute as to the economic or environmental cost or benefit of the project? The public is unlikely to dispute the report's estimates of the economic or environmental cost or benefit of the project. Economic assets at risk total over \$70 billion. The existing project footprint is not likely to change significantly and environmental impacts are expected to be negligible to minor.
- Is the information in the decision document or anticipated project design likely to be based on novel methods, involve innovative materials or techniques, present complex challenges for interpretation, contain precedent-setting methods or models, or present conclusions that are likely to change prevailing practices? No. The information in the document and the design will

not likely be based on novel methods or innovative materials or techniques. It will not present complex challenges for interpretation, contain precedent-setting methods or models, or present conclusions that are likely to change prevailing practices. All of the alternative designs are anticipated to utilize conventional methods of hurricane and storm risk reduction.

- Does the project design require redundancy, resiliency, and/or robustness, unique construction sequencing, or a reduced or overlapping design/construction schedule? No. The design effort and construction will utilize conventional techniques and will not require unusual redundancy, resiliency, and/or robustness, unique construction sequencing, or a reduced or overlapping design construction schedule. Levee resiliency currently provided by armoring is planned to be maintained.
- Is the estimated total cost of the project greater than \$200 million? Yes. Previous estimates place the estimated cost of the project at approximately \$390 million, which did not include the removal and replacement of armoring that is anticipated to be required for each levee lift.
- Will an Environmental Impact Statement be prepared as part of the study? Yes.
- Is the project expected to have more than negligible adverse impacts on scarce or unique tribal, cultural, or historic resources? No. Information from previous studies and coordination with state and local agencies will allow the project to avoid significant impacts to tribal, cultural and historic resources.
- Is the project expected to have substantial adverse impacts on fish and wildlife species and their habitat prior to the implementation of mitigation measures? No. The existing levee footprints are not expected to significantly expand, which minimizes the risk of substantial adverse impacts to adjacent wetland habitat near the levees. Most mitigation measures evaluated and implemented during LPV construction could also be implemented during future LPV levee lifts to reduce the level of construction impacts.
- Is the project expected to have, before mitigation measures, more than a negligible adverse impact on an endangered or threatened species or their designated critical habitat? No. Information from previous studies and coordination with federal, state and local agencies will allow the project to avoid significant impacts to endangered or threatened species.

2. REVIEW EXECUTION PLAN

This section describes each level of review to be conducted. Based upon the factors discussed in Section 1, this study will undergo the following types of reviews:

District Quality Control (DQC). All decision documents (including data, analyses, environmental compliance documents, etc.) undergo DQC. This internal review process covers basic science and engineering work products. DQC is an integrated review approach that provides for seamless review, first line supervisory reviews, PDT reviews, and a detailed peer review/checking of the documents, computations, and graphics. The detailed peer reviews are formal processes and are included in the

list of reviews in Table 1. It fulfils the project quality requirements of the Project Management Plan. All DQC reviews will be performed and certified in accordance with EC 1165-2-217.

Agency Technical Review (ATR). ATR is performed by a qualified team from outside the home district that is not involved in the day-to-day production of the project/product. These teams will be comprised of certified USACE personnel. The ATR team lead will be from outside the home MSC. All ATR reviews will be performed in accordance with EC 1165-2-217. As part of the ATR review a site visit may be performed if it is determined that it will add value to the review as determined by the reviewer.

Independent External Peer Review (IEPR). A Type I IEPR will be conducted for this study. A Type II IEPR is planned for the design and construction phases. Type I IEPR is the most independent level of review, and is applied in cases that meet criteria where the risk and magnitude of the project are such that a critical examination by a qualified team outside of USACE is warranted. A risk-informed decision is made as to whether Type I IEPR is appropriate. If significant life safety issues are involved in a study or project a safety assurance review should be conducted during IEPR. The basis for the decision to include IEPR can be found in Section 2.d.

Cost Engineering Review. All decision documents shall be coordinated with the Cost Engineering Mandatory Center of Expertise (MCX). The MCX will assist in determining the expertise needed on the ATR and IEPR teams. The MCX will provide the Cost Engineering certification. The RMO is responsible for coordinating with the MCX for the reviews. These reviews typically occur as part of ATR.

Policy and Legal Review. All decision documents will be reviewed for compliance with law and policy. ER 1105-2-100, Appendix H provides guidance on policy and legal compliance reviews. These reviews culminate in determinations that report recommendations and the supporting analyses and coordination comply with law and policy, and warrant approval or further recommendation to higher authority by the home MSC Commander. These reviews are not further detailed in this section of the Review Plan.

Constructability Evaluation. The Constructability Evaluation (CE) will ensure levee safety risks are adequately addressed by the design and all construction related risks are fully identified and mitigated to an acceptable level. A review will be made of the constructability, the schedule, and the cost estimate. The CE team shall consist of experienced construction engineers and cost estimator(s) and will be assigned by the Dam Safety Modification Mandatory Center of Expertise or the Levee Safety Center, as appropriate. The CE review will be concurrent with the draft report ATR.

LSOG Engagement. Review by the entire LSOG is not required for all risk assessments for levee projects during feasibility studies. Review by the entire LSOG may be appropriate for projects with significant life safety risk, to evaluate deviation requests, and for controversial decisions. In cases where the risk assessment is not presented to the entire LSOG, at least one member of the LSOG will be included on the ATR team. LSOG members from the relevant disciplines will participate as members of the agency technical review team or vertical team, as appropriate, to assure the quality of the technical information and create vertical team alignment throughout the study process.. Appropriate LSOG members will be identified in the Review Plan, in coordination with the LSOG Chair, as a part of the review process for existing levees and dams. For this study, an LSOG member

will be included on the ATR team. It has not yet been determined if the entire LSOG will review the risk assessment, though it is likely that the LSOG will be briefed on its results.

Table 1 provides the schedules and costs for reviews (costs provided are only those external to the PDT). The specific expertise required for the teams are identified in later subsections covering each review. These subsections also identify requirements, special reporting provisions, and sources of more information.

Table 1: Levels of Review

Product(s) to undergo Review	Review Level	Start Date	End Date	Cost	Complete
Existing and Future Without Action Risk Assessment	District Quality Control	5/6/19	5/17/19	\$10,000	No
Hydrology and Hydraulics Review for Risk Assessment	Agency Technical Review	5/20/19	5/24/19	\$5,000	No
Risk Assessment	Agency Technical Review	5/28/19	6/28/19	\$35,000	No
Existing and Future without Action Report and EIS	District Quality Control	5/6/19	5/31/19	\$50,000	No
Draft Feasibility Report and EIS	District Quality Control	11/4/19	12/6/19	\$50,000	No
Draft Feasibility Report and EIS	Agency Technical Review	1/2/20	2/15/20	\$60,000	No
Draft Feasibility Report and EIS	Constructability Evaluation	1/2/20	2/2/20	\$30,000	No
Draft Feasibility Report and EIS	Type I IEPR	1/2/19	3/3/20	\$100,000	No
Draft Feasibility Report and EIS	Policy and Legal Review	1/2/20	2/21/20	\$0	No
Final Feasibility Report and EIS	District Quality Control	1/15/21	2/15/21	\$50,000	No
Final Feasibility Report and EIS	Agency Technical Review	2/15/21	3/15/21	\$40,000	No
Final Feasibility Report and EIS	Policy and Legal Review	3/15/21	5/15/21	\$0	No

a. DISTRICT QUALITY CONTROL

The home district shall manage DQC and will appoint a DQC Lead to manage the local review (see EC 1165-2-217, section 8.a.1). The DQC Lead should prepare a DQC Plan and provide it to the RMO and MSC prior to starting DQC reviews. Table 2 identifies the required expertise for the DQC team.

Table 2: Required DQC Expertise

DQC Team Disciplines	Expertise Required
DQC Lead	A senior professional with extensive experience preparing Civil Works decision documents and conducting DQC. The lead may also serve as a reviewer for a specific discipline.
Planning	A senior water resources planner with experience in coastal storm risk management and flood risk management studies.
Economics	The Economics reviewer should be a senior economist with experience in flood risk management studies, including consequences modeling utilizing HEC-LifeSim and HEC-FDA.
Environmental Resources	The environmental reviewer should be experienced in the National Environmental Policy Act (NEPA) process, mitigation analysis, and have a biological or environmental background that includes experience with coastal systems.
Cultural Resources	Team member will be experienced in cultural resources and tribal issues, regulations, and laws
Hydrology & Hydraulic Engineering	The H&H engineering reviewer will be an expert in the fields of hydrology and hydraulics and have a thorough understanding of storm surge and wave effects, frequency analysis, levee breach modeling, and interior drainage analysis.
Geotechnical Engineering	The geotechnical reviewer should have experience with issues related to consolidation and settlement, overtopping erosion and risk assessment as it pertains to the estimation and portrayal of risk.
Civil Engineering	The civil engineering reviewer should have experience in civil works, coastal storm risk management and flood risk management studies.
Cost Engineering	The cost reviewer will have experience preparing cost estimates for coastal storm risk and flood risk management studies.
Real Estate	The Real Estate Reviewer will be a Senior Real Estate Specialist with experience in flood risk management studies.
Climate Preparedness and Resilience CoP Reviewer	An H&H engineering reviewer with experience in the requirements of sea level rise analysis will participate in the review. The reviewer should be familiar with sea level rise analysis. At this time it is unknown if inland hydrology climate change will be a study consideration.
Risk and Uncertainty	The risk and uncertainty reviewer will be experienced with performing and presenting risk analyses in accordance with ER 1105-2-101 and other related guidance, including familiarity with how information from the various disciplines involved in the

	analysis interact and affect the results. This reviewer may also be a reviewer for economics, hydrology, or hydraulics, if qualified.
Office of Counsel	Office of Counsel reviewer(s) will be competent in legal and policy areas relating to the study, including but not limited to USACE project and study policies, regulations, authorizations, appropriations, fiscal matters, hurricane and storm damage risk reduction projects and studies, NEPA, and environmental laws and regulations.

Required Disciplines for Each DQC. The draft report DQC will required all disciplines identified in Table 2. The final report DQC will only review the changes made to the report since the previous DQC. The disciplines for the final DQC will be identified as the final report is being developed. It will likely involve many but not all of the disciplines in Table 2.

Documentation of DQC. Quality Control should be performed continuously throughout the study. A specific certification of DQC completion is required at the draft and final report stages. Documentation of DQC should follow the District Quality Manual and the MSC Quality Management Plan. An example DQC Certification statement is provided in EC 1165-2-217, on page 19 (see Figure F).

Documentation of completed DQC should be provided to the MSC, RMO and ATR Team leader prior to initiating an ATR. The ATR team will examine DQC records and comment in the ATR report on the adequacy of the DQC effort. Missing or inadequate DQC documentation can result in delays to the start of other reviews (see EC 1165-2-217, section 9).

Recommended Best Planning Practice: Use DrChecks software (with the exception of Office of Counsel) to document DQC. Attach a DrChecks report to the DQC Certification to help illustrate the thoroughness of the DQC.

b. AGENCY TECHNICAL REVIEW

The ATR will assess whether the DQC is effective, the analyses are technically correct and comply with guidance, and that documents explain the analyses and results in a clear manner. An RMO manages ATR. The review is conducted by an ATR Team whose members are certified to perform reviews. Lists of certified reviewers are maintained by the various technical Communities of Practice (see EC 1165-2-217, section 9(h)(1)). Table 3 identifies the disciplines and required expertise for this ATR Team.

The disciplines required for each ATR will vary by the product being reviewed.

Table 3: Required ATR Team Expertise

ATR Team Disciplines	Expertise Required
ATR Lead	A senior professional with extensive experience preparing Civil Works decision documents and conducting ATR. The lead should have the skills to manage a virtual team through an ATR. The lead may serve as a reviewer for a specific discipline (such as planning).
LSOG Representative	This reviewer will be a member of the LSOG and will also serve as the reviewer for one of the engineering disciplines.
Planning	A senior water resources planner with experience in coastal storm risk management and flood risk management studies.
Economics	The Economics reviewer should be a senior economist with experience in flood risk management studies, including consequences modeling utilizing HEC-LifeSim and HEC-FDA.
Environmental Resources	The environmental reviewer should be experienced in National Environmental Policy Act (NEPA) process and mitigation analysis, and have a biological or environmental background that includes experience with coastal systems.
Cultural Resources	Team member will be experienced in cultural resources and tribal issues, regulations, and laws.
Hydrology & Hydraulic (H&H) Engineering	The H&H engineering reviewer will be an expert in the fields of hydrology and hydraulics and have a thorough understanding of storm surge and wave effects, frequency analysis, levee breach modeling, and interior drainage analysis.
Geotechnical Engineering	The geotechnical reviewer should have experience with issues related to consolidation and settlement, overtopping erosion and risk assessment as it pertains to the estimation and portrayal of risk. A certified Professional Engineer is recommended.
Civil Engineering	The civil engineering reviewer should have experience in civil works, coastal storm risk management and flood risk management studies.
Cost Engineering	The cost reviewer will be Cost DX Staff or a Cost DX Pre-Certified Professional with experience preparing cost estimates for coastal storm risk and flood risk management studies.
Real Estate	The Real Estate Reviewer will be a Senior Real Estate Specialist with experience in flood risk management studies.

Climate Preparedness and Resilience CoP Reviewer	A member of the Climate Preparedness and Resiliency Community of Practice (CoP) will participate in the ATR review. The reviewer should be familiar with sea level rise analysis. At this time it is unknown if inland hydrology climate change will be a study consideration.
Risk and Uncertainty	The risk and uncertainty reviewer will be experienced with performing and presenting risk analyses in accordance with ER 1105-2-101 and other related guidance, including familiarity with how information from the various disciplines involved in the analysis interact and affect the results. This reviewer may also be a reviewer for economics, hydrology, or hydraulics, if qualified.

Required Disciplines for Each ATR. The ATR for the Risk Assessment Existing and Future Without Action Conditions will require (at a minimum) the following disciplines: LSOG Representative, Hydrology and Hydraulics, Geotechnical Engineering, Coastal Climate Change and Economics. The H&H part of the Risk Assessment review will be performed ahead of the other disciplines, in order to verify that the inputs to the modeling are sound. The draft report ATR will require all disciplines identified in Table 3. The final report ATR will only review the changes made to the report since the previous ATR. The disciplines for the final ATR will be identified as the final report is being developed. It will likely involve many but not all of the disciplines in Table 3.

Documentation of ATR. DrChecks will be used to document all ATR comments, responses and resolutions. Comments should be limited to those needed to ensure product adequacy. If a concern cannot be resolved by the ATR team and PDT, it will be elevated to the vertical team for resolution using the EC 1165-2-217 issue resolution process. Concerns can be closed in DrChecks by noting the concern has been elevated for resolution. The ATR Lead will prepare a Statement of Technical Review (see EC 1165-2-217, Section 9), for the draft and final reports, certifying that review issues have been resolved or elevated. ATR may be certified when all concerns are resolved or referred to the vertical team and the ATR documentation is complete.

c. CONSTRUCTABILITY EVALUATION

Constructability Evaluation (CE) will be required near the end of the Formulate Alternative Risk Management Plan task to evaluate the constructability and construction risk of the various alternatives. The CE team will ensure levee safety risks are adequately addressed by the design and all construction related risks are fully identified and mitigated to an acceptable level. A review will be made of the constructability, the schedule, and the cost estimate. The CE team shall consist of experienced construction engineers and cost estimator(s) and should be from outside the geographic district. A Constructability Evaluation Report will be prepared by the CE team, reviewed and approved by the Levee Safety Production Center and briefed to the PDT. The PDT will consider all of the report recommendations, with emphasis on the recommendations rated as “high” significance and the Constructability Evaluation Report will be included as an appendix to the study report.

d. INDEPENDENT EXTERNAL PEER REVIEW

(i) Type I IEPR.

Type I IEPR is managed outside of the USACE and conducted on 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 of the project study. Selection of review panel members for IEPR efforts will adhere to the National Academy of Sciences (NAS) Policy on selecting reviewers, which sets the standard for “independence” in review process and for complexity in a national context.

Basis for Decision on Type I IEPR. Type I IEPR will be conducted for this study. The key factors supporting this decision include life safety risk, costs over \$200 million, and preparation of an EIS (see Section 1 of this review plan for additional discussion). Due to the life safety risk, a Safety Assurance Review will be addressed during Type I IEPR per EC 1165-2-217.

Products to Undergo Type I IEPR. The full draft report will undergo IEPR.

Required Type I IEPR Panel Expertise. Panels will consist of independent, recognized experts from outside of the USACE, NFSs, and interested parties, in disciplines representing a balance of areas of expertise suitable for the review being conducted. Table 4 lists the required panel expertise.

Table 4: Required Type I IEPR Panel Expertise

IEPR Panel Member Disciplines	Expertise Required
Economics	Panel member will have a master’s degree or higher education from a University with an accredited program in the discipline of economics and/or specific work experience in the discipline. Panel member will be familiar with the USACE Civil Works benefit-cost process and it would be beneficial for the panel member to have knowledge of the USACE HEC-FDA (Flood Damage Analysis) and LifeSim models. Panel member should be familiar with or have experience with USACE Civil Works policy and procedures.
Environmental	Panel member will have a master’s degree or higher education in biology or a related field and work experience in the discipline. Panel member will have knowledge and experience with National Environmental Policy Act (NEPA) processes and mitigation analysis. Panel member will have knowledge and experience with coastal systems. Panel member should be familiar with

	or have experience with USACE Civil Works policy and procedures.
Geotechnical Engineering	The panel member shall hold a professional license in geotechnical engineering with a MS degree or higher in geotechnical engineering. The panel member shall have geotechnical design experience and experience with multi-million dollar, flood risk management projects. Panel member should be familiar with or have experience with USACE Civil Works policy and procedures.
Hydrology and Hydraulic Engineering	The panel member shall hold a professional license in civil engineering with a focus on water resources with a MS degree or higher in civil engineering. The panel member shall have hydraulic modeling and design experience and experience with multi-million dollar, flood risk management projects. Panel member should be familiar with or have experience with USACE Civil Works policy and procedures.

Documentation of Type I IEPR. The OEO will submit a final Review Report no later than 60 days after the end of the draft report public comment period. USACE shall consider all recommendations in the Review Report and prepare a written response for all recommendations. The final decision document will summarize the Review Report and USACE response and will be posted on the internet.

Recommended Best Planning Practice: Begin coordination with the RMO very early in the study to allow adequate time for scoping and contracting for the Type I IEPR.

(ii) Type II IEPR.

The second kind of IEPR is Type II IEPR. These Safety Assurance Reviews are managed outside of the USACE and are conducted on design and construction for hurricane, storm and flood risk management projects or other projects where existing and potential hazards pose a significant threat to human life. A Type II IEPR Panel will be convened to review the design and construction activities before construction begins, and until construction activities are completed, and periodically thereafter on a regular schedule.

Decision on Type II IEPR. Due to the presence of life safety risks, Type II IEPR is planned for the design and construction phases.

e. MODEL CERTIFICATION OR 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 are any models and analytical tools used 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 a planning product. The selection and application of the model and the input and output data is the responsibility of the users and is subject to DQC, ATR, and IEPR.

Table 5: Planning Models. The following models may be used to develop the decision document:

Model Name and Version	Brief Model Description and How It Will Be Used in the Study	Certification / Approval
HEC-FDA 1.4.2	The program integrates hydrologic engineering and economic analysis to formulate and evaluate plans using risk-based analysis methods. It will be used to evaluate/compare plans to aid in selecting a recommended plan.	Certified
The Hydrologic Engineering Center's LifeSim (HEC-LifeSim) Version 1.0.1	The Hydrologic Engineering Center's LifeSim (HEC-LifeSim) is an agent based simulation system for estimating life loss with the fundamental intent to simulate population redistribution during an evacuation. Life loss and economic damages are then determined by the hazard (e.g. flooding). HEC-LifeSim is designed to simulate the entire warning and evacuation process for estimating potential life loss and direct economic damages resulting from catastrophic floods.	Enterprise Life Safety Model
Wetland Value Assessment Coastal Marsh Community Models for Civil Works, Version 2.0	The Wetland Value Assessment methodology is a quantitative habitat-based assessment methodology for use in determining wetland impacts. The methodology quantifies changes in fish and wildlife habitat quality and quantity expected to result from proposed project features. The coastal marsh community models will be used to assess potential project impacts and potential mitigation benefits to fresh/intermediate marsh, brackish marsh, and saline marsh.	Approved
Wetland Value Assessment Bottomland Hardwoods Community Model for Civil Works, Version 1.2	The Wetland Value Assessment methodology is a quantitative habitat-based assessment methodology for use in determining wetland impacts. The methodology quantifies changes in fish and wildlife habitat quality and quantity expected to result from proposed project features. The model will be used to assess potential project impacts and potential mitigation benefits to bottomland hardwoods.	Approved
Wetland Value Assessment Swamp	The Wetland Value Assessment methodology is a quantitative habitat-based assessment methodology for use in determining wetland impacts. The methodology quantifies changes in fish	Approved

Community Model for Civil Works, Version 2.0	and wildlife habitat quality and quantity expected to result from proposed project features. The model will be used to assess potential project impacts and potential mitigation benefits to swamp habitat.	
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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. The professional practice of documenting the application of the software and modeling results will be followed. The USACE Scientific and Engineering Technology Initiative has identified many engineering models as preferred or acceptable for use in studies. These models should be used when appropriate. 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.

Table 6: Engineering Model. This model may be used to develop the decision document:

Model Name and Version	Brief Model Description and How It Will Be Used in the Study	Approval Status
HEC-RAS 5.0.6 (River Analysis System)	The software performs 1-D steady and unsteady flow river hydraulics calculations and has capability for 2-D (and combined 1-D/2-D) unsteady flow calculations. It will be used for steady flow analysis to evaluate the future without-project and future with-project conditions.	HH&C CoP Preferred Model

Recommended Best Planning Practice: Hold an early coordination call (prior to the Alternatives Milestone) with the appropriate Planning Center(s) of Expertise to discuss model applications and any review needs for approval or certification of the planning models to be employed.

f. POLICY AND LEGAL REVIEW

Policy and legal compliance reviews for draft and final planning decision documents are delegated to the MSC (see Director's Policy Memorandum 2018-05, paragraph 9).

(i) Policy Review.

The policy review team is identified through the collaboration of the MSC Chief of Planning and Policy and the HQUSACE Chief of the Office of Water Project Review. The team is identified in Attachment 1 of this Review Plan. The makeup of the Policy Review team will be drawn from Headquarters (HQUSACE), the MSC, the Planning Centers of Expertise, and other review resources as needed.

- The Policy Review Team will be invited to participate in key meetings during the development of decision documents as well as SMART Planning Milestone meetings. These engagements may include In-Progress Reviews, Issue Resolution Conferences or other vertical team meetings plus the milestone events.
- The input from the Policy Review team should be documented in a Memorandum for the Record (MFR) produced for each engagement with the team. The MFR should be distributed to all meeting participants.
- In addition, teams may choose to capture some of the policy review input in a risk register if appropriate. These items should be highlighted at future meetings until the issues are resolved. Any key decisions on how to address risk or other considerations should be documented in an MFR.

(ii) Legal Review.

Representatives from the Office of Counsel will be assigned to participate in reviews. Members may participate from the District, MSC and HQUSACE. The MSC Chief of Planning and Policy will coordinate membership and participation with the office chiefs.

- In some cases legal review input may be captured in the MFR for the particular meeting or milestone. In other cases, a separate legal memorandum may be used to document the input from the Office of Counsel.
- Each participating Office of Counsel will determine how to document legal review input.

3. Public Posting of Review Plan

As required by EC 1165-2-217, the approved Review Plan will be posted on the District public website (<https://www.mvn.usace.army.mil/About/Offices/Programs-Project-Management/Project-Review-Plans/>). There is no 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.

ATTACHMENT 1: TEAM ROSTERS

PROJECT DELIVERY TEAM			
Name	Office	Position	Phone Number
Bradley Drouant	MVN-PM-OLP	Lead Project Manager	504-862-1516
Frank Spiess	MVN-PM-OLP	Project Manager	504-862-1012
Michelle Kniep	MVP-PD-F	Lead Planner	314-331-8404
Megan O'Brien	MVP-PD-F	Plan Formulation	314-331-8227
Kip Runyon	MVP-PD-P	Environmental/NEPA	314-331-8396
Brian Maestri	MVN-PDE-FRC	Lead Economics	504-862-1915
Ben Logan	MVN-PDE-N	Economics	504-862-1910
Eric Williams	MVN-PDN-NCR	Cultural Resources	504-862-2862
Stacey Frost	MVN-EDH	Lead Hydrology and Hydraulics	504-862-2993
Max Agnew	MVN-EDH	Hydrology and Hydraulics	504-862-1503
Leeland Richard	MVN-EDG	Geotechnical Engineering	504-862-2397
Lauren Hatten	MVN-EDC	Civil Engineering	504-862-1027
John Petitbon	MVN-EDD	Cost Engineering	504-862-2732
Erin Rowan	MVN-REE	Real Estate	504-862-2183
Landon Parr	MVN-PD-CEC	HTRW	504-862-1908
Daryl Glorioso	MVN-OC	Sr. Counsel HSDRR	504-862-1941
Michael Heier	MVN-OC	Assistant District Counsel	504-862-2877

RISK ASSESSMENT TEAM			
Name	Office	Position	Phone Number
TBD			

DISTRICT QUALITY CONTROL TEAM			
Name	Office	Position	Phone Number
TBD		DQC Lead	
		Project Management	
Nate Richards	CEMVP-PD-F	Plan Formulation	309-794-5286
		Environmental/NEPA	
		Economics	
		Cultural Resources	
		Hydrology and Hydraulics	
		Geotechnical Engineering	
		Civil Engineering	

		Cost Engineering	
		Real Estate	
Daryl Glorioso	MVN-OC	Sr. Counsel HSDRR	504-862-1941
Michael Heier	MVN-OC	Assistant District Counsel	504-862-2877

AGENCY TECHNICAL REVIEW TEAM			
Name	Office	Position	Phone Number
		ATR Lead	
		Plan Formulation	
		Environmental/NEPA	
		Economics	
		Cultural Resources	
		Hydrology and Hydraulics	
		Geotechnical Engineering	
		LSOG Representative	
		Civil Engineering	
		Cost Engineering	
		Real Estate	
		Climate Change	
		Risk and Uncertainty	

VERTICAL TEAM			
Name	Office	Position	Phone Number
Nicole Harris	PSD-DST	MVN FRM PM	(601) 634-5829
Julie Leblanc	CEMVD-PSD-DST	Deputy, Lower DST	(601) 634-5032
Brian Chewning	CEMVD-PSD-DST	Chief, Program Support Division	(601) 634-5386
Gary Young	CEMVD-PD-L	Chief, Planning and ECO- PCX	
Matt Mallard	CEMVD-PD-L	Review Manager	(601) 634-5869
Renee Turner	CEMVD-PDC	Chief, Civil Works Integration/Programs Deputy	(601) 634-5818
Charles Stokes	CEMVD-PDC	Supplemental PM	(601) 634-7148
Frankie Griggs	CEMVD-RBW	Civil Engineer (H/H)	(601) 634-5915
Randel Holder	CEMVD-PDP	MR&T ENV PM	(601) 634-5935
Scott Stewart	CEMVD-RBT	Deputy Chief	(601) 634-5883
Jennifer Chambers	CEMVD-RBT	Sr. Structural Engineer	(601) 634-7162
Megan Ross	CEMVD-MVD-OC	Asst. Division Counsel	(601) 634-5769

POLICY REVIEW TEAM			
Name	Office	Position	Phone Number
Nicole Harris	CEMVD-PDM	Review Manager	601-634-5829
Fay Lachney	OWPR	Plan Formulation	202-761-0668
Crorey Lawton	CEMVD-PD-L	Cultural Resources	601-634-5931
Lee Robinson	CEMVD-PD-L	Economics	601-634-5077
RTS TBD		Environmental	
Frankie Griggs	CEMVD-RB-W	Hydrology and Hydraulics	601-634-5915
Melissa Mullen	CEMVD-RB-T	Geotechnical, Levee Safety	901-544-0716
Jennifer Chambers	CEMVD-RB-T	Structural	601-634-7162
TBD		Climate Change	
James Briggs	CEMVD-PD-SP	Real Estate	601-634-5860

ATTACHMENT 2: SUMMARY OF APPLICABLE STUDY GUIDANCE

Reference	Notes
<u>Planning Bulletins</u>	
Planning Bulletin 2018-01: Feasibility Study Milestones (2018)	The purpose of this Planning Bulletin is to clarify the decisions and processes associated with feasibility study milestones. This bulletin was developed to assist teams in development of the feasibility study products and clarify processes and procedures to reach each of the decision milestones. This bulletin also defines the decision-making delegation for each milestone. This bulletin supersedes Planning Bulletin 2017-01: Feasibility Study Milestones and also supersedes specific sections of ER 1105-2-100 (Planning Guidance Notebook) that reference feasibility study milestones, including: Appendix G (30 June 2004) exhibits G-3, G-4, G-5, Appendix H (20 November 2007) section H-4 (discussion of Feasibility Scoping Meeting and Alternative Formulation Briefing), and Appendix H exhibits H-3, H-4, H-5, and H-7
Planning Bulletin 2018-02: Exemption Procedures for Planning Studies Exceeding Cost and Schedule Limits (2018)	The purpose of this planning bulletin is to clarify procedures associated with study cost and schedule exemptions from the “3x3x3 rule” as defined in Section 1001 of WRRDA 2014 (33 U.S. Code §2282c), which provides that, to the extent practicable, final feasibility reports and studies will be completed in three years and will have a maximum Federal cost of \$3 million. As a matter of USACE policy and program management, the USACE will continue to follow the “3x3x3 rule” established prior to the enactment of WRRDA 2014, which limits the study duration to three years and the total study cost. This bulletin supersedes and rescinds the following Planning Bulletins: PB 2015-01: Vertical Team Alignment in Study Scoping and PB 2012-04: 3x3x3 Rule Exemption Process.
Planning Bulletin 2019-03: Further Clarification of Existing Policy for USACE Participation in Nonstructural Flood Risk Management and Coastal Storm Risk Management Measures (2018)	The purpose of this planning bulletin is to provide further clarification on policy with respect to evaluation of nonstructural measures. This bulleting supplements Planning Bulletin 2016-01, Clarification of Existing Policy for USACE Participation in Nonstructural Flood Risk Management and Coastal Storm Risk, which is still in effect.
<u>Engineer Circulars</u>	
Engineer Circular 1110-2-6070: Comprehensive Evaluation of Project Datum (2009 Expiration: unlisted)	This circular provides guidance for a comprehensive evaluation of vertical datum on flood control, shore protection, hurricane protection, and navigation projects.

Reference	Notes
Engineer Circular 1110-2-6074: Guidance for Emergency Action Plans, Incident Management and Reporting, and Inundation Maps for Dams and Levee Systems (2018)	The purpose of this document is to expand and tailor current federal guidelines for dam emergency action planning and other available resources for implementation within the U.S. Army Corps of Engineers (USACE) Dam and Levee Safety Programs. This document establishes the requirements for consistent application of certain key Emergency Action Plan (EAP) features for USACE operated/maintained dams or levee systems (referred to as levees in this document). This document also serves as an advisory document for use by other project owners/operators.
Engineer Circular 1165-2-215: Water Resource Policies and Authorities, Use and Dissemination of Dam and Levee Inundation Map Data (2013 Expiration: 31 July 2016)	This circular provides guidance on the use and release of dam and levee inundation maps and all appurtenant data such as the models and assumptions used to develop the maps, including those used in feasibility studies, CAP, and other planning activities
Engineer Circular 1165-2-217: Review Policy for Civil Works	This Circular 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).
DRAFT Engineer Circular 1165-2-218: Levee Safety Program - Policy and Procedures	The purpose of this Engineer Circular (EC) is to provide the high level policies and procedures for the implementation of the US Army Corps of Engineers (USACE) Levee Safety Program. This EC is applicable to all headquarters USACE elements (HQUSACE), divisions, districts, laboratories, centers of expertise, and field operating activities having responsibility for planning, design, construction, operation, maintenance, inspection, assessment, and rehabilitation of levee systems.
<u>Engineering and Construction Bulletins</u>	
ECB 2018-14: Guidance for Incorporating Climate Change Impacts to Inland Hydrology Civil Works Studies, Designs, and Projects	This ECB applies to all hydrologic analyses supporting planning and engineering decisions having an extended decision time frame (i.e., not for short-term water management decisions). It provides guidance for incorporating climate change information in hydrologic analyses in accordance with the USACE overarching climate preparedness and resilience policy and ER 1105-2-101. This policy requires consideration of climate change in all current and future studies to reduce vulnerabilities and enhance the resilience of communities.

Reference	Notes
ECB 2019-08: Managed Overtopping of Levee Systems	This document is applicable for all USACE riverine levee and floodwall systems. It provides a methodology for configuring the engineered capacity exceedance related to flood overtopping at a specific location or locations along the levee system. This guidance does not address overtopping of the entire system on those occasions when the overall system capacity is exceeded.
<u>Engineer Manuals</u>	
Engineer Manual 1110-2-1619: Risk-Based Analysis for Flood Damage Reduction Studies (1996)	Procedures described in this manual lead to estimation of expected benefits of proposed flood damage reduction plans using risk and uncertainty analysis.
<u>Engineer Pamphlets</u>	
Engineer Pamphlet 1100-1-3: USACE Sustainability: Definition and Concepts Guide (2018)	This pamphlet clarifies sustainability-related terms and definitions to help orient and align USACE staff on practices consistent with the Environmental Operating Principles (EOP), Guiding Principles for Sustainable Federal Buildings (GP), Civil Works Strategic Plan (CWSP), and other directives
Engineer Pamphlet 1110-2-7: Hydrologic Risks (1988)	Engineer Pamphlet describes how the Corps estimates hydrologic risk and uses these estimates in project planning.
Engineer Pamphlet 1110-2-8: Explaining Flood Risk (1992)	Engineer Pamphlet improves the technical expert's skills in communicating information about flood risk to local officials and the public.
Engineer Pamphlet 1110-2-9: Hydrologic Engineering Study Design (1994)	Engineer Pamphlet describes activities necessary to design and prepare a Hydrologic Engineering Study for a Corps water resource investigation.
Engineer Pamphlet 1110-2-10: Hydrologic Engineering Analysis Concepts for Cost-Shared Flood Damage Reduction Studies (1994 Update needed)	Engineer Pamphlet describes study processes performed by USACE for Federal flood damage reduction cost projects.
Engineer Pamphlet 1130-2-500, Appendix E: Benefits Evaluation Procedures (1996)	This appendix outlines basic procedures that can be used to evaluate rehabilitation for navigation and hydropower project purposes.
Engineer Pamphlet 1165-2-314: Flood Proofing Regulations (1995 Update needed)	Engineer Pamphlet specifies flood-proofing measures and techniques that can be followed to regulate construction in riverine flood hazard areas.
<u>Engineer Regulations</u>	

Reference	Notes
Engineer Regulation 200-1-5: Policy for Implementation and Integrated Application of the U.S. Army Corps of Engineers (USACE) Environmental Operating Principles (EOP) and Doctrine (2003)	This regulation provides guidance on the implementation and integration of the Environmental Operating Principles across management initiatives and business processes.
Engineer Regulation 200-2-2: Procedures for Implementing NEPA (1988)	This regulation provides guidance for implementation of the procedural provisions of the NEPA for the Civil Works Program of the USACE
Engineer Regulation 1100-2-8162: Incorporating Sea Level Change in Civil Work Programs (2013)	This Regulation provides guidance for incorporating the direct and indirect physical effects of projected future sea level change across the project life cycle in managing, planning, engineering, designing, constructing, operating, and maintaining USACE projects and systems of projects.
Engineer Regulation 1105-2-100: Planning Guidance Notebook (2000)	The Planning Guidance Notebook provides the overall direction by which the Corps of Engineers civil works projects are formulated, evaluated, and selected for overall implementation. This includes all appendices that were written at a later date.
Engineer Regulation 1105-2-101: Risk Assessment for Flood Risk Management Studies (2017)	This regulation provides guidance on risk assessment requirements for flood management studies including but not limited to feasibility studies, post-authorization changes, general reevaluation studies, dam and levee safety studies, and major rehabilitation studies. This regulation is jointly promulgated by Planning and Engineering. The risk framework is a decision-making process that comprises three tasks: risk assessment, risk communication, and risk management, which can be advantageously applied to a variety of water resources management problems. These requirements are part of a broader decision making process that includes similar assessments for risks to the natural environment as well as the social and cultural well-being of people potentially impacted by flood management activities.
Engineer Regulation 1110-1-1300: Cost Engineering Policy and General Requirements (1993)	This regulation provides cost engineering policy, guidance, and procedures for all projects assigned to the U.S. Army Corps of Engineers (USACE) for Civil Works, Military, and Environmental Restoration Programs. Additional guidance is provided in specific cost engineering regulations for civil works, military, and environmental restoration programs
Engineer Regulation 1110-2-1302: Civil Works Cost Engineering (2016)	This regulation is applicable to cost products prepared by USACE or others, Federal or non-Federal, in support of all authorization, appropriations, decision, and implementation reports and documents for all Civil Works projects that invest Federal dollars

Reference	Notes
Engineer Regulation 1110-2-1403: Engineering and Design Studies By Coastal, Hydraulic, and Hydrologic Facilities and Others (1998)	This regulation prescribes the policy and procedure for approval and technical supervision of coastal, hydraulic, and hydrologic studies related to planning, design, construction, and operation of projects.
Engineer Regulation 1110-2-1405: Hydraulic Design for Local Flood Protection Projects (1982)	This regulation prescribes the design procedure and rationale for the hydraulic design of a local flood protection channel project.
Engineer Regulation 1110-2-1450: Hydrologic Frequency Estimates (1994)	This regulation defines the scope of analysis, reporting, and coordination requirements for determining frequency estimates of hydrologic variables.
Engineer Regulation 1110-2-1453: Criteria For Standard Project Hurricane (SPH) and Probably Maximum Hurricane (PMH) Wind Fields (1981)	This regulation provides direction for the development of Standard Project Hurricane (SPH) and Probable Maximum Hurricane (PMH) wind fields along the gulf and east coasts of the United States.
Engineer Regulation 1110-2-8160: Policies for Referencing Project Elevation Grades to Nationwide Vertical Datum (2009)	This regulation provides guidance for proper and accurately referenced materials for flood forecasting, inundation modeling, flood insurance rate maps, navigation charting, and topographic mapping.
Engineer Regulation 1130-2-530: Project Operation - Flood Control Operations and Maintenance Policies (1996)	This regulation establishes the policy for the operation and maintenance (O&M) of USACE flood control and related structures at civil works water resource projects and of USACE-built flood protection projects operated and maintained by non-Federal sponsors.
Engineer Regulation 1165-2-21: Water Resources Policies and Authorities - Flood Damage Reduction Measures in Urban Areas (1980)	This regulation provides policy and guidance for participation in urban flood damage reduction projects.
Engineer Regulation 1165-2-26: Water Resources Policies and Authorities, Implementation and Executive Order, Engineer Regulation 11988 on Flood Plain Management. (1984)	This regulation sets guidance for USACE implementation of Order 11988, Floodplain Management, as it pertains to civil works projects in design and construction.
Engineer Regulation 1165-2-29: Water Resources Policies and Authorities - General Credit for Flood Control (1987)	This regulation establishes guidelines and procedures for application of Section 104 of Public Law 99-662.

Reference	Notes
Engineer Regulation 1165-2-208: Water Resources Policies and Authorities; In-Kind Contribution Provisions of Section 221 of the Flood Control Act of 1970, As Amended (2012)	This circular replaces EC 1165-2-208 and provides guidance on the in-kind contribution credit provisions of Section 221 of Flood Control Act of 1970 as amended by Section 2003 of Water Resources Development Act (WRDA) 2007
Engineer Regulation 1165-2-111: Water Resources Policies and Authorities - Corps of Engineers Activities Under the Small Reclamation Projects Act of 1956, As Amended (1982)	This regulation provides guidance regarding Corps of Engineers assistance to applicants for loans of projects with a flood control potential.
Engineer Regulation 1165-2-117: Water Resources Policies and Authorities - Responsibility for Costs of Improved Standards in Highway and Housing Relocations (1978)	This regulation summarizes policy and procedures for identifying the costs of meeting improved standards when highways and housing are relocated due to construction of civil works projects.
Engineer Regulation 1165-2-119: Modifications to Completed Projects (1982)	This regulation discusses the use of available authorities, as compared to the need for new project authorizations, for study and accomplishment of modifications to completed projects.
Engineer Regulation 1165-2-121: Water Resources Policies and Authorities - Flood Control Cost-Sharing Requirements Under the Ability-to-Pay Provision-Section 103(M) of PL 99-662 (1989)	This regulation gives instruction on implementation of Section 103(M) as it applies to flood control projects.
Engineer Regulation 1165-2-132: Water Resources Policies and Authorizations; Hazardous Toxic and Radioactive Waste (HTRW) Guidance for Civil Works Projects (1992)	This regulation provides guidance on issues and problems associated with HTRW, which may be located within project boundaries.
Engineer Regulation 1165-2-501: Civil Works Ecosystem Restoration Policy (1999)	This regulation provides policy on Corps of Engineers involvement in ecosystem restoration and protection through CW programs and activities.

Reference	Notes
Engineer Regulation 1165-2-502: Delegation of Review and Approval Authority for Post-Authorization Decision Documents	This regulation provides guidance on the delegated review and approval process for Post-Authorization Decision Documents. A Post-Authorization Decision Document is a report on a previously authorized project that would serve as the basis for construction funding, or in the case of congressional adds, the report to support the Project Partnership Agreement.
<u>Economics</u>	
Economic Guidance Memorandum 04-01: Generic Depth-Damage Relationships for Residential Structures with Basements (2003)	Guidance for generic depth-damage curves for flood damage reduction studies.
Economic Guidance Memorandum 09-02: Current Normalized Prices, Fiscal Year 2009 (2008)	This memorandum provides a data link used in the economic evaluation of Corps of Engineers projects affecting agriculture.
Economic Guidance Memorandum 09-04: Generic Depth-Damage Relationships for Vehicles (2009)	Guidance for generic vehicle depth-damage curves for flood damage reduction studies.
Economic Guidance Memorandum 98-04: National Flood Insurance Program Operating Costs (1998)	This memorandum provides FY 1998 NFIP operating costs. It also shows NFIP costs since 1972.
Economic Guidance Memorandum 99-04: National Flood Insurance Program Operating Costs (1999)	This memorandum provides FY 1999 NFIP operating costs.
<u>Institute for Water Resources</u>	
Agricultural Flood Control Benefits and Land Values (1971)	This report is designed to present in some detail the results of successfully applying a land value approach using a multiple linear regression technique to two study areas. The bulk of the monograph is not directed to analyzing the utility of the approach per se, although the strengths and weaknesses are reviewed. The main concern is with a rather detailed exposition of the statistical analysis of areas in the Wabash and Missouri River Basins. In this respect it is written primarily for use at the field levels of the Corps to serve as a guide to the use of the approach in terms of the types of data required, the form of the data for use in the regression model, and the interpretation of the estimated regression model.

Reference	Notes
Analysis of Alternative Procedures for the Evaluation of Agricultural Flood Control Benefits (1971)	This report is devoted to evaluating alternative methodologies to the frequency damage procedure for estimating agricultural crop flood control benefits. The Economic Research Service Regional Linear Programming model has been extended to the case of project analysis. The RLP model operates in the same way as a basin-wide firm and estimates the change in production costs (out of pocket cost) as flood protection (and drainage) measures are provided. Efficiency benefits are equal to decreases in production costs, since output is held constant. Critical assumptions and several major empirical problems encountered during the study are discussed. Finally, Part IV is a synopsis of the utility of the land value approach, the regional linear programming approach, and the frequency-damage approach.
Analysis of Nonresidential Content Value and Depth-Damage Data for Flood Damage Reduction Studies (96-R-12, 1996)	This study demonstrates how to estimate nonresidential flood damages from generalized mathematical models using local data.
Assessment of the Economic Benefits from Flood Damage Mitigation by Relocation and Evacuation (1985)	The object of this research was to assess the current Corps procedures used in the economic evaluation of flood plain relocation and evacuation plans for flood damage mitigation. Based on this assessment, the report offers a theoretically sound framework to evaluate the NED benefits from evacuation and relocation plans.
Catalog of Residential Depth-Damage Functions-Used by the Army Corps of Engineers in Flood Damage Estimation (92-R-3, 1992)	This report is intended to be a comprehensive catalog of residential depth-damage functions used by the Corps of Engineers field offices. It includes damage functions that were computed from National data of flood damage records, and damage functions originally computed on a project-specific basis and now in general use.
Comparing Benefit Estimation Techniques: Residential Flood Hazard Reduction Benefits, Virginia (98-R-2, 1998)	The purpose of this research project was to evaluate the differences and potential strengths and weaknesses of different methods for evaluating consumers' willingness to pay for a public good, i.e., a flood hazard reduction project. Three methods are compared and contrasted both collectively and against the theory of revealed consumer preference.
Framework for Estimating National Economic Development Benefits and Other Beneficial Effects of Flood Warning and Preparedness Systems (94-R-3, 1994)	The purposes of this report are to present a conceptual framework for planners to evaluate benefits accruing to flood warning and preparedness alternatives and to demonstrate methods suitable for estimating these benefits under a variety of planning circumstances. This report presents a simplified workable model, consistent with or adaptable to existing evaluation models and tools used by most Corps' planners.

Reference	Notes
National Economic Development Procedures Manual: Flood Risk Management Manual (2013)	This manual, IWR Report 2013-R-05, describes flood risk management benefit evaluation procedures, and is intended for use in project feasibility planning and evaluation.
National Economic Development Procedures Manual: Urban Flood Damage Volume II (1991)	This is the second in a series of manuals designed to provide procedures and techniques to measure flood damage and to further implement the "Principles and Guidelines" of the U.S. Water Resources Council. This manual is a primer for conducting comprehensive flood damage and related surveys. It explains how basic principles of survey research can be applied to data collection for flood damage studies. Two prototype questionnaires (one face-to-face and one mail with a preliminary telephone supplement) are presented. Examples from previous applications of these questionnaires provide insight as to how they may be adapted and implemented for flood damage studies.
Risk-Based Evaluation of Flood Warning and Preparedness Systems - Volume 1 - Overview (96-R-25, 1995)	
Risk-Based Evaluation of Flood Warning and Preparedness Systems - Volume 2 - Technical (96-R-26, 1995)	



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
RISK MANAGEMENT CENTER
12596 WEST BAYAUD AVE., SUITE 400
LAKEWOOD, CO 80228

REPLY TO
ATTENTION OF

CEIWR-RMC

7 March 2019

MEMORANDUM FOR: Mr. Troy Constance, Chief, Regional Planning and Environment Division South, Mississippi Valley Division (CEMVD-RPEDS), ATTN: CEMVN-PM-OLP

SUBJECT: Risk Management Center Endorsement – Lake Pontchartrain and Vicinity, General Reevaluation Report, Review Plan

1. The Risk Management Center (RMC) has reviewed the Review Plan (RP) for – Lake Pontchartrain and Vicinity, General Reevaluation Report, Review Plan, dated 27 February 2019, and concurs that this RP complies with the current peer review policy requirements outlined in EC 1165-2-217 “Review Policy for Civil Works”, dated 20 February, 2018.
2. This review plan was prepared by New Orleans District, reviewed by the RMC, and all review comments have been satisfactorily resolved. For this project a Type I IEPR will be performed.
3. The RMC endorses this document to be approved by the MSC Commander. Upon approval of the RP, please provide a copy of the approved RP and a copy of the MSC Commander’s approval memorandum to the RMC Senior Review Manager. (rmc.review@usace.army.mil).
4. Thank you for the opportunity to assist in the preparation of this RP. Please coordinate all aspects of the Agency Technical Review and the Independent External Peer Review (as appropriate) efforts defined in the RP. For further information, please contact Dustin Herr at 601-631-5896.

Sincerely,

David E. Carlson, P.E.
Chief, Eastern Division
Risk Management Center

CF:
CEIWR-RMC (Mr. Snorteland)