

St. Johns Bayou and New Madrid Floodway Project

Executive Summary



**U.S. Army Corps of Engineers
Memphis District**

Summary

S1. Introduction

This draft Environmental Impact Statement (EIS) prepared according to the National Environmental Policy Act (NEPA), NEPA regulations of the Council on Environmental Quality, and NEPA directives of the Department of the Army and of the U.S. Army Corps of Engineers (USACE), assesses the reasonably foreseeable impact on the human environment of a proposal to alleviate flooding in portions of New Madrid, Mississippi, and Scott Counties in southeast Missouri, by constructing flood risk reduction features in the St. Johns Bayou Basin and in the adjacent New Madrid Floodway.

Although this draft EIS supplements the document prepared in 1976 entitled *Mississippi River and Tributaries Project* for the Closure of the New Madrid Floodway and its supplement, the 1982 St. Johns Bayou and New Madrid Floodway supplemental EIS; it does not incorporate or supplement the 2002 Revised Supplemental Environmental Impact Statement or the 2006 Revised Supplemental Environmental Impact Statement 2. Both of these NEPA documents were set aside by the U.S. District Court decision and are no longer applicable due to the major changes made for the completion of the 2013 draft EIS. However, applicable sections of prior documents as well as previous feasibility level analysis were included in the draft EIS where appropriate. Unless specifically indicated in this draft EIS, past comments, interagency agreements, and compensatory mitigation decisions were not considered as updated data and more accurate environmental methodologies, analyses, and results were used in this analysis.

Elevations presented in this draft EIS are in feet above sea level. Unless otherwise indicated, elevations in the St. Johns Bayou Basin are based on National Geodetic Vertical Datum (NGVD) of 1929 and those presented in the New Madrid Floodway are based on North America Vertical Datum (NAVD) of 1988. Applicable adjustments have been made to account for the different survey datum. To correlate a Mississippi River NGVD elevation at New Madrid to stage (MS115 gage located at river mile 889) subtract 255.48 (gage zero) from the applicable elevation; to correlate a Mississippi River NAVD elevation at New Madrid to stage subtract 255.71 (gage zero) from the applicable elevation.

For clarity, flood frequency is expressed in return periods instead of probability format. For example, a flood that has a 50 percent annual chance of exceedence is expressed as the 2-year flood. Similarly, a flood with a 1 percent annual chance of exceedence is expressed as the 100-year flood. Specific terms that required defining are presented in the glossary.

S2. Project Purpose and Need

USACE is obliged by law to accomplish the will of Congress for flood risk management¹ in Southeast Missouri. The statutory authority for and requirement to act in this case direct USACE to reduce the likelihood and adverse effects—on agricultural and urban lands—of backwater flooding in the New Madrid Floodway and flooding due to the impounding of waters in St. Johns Bayou Basin (currently) and the New Madrid Floodway (in the future).

Using its project-specific and other civil works authorities, the challenge before USACE is to perform its mission, serving public welfare and national economic development, within the constraints of applicable environmental and natural resources laws. Beginning with the Chief of Engineers report of 1952, and continuing with the 1975 environmental impact statement *St. Johns Bayou and New Madrid Floodway Missouri* and the 1983 Chief of Engineers report, USACE has undertaken extensive studies in the project area, resulting in not only a better understanding of the environment but also in a number of modifications to the nature and number of the flood risk management features and activities being considered. USACE also sought and heavily utilized extensive input from its local partner (the St. John Levee and Drainage District of Missouri), a variety of federal and state agencies, and the public.

With the exception of flood waters entering via the 1,500-foot gap located at the lower end of the New Madrid Floodway, the entire New Madrid Floodway is protected from high Mississippi River stages. Table S.1 provides existing flood frequencies and inundated acres² in both basins.

Table S.1. Existing flood frequencies and associated inundated acres, St. Johns Bayou Basin and New Madrid Floodway.

Event	St. Johns Bayou Basin		New Madrid Floodway		Total
	Elevation (Feet)	Acres	Elevation (Feet)	Acres	Acres
1.01 year	281.6	753	279.3	404	1,157
2-year	291.0	11,904	292.1	33,391	45,295
5-year	294.1	20,407	296.6	58,990	79,397
10-year	295.6	26,972	298.7	70,749	97,721
20-year	296.9	38,433	300.5	81,758	120,191
50-year	298.4	43,483	302.5	93,396	136,879

¹ Additional information on the history of USACE activities in New Madrid Floodway and St. Johns Bayou Basin, along with information on previous USACE studies and other relevant legislation, may be found in Appendix D, Part 2.

² Associated inundated acres were calculated by interpolating between contour elevations. For example, acreages associated with 281.6 were calculated by calculating the difference in acreages from 281 and 282, multiplying by 0.6, and adding the amount to the acreages of 281.

Within the project area, flooding causes social impacts primarily associated with community isolation and economic impacts primarily to agricultural areas and to a lesser extent infrastructure.

Although flooding impacts socio-economic resources, it is also the principal driving force responsible for the existence, productivity, and interactions of the major biota in river-floodplain systems (Junk *et al.*, 1989).

S3. Collaborative NEPA and Review Process

An Independent External Peer Review (IEPR) was utilized throughout the development of the draft EIS. Figure S.1 provides an example of the significant amount of independent expert involvement in development, review, and application of environmental models throughout the progress of the draft EIS. The independent panel was staffed with nationally-recognized experts to ensure objective, scientifically accurate information is presented in this draft EIS to assist in agency decision making. In addition to IEPR involvement, inter-agency coordination was maintained throughout the formulation of the draft EIS, including the independent external peer review process, model certification review process, scoping, project work plan, alternatives, impact analyses, and compensatory mitigation measures.

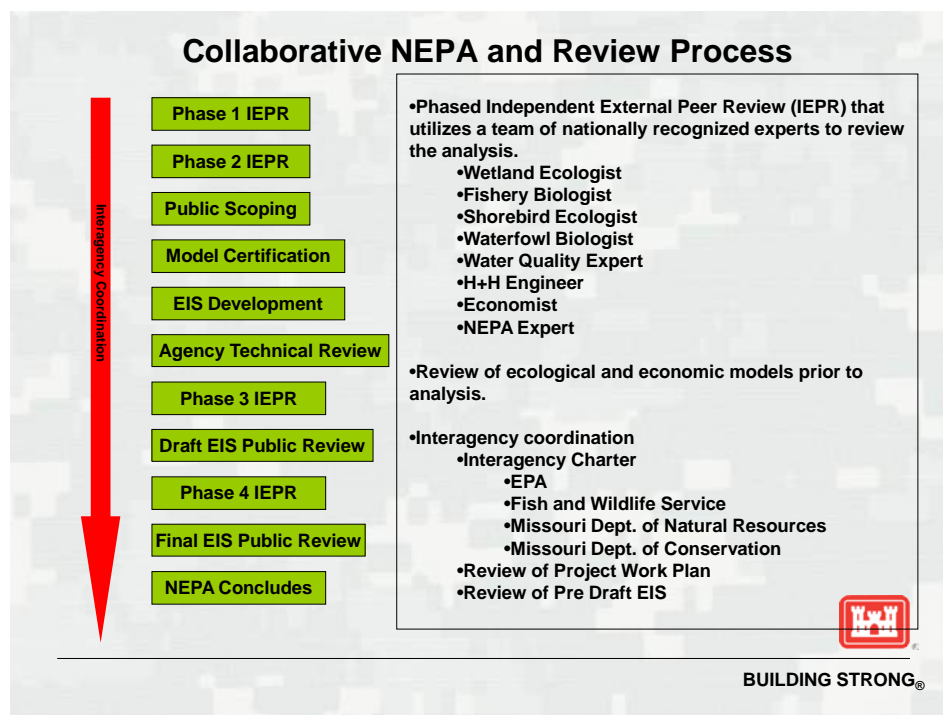


Figure S.1. Overview of IEPR involvement in review of environmental models used in analysis associated with the St. Johns Bayou and New Madrid Floodway Project.

The IEPR process was conducted in four phases. During Phase 1 IEPR, the panel reviewed past NEPA documentation to determine the adequacy of past NEPA documents and ensure that the scope of any future NEPA document would be complete and

scientifically accurate. In addition to the consolidated 2002 and 2006 NEPA documents, the U.S. District Court decision was also submitted to ensure that the panel was aware of environmental concerns contrary to that of USACE. A project briefing was held for the panel as well as the interagency team on 4-5 August 2009. The project briefing included a tour of the project area. Based on the outcome of the Phase 1 IEPR, USACE determined that a new EIS was required in lieu of a revision or supplement.

Based on recommendations from the Phase 1 IEPR as well as interagency coordination, a Project Work Plan was developed that specifically outlined the methodologies and assumptions that were to be used to complete the new environmental impact analysis. The Project Work Plan also contained preliminary alternatives and mitigation options that would likely be analyzed. A draft of the Project Work Plan was submitted to the interagency team for comment and an interagency meeting was conducted in December 2009 to discuss the overall aspects of the plan. The plan was revised and resubmitted to the interagency team for additional comment on 4 February 2010. The revised plan and interagency comments were submitted to the same panel of experts to conduct Phase 2 IEPR. The purpose of submitting the interagency comments was to ensure that the panel was aware of any opinions and views that were contradictory to that of USACE.

The panel identified numerous issues with the Project Work Plan that required extensive coordination between the USACE and the panel. A series of teleconferences occurred between USACE and the independent panel to clarify and discuss all of the issues. The interagency team was invited to participate in all discussions with the independent panel. With the exception of one issue relating to shorebird mitigation, the panel and USACE were able to reach resolution on all issues. An Addendum to the Phase 2 IEPR report was prepared to document the extensive coordination between USACE and the panel.

Utilizing the methodologies outlined in the Project Work Plan and revisions as a result of the Phase 2 IEPR, USACE conducted environmental analysis. The environmental analysis included the results of public scoping. A pre-draft EIS was completed that documented all of the preliminary conclusions. The pre-draft EIS was submitted for USACE Agency Technical Review as well as preliminary review by the interagency team. Although the entire team was requested to provide feedback, comments were only received by the EPA. USACE revised the pre-draft EIS based on Agency Technical Review and interagency preliminary review. The revised pre-draft EIS and EPA's comments were submitted to the same panel of experts for Phase 3 IEPR.

The panel provided numerous recommendations on the pre-draft EIS. Following discussions with the panel, revisions were made to the draft EIS to incorporate recommendations or address the panel's concerns. The final phase of IEPR will consist of a pre-final EIS that will include USACE's response to public comments.

In addition to IEPR for the overall NEPA effort, ecological models underwent a separate review by independent panels of nationally-recognized experts selected by an impartial party (e.g., Battelle). The purpose of these reviews was to ensure the scientific integrity of the models that would be employed to support project decisions.

S4. Alternative Analysis

The alternative development process begins by identifying a wide array of preliminary flood control alternatives and then, by application of carefully formulated selection criteria, establishing a reasonable range of feasible alternatives. Ultimately, eight alternatives were carried forward for detailed analysis, including the required no action alternative, and the process by which they were selected. These are:

- Alternative 1: no action;
- Alternative 2.1: construct and operate flood control improvements in the St. Johns Bayou Basin only;
- Alternative 2.2: construct and operate flood control improvements in New Madrid Floodway only;
- Alternative 2.3: construct and operate flood control improvements in both the St. Johns Bayou Basin and the New Madrid Floodway;
- Alternative 3.1: construct and operate flood control improvements in both the St. Johns Bayou Basin and the New Madrid Floodway, with seasonal flood pulse management and measures to avoid and minimize environmental impact;
- Alternative 3.2: construct and operate flood control improvements in both the St. Johns Bayou Basin and the New Madrid Floodway, with seasonal flood pulse management affording greater springtime flood protection and measures to avoid and minimize environmental impact;
- Alternative 4.1: construct and operate flood control improvements in both the St. Johns Bayou Basin and the New Madrid Floodway with floodplain connectivity maintained up to an elevation of 289.5 feet and measures to avoid and minimize environmental impact; and
- Alternative 4.2: construct and operate flood control improvements in both the St. Johns Bayou Basin and the New Madrid Floodway with floodplain connectivity maintained up to an elevation of 289.5 feet, reforestation of agricultural lands below an elevation of 289.5 feet, and measures to avoid and minimize environmental impact.

S5. Tentatively Selected Plan

Alternative 3.1 is the tentatively selected plan. The tentatively selected plan consists of the following:

- Closure of the 1,500 gap by means of a closure levee. The levee would be constructed of 233,000 cubic yards of earth and have a crown elevation of 317.0 feet, top width of 16 feet, base width of approximately 302 feet, and side slopes of 4.5:1.

- Construction of four gated 10-foot by 10-foot box culverts across Mud Ditch. Gates would only be closed during periods of waterfowl management or high Mississippi River stages.
- Raising the lower section of the Frontline Levee to an equivalent grade of 317.0 feet. This would require approximately 127,000 cubic yards of material. The levee would have a similar footprint as the closure levee.
- Raising the crown elevation along 14.1 miles of the Setback Levee. It is anticipated that 2.4 million cubic yards of material would be required. No changes to the base width are proposed. Therefore, construction would be entirely confined to the existing levee footprint.
- Construction of a 1,500 cfs pump station in the New Madrid Floodway at the closure location.
- Management of water levels in the New Madrid Floodway by means of the gated structure and pump as follows:
 - 15 Nov – 28 Feb – 289.5 feet maximum
 - 1 March – 15 April – 288 feet maximum
 - 16 April – 31 May – 284 feet maximum
 - 1 Jun – 14 Nov – 280 feet maximum
- Impoundment of water in the New Madrid Floodway to an elevation of 284.4 feet from 1 December to 31 January to benefit waterfowl.
- Modification of St. Johns Bayou Basin channels as follows:
 - 3.7 miles of the lower St. Johns Bayou would be enlarged from one side to a bottom width of 120 feet. Material would be deposited along the bank and would revegetate naturally as a conservation easement.
 - The lower 8.1 miles of Setback Levee Ditch would be enlarged from 40 feet to 50 feet along the left descending bank. Approximately 675,000 cubic yards of material would be placed in a 120-foot wide embankment and allowed to revegetate naturally as part of a conservation easement.
 - The lower 3.5 miles of St. James Ditch would be enlarged along the left descending bank by increasing the bottom width from 35 feet to 45 feet. The remaining 7.8 miles of channel work would increase the top bank width to 80 feet. Approximately 630,000 cubic yards of excavated material would be placed on a 100-foot wide embankment along the left descending bank.
- Construction of a 1,000 cfs pump station in the St. Johns Bayou Basin.
- Maintain of the current operation plan for the St. Johns Bayou gravity outlet structure (*i.e.*, close gates to prevent backwater flooding).
- Impoundment of water in the St. Johns Bayou Basin to an elevation of 285.0 feet from 1 December to 31 January to benefit waterfowl.

S6. Compensatory Mitigation

Compensatory mitigation is proposed for unavoidable project-induced adverse impacts. Project-induced impacts were calculated by the model developers in consultation with USACE and the inter-agency team using the specific methodologies and assumptions outlined in the Project Work Plan³ and model-specific parameters.⁴

To compensate for unavoidable impacts to different resource categories associated with the St. Johns Bayou Basin portion of the project, the following mitigation plan is proposed:

- Restore impacted ditch functions in channel modification reaches by:
 - Constructing nine transverse dikes in the lower 3.7 miles of St. Johns Bayou to create a low flow sinuous channel.
 - Constructing a bank stability structure (*i.e.*, weir) at the confluence of St. Johns Bayou and Setback Levee Ditch to provide stability as well as structure.
 - Constructing a bank stability structure at the confluence of Setback Levee Ditch and St. James Ditch.
 - Creating stream bank slopes that are designed to prevent erosion and maximize fish and wildlife habitat.
 - Establishing buffer strips consisting of both woody vegetation and warm season grasses along reaches of ditches that were previously farmed to top bank as well as replanting vegetation in areas cleared by construction efforts.
- Restore vegetated wetlands on 400 acres of agricultural land below an elevation of 285 feet.
- Restore vegetated wetlands on 1,816 acres below the post project 5-year floodplain.
- Ecologically design and construct 387 acres of borrow pits.
- Seasonally inundate 244 acres of farmland during the spring shorebird migration period.

To compensate for unavoidable impacts to different resource categories associated with the New Madrid Floodway portion of the project, the following mitigation plan is proposed:

- Restore hydrology to Big Oak Tree State Park by means of a gated culvert through the Mississippi River Frontline Levee.
- Restore vegetated wetlands on a minimum of 1,800 acres of farmland surrounding Big Oak Tree State Park.

³ The Project Work Plan was reviewed during Phase 2 IEPR.

⁴ Each model underwent a review by different panels of recognized experts.

- Restore vegetated wetlands on 387 acres of farmland below an elevation of 285 feet.
- Restore vegetated wetlands on 1,970 acres of farmland below the post project 5-year floodplain.
- Remove 3,050 acres of cropland from production in the batture and allow them to revert to bottomland hardwoods/riverfront forest naturally (vegetated wetlands).
- Ecologically design and construct 60 acres of borrow pits.
- Seasonally inundate 1,286 acres of farmland during the spring shorebird migration period. This would be accomplished by crediting the existing shorebird habitat provided by Ten Mile Pond Conservation Area (*i.e.*, 993 acres of moist soil units) pursuant to the project's specific Congressional authorization as well as the creation of an additional 293 acres of seasonally inundated farmland.
- Restore 432 acres of floodplain lakes, such as Riley Lake.
- Plant buffer strips surrounding ecologically designed borrow pits.

As seen in the proposed mitigation measures, a holistic watershed approach to compensatory mitigation has been proposed. USACE has developed, through collaboration with the interagency team and completion of a historic land use inventory of the project area, mitigation measures that incorporate a full range of resource management activities, including:

- Improving ecological services, such as water quality in the project area watershed, and subsequently the Mississippi River Basin. Currently, over 80 percent of the project area is devoted to agricultural production and agricultural drainage ditches are a common feature throughout the landscape. While some reaches of larger ditches and streams have areas of appropriate riparian buffer, a vast majority of the project area ditches have little to no buffer and are farmed to top bank. The intensive soybean and corn farming operations coupled with the lack of protective buffers along ditches capable of retaining sediments and nutrients result in the area being a top contributor to Gulf of Mexico hypoxia. Water quality analysis conducted for the project concluded that the project showed little effect on total phosphorous, total nitrogen, and organic carbon export in the St. Johns Bayou Basin. However, in the New Madrid Floodway, net average export of total phosphorus and total nitrogen would be reduced by about 15-20 percent by the tentatively selected plan due to the establishment of compensatory mitigation features. In addition, the tentatively selected plan reduces organic carbon export by approximately 40 percent. Results comparing nitrogen loading analysis post-project with mitigation indicate that agricultural land taken out of production and reforested would yield significant nitrogen loading reductions, roughly 12,000 tons over the project life, leading to a reduction in non-point source pollution being delivered to the Mississippi River and possibly a reduction in growth of the hypoxic zone in the Gulf of Mexico. Carbon sequestration is also substantially increased with project mitigation measures in place, nearly 2 million tons more than with the no action alternative, helping to offset the effects of global climate change by sequestering greenhouse gas emissions.

- Providing forest management planning, including restoration of over 9,400 acres of wetlands. Historically, bottomland hardwoods covered much of the Mississippi Alluvial Valley and periodic flooding was commonplace. However, less than 20 percent of this important habitat remains and water resource developments for flood control and agricultural enhancement have drastically reduced the flood return interval on remaining habitats. The tentatively selected plan proposes to take agricultural land, most of which is at low elevation and frequently subject to Mississippi River flood pulses, and revert it to historic forest habitat. With the exception of shorebirds, flooded agricultural land provides little to no habitat and the prior conversion of bottomland hardwoods to cropland is responsible for the vast majority of wetland and habitat losses throughout the Mississippi River Alluvial Valley and Nation. Bottomland hardwood forests can support as many as five times as many game animals as nearby pine and upland forests. Many non-game species, such as small mammals, owls, raptors, and neotropical migrants also find ideal habitat in bottomland hardwood forests. The tentatively selected plan proposes to acquire mitigation land in large blocks which provides much needed wildlife travel corridors in the project area. In addition to forest restoration within the floodway, restoration is also proposed in the batture area. Forested areas along the Mississippi River are among the nation's most important wetlands. They provide space for dispersal and temporary storage of flood waters, reducing potential damages from floods. Bottomland hardwoods growing in the batture are especially important to various fish species during annual flooding for food production, feeding, spawning, and rearing of young. Spring flooding allows many species of fish to spawn in the forested wetlands. Bottomland hardwoods also contribute to water quality by reducing sediment loads, filtering out chemical and organic wastes, and reducing nutrients, as well as reducing erosion by binding the soil with root systems.
- Providing year round fish habitat in the form of ecologically designed borrow pits and floodplain lakes. Borrow pits are an excellent method to compensate for impacts to floodplain spawning and rearing habitat (*i.e.*, inundated agricultural lands) and provide excellent nursery habitat. Each pit would be designed so approximately half of the pit would be an average of six feet in depth, and the remaining half would be an average of three feet in depth. Shoreline sinuosity would also be incorporated into the design. Although there are many floodplain lakes located in the batture, many of these lakes are degraded due to past drainage projects and high sediment loads of the Mississippi River. Additionally, there are fewer of these lakes and new lakes are not forming due to the levee system and navigation structures. Floodplain lakes located in the Mississippi Alluvial Valley have large aquatic populations of plants and animals. The total biomass of fish averages roughly 600 lbs/acre, indicating high fishery production. Periodic flooding recharges and relieves periodic overpopulation in floodplain lakes and results in a net export of fish to Mississippi River habitats. Furthermore, providing floodplain lakes and ecologically designed borrow pits would provide a reliable source of food for the interior least tern.

- Providing parkland management planning through hydrologic restoration of Big Oak Tree State Park and acquisition of 1,800 of prior converted cropland surrounding the park which would be restored to historic bottomland hardwood forest. Under existing conditions, Big Oak Tree State Park, of which 80 acres has been designated a National Natural Landmark by the U.S. Department of Interior is experiencing drier conditions due to adjacent flood control practices. A hydrologic connection to the Mississippi River would be restored to the park by constructing a water delivery system. The restored flood pulse would inundate the park and mimic a flood regime as if the levees had not been constructed. Otherwise, the current drying condition is expected to continue under future without project conditions.

The project would be monitored and adaptive management reports would be prepared at prescribed intervals until mitigation has been determined to be successful. All aspects of the project would be monitored including flood risk management structures and compensatory mitigation (according to the requirements of the Mitigation Rule). Adaptive management would recommend if changes are warranted. Adaptive management reports may conclude that the overall management of water levels should be adjusted or no changes are warranted. The cost of monitoring and adaptive management is included in the project's total cost and would also be reflected in the Project Cooperation Agreement with the non-Federal sponsor.

S7. Section 404 Findings

As required by Section 404(b)(1) of the Clean Water Act (CWA), an evaluation to assess the short- and long-term impacts associated with the discharge of dredged and fill materials into Waters of the United States resulting from this project has been completed. The tentatively selected plan includes features that were designed to avoid to the extent practicable wetlands and Waters of the United States, including reducing impacts in the St. Johns Bayou Basin by reducing channel dimensions and in the New Madrid Floodway by allowing for a much greater level of connectivity with the Mississippi River. Unavoidable project-induced adverse impacts to wetlands will be compensated.

S8. Findings on Executive Order 11988, Floodplain Management

Executive Order 11988, Floodplain Management (signed 24 May 1977), requires Federal agencies to recognize the significant values of floodplains and to consider the public benefits that would be realized from restoring and preserving floodplains. The Executive Order has an objective the avoidance, to the extent possible, of long and short-term adverse impacts associated with the occupancy and modification of the base floodplain and the avoidance of direct and indirect support of development in the base floodplain wherever there is a practical alternative. Under this Order the Corps of Engineers is required to provide leadership and take action to:

- a. Avoid development in the base floodplain unless it is the only practical alternative;

- b. Reduce the hazard and risk associated with floods;
- c. Minimize the impact of floods on human safety, health, and welfare; and
- d. Restore and preserve the natural and beneficial values of the base floodplain.

It is the policy of the Corps of Engineers to formulate projects which, to the extent possible, avoid or minimize adverse impacts associated with the use of the base floodplain and avoid inducing development in the base floodplain unless there is no practical alternative. The tentatively selected plan complies with the project for the following reasons:

- The significant value of the floodplain to fish and wildlife resources and wetland functions were assessed and mitigation is proposed to compensate for unavoidable significant impacts.
- Floodplain restoration of Big Oak Tree State Park is a priority of the project's mitigation.
- With the exception of conversion of agricultural land to forested areas as a result of the project's mitigation or WRP enrollment no land use change is expected. Although agricultural areas will intensify, no significant residential development is expected to occur.
- The project reduces the flood hazard and risk to residents, infrastructure, and agricultural areas within the floodplain.
- The tentatively selected plan recognizes the importance of the floodplain by maintaining a level of connection between the Mississippi River and the New Madrid Floodway during portions of the year and at elevations that do not impact socio-economic resources.
- The project will not significantly increase flood heights to adjacent or downstream areas during significant flood events.
- The project will not change the operation of the Birds Point to New Madrid Floodway. The Floodway will continue to be operated as authorized by law. The project will not result in increased time period of operation or an increased time period for a decision to operate. No significant impacts are anticipated to adjacent and downstream areas.

Additional information is found throughout the draft EIS.

S9. Findings on Executive Order 11990, Protection of Wetlands

Executive Order 11990 directs Federal agencies to avoid, to the extent possible, long- and short-term adverse impacts associated with destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands if a practical alternative exists. Furthermore, agencies shall consider the action's effect on (a) public health, safety, and welfare, (b) maintenance of natural systems, including conservation and long-term productivity of existing flora and fauna, species and habitat diversity and stability, hydrologic utility, fish, wildlife, timber, and food and fiber resources, and (c) other wetland uses. Avoidance is determined first by demonstrating that the proposed project is water dependent, and secondly by demonstrating that the proposed project is the least

environmentally damaging practicable alternative. Since the purpose and need of the project is to manage flood risks in the area, impacts on Waters of the United States, other waters, and wetlands would be unavoidable.

Alternatives were formulated that minimize the impacts to wetlands. With the exception of direct impacts as a result of channel modifications and fill, the project would indirectly impact wetlands as a result of changes to flood frequencies and durations. The wetlands would still exist following the completion of the project. However, they would not be flooded as frequent or as long as presently observed under existing conditions. Although the project will not impact overall acreages of wetlands, the impacts to functions as a result of hydrologic changes have been assessed and mitigation is proposed to compensate for the impacts to significant wetland functions.

S10. Findings on Executive Order 12898, Environmental Justice in Minority and Low Income Populations

This Executive Order directs all Federal agencies to take the appropriate steps to identify and address any “disproportionately high and adverse” human health or environmental effects of Federal programs, policies, and activities on minority and low-income populations. Implementation of the proposed action in the project area would manage flood risks in an area with existing lower level protection. Thus, implementation will benefit all residents of these areas alike. Likewise, the project will not impact Mississippi River flood stages or future operation of the Birds Point to New Madrid Floodway. Therefore, the project will not impact adjacent communities including minority and low-income populations.

S11. Unresolved Issues

S11.1 State of Missouri Water Quality Certification

USACE will request water quality certification from the State of Missouri.

S11.2 Endangered Species

The U.S. Fish and Wildlife Service did not concur with the biological assessment completed for the interior least tern. The Fish and Wildlife Service deferred formal consultation until the draft EIS, or similar document was submitted. Consultation is ongoing and is anticipated to be complete prior to the final EIS.

S11.3 U.S. Fish and Wildlife Service Coordination Act Report

The U.S. Fish and Wildlife Service (USFWS) provided a Fish and Wildlife Coordination Act Report (FWCAR) on July 11, 2013 (see Appendix Q, Part 1). The document contains USFWS’s findings and recommendations, outlining its vision for what is best for the project area insofar as fish and wildlife are concerned, and raising several issues for further exploration, especially those pertaining to uncertainties in scientific

information, analytical methodologies, and statutory constraints. USACE will continue to work collaboratively with USFWS and others on issues raised in the FWCAR during and after the public comment period (e.g., during Independent External Peer Review Phase IV and in developing a Final EIS).

In summary, USFWS recommends that flood risk reduction improvements be constructed in St. Johns Bayou Basin only (Alternative 2.1), and that no action be taken in the New Madrid Floodway. If, however, limiting construction to St. Johns Bayou Basin is not possible, USFWS urges USACE to select Alternative 4.1 over the preferred alternative, Alternative 3.1.

There are challenges associated with water resources development interests regarding the St. Johns Bayou Basin and New Madrid Floodway (i.e., socio-economic impacts vs. fish and wildlife habitat) that must be balanced. The objectives for the project area are derived from the statutes that are the basis for the proposed action. That is, flood risk management focuses on protecting people, places, and social and economic activity in the project area. However, it is also true that bottomland hardwoods connected to the Mississippi River and subject to its flood pulse provide a host of ecological goods and services. Currently, the New Madrid Floodway is a working landscape, providing flood risk reduction as a Floodway, agricultural production, and fish and wildlife habitat. With or without a project, it is expected that the majority of the area will continue as agricultural lands. Harmonizing competing socio-economic and environmental interests is thus a complex, at times a controversial task, one that demands careful consideration of federal investment towards preferred uses of the project area. And it is precisely for this reason that public comment on the FWCAR and on this draft EIS are vitally important.

USFWS has recommended, and USACE has considered and will continue to investigate, the value of retaining connectivity between the Mississippi River and the New Madrid Floodway, as a means of preserving the benefit of the flood pulse to that floodplain, and thereby serving the interests of conservation and preservation advocated by USFWS.⁵ The project's statutory authority is to reduce the likelihood and adverse effects—on agricultural and urban lands—of backwater flooding in the New Madrid Floodway and flooding due to the impounding of waters in St. Johns Bayou Basin. With the exception of restoration activities of sustaining some degree of connectivity associated with compensatory mitigation, USACE is not authorized to implement ecosystem restoration measures as a project purpose. To do so, USACE would have to obtain reconnaissance study authorization from Congress and appropriation to determine a federal interest, conduct a cost-shared feasibility study, obtain additional authorization to implement such a plan, and work with a cost-share sponsor to implement the plan.

Additionally, the USFWS's recommendation to implement flood control improvements only in the St. Johns Bayou basin is economically justified (project benefits are greater than project costs, including mitigation). However, such a plan does not consider the

⁵ As noted by USFWS, the New Madrid Floodway has considerable potential for conservation and restoration, the floodplain being one of but a very few places in the Lower Mississippi River Valley, outside of batture lands, where this could be accomplished.

socio-economic impacts in the New Madrid Floodway. When project costs and benefits from both basins are combined, constructing a St. Johns Bayou Basin only alternative does not result in the greatest excess benefits.

USACE acknowledges that implementing other alternatives, as urged by the USFWS, would reduce environmental impacts because a larger geographic area remains subject to flooding. Although the decrease in environmental impacts results in less mitigation, when net excess benefits are compared, they do not result in the greatest net excess benefits.

While a preferred alternative has been identified in this draft EIS, one that delivers the greatest annual net excess benefit, according to National Economic Development criteria, USACE has not made a decision on which, if any, alternative to implement. Public comments are beneficial to the holistic decision making process and will also aid in the continued discussion between USFWS and USACE regarding the benefits and impacts of each alternative and the policy implications of each approach. All comments will be given full consideration, and the final EIS will be revised accordingly.

S12. Relationship of Plans to Environmental Requirements

<u>FEDERAL STATUTES</u>	<i>Alt. 2.1</i>	<i>Alt. 2.2</i>	<i>Alt. 3.1</i>	<i>Alt. 3.2</i>	<i>Alt. 4.1</i>	<i>Alt. 4.2</i>
1. <u>Archaeological and Historic Preservation Act of 1974.</u> Compliance requires Corps to undertake recovery, protection, and preservation of significant cultural resources whenever its activities may cause irreparable loss or destruction of such resources.	<i>PC</i>	<i>PC</i>	<i>PC</i>	<i>PC</i>	<i>PC</i>	<i>PC</i>
2. <u>Clean Air Act, as Amended.</u> Compliance requires coordination with the U.S. Environmental Protection Agency and analysis of potential impacts on air quality.	<i>FC</i>	<i>FC</i>	<i>FC</i>	<i>FC</i>	<i>FC</i>	<i>FC</i>
3. <u>Clean Water Act of 1977.</u> Compliance requires preparation of 404(b)(1) Evaluation and submission of such to Congress with the draft EIS or procurement of state water quality certification (WQC). See, Appendix E, for the 404(b)(1) evaluation. Pending State WQC.	<i>PC</i>	<i>PC</i>	<i>PC</i>	<i>PC</i>	<i>PC</i>	<i>PC</i>
4. <u>Endangered Species Act of 1973, as Amended.</u> Compliance requires coordination with the U.S. Fish and Wildlife Service (USFWS) to determine if any endangered or threatened species or their critical habitat would be impacted by the project.	<i>NC</i>	<i>NC</i>	<i>NC</i>	<i>NC</i>	<i>NC</i>	<i>NC</i>
5. <u>Federal Water Project Recreation Act.</u> Compliance requires review by the Department of the Interior. Coordination of the draft EIS will bring	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>

the project into full compliance.						
6. <u>Fish and Wildlife Coordination Act.</u> Compliance requires coordination with the USFWS and recommendations are discussed in, Appendix Q, which includes the Fish and Wildlife Coordination Act Report (CAR).	<i>PC</i>	<i>PC</i>	<i>PC</i>	<i>PC</i>	<i>PC</i>	<i>PC</i>
<u>FEDERAL STATUTES</u>	<i>Alt. 2.1</i>	<i>Alt. 2.2</i>	<i>Alt. 3.1</i>	<i>Alt. 3.2</i>	<i>Alt. 4.1</i>	<i>Alt. 4.2</i>
7. <u>Land and Water Conservation Fund Act.</u> Compliance requires Secretary of the Interior approval of replacement property that would be acquired to mitigate converted property purchased with LWCFA funds.	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
8. <u>National Historic Preservation Act.</u> Compliance requires Corps to take into account the impacts of project on any property included in or eligible for inclusion in the National Register of Historic Places.	<i>FC</i>	<i>FC</i>	<i>FC</i>	<i>FC</i>	<i>FC</i>	<i>PC</i>
9. <u>National Environmental Policy Act.</u> Compliance requires preparation of this draft EIS, consideration of public comments, and preparation and public review of the final EIS. Signing of the Record of Decision would bring this project into full compliance.	<i>PC</i>	<i>PC</i>	<i>PC</i>	<i>PC</i>	<i>PC</i>	<i>PC</i>
10. <u>River and Harbor Act.</u>	<i>PC</i>	<i>PC</i>	<i>PC</i>	<i>PC</i>	<i>PC</i>	<i>PC</i>
11. <u>Farmland Protection Policy Act.</u> Compliance requires coordination with the Natural Resources Conservation Service to determine if any designated prime or unique farmlands are affected by the project.	<i>FC</i>	<i>FC</i>	<i>FC</i>	<i>FC</i>	<i>PC</i>	<i>PC</i>
12. <u>Watershed Protection and Flood Prevention Act.</u> No requirements for Corps projects.	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
13. <u>Wild and Scenic River Act.</u> Compliance requires coordination with Department of the Interior to determine if any designated or potential wild, scenic, or recreational rivers are affected by the project. Coordination has been accomplished and there are no such rivers in the project area.	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
<u>EXECUTIVE ORDER/MEMORANDA</u>	<i>Alt. 2.1</i>	<i>Alt. 2.2</i>	<i>Alt. 3.1</i>	<i>Alt. 3.2</i>	<i>Alt. 4.1</i>	<i>Alt. 4.2</i>
1. <u>Executive Order 11988, Floodplain Management.</u> Compliance requires an assessment and evaluation together with the other general implementation	<i>FC</i>	<i>FC</i>	<i>FC</i>	<i>FC</i>	<i>FC</i>	<i>FC</i>

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procedures to be incorporated into EIS.						
2. <u>Executive Order 11990, Protection of Wetlands.</u> Compliance requires results of analysis and findings related to wetlands be incorporated into the EIS.	<i>FC</i>	<i>FC</i>	<i>FC</i>	<i>FC</i>	<i>FC</i>	<i>FC</i>
3. <u>Executive Memorandum, Analysis of Impacts on Prime and Unique Farmlands in EIS.</u> Compliance requires inclusion of effects of proposed action on prime and unique farmlands in EIS.	<i>FC</i>	<i>FC</i>	<i>FC</i>	<i>FC</i>	<i>PC</i>	<i>PC</i>
4. <u>Executive Order 11593, Protection and Enhancement of the Cultural Environment.</u> Compliance requires Corps to administer cultural properties under their control in stewardship for future generations; preserve, restore or maintain such for benefit of the people; and assure that its plans contribute to preservation and enhancement of non-federally owned sites.	<i>FC</i>	<i>FC</i>	<i>FC</i>	<i>FC</i>	<i>FC</i>	<i>FC</i>
5. <u>Executive Order 13112, Invasive Species.</u> Compliance requires assessment of potential for the project to introduce invasive species to the project area.	<i>FC</i>	<i>FC</i>	<i>FC</i>	<i>FC</i>	<i>FC</i>	<i>FC</i>
6. <u>Executive Order 12898, Environmental Justice in Minority and Low-income Populations.</u> Compliance requires assessment of project effects on minority and low-income populations.	<i>FC</i>	<i>FC</i>	<i>FC</i>	<i>FC</i>	<i>FC</i>	<i>FC</i>

FC - In Full Compliance

PC - In Partial Compliance

NA - Not Applicable

NC – Not in Compliance, to date