

Comments on the Draft Environmental Impact Statement
St. Johns Bayou New Madrid Floodway Project (July 2013)

Submitted by

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The National Wildlife Federation, Great Rivers Environmental Law Center, Kentucky Waterways Alliance, Missouri Coalition for the Environment, Missouri Parks Association, and Sierra Club (collectively, the Conservation Organizations) appreciate the opportunity to submit these comments on the Draft Environmental Impact Statement (DEIS) for the St. Johns Bayou and New Madrid Floodway Project. The Conservation Organizations also ask the Corps to treat a resubmitted all the comments previously submitted by the National Wildlife Federation and/or the Environmental Defense Fund on previous environmental impact statements for the Project as though fully set forth herein.

The Conservation Organizations strongly oppose the St. Johns Bayou New Madrid Floodway Project (the Project) and urge the U.S. Army Corps of Engineers (Corps) to abandon the Project and select the no action alternative. Should the Corps choose to pursue the Project despite its devastating environmental impacts, the Conservation Organizations call on the Environmental Protection Agency to veto the project under Section 404(c) of the Clean Water Act, and call on the Department of the Interior to refer the project to the Council on Environmental Quality pursuant to 42 U.S.C. § 4344.

The National Wildlife Federation (NWF) is the nation's largest conservation education and advocacy organization. NWF has more than four million members and supporters and conservation affiliate organizations in forty-eight states and territories. NWF has a long history of working to protect the nation's coasts, rivers, wetlands and floodplains, and the fish and wildlife that depend on those vital resources. NWF also has a long history of advocating for the protection and restoration of the Mississippi River and on working to ensure that federal water projects are environmentally and economically sound.

Great Rivers Environmental Law Center is a nonprofit organization dedicated to providing free and reduced-fee public interest legal services to individuals and organizations working to protect and preserve Missouri's environment.

Kentucky Waterways Alliance is a statewide nonprofit organization dedicated to protecting and restoring the waters of the Commonwealth. Kentucky Waterways Alliance represents over 900 members and affiliate organizations united to insure high quality water resources in Kentucky for diverse recreational activities such as swimming, boating, and fishing as well as reliable drinking water supplies and biological habitat.

Missouri Coalition for the Environment is Missouri's independent, citizens environmental organization for clean water, clean air, clean energy, and a healthy environment. The Missouri Coalition for the Environment works to protect and restore the environment through education, public engagement, and legal action.

Missouri Parks Association is a non-profit citizens organization—Independent and non-partisan—of more than 3,000 members statewide dedicated to the protection, enhancement, and interpretation of Missouri state parks and historic sites. MPA has long advocated for restoration of hydrologic and ecosystem function in a scientifically sound and sustainable manner along the great rivers, where Missouri has twenty state parks including Big Oak Tree.

Sierra Club is the nation's oldest, grassroots based environmental organization. Founded in 1892 the Sierra Club has over 603,000 members united to explore, enjoy and protect the wild places of the Earth; to practice and promote the responsible use of the Earth's ecosystems and resources; and to educate and enlist humanity to protect and restore the quality of the natural and human environment.

I. Overview of Comments

The Project violates federal law and policy and is fundamentally at odds with modern science. The Project will cause devastating harm to the environment and to fish and wildlife that cannot be mitigated. As aptly stated by FWS, the “project-related wetlands losses are at odds with the federal conservation policy goals and sustainable water resources development.”¹ The Corps’ own Assistant Director of Civil Works has aptly described the project as an “economic dud” with “huge environmental consequences.”²

The project’s defining component – a new levee to close the last connection between the Mississippi River and its natural backwater habitat in the State of Missouri – will end backwater flooding on 75,000 acres and eliminate the most important backwater spawning and rearing habitat in the Middle Mississippi River. The U.S. Fish and Wildlife Service (FWS) has repeatedly stated that this will “cause substantial, irretrievable losses of nationally significant fish and wildlife resources, and greatly diminish rare and unique habitats found in southeast Missouri.”³ Many experts have concluded that the adverse impacts of the Project are so significant that they cannot be mitigated.

The Draft EIS provides a fundamentally flawed analysis of the impacts of the Project and fails to comply with the requirements of the National Environmental Policy Act (NEPA). The DEIS relies on outdated model and data and lacks scientific integrity; fails to demonstrate project need; fails to properly consider reasonable, less damaging alternatives, and fails to examine the full suite of adverse impacts from the Project. The Draft EIS draws conclusions on the value of the proposed mitigation that are fundamentally at odds with modern science and ignores important statutory and regulatory mitigation requirements.

The Project is prohibited under the Clean Water Act 404(b)(1) Guidelines and is appropriate for a Clean Water Act Section 404(c) veto due to the severity of the harm it will cause to fishery areas and wildlife. The proposed mitigation and the mitigation plan are both scientifically unsound and legally inadequate. And, as noted above, the project is at odds with longstanding federal policy.

The Project is so environmentally destructive that it simply should not be built. The Corps should abandon the Project and select the no action alternative. Should the Corps choose to pursue the Project despite its devastating environmental impacts, the Environmental Protection Agency should veto the project under Section 404(c) of the Clean Water Act, and the Department of the Interior should refer the project to the Council on Environmental Quality pursuant to 42 U.S.C. § 4344.

II. The Project Will Cause Significant, Critical, and Unacceptable Harm to the Environmental That Cannot Be Mitigated

The Project will sever the last natural connection between the Mississippi River and its floodplain in the State of Missouri, eliminating the natural flood regime and destroying tens of thousands of acres of

¹ July 2013 Draft U.S. Fish and Wildlife Service Fish and Wildlife Coordination Act Report, DEIS Appendix Q, Part 1.

² December 27, 2002 Email from Larry Prather, then the Chief, Legislative Management Branch, U.S. Army Corps of Engineers, and currently the Corps’ Assistant Director of Civil Works (Legislation and Planning).

³ July 2013 Draft U.S. Fish and Wildlife Service Fish and Wildlife Coordination Act Report, DEIS Appendix Q, Part 1.

wetlands and vital fish and wildlife habitat. The Department of the Interior, the U.S. Fish and Wildlife Service, the Missouri Department of Conservation, and independent scientific experts have concluded that these critically significant impacts cannot be mitigated. For example:⁴

- **U.S. Department of the Interior:** the Department of The Interior has advised the Corps that the Project would have critically significant unacceptable impacts to fish and wildlife resources that cannot be mitigated.

2013 Comments on the DEIS⁵—

"Up to 53,556 acres of functional wetlands would be degraded or eliminated by the project. Those habitats provide essential breeding and migration areas for 193 species of migratory birds, including tens of thousands of migrating shorebirds and waterfowl. The fisheries impacts have been significantly underestimated and extend far beyond the 5-year floodplain used in the analysis conducted by the Corps. Frequent Mississippi River backwater flooding (2 to 5 year intervals) during the spring is extensive and the spawning, nursery and foraging habitat (15,000 to 50,000 acres) it provides for an extremely diverse fishery (114 species representing 22 families) is **unique and irreplaceable**. Recent scientific investigations along the Missouri and Mississippi rivers show how critical less frequent, but large, flood events are in maintaining populations of long-lived, commercially important fish such as catfish, paddlefish, drum, sturgeon, and white bass. The difference between the 5 year and 20 year flood in both basins is 40,000 acres. During flood events, connected agricultural floodplains provide expansive, slackwater fish habitats that cannot be substituted by the constricted, fast-flowing main channel and adjacent batture lands. The Floodway closure and proposed pumps would eliminate 75 percent of the spring, and 95% of the fall shorebird habitat in the Floodway. It would also result in an estimated 39% loss of Duck Use Days during critical spring migration".

"The Department continues to have significant concerns regarding potential project effects to fish and wildlife resources, as detailed in our August 26, 2011, letter to Assistant Secretary Darcy (enclosed). **In spite of our repeated concerns, current project plans are essentially unchanged from the original alternative. The project would essentially eliminate a unique landscape and ecological feature in southeast Missouri and result in the loss of thousands of acres of wetlands and their connection to the Mississippi River. At present, the Department does not believe these impacts can be adequately mitigated.**"

"Should the Corps pursue the Tentatively Selected plan, and fail to move towards a less environmentally-damaging alternative, the Department of the Interior will consider this project a candidate for referral to the Council on Environmental Quality in accordance with 40 CFR 1504."

⁴ While a number of the conclusions outlined in this section were made prior to release of the DEIS, those conclusions remain valid as the key elements of the Tentatively Selected Plan and the fundamental approach to mitigation have not changed since those conclusions were rendered.

⁵ November 18, 2013 Letter from the Office of Environmental Policy and Compliance, U.S. Department of the Interior to Col. Jeffery A. Anderson, Commander, Memphis District, U.S. Army Corps of Engineers (emphasis added).

2011 Letter to the Assistant Secretary of the Army (Civil Works)⁶—

“Unless the purpose and alternatives for the New Madrid project have changed since the last evaluation, the Department does not believe that it is in the public interest to engage in yet more environmental analysis of this project.”

“Altering the hydrologic regime of the floodway produces a suite of complex and **unsolvable challenges** in providing adequate mitigation for the wetland, fishery, and floodplain impacts.”

The Corps’ mitigation plans for the project “**are at odds with contemporary understanding of wetland and floodplain science and agency mitigation guidance.**

This science emphasizes the critical importance of natural hydrology, spatial extent, and landscape position. The science recognizes the importance to habitat values of subtle features of hydrology, including depth, velocity, and timing of flooding and the relationship of one habitat to another. The Corps wetland mitigation guidance specifically endorses these principles.”

- **U.S. Fish and Wildlife Service:** Through a series of Fish and Wildlife Coordination Act reports, the Fish and Service has advised the Corps that the Project would have critically significant unacceptable impacts to fish and wildlife resources that cannot be mitigated.

2013 Draft Fish and Wildlife Coordination Act Report⁷—

“The project would essentially eliminate a unique landscape and ecological feature in southeast Missouri and result in loss of thousands of acres of wetlands and their connection to the Mississippi River that **cannot be adequately mitigated**. This would occur as a result of a project with vaguely defined crop optimization benefits on some portions of both basins.”

The Service opposes the New Madrid Floodway component of the preferred alternative because it would “**cause substantial, irretrievable losses of nationally significant fish and wildlife resources, and greatly diminish rare and unique habitats found in southeast Missouri.**” The Service further concludes that “**project-related wetlands losses are at odds with the federal conservation policy goals and sustainable water resources development.**”

“The TSP will eliminate spring overbank flooding that currently may cover tens of thousands of acres in the St. Johns Bayou basin and the New Madrid Floodway. Upon receding, those flood waters produce thousands of acres of shallow, temporarily flooded wetlands in a variety of cover types. A variety of waterfowl, numerous other wetland dependent birds, amphibians, invertebrates, and mammals benefit from those habitats. Some of the largest remaining forested wetland tracts in southeast Missouri are found in the project area and would be negatively affected by the TSP. Seasonal backwater flooding in the New Madrid Floodway provides important floodplain habitat

⁶ August 26, 2011 Letter from Acting Assistant Secretary for Fish Wildlife and Parks to Assistant Secretary of the Army for Civil Works (emphasis added).

⁷ DEIS Appendix Q, Part 1 (emphasis added).

that supports an extremely abundant and diverse fish fauna (both floodplain and riverine), some of which are becoming regionally scarce. The interchange between the Floodway and the river supports a sustainable ecosystem not found elsewhere along the Mississippi River in Missouri. Alterations in the extent and timing of seasonal flooding in the project area greatly concern the Service not only because of adverse impacts upon numerous Federal and State trust resources, but also because of the potential adverse impacts to the study area ecosystem and cumulative impacts in the Lower Mississippi Valley.”

“The Corps has proposed reforesting 9,423 acres of frequently flooded croplands (i.e. farmed wetlands) near the project area to compensate for project-related fish and wildlife habitat losses. That plan, however, would result in a net loss of wetland acreage and functions within the project area, and a regional net loss of wetland acreage. In addition, although the proposed mitigation measures would compensate losses of wetland habitat value, they would not mitigate impacts to floodwater storage, nutrient cycling or detrital export/import, and water quality changes. Fish and wildlife species with limited mobility (i.e., reptiles, amphibians, and larval fishes) will experience a net loss of habitat within the project area that may not be compensated through the proposed mitigation lands. For those reasons, the Service urges the Corps to pursue measures to avoid project impacts rather than try to compensate for them after the fact.”

2006 Fish and Wildlife Coordination Act Report⁸—

The Mississippi River-New Madrid Floodway “connection is absolutely vital to maintaining a healthy, sustainable fishery in this section of the Mississippi River. Completing the closure of the New Madrid Floodway will eliminate a major area of river-floodplain connectivity in this region of the River and the very last area of its kind in the State of Missouri.”

“The exceptional value of backwater areas of the Mississippi River to the River’s regional fishery and on-going threats to these backwater areas requires that we continue to explore and implement mitigation measures that avoid and minimize further losses. **The Service is unaware of any feasible mitigation techniques that can provide in-kind replacement to offset the permanent loss of this habitat and associated ecological processes. . . .** “The Services’ position on this issue has not changed from our previous FWCA Reports.”

2002 Fish and Wildlife Coordination Act Report⁹—

The project “will result in significant losses of regionally and nationally important fish and wildlife resources which can not be adequately mitigated due to project design and economic objectives.”

⁸ March 15, 2006 U.S. Fish and Wildlife Service Supplemental Fish and Wildlife Coordination Act Report (included at pages 510-515 of the Revised Supplemental Environmental Impact Statement Number 2 for the St. Johns Bayou-New Madrid Floodway Project) (emphasis added).

⁹ June 6, 2002 U.S. Fish and Wildlife Service Supplemental Fish and Wildlife Coordination Act Report at E-2, E-9 (Consolidated 2009 NEPA Appendix E 11) (emphasis added). The Consolidated 2009 NEPA Appendix is available at http://www.mvm.usace.army.mil/stjohns/2009_update/IEPR_Documents/4f_App_E_FWCAR.pdf.

The project “will significantly reduce the duration and frequency of flooding on 130,000 acres of Mississippi River floodplain, adversely impact a regionally important fishery (including an economically viable commercial fishery) by eliminating the last remaining connection of the Mississippi river with its historic floodplain in Missouri, result in the elimination or major degradation of over 18,000 acres of wetland habitat and their ecological functions, and cause further decline in the biological and ecological integrity of a federally designated National Natural Landmark. . . . The project, as presently formulated, provides only superficial consideration of fish and wildlife resources”

“The proposed project design actions and changes **do nothing to avoid** fish and wildlife resource losses and the minimization features are nominal considering the significant scope and magnitude of these losses.”

2000 Fish and Wildlife Coordination Act Report¹⁰—

Even with mitigation the project “**would cause substantial, irretrievable losses of nationally significant fish and wildlife resources, and greatly diminish rare and unique habitats in southeast Missouri.**”

- **U.S. Environmental Protection Agency:** EPA’s Region 7 Watershed Planning & Implementation Branch Manager has said that the Project “**could potentially have the largest negative impact on wetlands and streams of any project ever proposed in Region 7.** The proposed plan will close a 1,500 ft. levee gap along the New Madrid Floodway, the last levee gap for the Mississippi River in Missouri.”¹¹
- **Missouri Department of Conservation:** The Missouri Department of Conservation has advised the Corps and the Fish and Wildlife Service that the Project is unacceptable and that the Project’s impacts cannot be mitigated.

2002 Letter to the U.S. Fish and Wildlife Service¹²—

“We concur with your comment that levee closure and gate operation 3-1B [the alternative selected by the Corps] is unacceptable given that it makes no more than a token effort to mitigate fish and wildlife losses.”

2001 Letter to the Corps of Engineers¹³—

“The loss of connectivity between the floodplain and the Mississippi River is the single most significant project feature and **its loss cannot, in reality, be mitigated.**”

“As stated previously, the single most significant project impact to the aquatic resources is the major reduction in the magnitude of seasonal flooding and connectively to the

¹⁰ May 2000 U.S. Fish and Wildlife Service Fish and Wildlife Coordination Act Report at v (Consolidated 2009 NEPA Appendix E 63) (emphasis added).

¹¹ February 23, 2011 Email from EPA Region 7 Watershed Planning & Implementation Branch Manager.

¹² July 15, 2002 Letter from John Hoskins, Director of the Missouri Department of Conservation to Charles Scott, Field Supervisor, Missouri Ecological Services Field Office, U.S. Fish and Wildlife Service.

¹³ December 15, 2001 Letter from Jerry Conley, Director Missouri Department of Conservation to Colonel Scherer, Memphis District Engineer, U.S. Army corps of Engineers (emphasis added).

Mississippi River. Levee closure in the New Madrid Floodway and pump operations will eliminate backwaters from covering the floodway and bayou basins. Connectivity between the Mississippi River and the floodplain provides important ecological interactions and **cannot be mitigated for** in this project. Many species of fish move from the river into the floodplain in the spring to spawn. The gap closure will prevent that exchange.”

The project “will cause major declines in wetlands, their functions and inhabitants; fish spawning and rearing; mussels, birds and waterfowl feeding sites during migration.”

- **Independent Expert Joy Zedler, PH.D:** In 2006 and again in 2013, Dr. Joy Zedler, Professor of Botany and Aldo Leopold Chair in Restoration Ecology at the University of Wisconsin and Chair of the National Research Council Panel on *Compensating for Wetland Losses Under the Clean Water Act*, concluded that the mitigation proposed by the Corps for the Project is both scientifically unsound and environmentally harmful.

The claim that the proposed mitigation for the St. Johns - New Madrid Floodway Project “fully offsets project impacts on aquatic resources is **completely inconsistent with scientific understanding** of wetland functioning, wetland replacement, wetland restoration, and mitigation of other aquatic areas, as well as inconsistent with established practice under the Section 404 program. **The claim is so outside the range of reasonable scientific understanding that it cannot be seriously advanced as science-based.** It therefore should be disregarded.”¹⁴

“The Corps’ claim for this project that the loss of a vast area of seasonally flooded aquatic habitat could be replaced by unnaturally extended flooding on a small area of already existing wetlands would be **an extreme example of what the NRC report recommended against.**”¹⁵

For the St. Johns New Madrid Floodway Project, “the Corps has proposed to do the opposite of [the National Academy of Sciences recommendations on mitigation]. It would dramatically reduce or eliminate flooding according to a relatively natural pattern on tens of thousands of acres of wetlands and other valuable floodplain areas, and replace them primarily by artificially manipulating the hydrology on a small number of acres of already existing wetlands. **According to established understanding, that mitigation should itself be viewed as harmful, and according to accepted scientific understanding, it cannot offset the impacts of this project.**”¹⁶

- **Independent External Peer Review Panel:** The independent panel of experts convened to evaluate the DEIS concluded that the Project would cause significant cumulative impacts.

¹⁴ January 2006 Report of Dr. Joy Zedler on the Mitigation Proposal for the St. Johns Bayou/New Madrid Floodway Project at 3, 5, 7 (emphasis added); November 25, 2013 REPORT OF DR. JOY ZEDLER ON DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE ST. JOHNS BAYOU/NEW MADRID FLOODWAY PROJECT (2013). A copy of Dr. Zedler’s 2006 and 2013 reports are attached to these comments at Attachment B.

¹⁵ *Id.*

¹⁶ 2006 Zedler Report.

IEPR Phase 3¹⁷—

“The DEIS assigns little value to the ecosystem services (e.g., carbon sequestration) provided by floodplain connection to the Mississippi River, based on the argument that the system has been significantly changed over time. However, the Panel believes that the ecological value of the remaining connection to the Mississippi River is high. As described in CEQ (1997), the loss of this last remaining connection is an example where additional impacts, no matter how small, will have a disproportionate cumulative effect by exceeding the threshold where floodplain connection ecosystem functioning is eliminated. **The Panel believes that closing the last connection would have a significant cumulative impact on the flood-dependent system.** While it is not required that a project compensate for historical impacts, **it is incumbent on the project not to contribute the incremental impact that may cause the project to exceed this overall threshold.**

IEPR Phase 2¹⁸—

“The panel believes that the New Madrid Floodway is unique because, in context, it is the last remaining connection between the Mississippi River and its floodplain in the State of Missouri. Therefore, it plays a much larger role in providing natural floodplain services than the other areas. If the other originally connected areas had not been disconnected, the Floodway would be playing a proportionally smaller, and less important, role in maintaining the natural ecosystem. **The loss of this last remaining connection and its ecosystem functioning would be the “straw that broke the camel’s back” in terms of the total cumulative impact.** That is, not all incremental impacts are equal and it is the impact that exceeds a threshold that is significant. In this case, the adverse impact of removing the last floodplain connection, once the other connections have already been removed, is disproportionately high.”

III. The Project is Appropriate for a Clean Water Act Section 404(c) Veto

The environmental consequences of the Project are so significant that the Project is appropriate for a Clean Water Act Section 404(c) veto. Should the Corps adopt the Tentatively Selected Plan (TSP) or any variation of the TSP that causes similarly destructive impacts, the Conservation Organizations call on EPA to initiate – and issue – a Clean Water Act Section 404(c) veto of the Project.

Section 404(c) of the Clean Water Act authorizes the Administrator of EPA to “prohibit, restrict, or deny the specification of any defined area in waters of the United States (including wetlands) as a disposal site for the discharge of dredged or fill material whenever it determines, after notice and opportunity for public hearing, that such discharge into waters of the United States will have an unacceptable adverse effect on municipal water supplies, shellfish beds and fishery areas (including spawning and breeding areas), wildlife, or recreational areas.”¹⁹

¹⁷ DEIS Volume 3 Part 4, Phase III IEPR Final Comment Response Record at 61 (emphasis added).

¹⁸ DEIS Volume 3 Part 3, Phase 2 IEPR at B-43 (emphasis added).

¹⁹ Clean Water Act § 404(c), 33 U.S.C. § 1344(c).

This authority provides an important tool for protecting the nation's waters and for ensuring that EPA can effectively carry out its Clean Water Act oversight responsibilities. EPA has utilized Section 404(c) sparingly, but the impacts of the Project – particularly those on fishery areas (including spawning and breeding areas) and wildlife – are so significant that a veto is both appropriate and necessary.

As discussed in Sections II and VII of these comments, the Department of the Interior, the Fish and Wildlife Service, the Missouri Department of Conservation, and independent experts have all concluded that the Project would cause the precise types of unacceptable adverse impacts that warrant a 404(c) veto.

IV. The Project is Prohibited Under the Clean Water Act 404(b)(1) Guidelines and Conflicts with Section 10 of the Rivers and Harbors Act

Construction and operation of the Project would violate Section 404 of the Clean Water Act due to the magnitude and severity of the environmental harm that would be caused, the ability to avoid those impacts through the use of nonstructural and restoration efforts, and the Corps' failure to require adequate compensatory mitigation.

In carrying out its civil works activities, the Corps must comply with the requirements of Clean Water Act Section 404 and the Section 404(b)(1) Guidelines.²⁰ Critically, the 404(b)(1) Guidelines **prohibit** the Corps from proceeding with the Project if:

- (a) The project "will cause or contribute to significant degradation of the waters of the United States;"²¹ or
- (b) A less damaging practicable alternative is available;²² or
- (c) The project fails to adequately minimize and compensate for wetland and other aquatic resource losses;²³ or
- (d) The project evaluation fails to establish that the project will not have unacceptable adverse environmental impacts.²⁴

The TSP is prohibited under each of these mandates.

A. The Project Would Cause or Contribute to Significant Degradation of Waters of the United States

The TSP would cause and contribute to significant degradation of waters of the United States. Under the 404(b)(1) Guidelines, effects that contribute to significant degradation include:

- Significantly adverse effects of the discharge of pollutants on human health or welfare, including but not limited to effects on . . . fish, shellfish, wildlife, and special aquatic sites;

²⁰ 33 U.S.C. § 1323; 33 C.F.R. § 336.1(a).

²¹ 40 C.F.R. § 231.10(c).

²² 40 C.F.R. § 230.10(a).

²³ See 40 C.F.R. 230.10(a)–(d).

²⁴ 40 C.F.R. § 230.1(c).

- Significantly adverse effects of the discharge of pollutants on life stages of aquatic life and other wildlife dependent on aquatic ecosystems;
- Significantly adverse effects of the discharge of pollutants on aquatic ecosystem diversity, productivity, and stability. Such effects may include, but are not limited to, loss of fish and wildlife habitat or loss of the capacity of a wetland to assimilate nutrients, purify water, or reduce wave energy; or
- Significantly adverse effects of discharge of pollutants on recreational, aesthetic, and economic values.²⁵

As discussed above, the adverse impacts of the Project are so dire that they unquestionably would cause or contribute to significant degradation of the nation's waters. The TSP would cause significant and severe impacts to virtually every factor identified above and would cause unacceptable adverse impacts to fish and wildlife habitat and special aquatic sites, including wetlands.

Because it would cause or contribute to significant degradation of the nation's waters, the TSP is prohibited by the 404(b)(1) Guidelines.

B. Less Damaging, Practicable Alternatives Are Available

The assessment and evaluation of the existence of less damaging reasonably practicable alternatives may not be constrained by the existence of a Congressionally authorized plan. To the contrary, to comply with the Clean Water Act an evaluation of reasonably practicable alternatives must include a review of alternatives outside of the jurisdiction of the Corps, including alternatives that are outside of the scope of a Congressionally authorized project.²⁶ The Corps' limited analysis of less damaging alternatives is fundamentally flawed. The Corps relied on flawed cost and economic analyses as the sole basis for eliminating most of the low impact solutions it considered. The many problems with the Corps' economic analysis are discussed in Section VII.D. of these comments. The Corps also failed to evaluate a number of important and viable low impact alternatives at all.

In addition to these problems, when the Corps did look at alternatives in combination, the Corps typically combined less costly alternatives with more costly alternatives (e.g., road elevations, ring levees, etc) raising the cost of the combined alternatives. The Corps improperly rejected the crop conversion alternatives (agriculture to silviculture, and conversion flood tolerant crops) on the basis of the cost of enrolling lands in the WRP program. This is entirely inappropriate as: (1) the costs of enrolling in WRP are completely unrelated to the costs of conversion to an alternative flood tolerant crop; and (2) WRP lands cannot be utilized to produce crops that can be sold in the marketplace. Crop conversion alternatives would result in the production of crops or trees that can be sold for a profit which would fundamentally alter the benefit cost analysis for such alternatives. Because of these and

²⁵ 40 C.F.R. § 230.10(c).

²⁶ E.g., 40 C.F.R. § 230.2(a)(2) (the 404(b)(1) Guidelines are applicable to the Corps' civil works program); 40 C.F.R. § 230.10(a)(2) (an "alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes. If it is otherwise a practicable alternative, an area not presently owned by the applicant which could reasonably be obtained, utilized, expanded or managed in order to fulfill the basic purpose of the proposed activity may be considered."). As discussed in Section IV.B. and VII.C. of these comments, NEPA also requires the Corps to rigorously evaluate all reasonable alternatives, including those outside of the Corps' jurisdiction.

many other problems, the Corps' alternatives analysis is inadequate to determine whether less damaging practicable alternatives are available.

The activities outlined below, either individually or in combination, constitute reasonably practicable alternatives that would provide extensive flood damage reduction benefits while also protecting the environment and providing benefits to the public at large. While the Corps included a cursory review of a small number of these activities in the DEIS, it failed to consider or evaluate most of these activities and failed to consider any alternatives that included a combination of some or all of these activities:

1. Purchase of additional flowage easements in the New Madrid Floodway and/or modification of the terms of existing flowage easements to provide a more meaningful degree of compensation for smaller floods – the Federal Government currently owns flowage easements on at least 111,840 acres of land in the New Madrid Floodway;²⁷
2. Purchase of perpetual conservation easements on both cleared and forested lands in the Project area;
3. Accelerated use of Wetlands Reserve and Conservation Reserve Programs in the Project area;
4. Floodplain and wetland restoration in the Project area;
5. Creation and/or expansion of fish and wildlife refuges in the Project area;
6. Reintroduction of historic Mississippi River backwater flows into Big Oak Tree State Park as a project element (or as a stand-alone project) instead of as mitigation;
7. Economic stimulus focused on promoting conversion of existing agriculture to flood tolerant silviculture;
8. Economic stimulus aid for East Prairie;
9. Targeted flood proofing and small scale flood protection projects as necessary to protect East Prairie and other communities or structures at risk from flooding, including targeted elevation of homes, businesses and roads, and voluntary relocation;
10. Sewer and water infrastructure improvements for East Prairie;
11. Water quality monitoring and water quality education;
12. Nutrient trading

In addition to the many alternatives discussed above, reasonably practicable alternatives include the use of flood hazard mitigation options for flood prone structures. Such programs are currently available to the State of Missouri, local communities, and individual residents and businesses in the Project Area. These include programs available under: (a) the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988,²⁸ including the Stafford Act's Hazard Mitigation Grants Program²⁹; (b) the National Flood Insurance Program (NFIP)³⁰, including the NFIP's Flood Mitigation Assistance and Severe

²⁷ By 1942, the Federal government had purchased flowage easements on 106,858 acres of land in the New Madrid Floodway. By 1974, the Federal government had purchased modified flowage easements on 80,982 acres in the New Madrid Floodway, including 76,000 acres that were under the originally purchased easements. Mississippi River Commission Information Paper, *Mississippi River & Tributaries Project: Birds Point-New Madrid Floodway*, at 7, 11. The St. John Levee and Drainage District also appears to own easements covering 57,000 acres within the backwater area. *Id.* at 10.

²⁸ 42 U.S.C. 5121-5207, P.L. 93-288, as amended, particularly through the "Public Assistance Program" and the "Section 404 Hazard Mitigation Grants Program."

²⁹ 42 U.S.C. § 5170c.

³⁰ 42 U.S.C. Chapter 50.

Repetitive Loss Programs³¹; and (c) the Federal Emergency Management Agency's Pre-Disaster Mitigation Program³² (the PDM Program) and Public Assistance program (which is also part of the Stafford Act).

These programs provide funding, both before and after flood disasters, for mitigation of flood risks to residences, businesses, and public facilities (including roads and utilities). The Hazard Mitigation Grants Program provides an additional 15 percent beyond FEMA's total expenditures of Stafford Act disaster assistance grants in any Presidentially-declared disaster (with limitations for costs above \$2 billion per disaster declaration) for investments through the affected State in FEMA-approved hazard mitigation activities. The money is available as a 75 percent grant for generally non-structural hazard mitigation, such as voluntary buyout acquisitions and relocation or demolition of floodprone properties and dedication of related lands to permanent open space condition, and elevation and/or floodproofing of structures.

In addition, all FEMA flood insurance policies include an "Increased Cost of Construction" insurance rider that provides up to \$30,000 of coverage that can be used for post-flood building elevations or otherwise for bringing buildings up to current code requirements and elevation standards. Funds paid out under this insurance rider provide substantial funding that can be applied directly as the non-Federal match for hazard mitigation costs to elevate properties at least to the base flood elevation (1 percent chance annual flood).

The State of Missouri has had important successes in utilizing buyouts and relocations to protect communities and avoid flood damages.³³ The state also recently adopted a new State Hazard Mitigation Plan that highlights the high priority that Missouri places on the state's voluntary buyout program.³⁴ The new Hazard Mitigation Plan makes **no** mention of constructing new levees to protect agricultural lands, but instead talks extensively about the dangers of levee failures and overtoppings.

³¹ 42 U.S.C. § 4104c.

³² FEMA's PDM Program was added to the Stafford Act (42 U.S.C. 5165) in 2000, enacted under section 104 of the Disaster Mitigation Act of 2000 as amended, P.L. 106-390.

³³ Missouri State Emergency Management Agency, *Stemming the Tide of Flood Losses* (available at <http://sema.dps.mo.gov/docs/publications/stemming.pdf> last visited November 11, 2013); Missouri State Emergency Management Agency, *Out of Harm's Way: The Missouri Buyout Program*, 1995, p.5. FEMA realized a 99 percent savings from the Missouri Buyout Program in St. Charles, Co., MO, when in May, 1995, less than two years after the 1993 Great Midwest Flood (which in 1993 cost FEMA \$26 million), the St. Charles County buyout area was again subject to major flooding.

³⁴ Missouri State Hazard Mitigation Plan July 2013 (available at http://sema.dps.mo.gov/docs/programs/Logistics,%20Resources,%20Mitigation%20&%20Floodplain/mitigation/M_O_Hazard_Mitigation_Plan_2013.pdf last visited November 11, 2013) ("Missouri's voluntary flood buyout program was established after the Great Flood of 1993. Since then, over 4,500 primary residences have been acquired, which allows households in flood-prone areas to voluntarily relocate out of harm's way. The acquired properties are then placed in public ownership with deed restrictions that ensure that future use of that land will not put people and property at risk to flooding disasters. The buyout program uses a mixture of funds sources, including the Hazard Mitigation Assistance grants, Public Assistance, Community Development Block Grant Program, and some financial assistance from The Salvation Army and the Interfaith Disaster Response funds. The Community Buyout Program was recognized as a model for the nation following the devastating 1993 floods. Local communities throughout the State have continued this program by using their own funds to acquire flood-prone properties. Because of the success of this program, acquisition of flood-prone structures continues to be a priority for hazard mitigation funding in the State and in particular, the acquisition of repetitive loss structures under NFIP.")

Because less damaging, practicable alternatives are available, the TSP is prohibited by the 404(b)(1) Guidelines.

C. The Project Fails To – And Cannot – Adequately Minimize and Compensate for the Wetland and River-Floodplain Connectivity Losses Caused by the Project

The adverse environmental impacts of all projects not otherwise prohibited by the 404(b)(1) Guidelines must be minimized to the maximum extent practicable. To this end, impacts must first be avoided if at all possible. Impacts that cannot be avoided are to be minimized by modifying the project. If modification is not possible, the impact is to be rectified by restoring the environment.³⁵

As discussed throughout these comments, the TSP is so environmentally destructive that it is prohibited under the 404(b)(1) Guidelines and should not be recommended or constructed by the Corps. The Corps has also not taken the steps needed to avoid, minimize and mitigate for the adverse impacts of the Project. For example, as discussed above, the Corps could avoid all adverse impacts of this project by selecting an alternative that consists of one or more wholly non-structural activities, or an alternative that consists of a combination of nonstructural and restoration activities, to reduce flood damages.

The Corps also has not minimized the impacts of this project. It could have done this by selecting a less damaging operating regime (we note, however, that even a less damaging operating regime would produce so much harm that the Project would be prohibited under the 404(b)(1) Guidelines). The Corps has also ignored important Fish and Wildlife Service recommendations that would help minimize the adverse impacts of the Project. To minimize the adverse impacts, the Corps should, at a minimum, adopt the recommendations set forth at pages 50 through 53 of the July 2013 Draft Fish and Wildlife Coordination Act Report found in Appendix Q Part 1. Should the Corps opt to proceed with recommending the TSP or a variation of the TSP in its final EIS, the Corps should also adopt any additional recommendations for minimizing impacts included in the final Fish and Wildlife Coordination Act report and such recommendations included in the comments submitted by any other federal or state agencies, independent experts, and members of the public.

Finally, as is discussed in detail in Section V of these comments, the compensatory mitigation proposed by the Corps is woefully inadequate and the mitigation “plan” contained in the DEIS fails to comply with fundamental legal requirements. Critically, federal and state agencies and experts have all concluded that the adverse impacts of the Project cannot be mitigated.

Because the Corps has failed to – and cannot – adequately minimize and compensate for the adverse impacts that the Project would cause to the nation’s waters, the TSP is prohibited by the 404(b)(1) Guidelines.

D. The Corps Has Not Carried Out the Review Necessary to Demonstrate that the Project Will Not Have Unacceptable Adverse Environmental Impacts

It is a “fundamental precept” of the 404(b)(1) Guidelines that “fill material should not be discharged into the aquatic ecosystem, unless it can be demonstrated that such a discharge will not have an

³⁵ 40 C.F.R. § 230.10(d).

unacceptable adverse impact either individually or in combination with known and/or probable impacts of other activities affecting the ecosystems of concern.” 40 C.F.R. § 230.1(c). To make this assessment, the Corps must:

- Determine “the nature and degree of effect that the proposed discharge will have, both individually and cumulatively, on the structure and function of the aquatic ecosystem and organisms.” 40 C.F.R. § 230.11(e).
- “Determine the nature and degree of effect that the proposed discharge will have, individually and cumulatively” on a number of factors, including “water, current patterns, circulation including downstream flows, and normal water fluctuation” and “the structure and function of the aquatic ecosystem and organisms.” 40 C.F.R. § 230.11(b) and (e).
- Consider secondary impacts, which are “effects on an aquatic ecosystem that are associated with a discharge of dredged or fill materials, but do not result from the actual placement of the dredged or fill material.” 40 C.F.R. § 230.11(h).
- Consider the impacts described in 40 C.F.R. § 230.10(c) to determine whether the project would cause or contribute to significant degradation of the waters of the United States, and would thus be prohibited.³⁶

As discussed throughout these comments and in the November 18, 2013 Comments by the Department of the Interior,³⁷ the Corps has not properly carried out these necessary evaluations, and has not accounted for the full range of aquatic impacts. For example, the DEIS fails to evaluate the impacts to wetlands and fish and wildlife from hydrologic changes above the 5 year floodplain.³⁸ “This ignores effects to thousands of acres of wetlands that will have reduced inundation as a result of the project.”³⁹ The Department of the Interior “has consistently” told the Corps that the Hydrogeomorphic Method (HGM) that is used “did not include all of the potentially affected wetlands” and that the model is “insensitive to hydrological changes and other important factors.”⁴⁰ The Department of the Interior has also concluded that the DEIS “does not account for forested wetlands that will be lost as a result of being cleared due to post-project drainage and agricultural conversion” because the Corps has restricted “its evaluation to the construction footprint and does not include the reasonably foreseeable indirect effects to forested wetlands caused by the changes in land use and hydrologic changes.”⁴¹

Because the Corps has not carried out the review necessary to demonstrate that the Project will not have unacceptable adverse environmental impacts, the TSP is prohibited by the 404(b)(1) Guidelines.

³⁶ These impacts are discussed in Section IV.A. of these comments.

³⁷ November 18, 2013 Letter from the Office of Environmental Policy and Compliance, U.S. Department of the Interior to Col. Jeffery A. Anderson, Commander, Memphis District, U.S. Army Corps of Engineers (emphasis added).

³⁸ The Conservation Organizations also note that while the Corps has not evaluated impacts above the 5-year floodplain it has claimed benefits above the 5-year floodplain, including for example, claiming 22% of Project benefits for avoiding the need to elevate Interstate 55, which the DEIS states is not affected by flooding until a 10 year flood and with sandbagging and other efforts can be kept open through at least a 50 year flood. See DEIS at 8-9, and Section VII.D. of these comments.

³⁹ *Id.* at Specific Comments page 6.

⁴⁰ *Id.* at cover letter page 2.

⁴¹ *Id.* at Specific Comments page 11.

E. The Project Conflicts with the Requirements of Section 10 of the Rivers and Harbors Act

Under Section 313 of the Clean Water Act, Corps projects are also subject to § 10 of the Rivers and Harbors Appropriation Act of 1899, 33 U.S.C § 403. Section 10 requires Corps authorization for filling activity or other modifications of navigable waters, such as this project on the Mississippi River. The Corps relies on a single, consolidated set of regulations to delineate permit requirements for § 10 and CWA § 404 permits.⁴² Although § 10 permits do not have to comply with the § 404(b)(1) Guidelines, they must withstand a public interest review that requires a balancing of economic goals and impacts on “wetlands”, “fish and wildlife values”, and “floodplain values”.⁴³

The TSP is prohibited under the regulatory requirements of § 10 of the Rivers and Harbors Act because the significant and unacceptable adverse impacts to wetlands, fish and wildlife values, and floodplain values vastly outweighs any potential economic gains. As a result, the project is not in the public interest as defined by applicable regulations.

V. The Proposed Mitigation is Scientifically Unsound and Legally Inadequate

There is overwhelming consensus that the significant adverse impacts of this project simply cannot be mitigated. Outside experts have also concluded that the mitigation that has been proposed is both scientifically unsound and environmentally damaging. Finally, it is undeniably clear that both the mitigation and mitigation “plan” proposed by the Corps in the DEIS fail to comply with longstanding statutory and regulatory requirements.

A. The Significant Adverse Impacts of the Project Cannot Be Mitigated

As discussed in Sections II, V, and VII of these comments, there is overwhelming consensus that the significant adverse impacts of the TSP cannot be mitigated. For example:

- The Department of the Interior has concluded that “[a]ltering the hydrologic regime of the floodway produces a suite of complex and unsolvable challenges in providing adequate mitigation for the wetland, fishery, and floodplain impacts.”⁴⁴ Mitigation plans for the project “are at odds with contemporary understanding of wetland and floodplain science and agency mitigation guidance.”⁴⁵
- The Fish and Wildlife Service has concluded that the project “would essentially eliminate a unique landscape and ecological feature in southeast Missouri and result in loss of thousands of acres of wetlands and their connection to the Mississippi River that cannot be adequately mitigated.”⁴⁶ Moreover, the Service “is unaware of any feasible mitigation techniques that can

⁴² 33 C.F.R. pts 320-330.

⁴³ 33 C.F.R. § 320.4.

⁴⁴ 2011 Department of the Interior Letter.

⁴⁵ 2011 Department of the Interior Letter.

⁴⁶ July 2013 Draft Fish and Wildlife Coordination Act Report at vi-vii, DEIS Appendix Q Part 1.

provide in-kind replacement to offset the permanent loss of this habitat and associated ecological processes.”⁴⁷

- The Missouri Department of Conservation has concluded that “[c]onnectivity between the Mississippi River and the floodplain provides important ecological interactions” and “this loss cannot be mitigated.”⁴⁸
- Dr. Joy Zedler, a renowned wetland mitigation expert has concluded that the Corps’ mitigation “should itself be viewed as harmful” and “cannot offset the impacts of this project.”⁴⁹ The Corps’ claim that the proposed mitigation “fully offsets project impacts on aquatic resources is completely inconsistent with scientific understanding of wetland functioning, wetland replacement, wetland restoration, and mitigation of other aquatic areas, as well as inconsistent with established practice under the Section 404 program.”⁵⁰

B. The Mitigation for the Project Is Fundamentally the Same as the Mitigation That Has Already Been Struck Down by the Courts

One of the striking features of the succession of the different environmental impact statements for this Project, including the DEIS, is that the general types and quantity of mitigation continue not to change despite the fundamental flaws showed in the previous mitigation.

- In the first two rounds of environmental impact statements, including the one completed in 2002, the mitigation was roughly 9,000 acres of which 8,375 were reforestation lands. In court, conservationists demonstrated among other things that the calculation of this 8,375 acres of total inundation was based on a math error. In fact, the calculation required that this many acres be flooded on average every day during the fish-midseason (*i.e.*, 8,375 average daily flooded acres). For example, if a typical acre of mitigation were flooded 25 percent of the time in the midseason, the true mitigation required was 33,500 acres of reforestation. After conceding the error, the Justice Department compelled the Corps to withdraw the EIS.
- The next round of EIS came up with almost exactly the same total mitigation. It conceded that virtually all the reforestation areas would be dry most of the time and would collectively produce less than 10 percent of the needed mitigation. The overwhelming bulk of the mitigation was then declared to be provided by the sump area, which would be managed to be flooded a little longer, and as a result was called a “permanent water body” even though it would still be only seasonally flooded and in fact only modestly more flooded than otherwise. (The management would also further restrict fish access). That plan was struck down by the District Court as arbitrary and capricious.

⁴⁷ 2006 FWCA Report.

⁴⁸ December 15, 2001 Letter from Jerry Conley, Director Missouri Department of Conservation to Colonel Scherer, Memphis District Engineer, U.S. Army Corps of Engineers.

⁴⁹ January 2006 Report of Dr. Joy Zedler on the Mitigation Proposal for the St. Johns Bayou/New Madrid Floodway Project at 3, 5, 7 (2006 Zedler Report). Dr. Zedler is a Professor of Botany and Aldo Leopold Chair in Restoration Ecology at the University of Wisconsin. Dr. Zedler chaired the National Research Council Panel on *Compensating for Wetland Losses Under the Clean Water Act*.

⁵⁰ 2013 Zedler Report; 2006 Zedler Report (the conclusions in the 2006 Zedler Report remain valid as the Corps fundamental approach to mitigation for this project has not changed).

- The DEIS nevertheless still comes up with roughly the same 9,000 acres of mitigation. In this case, it does so largely by declaring that mitigation previously either in the plan or rejected would now produce vast quantities of habitat.
 - For example, Big Oak Tree State Park is supposed to provide roughly half of all fish habitat mitigation for the New Madrid Floodway although earlier versions of the EIS conceded that fish access was problematic and should not be counted. Nothing has changed technically to alter that problem.
 - Batture lands are to provide most of the remaining fish habitat although previous versions of the EIS only had modest plans for batture lands, conceding that most would not provide suitable habitat.
 - The value of floodplain lakes is recalculated in ways that minimize the impacts of the project and greatly exaggerate the benefits of mitigation, so much so that a few hundred acres of mitigation are claimed to more than offset the impacts on more than 7,000 acres of seasonally flooded forest and tens of thousands of acres of flooded agricultural lands and farmed wetlands.
 - Shorebird mitigation is now to be provided by claiming benefits for 10 Mile Pond, a conservation area that has long existed and that the Corps never claimed benefits for in the past.
 - The waterfowl calculation previously made an even larger error than the fish math error. That has been addressed in effect by dramatically reducing the estimated value of flooded agricultural land (even though it could easily produce corn and have very large values over the 50 year time period of the project), and by altering the hydrologic measure such that reduced flooding duration counts very little.

The very fact that the Corps never claimed these kinds of benefits from already proposed and possible mitigation sites by itself should cast serious doubts on the new claims of benefits. The Reports by Dr. Joy Zedler, Dr. Bruce Dugger and Dr. Richard Sparks, summarized below, explain why these new forms of mitigation do not produce the mitigation claimed. These reports also demonstrate that the Project will in fact have unacceptable adverse effects on fishery areas (including spawning and breeding areas) and wildlife, making the Project appropriate for a 404(c) veto.⁵¹

C. The Proposed Mitigation is Insufficient as a Matter of Law

Corps water projects must comply with two sets of mitigation standards. The Corps must meet the statutory mitigation requirements established specifically for Corps projects in the Water Resources Development Acts, and the Corps must meet the mitigation requirements of the Clean Water Act Section 404 program, including those established in 33 C.F.R. Part 332. The mitigation proposed in the DEIS fails utterly to comply with these requirements.

The Water Resources Development Acts establish minimum standards for civil works project mitigation, establish timing requirements for the implementation of mitigation, define the elements that must be included in mitigation plans, require the Corps to monitor civil works mitigation until ecological success is achieved, and require the Corps to consult yearly with state and federal resource agencies on the

⁵¹ Clean Water Act § 404(c), 33 U.S.C. § 1344(c).

progress being made for each civil works mitigation plan.⁵² Since enactment of the Water Resources Development Act of 2007, these mitigation mandates must be satisfied for all new and ongoing Corps project studies, and must be satisfied anytime the Corps prepares a supplemental environmental impact statement or reevaluation of a project that has already been authorized for construction.⁵³ As a result, these mitigation requirements must be met for the Project.

Mitigation Requirements Established Under the Water Resources Development Acts

The Water Resources Development Acts establish specific mitigation requirements for Corps civil works projects. Harm to bottomland hardwood forests from Corps civil works project must be mitigated in-kind, and harm to other habitat types must be mitigated “to not less than in-kind conditions, to the extent possible.”⁵⁴

Mitigation lands for Corps civil works projects must be purchased before any construction begins.⁵⁵ Any physical construction required for purposes of mitigation should also be undertaken prior to project construction but must, at the latest, be undertaken “concurrently with the physical construction of such project.”⁵⁶

Corps mitigation must be monitored until the monitoring demonstrates that the ecological success criteria established in the mitigation plan have been met. The Corps is also required to consult yearly on each project with the appropriate Federal agencies and the states on the status of the mitigation efforts. The consultation must address the status of ecological success on the date of the consultation, the likelihood that the ecological success criteria will be met, the projected timeline for achieving that success, and any recommendations for improving the likelihood of success.⁵⁷

The mitigation plan requirements established by the Water Resources Development Act of 2007 are discussed below.

Mitigation Requirements Established Under the Clean Water Act

Specific compensatory mitigation requirements under the Clean Water Act are set forth at 33 C.F.R. Part 332. These rules impose the following **additional** requirements on mitigation for Corps civil works projects:

1. Mitigation must compensate for the aquatic resource functions that will be lost to the project, and “must be commensurate with the amount and type of impact” caused by the

⁵² WRDA 2007 § 2036. These provisions have been codified at 33 U.S.C. §§ 2283, 2283a, and 2317b.

⁵³ 33 U.S.C. § 2283(d)(1)(“the Secretary shall not submit any proposal for the authorization of any water resources project to Congress in any report, **and shall not select a project alternative in any report, unless such report contains** (A) a recommendation with a **specific plan** to mitigate fish and wildlife losses created by such project”)(emphasis added).

⁵⁴ 33 U.S.C. § 2283(d).

⁵⁵ 33 USC § 2283(a)(“mitigation, including acquisition of the lands or interests” needed to carry out mitigation “shall be undertaken or acquired before any construction of the project . . . commences, or . . . shall be undertaken or acquired concurrently with lands and interest in lands for project purposes . . . except that physical construction required for the purposes of mitigation may be undertaken concurrently with the physical construction of such project.”)

⁵⁶ *Id.*

⁵⁷ 33 U.S.C. § 2283(d).

- project.⁵⁸ Mitigation also “should provide, where practicable, the suite of functions typically provided by the affected aquatic resource.”⁵⁹
2. The mitigation “project site must be ecologically suitable for providing the desired aquatic resource functions.” In determining the ecological suitability of the compensatory mitigation site, the Corps “must consider, to the extent practicable”: the hydrological conditions, soil characteristics, and other physical and chemical characteristics; watershed-scale features including aquatic habitat diversity and habitat connectivity; and the size and location of the compensatory mitigation site relative to hydrologic sources (including the availability of water rights) and other ecological features.⁶⁰
 3. Mitigation should be in kind if possible and where out of kind mitigation is utilized, the record must explain why.⁶¹
 4. The Corps “must require a mitigation ratio greater than one-to-one where necessary to account for the method of compensatory mitigation (e.g., preservation), the likelihood of success, differences between the functions lost at the impact site and the functions expected to be produced by the compensatory mitigation project, temporal losses of aquatic resource functions, the difficulty of restoring or establishing the desired aquatic resource type and functions, and/or the distance between the affected aquatic resource and the compensation site. The rationale for the required replacement ratio must be documented in the administrative record for the permit action.”⁶²
 5. Preservation can only be used to provide compensatory mitigation when all the following criteria are met: “(i) The resources to be preserved provide important physical, chemical, or biological functions for the watershed; (ii) The resources to be preserved contribute significantly to the ecological sustainability of the watershed. In determining the contribution of those resources to the ecological sustainability of the watershed, the district engineer must use appropriate quantitative assessment tools, where available; (iii) Preservation is determined by the district engineer to be appropriate and practicable; (iv) The resources are under threat of destruction or adverse modifications; and (v) The preserved site will be permanently protected through an appropriate real estate or other legal instrument (e.g., easement, title transfer to state resource agency or land trust).”⁶³
 6. “The aquatic habitats, riparian areas, buffers, and uplands that comprise the overall compensatory mitigation project must be provided long-term protection through real estate instruments or other available mechanisms, as appropriate.”⁶⁴
 7. The compensatory mitigation requirements must be clearly stated and include special conditions that “must be enforceable.” The special conditions must: “(i) Identify the party responsible for providing the compensatory mitigation; (ii) Incorporate, by reference, the final mitigation plan approved by the district engineer; (iii) State the objectives, performance standards, and monitoring required for the compensatory mitigation project, unless they are provided in the approved final mitigation plan; and (iv) Describe any required financial assurances or long-term management provisions for the compensatory

⁵⁸ 33 C.F.R. § 332.3(a).

⁵⁹ 33 C.F.R. § 332.3(c).

⁶⁰ 33 C.F.R. § 332.3(d).

⁶¹ 33 C.F.R. § 332.3(e).

⁶² 33 C.F.R. § 332.3(f).

⁶³ 33 C.F.R. § 332.3(h).

⁶⁴ 33 C.F.R. § 332.7(a).

- mitigation project, unless they are specified in the approved final mitigation plan....”⁶⁵ “The special conditions must clearly indicate the party or parties responsible for the implementation, performance, and longterm management of the compensatory mitigation project.”⁶⁶
8. To the maximum extent practicable, compensatory mitigation must be implemented “in advance of or concurrent with the activity” causing the impacts. “The district engineer shall require, to the extent appropriate and practicable, additional compensatory mitigation to offset temporal losses of aquatic functions that will result from the permitted activity.”⁶⁷
 9. The district engineer shall require sufficient financial assurances to ensure a high level of confidence that the compensatory mitigation project will be successfully completed, in accordance with applicable performance standards.”⁶⁸
 10. “For compensatory mitigation projects on public lands, where federal facility management plans or integrated natural resources management plans are used to provide long-term protection, and changes in statute, regulation, or agency needs or mission results in an incompatible use on public lands originally set aside for compensatory mitigation, the public agency authorizing the incompatible use is responsible for providing alternative compensatory mitigation that is acceptable to the district engineer for any loss in functions resulting from the incompatible use.”⁶⁹

Importantly, these mitigation requirements also make it clear that compensatory mitigation projects should be designed to be self-sustaining and should minimize the use of pumps and other active engineering features:

“Compensatory mitigation projects shall be designed, to the maximum extent practicable, to be self-sustaining once performance standards have been achieved. This includes minimization of active engineering features (e.g., pumps) and appropriate siting to ensure that natural hydrology and landscape context will support long-term sustainability. Where active long-term management and maintenance are necessary to ensure long-term sustainability (e.g., prescribed burning, invasive species control, maintenance of water control structures, easement enforcement), the responsible party must provide for such management and maintenance. This includes the provision of long-term financing mechanisms where necessary....”⁷⁰

The mitigation plan requirements established under the Clean Water Act are discussed below.

As specifically set forth specifically in the attached Reports by Dr. Joy Zedler, Dr. Bruce Dugger and Dr. Richard Sparks (and as summarized in Section VII of these comments) the mitigation proposed in the DEIS will **not** mitigate the impacts of the Project and will **not** produce the habitat and other values claimed in the DEIS. The content of each of these Reports is incorporated by reference into these comments as though fully set forth herein.

⁶⁵ 33 C.F.R. § 332.3(k).

⁶⁶ 33 C.F.R. § 332.3(l).

⁶⁷ 33 C.F.R. § 332.3(m).

⁶⁸ 33 C.F.R. § 332.3(n).

⁶⁹ 33 C.F.R. § 332.7(a).

⁷⁰ 33 C.F.R. § 332.7(b).

The Department of the Interior also identifies the following problems with the proposed mitigation for Big Oak Tree State Park:

As described, the proposed mitigation [for Big Oak Tree State Park] appears mischaracterized in the DEIS and is likely infeasible. MDNR staff has indicated the proposed restoration project, if successful, would only offset effects to the park from construction of the Floodway closure and pumping stations and it would not compensate for resource losses outside the park. In addition, because the park sits in a depression, acquisition of a minimum of 1800 acres (the rest of the depression) immediately adjacent to the park is necessary for a functional restoration project. Without it, MDNR staff notes the project would not be implementable. As pointed out previously, and as this document notes, the desire of landowners in the project area is agricultural intensification. Given increased post-project drainage coupled with high commodity prices, purchase of these lands is unlikely. Moreover, a gravity fed culvert/water delivery system should not be characterized as mimicking natural riverine flooding.”⁷¹

In addition, to these many failings – including proposing an insufficient amount of mitigation, inappropriate types of mitigation, and over-engineered mitigation – the DEIS also fails to comply with the requirement that mitigation lands for Corps civil works projects must be purchased before any construction begins.⁷² The DEIS explicitly states that mitigation “would progress concurrent with construction of flood control features” including the purchase of mitigation lands.⁷³ However, mitigation lands must be acquired prior to or concurrently with purchase of lands for Project purposes. Only actual physical construction required for purposes of mitigation may be undertaken “concurrently with the physical construction of such project.”⁷⁴

We also note that the DEIS fails to address any uncertainties associated with the proposed mitigation. As aptly noted by the Department of the Interior:

“The DEIS does not adequately address the uncertainties of the proposed mitigation. Without knowing the specific locations of mitigation tracts, or even general locations, the Corps cannot assure the public that such lands are available or are available in an appropriate mix to provide the functions/compensation needed. Without identifying the true costs associated with land acquisition, restoration, operation, maintenance, and potential remediation; it is not possible to determine if the costs identified are credible or that monitoring/adaptive management of those lands will occur.”

⁷¹ November 18, 2013 Letter from the Office of Environmental Policy and Compliance, U.S. Department of the Interior to Col. Jeffery A. Anderson, Commander, Memphis District, U.S. Army Corps of Engineers.

⁷² 33 USC § 2283(a)(“mitigation, including acquisition of the lands or interests” needed to carry out mitigation “shall be undertaken or acquired before any construction of the project . . . commences, or . . . shall be undertaken or acquired concurrently with lands and interest in lands for project purposes . . . except that physical construction required for the purposes of mitigation may be undertaken concurrently with the physical construction of such project.”)

⁷³ DEIS at 252, 265-266 (Because the undertaking will be long and complex, and will be coordinated with the Inter-Agency Team, USACE will build flexibility and adaptability into the process to, among other things adjust to changes in the willingness of prospective sellers to convey property to the Government. **Therefore, landowners would be periodically surveyed on their amenability to sell mitigation land.”**)(emphasis added).

⁷⁴ 33 USC § 2283(a).

“It has been shown that wetland compensation has historically underperformed (Moreno-Mateos et al., 2012) and the Adaptive Management Program does not include details regarding actions that will be taken to rectify mitigation measures that do not work.”⁷⁵

D. The Mitigation “Plan” is Insufficient as a Matter of Law

In addition to meeting the mitigation requirements discussed above, the Corps must also comply with the mitigation plan requirements established by the Water Resources Development Acts and the mitigation plan requirements of the Clean Water Act, including those established in 33 C.F.R. Part 332. The mitigation plan in the DEIS fails utterly to comply with these statutory and regulatory requirements.

Water Resources Development Act Mitigation Plan Requirements

As a matter of law, the DEIS must include a “specific plan to mitigate fish and wildlife losses created” by the Project that must include the following information⁷⁶:

1. The type, amount, and characteristics of the habitat being restored, a description of the physical actions to be taken to carry out the restoration, and the functions and values that will be achieved;
2. The ecological success criteria, based on replacement of lost functions and values, that will be evaluated and used to determine mitigation success;
3. A description of the lands and interest in lands to be acquired for mitigation, and the basis for determining that those lands will be available;
4. A mitigation monitoring plan that includes the cost and duration of monitoring, and identifies the entities responsible for monitoring if it is practicable to do so (if the responsible entity is not identified in the monitoring plan it must be identified in the project partnership agreement that is required for all Corps projects). Corps mitigation must be monitored until the monitoring demonstrates that the ecological success criteria established in the mitigation plan have been met; and
5. A contingency plan for taking corrective action in cases where monitoring shows that mitigation is not achieving ecological success as defined in the plan.⁷⁷

Clean Water Act Section 404 Mitigation Plan Requirements

Pursuant to the Clean Water Act regulatory requirements of 33 C.F.R. Part 332, Corps civil works mitigation plans must also provide a level of detail “commensurate with the scale and scope of the impacts”⁷⁸ and include the following information:

1. “A description of the resource type(s) and amount(s) that will be provided, the method of ecoregion, physiographic province, or other geographic area of interest.”⁷⁹
2. “A description of the factors considered during the site selection process. This should include consideration of watershed needs, onsite alternatives where applicable, and the practicability of accomplishing ecologically self-sustaining aquatic resource restoration,

⁷⁵ November 18, 2013 Letter from the Office of Environmental Policy and Compliance, U.S. Department of the Interior to Col. Jeffery A. Anderson, Commander, Memphis District, U.S. Army Corps of Engineers.

⁷⁶ 33 U.S.C. § 2283(d).

⁷⁷ 33 U.S.C. § 2283(d)(3).

⁷⁸ 33 C.F.R. 332.4(c).

⁷⁹ 33 C.F.R. § 332.4(c)(2).

- establishment, enhancement, and/or preservation at the compensatory mitigation project site.”⁸⁰
3. “A description of the legal arrangements and instrument, including site ownership, that will be used to ensure the long-term protection of the compensatory mitigation project site.”⁸¹
 4. “A description of the ecological characteristics of the proposed compensatory mitigation project site This may include descriptions of historic and existing plant communities, historic and existing hydrology, soil conditions, a map showing the locations of the impact and mitigation site(s) or the geographic coordinates for those site(s), and other site characteristics appropriate to the type of resource proposed as compensation. The baseline information should also include a delineation of waters of the United States on the proposed compensatory mitigation project site.”⁸²
 5. “A description of the number of credits to be provided, including a brief explanation of the rationale for this determination,” including “an explanation of how the compensatory mitigation project will provide the required compensation for unavoidable impacts to aquatic resources resulting from the permitted activity.”⁸³
 6. “Detailed written specifications and work descriptions for the compensatory mitigation project, including, but not limited to, the geographic boundaries of the project; construction methods, timing, and sequence; source(s) of water, including connections to existing waters and uplands; methods for establishing the desired plant community; plans to control invasive plant species; the proposed grading plan, including elevations and slopes of the substrate; soil management; and erosion control measures.”⁸⁴
 7. “A description and schedule of maintenance requirements to ensure the continued viability of the resource once initial construction is completed.”⁸⁵
 8. “Ecologically-based standards that will be used to determine whether the compensatory mitigation project is achieving its objectives.”⁸⁶
 9. “A description of parameters to be monitored in order to determine if the compensatory mitigation project is on track to meet performance standards and if adaptive management is needed. A schedule for monitoring and reporting on monitoring results to the district engineer must be included.”⁸⁷ The mitigation plan must provide for a monitoring period that is sufficient to demonstrate that the compensatory mitigation project has met performance standards, but not less than five years. A longer monitoring period must be required for aquatic resources with slow development rates (e.g., forested wetlands, bogs).⁸⁸
 10. “A description of how the compensatory mitigation project will be managed after performance standards have been achieved to ensure the long-term sustainability of the resource, including long-term financing mechanisms and the party responsible for long-term management.”⁸⁹

⁸⁰ 33 C.F.R. § 332.4(c)(3).

⁸¹ 33 C.F.R. § 332.4(c)(4).

⁸² 33 C.F.R. § 332.4(c)(5).

⁸³ 33 C.F.R. § 332.4(c)(6).

⁸⁴ 33 C.F.R. § 332.4(c)(7).

⁸⁵ 33 C.F.R. § 332.4(c)(8).

⁸⁶ 33 C.F.R. § 332.4(c)(9).

⁸⁷ 33 C.F.R. § 332.4(c)(10).

⁸⁸ 33 C.F.R. § 332.6.

⁸⁹ 33 C.F.R. § 332.4(c)(11).

11. “A management strategy to address unforeseen changes in site conditions or other components of the compensatory mitigation project, including the party or parties responsible for implementing adaptive management measures. The adaptive management plan will guide decisions for revising compensatory mitigation plans and implementing measures to address both foreseeable and unforeseen circumstances that adversely affect compensatory mitigation success.”⁹⁰
12. “A description of financial assurances that will be provided and how they are sufficient to ensure a high level of confidence that the compensatory mitigation project will be successfully completed, in accordance with its performance standards.”⁹¹
13. The mitigation plan must provide for a monitoring period that is sufficient to demonstrate that the compensatory mitigation project has met performance standards, but not less than five years. A longer monitoring period must be required for aquatic resources with slow development rates (e.g., forested wetlands, bogs).⁹²
14. The compensatory mitigation requirements must be clearly stated and include special conditions that “must be enforceable.” The special conditions must: “(i) Identify the party responsible for providing the compensatory mitigation; (ii) Incorporate, by reference, the final mitigation plan approved by the district engineer; (iii) State the objectives, performance standards, and monitoring required for the compensatory mitigation project, unless they are provided in the approved final mitigation plan; and (iv) Describe any required financial assurances or long-term management provisions for the compensatory mitigation project, unless they are specified in the approved final mitigation plan....”⁹³ “The special conditions must clearly indicate the party or parties responsible for the implementation, performance, and longterm management of the compensatory mitigation project.”⁹⁴
15. “The real estate instrument, management plan, or other mechanism providing long-term protection of the compensatory mitigation site must, to the extent appropriate and practicable, prohibit incompatible uses (e.g., clear cutting or mineral extraction) that might otherwise jeopardize the objectives of the compensatory mitigation project.”⁹⁵

A key element of a legally adequate mitigation plan is the inclusion of ecological performance standards for assessing whether the mitigation is achieving its objectives:

“Performance standards should relate to the objectives of the compensatory mitigation project, so that the project can be objectively evaluated to determine if it is developing into the desired resource type, providing the expected functions, and attaining any other applicable metrics (e.g., acres).⁹⁶

“Performance standards must be based on attributes that are objective and verifiable. Ecological performance standards must be based on the best available science that can be measured or assessed in a practicable manner. Performance standards may be based on

⁹⁰ 33 C.F.R. § 332.4(c)(12).

⁹¹ 33 C.F.R. § 332.4(c)(13).

⁹² 33 C.F.R. § 332.6.

⁹³ 33 C.F.R. § 332.3(k).

⁹⁴ 33 C.F.R. § 332.3(l).

⁹⁵ 33 C.F.R. § 332.7(a).

⁹⁶ 33 C.F.R. § 332.5(a).

variables or measures of functional capacity described in functional assessment methodologies, measurements of hydrology or other aquatic resource characteristics, and/or comparisons to reference aquatic resources of similar type and landscape position. The use of reference aquatic resources to establish performance standards will help ensure that those performance standards are reasonably achievable, by reflecting the range of variability exhibited by the regional class of aquatic resources as a result of natural processes and anthropogenic disturbances. Performance standards based on measurements of hydrology should take into consideration the hydrologic variability exhibited by reference aquatic resources, especially wetlands. Where practicable, performance standards should take into account the expected stages of the aquatic resource development process, in order to allow early identification of potential problems and appropriate adaptive management.”⁹⁷

The mitigation plan in the DEIS does not comply with these clear and specific requirements. For example, among its many other mitigation plan failings:

- The DEIS fails to provide any specific mitigation plan. Instead it, at best, includes conceptual explanations of plans that will be developed in the future. The DEIS explicitly states that specific mitigation plans will not be developed until mitigation lands are acquired.⁹⁸
- The DEIS fails to describe the type, amount, and characteristics of the habitat being restored and fails to describe the physical actions to be taken to carry out the restoration, and the functions and values that will be achieved.
- The DEIS fails to identify or describe any specific mitigation lands, and fails to provide any meaningful explanation as to the basis for determining that mitigation lands will be available. Indeed, the DEIS specifically states that landowners will not be queried about their willingness to sell land for mitigation purposes until a final decision is made on the Project.⁹⁹ The Corps’ claims that it is “reasonable to assume”¹⁰⁰ that mitigation lands can be acquired from willing sellers is wholly unsupported by evidence and is directly contradicted in the DEIS which states that “[measures that take productive agricultural land out of production and reforest it are not supported by local landowners (St. John Levee and Drainage District, personal communication).”¹⁰¹.
- The DEIS fails to identify the ecological success criteria that will be used to determine whether the mitigation is working as promised. Referencing the number of habitat units that will be replaced by the mitigation does not satisfy the requirement to include ecological success criteria and does not meet the definition of the required performance standards in 33 C.F.R. Part 332.
- The DEIS does not include a detailed monitoring plan that includes the cost and duration of monitoring, and it does not identify entities responsible for monitoring.

⁹⁷ 33 C.F.R. § 332.5(b).

⁹⁸ DEIS at 251.

⁹⁹ DEIS at 251.

¹⁰⁰ See e.g., DEIS at 249, 250.

¹⁰¹ DEIS at 49.

- The DEIS does not include a contingency plan for taking corrective action in cases where monitoring shows that mitigation is not achieving ecological success as defined in the plan.
- The DEIS does not include enforceable mitigation conditions and does not include reasonable financial assurances for carrying out the promised mitigation.

The failures to meet the mitigation plan requirements are also addressed in the 2013 Zedler Report.

VI. The Project Is At Odds with Longstanding Federal Policy

The Project is fundamentally at odds with longstanding federal policy and should not be constructed. As discussed throughout these comments, the Project is also prohibited under Section 404 of the Clean Water Act, should be vetoed under Section 404(c) of the Clean Water Act, fails to comply with the National Environmental Policy Act, and ignores the critical ecological and flood protection values of floodplain, wetland, and backwater habitat.

The Project's fundamental components – eliminating the river-floodplain connection and draining wetlands – to promote increased agricultural production are archaic concepts from another era and are in direct conflict with current federal policy. According to the Draft EIS, 75 percent of the alleged benefits from the Project come from agricultural production making it clear that agricultural drainage is in fact the project's primary purpose.

The TSP will eliminate the last natural connection and the related natural functions, between the Mississippi River and its floodplain in the state of Missouri, will destroy tens of thousands of acres of wetlands, and will encourage intensified use of the New Madrid Floodway. By eliminating the natural flood regime, eliminating natural access to backwater habitat, and damaging tens of thousands of acres of wetlands, the Project also significantly undermines the resiliency and sustainability of the region's fish and wildlife in the face of climate change. The adverse impacts of the Project cannot be mitigated.

As a result, the Project violates or works against **at least** the following federal policies and initiatives:

The National Water Resources Planning Policy

"It is the policy of the United States that all water resources projects" should among other things, reflect national priorities and protect the environment by "protecting and restoring the functions of natural systems and mitigating any unavoidable damage to natural systems" and by "seeking to avoid the unwise use of floodplains and flood-prone areas and minimizing adverse impacts and vulnerabilities in any case in which a floodplain or flood-prone area must be used."¹⁰² The Project violates this policy as it will do just the opposite.

National Wetlands and Floodplain Policies

A broad array of federal laws and policies promote protection of the nation's remaining wetlands and floodplains and restoration of those resources to reverse historic wetland losses. Such Federal laws include, the Clean Water Act; the 1985 and 1990 Farm Bills; the Emergency Wetlands Protection Act of 1986; the Water Resources Development Acts of 1986, 1992, and 1996; the Agriculture Credit Act of 1987; the Conservation Reserve Program; the Food Security Act of 1992; the Wetlands Reserve Program

¹⁰² 42 USC § 1962–3.

(WRP); and the Federal Agriculture Improvement and Reform Act of 1996. Longstanding Executive Orders also call for the protection of wetlands and floodplains. For example:

- Executive Order 11990 (Protection of Wetlands) directs each federal agency to provide leadership and take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values in carrying out agency policy.
- Executive Order 11988 (Floodplain Management) directs each federal agency to avoid, to the extent possible, the long and short-term adverse impacts associated with the occupancy and modification of floodplains; to avoid direct and indirect support of floodplain development wherever there is a practicable alternative; and "to restore and preserve the natural and beneficial values served by flood plains in carrying out its responsibilities."
- The Water Resources Development Act of 1990 establishes a wetlands protection goal for Corps civil works projects. That Act establishes "an interim goal of no overall net loss of the Nation's remaining wetlands base, as defined by acreage and function, and a long-term goal to increase the quality and quantity of the Nation's wetlands, as defined by acreage and function." 33 U.S.C. § 2317(a)(1). That Act further established "environmental protection as one of the primary missions of the Corps of Engineers in planning, designing, constructing, operating, and maintaining water resources projects." Water Resources Development Act of 1990, 33 U.S.C. § 2316(a) (emphasis added).
- Provisions referred to as Swampbuster, sections 1201-1224 of the Food Security Act of 1985, as amended, 16 U.S.C. 3801 et seq., bar participation in a wide variety of important agricultural support programs to farmers who either convert wetlands after 1985 or who plant crops on wetlands that have been converted since 1985. Conversion has been defined by regulations at 7 C.F.R. Sections 12.-12.34, to include the additional drainage of wetlands regardless of whether it completely eliminates all wetland conditions. Under the statute and regulations, farmers are responsible for drainage done with the assistance of drainage districts, and mitigation for wetland drainage may not be done at federal expense. This project will drain thousands of acres of farmed wetlands as set forth in the attached Report of Dr. Joy Zedler. Doing so will cause farmers to be ineligible under Swampbuster for a host of farm payments. The implications of this ineligibility are not addressed in the DEIS at all, and are also ignored because the Corps improperly claims that only approximately 1,000 acres of inundated farmland qualify as farmed wetlands.
- The Wetland Reserve Program (WRP), administered by the USDA Natural Resources Conservation Service, is a voluntary program offering landowners the opportunity to protect, restore, and enhance wetlands on their property. The program provides technical and financial support to help landowners with wetland restoration efforts and establish long-term conservation and wildlife practices and protection. Lands eligible for WRP include farmed wetlands, prior converted cropland, riparian areas that link protected wetlands and lands that have the potential to become a wetland as a result of flooding. Lands enrolled are placed under a conservation easement and undergo restoration. The USDA will pay 100 percent of the easement value and restoration costs for perpetual easements, and 75 percent of the easement value and restoration costs for 30 year easements.

- The Conservation Reserve Program (CRP), administered by the Farm Services Agency, is a voluntary program for agricultural landowners. CRP provides annual rental payments, cost-share assistance and technical assistance to establish long-term, resource conserving covers on eligible farmland. It is often referred to as the nation's largest voluntary private lands conservation program. Eligible owners or operators may place highly erodible or other environmentally-sensitive land into a 10 to 15 year conservation contract.
- The Conservation Stewardship Program (CSP), administered by the USDA Natural Resources Conservation Service, is a voluntary program which encourages agricultural and forestry producers (including Tribal producers) to address resource concerns by: (1) undertaking additional conservation activities; and (2) improving and maintaining existing conservation systems. CSP provides financial and technical assistance to help land stewards conserve and enhance soil, water, air, and related natural resources on their land. The beneficiaries of the CSP program must refrain from damaging or draining wetlands on their lands.
- In recent years substantial funds have been provided through Supplemental Appropriations bills for the USDA Emergency Watershed Protection Program, with much of this funding being used to purchase floodplain easements to help restore previously drained or degraded wetlands and to restore naturally functioning floodplains. The Secretary of Agriculture is authorized to utilize the purchase of floodplain easements as an emergency restoration measure.¹⁰³

The Project is at odds with Executive Order 11990 (Protection of Wetlands) and Executive Order 11988 (Floodplain Management), and works against the goals and initiatives designed to protect and restore wetlands and floodplains. The Project will add significantly to – not reverse – historic wetland losses.

National Climate Change Policies

The scientific recognition of our changing climate has led to federal policies requiring greater consideration of the effects of climate change on federal infrastructure investment and planning. For example, in 2012, the Department of the Interior adopted policy guidance to address climate change in project planning that include: (1) promoting landscape-scale ecosystem-based management approaches to enhance resilience and sustainability of linked human and natural systems; (2) protecting diversity of habitat communities and species; (3) protecting and restoring core, unfragmented habitat areas and the key habitat linkages among them; and (4) maintaining key ecosystem services.

Most recently, on November 13, 2013 the President issued an Executive Order entitled “Preparing the United States for the Impacts of Climate Change.” Among other things, this Executive Order requires federal agencies to “complete an inventory and assessment of proposed and completed changes to their land- and water-related policies, programs, and regulations necessary to make the Nation’s watersheds, natural resources, and ecosystems, and the communities and economies that depend on them, more resilient in the face of a changing climate” and in recognition of “the many benefits the Nation’s natural

¹⁰³ Section 216, P.L. 81-516, as amended, 16 U.S.C. § 2203 (emphasis added) ("The Secretary of Agriculture is authorized to undertake emergency measures, **including the purchase of floodplain easements**, for runoff retardation and soil erosion prevention, in cooperation with landowners and land users, as the Secretary deems necessary to safeguard lives and property from floods, drought, and the products of erosion on any watershed whenever fire, flood, or any other natural occurrence is causing or has caused a sudden impairment of that watershed.")

infrastructure provides” directs agencies to focus on program and policy adjustments that promote the dual goals of greater climate resilience and carbon sequestration where possible.

The Project works against these critical policies and goals by, among other things, significantly undermining the resiliency and sustainability of fish and wildlife populations by eliminating the natural flood regime that sustains those populations and the wetlands that they rely on.

Association of State Floodplain Managers Levee Policies

In 2007, the Association of State Floodplain Managers issued a statement on Levee Policy which included the following recommendations, both of which would be violated by construction of the New Madrid levee:

- “Levees should be used as a structure of last resort and only after other measures, especially nonstructural ones, have been fully considered. Levees should not be used as a means to facilitate the development of currently undeveloped floodprone lands.”¹⁰⁴
- “Levees should not be constructed in floodways and, to the maximum extent possible, when constructed or reconstructed levees should be set back from rivers to allow the river to function more naturally and to provide for the protection or restoration of riparian and wetland resources between the river bank and the levee.”¹⁰⁵

Restoration Policies and Initiatives

Restoring backwater habitat is a primary goal of the Corps’ restoration efforts under the Environmental Management Program and the Upper Mississippi River System Navigation & Ecosystem Sustainability Program. The Project works against these key restoration efforts because it will destroy vital backwater habitat.

VII. The DEIS Is Fundamentally Flawed

As discussed throughout these comments, the DEIS is fundamentally flawed and does not comply with the requirements of the National Environmental Policy Act. The DEIS relies on outdated model and data and lacks scientific integrity; fails to demonstrate project need; fails to properly consider reasonable, less damaging alternatives, and fails to examine the full suite of adverse impacts from the Project.

A. The DEIS Relies on Outdated Models, Lacks Scientific Integrity, and Fails to Address Many Significant Issues Raised by the External Independent Peer Review Panel

The DEIS must be based on “high quality” science and information as “[a]ccurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA.”¹⁰⁶ The Corps must also “insure professional integrity, including scientific integrity, of the discussions and analysis in

¹⁰⁴ Levees: The Double-edged Sword, Adopted by the ASFPM Board April 17, 2007 at 6.

¹⁰⁵ *Id.*

¹⁰⁶ 40 C.F.R. § 1500.1(b).

environmental impact statements.”¹⁰⁷ This requires the Corps to candidly disclose the risks of its proposed action and to respond to adverse opinions held by respected scientists.¹⁰⁸ It also prohibits the Corps from relying “on conclusory statements unsupported by data, authorities, or explanatory information.”¹⁰⁹ Importantly, if information that is essential for making a reasoned choice among alternatives is not available, the Corps must obtain that information unless the costs of doing so would be “exorbitant.”¹¹⁰

The DEIS and the Corps’ decision to select the TSP do not satisfy these fundamental NEPA requirements. To the contrary, despite studying this project for decades – and highlighting the need for utilizing modern and scientifically sound models and data in the DEIS¹¹¹ – the Corps relies on outdated models and data and fails to include information that is critical for making an accurate assessment of project need and benefits.

For example, the DEIS contains no data on actual flood damages in the Project area. This information is critical for determining whether this project is actually needed, and whether the project will produce a positive return on the taxpayer’s investment. The DEIS also fails to identify the elevations or number of farms in the Project area to more accurately determine potential benefits, despite the fact that the Corps has claimed that 75 percent of the project benefits come from agriculture. See Section VII.B. of these comments for additional examples of critical information that is missing from the DEIS.

A number of the models used by the Corps are outdated, unexplained, unverified, or inappropriate for the purposes for which they were used. For example, as noted below, the Department of the Interior and FWS have repeatedly told the Corps that the HGM model it has used is inappropriate for evaluating the impacts of this Project. As discussed in more detail in Section VII.D. of these comments, the economic model used by the Corps has not been explained or verified. As discussed in more detail in Section VII.L. of these comments, the Corps used a 1950s era physical model to evaluate the effect on flood heights of constructing the New Madrid levee (closing the 1,500 foot gap). The Corps ran that model in 1989 or 1990 and has not updated it since then.¹¹²

The DEIS also ignores opposing views and recommendations made by respected scientists, including resource agency experts and independent scientists. The DEIS also draws conclusions that are fundamentally contradicted by modern science and/or are completely unsupported by any evidence. The following are just a few of the many examples of opposing views and recommendations made by respected scientists that have not been addressed in the DEIS:

¹⁰⁷ 40 C.F.R. § 1502.24 (“Agencies shall insure professional integrity, including scientific integrity, of the discussions and analysis in environmental impact statements”); *Earth Island Inst. v. U.S. Forest Service*, 442 F.3d 1147, 1159-60 (9th Cir. 2006) (quoting 40 CFR §1502.24).

¹⁰⁸ *Seattle Audubon Soc’y v. Mosely*, 798 F.Supp. 1473, 1482 (W.D. Wash. 1992) (citing *Friends of the Earth v. Hall*, 693 F.Supp. 904, 934, 937 (W.D.Wash. 1988)).

¹⁰⁹ *Id.*

¹¹⁰ 40 C.F.R. § 1502.22.

¹¹¹ See DEIS at v (Figure S.1) and 16.

¹¹² DEIS Appendix C at C-18; Mississippi Basin Model Letter Report 89-1, Birds Point-New Madrid Floodway Reconnaissance Study, dated July 27, 1990 (“The MBM is of the fixed-bed type, reproducing a large portion of the Mississippi River and its major tributary system to a horizontal scale of 1:2000 and a vertical scale of 1:100. General features of the model, including appurtenances, instrumentation, and operating procedures, are discussed in detail in MBM Report 1-4, DESCRIPTON OF THE MISSISSIPPI BASIN MODEL, dated 18 July 1951.”)

- The Department of the Interior has advised the Corps that “[a]ltering the hydrologic regime of the floodway . . . is at odds with contemporary understanding of wetland and floodplain science and agency mitigation guidance. This science emphasizes the critical importance of natural hydrology, spatial extent, and landscape position. The science recognizes the importance to habitat values of subtle features of hydrology, including depth, velocity, and timing of flooding and the relationship of one habitat to another.”¹¹³
- The Independent External Peer Review Panel has advised the Corps that “**closing the last connection would have a significant cumulative impact on the flood-dependent system.** While it is not required that a project compensate for historical impacts, it is incumbent on the project not to contribute the incremental impact that may cause the project to exceed this overall threshold.”¹¹⁴
- The Fish and Wildlife Service has “provided extensive comments and data (i.e., National Wetlands Inventory; Appendix Q, draft Fish and Wildlife Coordination Act) indicating a substantially larger area of functional wetlands would be affected by the proposed project. The Corps was also informed that the species-specific assessment models used to evaluate wetland impacts do not adequately quantify the importance or the effects to the wetlands evaluated.”¹¹⁵
- The Department of the Interior “has consistently discouraged the Corps from using the Hydrogeomorphic Method (HGM) to evaluate wetlands and that the analysis did not include all of the potentially affected wetlands. . . . The Missouri Interagency Review Team (IRT) has considered a number of wetlands assessment tools to use for wetland mitigation determinations and does not use HGM. The Missouri IRT has developed an alternative assessment methodology to best reflect wetlands impacts and benefits from various management actions. HGM is cumbersome and requires a great deal of data to populate the many variables and functions in the models. In addition, users must make many assumptions to conduct a robust, thorough analysis. Some of the models/functions are insensitive to hydrologic changes and other important factors not easily measured in the field (e.g., wildlife interactions, minimum acreage requirements for species, wildlife and fish access to an area, rarity of biotic communities). Thus HGM has significant limitations as an assessment tool for this and other projects.”¹¹⁶
- The Department of the Interior and FWS have raised significant objections to the Corps’ conclusion that “the flood pulse is not a driving factor for the ecology of rivers that have been broadly manipulation. This assertion is significant, is at odds with the information presented in the FWS’s Draft FWCA report (including numerous-peer reviewed articles) and should be well-supported with citations from scientific literature. . . . The scientific literature is rich with examples from around the globe of restored and managed functioning floodplain ecosystems in large rivers that are highly modified to eliminate channel meander and regulated for human use, exactly like the Mississippi River. . . . Despite flood control efforts and water management along

¹¹³ August 26, 2011 Letter from Acting Assistant Secretary for Fish Wildlife and Parks to Assistant Secretary of the Army for Civil Works.

¹¹⁴ DEIS Volume 3 Part 4, Phase III IEPR Final Comment Response Record at 61 (emphasis added).

¹¹⁵ November 18, 2013 Letter from the Office of Environmental Policy and Compliance, U.S. Department of the Interior to Col. Jeffery A. Anderson, Commander, Memphis District, U.S. Army Corps of Engineers.

¹¹⁶ *Id.*

the Mississippi River, it is clear that flows are indeed dynamic (e.g., recent extreme floods in 2010 and 2011, and extreme drought in 2012). Therefore, ecologically based theory such as the Flood Pulse Concept (FPC) and Low Flow Recruitment Hypothesis (LFRH; see Humphries et al. 1999), is directly relevant to our understanding of the importance of the remaining dynamic hydrology of the river that shapes ecosystem function. Thus, Ward and Stanford (1995) recommend the focus of restoration efforts on reestablishing dynamic connectivity between the channel and floodplain.”¹¹⁷

The DEIS also fails to adequately address many significant concerns raised by the Independent External Peer Review panel (IEPR Panel). For example:

In **Comment 4** of the Phase III IEPR Final Comment Response Record¹¹⁸, the IEPR Panel pointed out that the assumptions associated with food availability for waterfowl are not appropriate and provide unreliable estimates of biomass for waterfowl. A primary reason for the IEPR Panel’s comment was the Corps’ assertion that because herbaceous wetlands provide a greater amount of food availability than cypress-tupelo or riverfront forest (black willow/cottonwood), compensatory mitigation calculations are under valuing the benefit to waterfowl and, therefore, mitigation may be over compensating for waterfowl impacts. The IEPR Panel made clear that it disagreed with the Corps’ assertion because the production of these areas will be completely dependent on the hydrology, which controls what species of vegetation are produced, and which is unknown. Therefore, according to the IEPR Panel, these areas may very well produce more food than the aforementioned habitats, but may actually produce little to no food for waterfowl.

In the DEIS, the Corps continues to assert that the compensatory mitigation features would result in a net gain to waterfowl and, therefore, there will be an increase to waterfowl habitat as a result of the project.¹¹⁹

In **Comment 5**, the IEPR Panel noted that the wetland cover (acreage) and quality are poorly documented. In the February 2011 Appendix E, Part 1 Report, USEPA identified 149,802 acres of wetlands in the St. Johns/New Madrid Bayou/Floodway. The IEPR Panel agreed that it was appropriate for USEPA to include farmed wetlands in their wetland survey. The IEPR Panel stated that without a firm resolution of the total area of wetlands affected by this project, few of the wetland impact or mitigation estimates are meaningful. The IEPR Panel called on the Corps to provide additional detail on the wetland estimating methodology used by both agencies. The IEPR Panel strongly believed that “non-jurisdictional wetlands such as some farmed wetlands and most bottomland hardwood forests provide many ecosystem functions and habitats that should be included in an EIS, regardless of their legal standing.”

In its response the Corps promised to clarify in the DEIS its position that “wetlands are over-compensated for in either the NRCS estimate or the EPA estimate.” Further, the Corps represented that “Both the EPA and NRCS methodology will be included in an appendix with the appropriate level of detail so one could duplicate the effort.”

¹¹⁷ *Id.* at Specific Comments page 5.

¹¹⁸ Each of the Comments referred to in this Section can be found at DEIS Volume 3, Part 4 Phase III IEPR Final Comment Response Record.

¹¹⁹ See DEIS at 234.

In the DEIS, however, the Corps has swept the issue under the rug. EPA's methodology is absent from the DEIS. There is no detailed clarification of EPA's position.

In **Comment 6**, the IEPR Panel stated that “[t]he HGM methodology lacks the appropriate detail to validate the analysis results.” If the results are uncertain, then the validity of the calculations for mitigation will also be uncertain. Because the HGM methodology is based on “professional educated guesses,” the IEPR Panel requested the Corps use an alternative method of analysis to complement the HGM model to describe the effects of each alternative on the ecosystem services of wetlands.

The Corps responded by not adopting the IEPR Panel’s recommendation. It asserted that it already had complemented the HGM method with other methods (e.g., fish, waterfowl, shorebirds, and water quality) and that these would be sufficient to “describe the effects of the alternatives on a suite of environmental services.” In reply, the IEPR Panel reiterated the need for an additional method that would determine ranges and probabilities of FCI values. The IEPR Panel stated “[o]therwise, the HGM technique, with all its exquisite details, gives the impression that it is analytically rigorous while it does, in effect, have a great deal of uncertainty associated with it.”

The Corps has not complemented the HGM method with any other methods. Therefore, a significant amount of uncertainty remains as to the sufficiency of the mitigation calculations.

In **Comment 11**, the IEPR Panel stated that the “adaptive management plan lacks the details necessary to ensure that environmental resources affected by the project are appropriately mitigated.” According to the IEPR Panel, “[t]he adaptive management approach requires both a monitoring and response phase.” The IEPR Panel noted that there “is no indication as to what type of modification would occur in the mitigation plan (e.g., increase in mitigation acreage) if the mitigation actions do not meet objectives.”

The Corps responded by stating that the “Draft EIS will be expanded to include more details regarding short term monitoring.” The Corps promised that short term monitoring would include parameters such as hydraulics and hydrology and percent survivorship of newly planted vegetation and promised that “Section 6 of the Draft EIS will be expanded to include more details.” The Corps further promised that “Waterfowl – Section 6.4.3 will be expanded to include methods that would be utilized to assess available waterfowl food.” According to the Corps, “Details regarding costs would also be provided.”

The Corps, however, did not include the necessary information in the DEIS. Instead, relevant sections of the DEIS continue to be ambiguous and to lack specificity. For example, the DEIS states merely that, “Tract-specific objectives will be developed for each tract-specific mitigation plan.”¹²⁰ Also, for example, Table 5.7 (concerning “preliminary compensatory mitigation monitoring parameters”) lacks the promised detail. Parameters set out in the table, for example, list only in general terms such as “Success of Planted Vegetation” and “Hydrology functioning as designed (duration, depth, timing).”¹²¹

Further, under the section dealing with “Tract-Specific Remedial Actions,” for example, the Corps states only in general terms that, “it may be determined to change the overall mitigation feature to a different feature. . . . Therefore, a new mitigation plan would be developed for the tract. . . . In the event of

¹²⁰ DEIS at 265.

¹²¹ DEIS at 271.

significant deficiencies on multiple mitigation tracts, the overall operation of the project may be modified through overall project adaptive management.”¹²²

The lack of detail carries on, for example, to Section 7.3, concerning “Adaptive management Thresholds,” where the DEIS states only that: “To reach these goals, adaptive management thresholds would be set, at which additional or other mitigation measures would be taken (i.e., above or beyond those described in Section 5). . . . The thresholds for instituting adaptive management actions would be based on the point estimates necessary to compensate for project impacts with the inclusion of variance estimates determined in Section 6 (Figure 7.1).” At best, these statements describe project adaptive management generally, but lack the necessary detail. The same holds true, for example with section 7.4.2 titled “Waterfowl” where the DEIS states only that, “A measure that may aid waterfowl mitigation would be to adaptively manage flood waters for their benefit from December into February and possibly early March, rather than curtailing this activity by January 31.”¹²³

Further, concerning the Corps’ promise to provide “methods that would be utilized to assess available waterfowl food,” the DEIS says only that “How much food would be available to waterfowl would be projected using standard methods to compare the chosen mitigation sites to the estimated annual production of major food sources” and that “The assessment would occur at least once prior to each adaptive management report and cover each type of waterfowl habitat listed above. Waterfowl mitigation measures would be assessed until ecological success criteria are achieved.” Section 7.2.4, p. 297. These are not detailed methods but only general statements. The DEIS also fails to provide the promised “details regarding costs.”

Many additional problems with the Corps’ proposed mitigation are discussed in detail in Sections V. and VII. of these comments.

In **Comment 12**, the IEPR Panel pointed out that the adaptive management plan does not provide specific details on the source(s) of funding needed to implement the plan. According to the IEPR Panel, without a source of funding, crucial adaptive management activities would likely be halted, jeopardizing the success of the project. The IEPR Panel noted that the source of funding is a critical aspect of the adaptive management plan that needs to be identified to ensure that the project goals are achieved.

The Corps responded that “specific costs and details associated with adaptive management would be presented in the Draft EIS.” However, this information is not included. For example, instead of providing “specific costs” the DEIS states, for example, that “Maintenance of mitigation sites would be subject to specific authorization for each specific portion of the project.”¹²⁴ Further, while the DEIS states that “[w]ith the exception of routine maintenance provided by the project sponsor, the Federal government would be responsible for maintaining the structure necessary to restore hydrology to Big Oak Tree State Park,” detailed costs are not provided.¹²⁵

The DEIS also does not provide details associated with adaptive management, and fails even to identify the agency that would be responsible for long-term management:

¹²² DEIS at 274-275.

¹²³ DEIS at 303.

¹²⁴ DEIS at 267-229.

¹²⁵ DEIS at 269.

“Under current authorities and policies, mitigation lands acquired in fee for the New Madrid Floodway portion of the project, specifically lands acquired by the Federal government **could be transferred** over to the FWS once mitigation acquisition is completed and determined to meet ecological success criteria. The FWS **could then** transfer the lands over to a state agency/third-party for long-term management. Lands acquired by the St. John Levee and Drainage District **could be transferred** to a state agency or third party if determined appropriate. **If the FWS determines not to accept** the lands, USACE would maintain long-term management. USACE **would likely license** long term management to a suitable third party, such as MDC, MDNR, or other interested partner. The interagency team would be consulted with prior to turning over any mitigation lands. **It is the intent of USACE to turn over mitigation lands to a suitable third party.**”¹²⁶

In **Comment 13**, the IEPR Panel pointed out that the fisheries adaptive management plan requires additional fish passage studies and lacks the detail needed to establish monitoring frequency. The IEPR Panel noted that specific monitoring “details for connectivity, access, hydrograph, and Habitat Suitability Index (HSI) values” were not provided in the DEIS and are needed to evaluate mitigation as part of the adaptive management process.

The DEIS fails to provide the needed detail. The EIS simply states that, “Adult fish usage would be monitored”¹²⁷ Further, regarding “specific monitoring details for connectivity, access, hydrograph, and Habitat Suitability Index (HSI) values,” the DEIS parrots these words, but fails to provide the necessary detail. According to the DEIS, “The assessment would include, but would not be limited to, documenting fish usage by spawning adults (richness and diversity), fish usage by rearing larvae and young of the year (richness and diversity), connectivity, fish access, habitat transition periods, and the hydrograph (i.e., rising and falling stages).”¹²⁸

In **Comment 19**, the IEPR Panel noted that the methods and model used to assess the impacts on fish and to estimate the compensatory mitigation are not clearly described. The IEPR Panel made several recommendations.

First, the IEPR Panel asked the Corps to reference and define the timing of the connectivity in Section 4.8.5.2. Further, the IEPR Panel said that tables 4.47, 4.48, 4.49, and 4.50 should include percentage of connectivity loss for alternatives. The Corps ignored the requests. The DEIS does not define the timing of connectivity and fails to include the percentage of connectivity loss in the tables.

Second, the IEPR Panel asked the Corps to provide clarification of reproductive success that focuses on population level maintenance that can be achieved. For its response, the Corps promised that a “discussion in the Draft EIS will be provided on population-level success.” However, the discussion consists of statements that fall short of discussing “reproductive success which focuses on achievable population level maintenance.” For example, the DEIS notes that “few studies have been conducted on fish access through culverts, and those studies that have shown impacts are related to small road crossing culverts or located in geographically disparate regions.”¹²⁹ The DEIS states that “monitoring fish passage after the project is completed would provide additional information to possibly refine access

¹²⁶ DEIS at 275 (emphasis added).

¹²⁷ DEIS at 298.

¹²⁸ DEIS at 298.

¹²⁹ DEIS at 157.

coefficients.”¹³⁰ The DEIS later states “there is uncertainty regarding fish passage.”¹³¹ These statements make clear that the Corps has not implemented culverts of the type it proposes here and has no predictive studies showing they will work. This is not a discussion of “population maintenance that can be achieved.”

Third, the IEPR Panel asked the Corps to provide clarification of why access coefficients were not calculated for each spawning/rearing season. The Corps responds in the DEIS by stating that “it **can be argued** that those fish unable or unwilling to move through the culverts can spawn elsewhere and the fish access reduction coefficient is unnecessary.”¹³² This unsupported assertion falls short of the clarification requested by the IEPR Panel.

Fourth, the IEPR Panel stated that for comparative purposes, clarity would be improved by presenting reduced AAHUs as both lost AAHUs and as a percentage for each habitat type and total pooled habitats in Tables 4.34 to 4.39. The Corps responded by promising that “the recommendations regarding clarity will be adopted and the Draft EIS will be revised.” However, the DEIS does not present reduced and lost AAHUs as percentages. It would present a more compelling case **against** the project if percentages were shown in Tables 4.52 and 4.53, in addition to number of acres lost.

Finally, the IEPR Panel recommended that mitigation in batture land and floodplain lakes should be limited to no more than 27% of AAHUs based on the fish access coefficient (0.73). The Corps rejected this recommendation.

In **Comment 20**, the IEPR Panel noted that the description of fisheries resources is inconsistent and is not adequately explained. The IEPR Panel asked the Corps to revise the DEIS to eliminate conflicting descriptions and conclusions, delete a particular statement of an environmental advocacy group which the Corps was using to support the claim that the project will have an insignificant impact to fish spawning and rearing habitat, and remove the language suggesting that the project area has no value or significant habitat for fish resources. The IEPR Panel pointed out that it was “unaware of any scientific publications that state the Mississippi River ecosystem is destroyed and has no remaining value either economically or biologically.” The IEPR Panel also asked the Corps to remove Section 4.17, Loss of Connectivity in the Cumulative Impacts section, from the DEIS because the panel believed that the language had “nothing to do with cumulative impacts and qualitatively dismisses the fish resources that were quantified in the DEIS.”

Although the Corps responded to the IEPR Panel by committing to revise the DEIS (though the Corps declined to remove the connectivity section from the cumulative impacts section), the Corps did not make the recommended changes.¹³³

In **Comment 22**, the IEPR Panel pointed out that the positive ecological effects of the flood pulse on the landscape are not considered and the flood pulse is applied inaccurately in a social impact context. The IEPR Panel elaborated that the historical accounts of human suffering due to flood pulses should not be tied to Junk’s concept of flood pulsing. The IEPR Panel advised the Corps that this is an artificial connection between an ecological concept and social effects of flooding and as a result language linking

¹³⁰ DEIS at 160.

¹³¹ DEIS at 293.

¹³² DEIS at 160 (emphasis added).

¹³³ See DEIS Section 4.20 at 255.

the two should be removed from the document. More importantly, according to the IEPR Panel, the economic benefits of flood pulsing are not described in the DEIS or in the benefit-cost section. Flood pulses are natural subsidies to ecosystems such as bottomland hardwood forests and backwater wetlands. Floods cause an increase in nutrient availability to wetlands in these settings, as well as increased nutrient cycling due to water level fluctuations.

Although the Corps “concurred” with the IEPR Panel’s comment, the DEIS still ties Junk’s study to human suffering, again making what the IEPR Panel called, “an artificial connection between an ecological concept and social effects of flooding; the link should be removed from the document.” The Corps cited Junk in Section 3.5 (DEIS at 62) and followed that section with six pages of detailed historical suffering, effectively making the connection to Junk. Furthermore, the Corps nowhere mentioned that flooding made fields rich and able to support cultivation,¹³⁴ as the IEPR Panel stated: “Floods cause an increase in nutrient availability to wetlands in these settings, as well as increased nutrient cycling due to water level fluctuations.

In **Comment 23**, the IEPR Panel made clear that the cumulative impacts analysis does not consider the value of ecosystem services that have diminished over time. According to the IEPR Panel, the “DEIS assigns little value to the ecosystem services . . . provided by floodplain connection to the Mississippi River. The . . . ecological value of the remaining connection to the Mississippi River is high. . . [and] closing the last connection would have a significant cumulative impact on the flood-dependent system. . . Throughout the DEIS, ecosystem services are not considered or are undervalued, while economic benefits may be inflated and based on previous socioeconomic data.”

While the DEIS includes an extremely limited evaluation of just two of many ecosystem services (carbon sequestration and nutrient cycle), the conclusion ignores the lost ecosystem services from the Project and instead concludes, without justification or explanation, that the proposed mitigation would increase the ecosystem services of the area. At the most basic level, this conclusion is fundamentally incorrect. The purpose of mitigation is to replace the resources lost to the project, so at the most basic level mitigation would simply replace the ecosystem services lost to the project (assuming that mitigation was successful; as discussed in these comments many experts have concluded that the adverse impacts of the Project cannot be mitigated).

In **Comment 26**, the IEPR Panel pointed out that the description of shorebird resources includes inconsistencies and inaccuracies. Specifically, the DEIS states that, historically, the project area did not provide any suitable shorebird habitat. The IEPR Panel believes it is likely, based on general geomorphologic principles, that river scour areas and other similar river features, as well as margins of open wetland areas, provided sparsely vegetated areas suitable for shorebirds before landscape conversion. The IEPR Panel stated that the “historical value of the project area for shorebirds should be accurately described so that the resource is accurately represented throughout the DEIS.”

While the Corps concurred with the IEPR Panel’s comment, it did not revise the DEIS. The DEIS continues to state that “Historically, the project area did not provide any suitable shorebird habitat.”¹³⁵

¹³⁴ See DEIS at 62-63.

¹³⁵ DEIS at 221, 224.

B. The DEIS Fails to Demonstrate Project Need

The DEIS fails to demonstrate that the Project is needed or in the national interest. The Corps' conclusion that it "is obliged by law to accomplish the will of Congress for flood risk management in Southeast Missouri"¹³⁶ does not demonstrate Project need.

Moreover, this conclusion ignores law, policy, and reality on the ground. First, this conclusion ignores the fundamental purpose of the National Environmental Policy Act, which is to examine the full suite of impacts and determine whether less damaging alternatives are available before deciding **whether or how to proceed**. Second, this conclusion ignores critical elements of the Corps' planning process – notably, the ability of the agency to conduct a general reevaluation project to determine whether a project remains appropriate for construction. Finally, this conclusion ignores the realities of the Corps' project backlog and funding limitations. The Corps currently has an estimated backlog of more than 1,000 authorized activities that will take an estimated \$60 billion to construct.¹³⁷ The Water Resources Development Act of 2013 which is likely to be enacted into law this year or early next year will add to this backlog. For more than a quarter century, new project authorizations have vastly outpaced appropriations,¹³⁸ and it is highly unlikely that the Corps will ever be able to build all the projects that are currently authorized for construction.

The DEIS concludes that 75 percent of the alleged benefits from the Project come from agricultural production making it clear that the project's primary purpose is agricultural drainage. The DEIS also claims another 22 percent of alleged project benefits from avoiding the need to raise Interstate 55 (I-55) to avoid flood damage.¹³⁹ Section VII.D. of these comments provides a detailed discussion of the many problems with the economic analysis in the DEIS.

As a fundamental matter, eliminating the river-floodplain connection and draining wetlands to promote increased agricultural production are archaic concepts from another era and are in direct conflict with current federal policy. As a result, there could be few, if any, circumstances where such a project could be considered to be in the national interest.

In addition, the DEIS lacks the most basic information needed to determine whether there is even a need for a flood damage reduction project in the Project area. For example, as discussed throughout these comments, the DEIS contains no data on actual flood damages in the Project area. The Corps contends that "[r]eliable estimates of crop damage due to flooding do not exist."¹⁴⁰ However, because

¹³⁶ DEIS at 4.

¹³⁷ Nicole T. Carter and Charles V. Stern, "Army Corps of Engineers Water Resource Projects: Authorization and Appropriations," Congressional Research Service R41243, March 22, 2013.

¹³⁸ Nicole T. Carter and Charles V. Stern, "Army Corps Fiscal Challenges: Frequently Asked Questions," Congressional Research Service R41961, August, 18 2011.

¹³⁹ The Corps has concluded that approximately 38 percent of Project benefits come from crop damage reduction, approximately 14 percent of Project benefits come from agricultural non-crop benefits, approximately 23 percent of Project benefits come from agricultural intensification, and approximately 24 percent of Project benefits come from reduced flood damages to roads and streets. Donald C. Sweeney II, Ph.D., A Review of the Economic Analysis Presented in the St. Johns Bayou and New Madrid Floodway July 2013 Draft Environmental Impact Statement, prepared for the National Wildlife Federation and the Great Rivers Environmental law Center (November 8, 2013). A copy of this Economic Analysis is attached at Attachment A to these comments. The many problems with the Corps' economic analysis are discussed in Section VII.D. of these comments.

¹⁴⁰ DEIS at 9.

this information is critical for determining whether the Project is actually needed and will produce a positive return on the taxpayer's investment, the Corps is required as a matter of law to obtain this information, unless the cost of doing so is exorbitant.¹⁴¹

Despite decades of studying this Project, the Corps has not provided the most basic information concerning agricultural activities within the Project area.¹⁴² The DEIS does not provide the total number of farms that would be affected by the Project, the total value of products sold from those farms, or any estimates of crop damage or other agricultural losses caused by flooding in the Project area.

The DEIS does not provide the elevation of farms located within the Project area even though **all** project benefits are linked to the reduction of flooding at specific elevations. Without knowing the elevation of the farms in the Project area it is not possible to assess what percentage of total farms (and thus, beneficiaries) might allegedly benefit from the Project.

The DEIS does not provide farm ownership information, so it is not possible to discern whether some landowners or corporations own multiple farms in the Project area. The DEIS also does not provide information on the amount, location and terms of existing flood easements already owned by the Federal government in the Project area and does not provide information regarding farm subsidy payment made in the Project area.

This information is critical for determining the project need, whether the project will produce a positive return on the taxpayers' investment, and how the benefits of this costly and destructive project will be distributed.

In addition to the many legal and policy reasons that dictate selection of the "no action" alternative, the following also make clear that there is no legitimate need for the TSP (we do not suggest that less damaging actions should not be taken to address urban flooding problems in the St. Johns Bayou Basin):

1. Landowners in the New Madrid Floodway are knowingly and voluntarily operating in an area that has always flooded and that is designated as a relief valve during significant flood events.
2. Landowners in the New Madrid Floodway have already been paid by the Federal government to allow the land to flood. The Federal government currently owns flowage easements on at least 111,840 acres of land in the New Madrid Floodway.¹⁴³ The St. John Levee and Drainage District also appears to own easements covering 57,000 acres within the backwater area.¹⁴⁴
3. Despite – and far more likely, because of – existing flood regimes, the area has a significant amount of prime farmland. "The farmland found in the project area is some of the most

¹⁴¹ 40 C.F.R. § 1502.22.

¹⁴² While the DEIS does provide county wide information on the number of farms, total commodities sold, and farm subsidy payments, large portions of each county are located outside the Project area and would be unaffected by the Project.

¹⁴³ By 1942, the Federal government had purchased flowage easements on 106,858 acres of land in the New Madrid Floodway. By 1974, the Federal government had purchased modified flowage easements on 80,982 acres in the New Madrid Floodway, including 76,000 acres that were under the originally purchased easements. Mississippi River Commission Information Paper, *Mississippi River & Tributaries Project: Birds Point-New Madrid Floodway*, at 7, 11.

¹⁴⁴ *Id.* at 10.

productive found within the State of Missouri as well as the United States. The productivity of the farmland in the project area is so significant that it warrants special status from the USDA as prime and unique.”¹⁴⁵

4. Information contained in the DEIS makes clear that farming can proceed even after major flooding events. After the flood of 2011, “farmers were able to plant upwards of 90,000 acres of soybeans by the summer of 2011 and an additional 30,000 acres of soybeans or corn by spring 2012” in the New Madrid Floodway.¹⁴⁶
5. As discussed below, many landowners in the Project area are already receiving significant federal farm subsidy payments, which calls into question the appropriateness of (and national interest in) providing additional subsidies through construction of the Project.
6. Despite claiming 22 percent of project benefits for avoiding the need to raise I-55 to avoid flooding (which the Corps values at an average annual savings of \$3,439,000), the Missouri Department of Transportation advised the St. John’s Drainage District that the cost of keeping I-55 open during the 2011 floods was approximately \$163,000, and that the existing system of levees and pumps designed to protect I-55 have only been used “a few times.”¹⁴⁷ This suggests that the Corps has vastly overstated the need for the Project to protect I-55 and that the benefits claimed by the Corps for avoiding damage to I-55 are entirely without support and based on nothing but wishful (and wild) speculation.

Moreover, the natural flood regime, which serves to enrich the soil, is one of the primary reasons why farmland in the Project area is so productive. It is thus not surprising that at least one study strongly suggests that the Project would actually harm – not help – agricultural production in the Project area.¹⁴⁸

This study looked at the riverine hydrological and regional climatic regime relationships to agriculture (cotton, soybeans) and the principal riverine fish stocks in the upper Yazoo River basin. The study looked at 31 years of data (from 1964 to 1994) to compare flooding in the study area with soybean and cotton production. It found that “no factor associated with flood events adversely influence production of cotton and soybeans. However, with regard to soybeans, the amount of area flooded two years prior to a crop was positively related to soybean yield. From a long-term perspective therefore, the data suggest that flooding may benefit agricultural enterprises associated with soybean production.”¹⁴⁹ The study also found that cotton yield was positively correlated with maximum area flooded during the same year, noting that this was likely due to increased soil moisture which benefits cotton production. This was true even though floods resulted in fewer acres of cotton being planted during flood years.¹⁵⁰

The study did note, however, that a different pattern appeared to emerge over shorter time periods “which may explain the public perception that flooding adversely impacts agriculture in the area. During

¹⁴⁵ DEIS at 216.

¹⁴⁶ DEIS at 8.

¹⁴⁷ DEIS, Volume II, Part 2, June 21, 2011 Letter from Stan Johnson, Area Engineer, Missouri Department of Transportation to St. John’s Draining District.

¹⁴⁸ Jackson, D. C. and Q. Ye. 2000. Riverine fish stock and regional agronomic responses to hydrologic and climatic regimes in the upper Yazoo River basin. Pages 242-257 in I. G. Cowx, Editor. Management and Ecology of River Fisheries. Fishing News Books. Blackwell Science. London.

¹⁴⁹ Id.

¹⁵⁰ Id.

the 5 year period from 1990-1994, high precipitation was negatively related to area planted in cotton and the percent of the area planted in soybeans that was actually harvested. However, flooding during this period did not significantly affect overall yield of cotton and soybeans.¹⁵¹ And again, there was a positive correlation between cotton yields and the maximum area flooded during the same year.

That same study also shows that flooding benefits fisheries in the area, finding a positive relationship between flooding and positive fish stock characteristics, which the study defines as more and bigger fish. The study also noted that much of the productive potential for fisheries in floodplain river ecosystems is determined by the dynamics of overbank flooding and riparian vegetation.¹⁵²

Federal Farm Subsidy Payments

The DEIS states that as of “2007, there were 350 and 228 farms in New Madrid County and Mississippi County with an average size of 1,088 acres and 1,134 acres, respectively. . . . Total government farm subsidy payments were \$13,667,000 (with a per farm average of \$42,845) in New Madrid County, and \$4,459,000 (with a per farm average of \$22,294) in Mississippi County.”¹⁵³ However, large portions of each county are located outside the Project area so that the average farm subsidy payments in each county do not necessarily provide an accurate estimate of farm subsidy payments in the Project area.

The Environmental Working Group Farm Subsidy database provides more recent and comprehensive information on subsidy payments for New Madrid and Mississippi Counties. From 1995 to 2012, total farm subsidy payments for New Madrid County were \$443 million.¹⁵⁴ From 1995 to 2012, total farm subsidy payments for Mississippi County were \$185 million.¹⁵⁵

In an attempt to establish a more accurate assessment of farm subsidy payments in the Project area, the Conservation Organizations compared farm ownership data in the lower portion of the New Madrid Floodway from plat maps with farm subsidy data compiled by the Environmental Working Group.¹⁵⁶ While this information is not definitive, we believe it provides a more accurate assessment for purposes of evaluating whether it is in the national interest to provide more federal subsidies to farmers in this area by constructing the Project largely at federal taxpayer expense.

This analysis revealed that between 1995 and 2012, thirty entities¹⁵⁷ that own land in the New Madrid Floodway received \$8.89 million in farm subsidy payments for farming carried out in the Floodway.¹⁵⁸ Payments to individual entities ranged from \$17,195 to more than \$1.52 million. Of those entities that received farm subsidy payments, 8 received more than \$538,000 in payments during this period, and 21 entities received more than \$109,000.

¹⁵¹ Id.

¹⁵² Id.

¹⁵³ DEIS at 6-7.

¹⁵⁴ Environmental Working Group, New Madrid County, Missouri Summary Information, EWG Farm Subsidy Database (visited November 15, 2013)

¹⁵⁵ Environmental Working Group, Mississippi County, Missouri Summary Information, EWG Farm Subsidy Database (visited November 15, 2013).

¹⁵⁶ Environmental Working Group, EWG Farm Subsidy Database, (visited November 15, 2013).

¹⁵⁷ For purposes of this analysis, the Conservation Organizations consolidated various owners, companies, and trusts that could reasonably be determined to belong to the same person or family. To protect the privacy of the entities we have not included the detailed information with these comments, however, this information is on file with the National Wildlife Federation and will be supplied directly to the Corps upon request.

¹⁵⁸ We identified 21 entities that received no subsidy payments.

C. The DEIS Fails to Evaluate a Full Range of Reasonable Alternatives that Would Cause Far Less Harm to the Environment

As discussed in Section IV.B. of these comments, the DEIS fails to evaluate a full range of reasonable alternatives, including a host of alternatives that alone or in combination would provide extensive flood damage reduction benefits while also protecting the environment and providing benefits to the public at large. As also discussed in Section IV.B. of these comments, the limited analysis of some less damaging alternatives that is included in the DEIS is fundamentally flawed. Indeed, the Corps' alternatives analysis appears to have been improperly designed to justify a decision that had already been reached. The Corps' failure to fully evaluate a full range of reasonable alternatives violates the requirements outlined below, and renders its analysis inadequate as a matter of law.

An EIS must inform the decisionmakers and the public of reasonable alternatives that would avoid or minimize adverse impacts, and must provide a full and fair discussion of significant environmental impacts.¹⁵⁹ NEPA requires that each EIS “[r]igorously explore and objectively evaluate all reasonable alternatives.”¹⁶⁰ This requires a “**thorough consideration of all appropriate methods of accomplishing the aim of the action**” and an “**intense consideration of other more ecologically sound courses of action.**”¹⁶¹ The rigorous and objective evaluation of all reasonable alternatives to a proposed project is the “heart of the environmental impact statement.”¹⁶²

The alternatives analysis must “[i]nclude reasonable alternatives not within the jurisdiction of the lead agency.”¹⁶³ This requires the Corps to evaluate reasonable alternatives that are outside of the scope of the Corps' mission areas and those outside of the scope of a Congressionally authorized project.

While an EIS need not explore every conceivable alternative, it must rigorously explore all reasonable alternatives that are consistent with its basic policy objective and that are not remote or speculative. A viable but unexamined alternative renders an EIS inadequate.¹⁶⁴ In addition, an alternative may not be disregarded merely because it does not offer a complete solution to the problem.¹⁶⁵

Failure to look at an appropriate range of alternatives likewise renders an alternatives analysis inadequate.¹⁶⁶ The range of alternatives that must be considered is determined by the nature and scope of the proposed action. Thus, the greater the impacts and scope of the proposed action, the

¹⁵⁹ 40 C.F.R. § 1502.1.

¹⁶⁰ 40 C.F.R. § 1502.14.

¹⁶¹ *Environmental Defense Fund, Inc. v. Corps of Engineers of U.S. Army*, 492 F.2d 1123, 1135 (5th Cir. 1974) (emphasis added).

¹⁶² 40 C.F.R. § 1502.14.

¹⁶³ 40 C.F.R. § 1502.14(c).

¹⁶⁴ *E.g. Muckleshoot Indian Tribe v. U.S. Forest Service*, 177 F.3d 800, 810, 814 (9th Cir. 1999).

¹⁶⁵ *Natural Resources Defense Council, Inc. v. Morton*, 458 F.2d 827, 836 (D.C. Cir. 1972).

¹⁶⁶ *E.g. Resources Ltd., Inc. v. Robertson*, 35 F.3d 1300, 1307 (9th Cir. 1993).

greater the range of alternatives that must be considered.¹⁶⁷ The range of alternatives considered is not sufficient if each alternative has the same end result.¹⁶⁸

Importantly, “the discussion of alternatives must be undertaken in good faith; it is not to be employed to justify a decision already reached.”¹⁶⁹

D. The DEIS Economic Analysis Is Arbitrary, Unreliable, and Insufficient

The economic analysis contained in the DEIS is wholly insufficient to demonstrate that the TSP is economically justified or to support a federal investment in a \$165 million project that will have such significant, unmitigatable impacts.

A detailed economic analysis of the DEIS prepared by Donald C. Sweeney II, Ph.D. (the Sweeney Report) is attached to these comments at Attachment A, and the Conservation Organizations incorporate the entire contents of the Sweeney report into these comments as though fully set forth herein.¹⁷⁰ Dr. Sweeney is eminently qualified to evaluate the Project. Dr. Sweeney is a Teaching Professor of Logistics and Operations Management, an Affiliate Professor of Economics, and the Associate Director of the Center for Transportation Studies at the University of Missouri-St. Louis. He holds a Bachelor of Science degree in Mathematics and Economics from Knox College, Galesburg IL and a Ph.D. degree in Economics from Washington University, St. Louis MO. Prior to joining the University of Missouri-St. Louis in January 2005, Dr. Sweeney was employed by the Corps for 27 years as a regional economist, supervisory regional economist and senior regional economist.

The Sweeney Report concludes that the “economic analysis should be considered unreliable and insufficient to determine whether or not the recommended alternative, or any other alternative for that matter, will likely produce a positive net economic return for taxpayers’ investments.”¹⁷¹ The Sweeney Report also concludes:

“The economic analysis in the DEIS lacks the scope, data, detail, quality of execution and quality of presentation required to support such an important and controversial public policy decision involving the commitment of between \$58 and \$180 million of scarce resources (depending on the alternative implemented) with such potentially large environmental consequences. The analysis relies on arbitrary assumptions. Important specific and significant project-area supporting data is lacking. In many instances the descriptions of the analytical methodologies employed are insufficient to determine what was actually done, in other instances no descriptions of employed methodologies are provided at all, in still other instances, the

¹⁶⁷ *Alaska Wilderness Recreation and Tourism v. Morrison*, 67 F.3d 723, 729 (9th Cir. 1995); see *Sierra Club v. Espy*, 38 F.3d 792, 803 (5th Cir. 1994) (the range of alternatives that must be considered in an environmental assessment decreases as the environmental impact of the proposed action becomes less and less substantial).

¹⁶⁸ *State of California v. Block*, 690 F.2d 753, 767 (9th Cir. 1982) (holding that an inadequate range of alternatives was considered where the end result of all eight alternatives evaluated was development of a substantial portion of wilderness).

¹⁶⁹ *Citizens Against Toxic Sprays, Inc. v. Bergland*, 428 F.Supp. 908, 933 (D.Or. 1977).

¹⁷⁰ Donald C. Sweeney II, Ph.D., A Review of the Economic Analysis Presented in the St. Johns Bayou and New Madrid Floodway July 2013 Draft Environmental Impact Statement, Prepared for the National Wildlife Federation and the Great Rivers Environmental Law Center, November 8, 2013.

¹⁷¹ Sweeney Report at 2.

employed methodologies appear questionable at best. Further, the economic analysis is fraught with both demonstrable and apparent errors. The results of the 2013 DEIS Economic Analysis should not be used as a basis for any public policy decision.”¹⁷²

The Sweeney Report further states that “for the DEIS to be useful in informing a public policy decision of this magnitude” it should include: “(1) accurate data truly representing the existing conditions at various flood frequencies and elevations in the project area must be obtained and verified; (2) using that data, the errors in the current execution of the economic analysis must be acknowledged and corrected with updated and certified models; and (3), finally, the real levels of uncertainty present in the analysis and results must be identified, acknowledged and reported.”¹⁷³

The Sweeney Report discusses the many failings with the economic analysis in detail. A number of these failings are summarized below:

- Despite having decades to evaluate the Project (the Corps has prepared NEPA reviews for this Project in 1976, 1982, 2002, 2006, and 2013), the Corps has not bothered to obtain any actual data on flood damages or to document the elevation of any of the farms, roads, or structures that will allegedly benefit from the Project. As the Sweeney Report notes:

“Properly establishing the existing conditions is a fundamental first step to completing a meaningful economic analysis. Historical data should serve as the foundation for determining existing conditions which in turn then serve as the foundation for forecasting future conditions with and without project alternatives. Despite the contention that the study area is frequently flooded, evidence of historical flooded acres and actual flood related economic damages are not presented in the economic analysis.”¹⁷⁴
- “All of the estimated economic benefit categories ultimately derive from the reduction of flood risk. For that reason the economic analysis should have begun with a detailed identification and evaluation of the extent of without-project flooding. This should have been followed by an evaluation of the flooding risk under each distinct alternative. The DEIS and Economics Appendix did not accomplish this.”¹⁷⁵
- The DEIS Economic Appendix is rife with inconsistencies and basic math errors that lead to flawed conclusions. For example, the Sweeney Report concludes that it “appears that the annual expected flooding predicted in the 5-year floodplain is overestimated by at least a factor of 3.”¹⁷⁶ This could translate into benefits also being overestimated by a factor of 3 “because the estimated benefits are directly proportional to the expected flooding [so that] the apparent over-estimation of flooding will produce a corresponding over-estimation of the crop damage reduction benefits.”¹⁷⁷ The Sweeney Report further concludes that “even if the quantity of flooding were not an issue, the failure to definitively establish the ‘existing conditions’ together

¹⁷² Sweeney Report at 22-23.

¹⁷³ Sweeney Report at 23.

¹⁷⁴ Sweeney Report at 3.

¹⁷⁵ Sweeney Report at 7.

¹⁷⁶ Sweeney Report at 12.

¹⁷⁷ Sweeney Report at 12, 14.

with the uncertainty in forecasting the future condition would make it difficult to be confident in these estimations.”¹⁷⁸

- The Economic models have not been explained and appear not to have been certified. “Reliance is placed on a barely explained model, the Corps’ “Crop Flood Damage Analysis” (CFDA) model, to provide the agricultural crop damage reduction benefit estimates. Volume 3 of the 2013 DEIS provides certification reviews of many of the models used in preparation of the DEIS. The certification review of the CFDA is notably absent. The main body of the DEIS indicates in Figure S.1 (page V) that economic models should be part of the review and certification process. The absence of documentation suggests that this review and certification of economic models may not have occurred.”¹⁷⁹
- The Corps claims 22 percent of Project benefits “for avoiding expensive improvements to Interstate 55 that would be ‘required’ in the future in the without project condition.”¹⁸⁰ The Corps values the average annual savings from avoiding these improvements at \$3,439,000. Despite accounting for almost a quarter of the alleged project benefits, however, the Economic Appendix allots only one paragraph to discussing this benefit.

The Sweeney Report identifies three significant problems with this claimed benefit: (1) the cost estimate for raising I-55, which is the estimated benefit used by the Corps, was prepared by the Corps without the input of the Missouri Department of Transportation; (2) there is no evidence presented that the raising of I-55 is in itself a justified project; and (3) the DEIS provides no economic based rational to justify raising I-55.¹⁸¹

In addition, the Corps has not explained how the project will prevent flooding of that stretch of highway. The Conservation Organizations believe that is highly questionable as to whether the Project would have any impact at all on reducing flood damages to I-55. The DEIS states that I-55 is not affected by flooding at all until at least the 10 year flood event, and that it can remain open with sandbagging and other efforts through at least a 50 year event.¹⁸² However, we have been informed that I-55 was affected by flooding in 2011 and 2008, but prior to that had not been affected by flooding since the 1970s.¹⁸³ The 2008 and 2011 floods have been estimated as being 500-year flood events. The Corps has not provided any explanation as to how St. Johns Bayou Basin portion of the Project (the only portion of the TSP for which the I-55 benefits are assessed), which is focused on reducing backwater and smaller scale flooding, would be able to reduce flood damages to the highway during major flood events.

Moreover, during both 2008 and 2011, the Missouri Department of Transportation was able to keep the highway open by constructing levees around the highway and using sandbags and water pumps, suggesting that raising the highway is unnecessary and would be an extremely low priority for the state. The Missouri Department of Transportation advised the St. John’s Drainage District that the cost of keeping I-55 open during the 2011 floods was approximately

¹⁷⁸ Sweeney Report at 14.

¹⁷⁹ Sweeney Report at 7.

¹⁸⁰ Sweeney Report at 19.

¹⁸¹ Sweeney Report at 19.

¹⁸² DEIS at 8-9.

¹⁸³ Personal communication with Missouri Department of Transportation staff.

\$163,000, and that the existing system of levees and pumps designed to protect I-55 have only been used “a few times.”¹⁸⁴ Indeed, we have also been informed that the Missouri Department of Transportation has had only general discussions about the flooding of I-55 and has not conducted any type of analysis to determine whether it would be appropriate to raise I-55.¹⁸⁵ As a result, the 22 percent of Project benefits claimed by the Corps for avoiding damage to I-55 are entirely without support and based on nothing but wishful (and wild) speculation.

In short, the economic analysis in the DEIS can best be described as an embarrassing effort on the part of the Corps. It cannot be relied upon to demonstrate that the Project is economically justified as required by law.

E. The DEIS Significantly Understates the Wetland Impacts and Overstates the Value of Mitigation

The DEIS significantly underestimates the wetland impacts of the Project. The DEIS underestimates the farmed wetland impacts by more than 9,000 acres. The DEIS fails to evaluate any wetland impacts above the 5-year floodplain. The DEIS fails to properly evaluate the adverse impacts that will result from changes in the duration and inundation on wetlands in the Project area. As also discussed in Section V. of these comments, the DEIS fails to provide scientifically or legally sound mitigation for the significant adverse impacts of this Project.

A detailed analysis of the wetland assessment and mitigation plan in the DEIS prepared by Dr. Joy Zedler (the 2013 Zedler Report) is attached to these comments at Attachment B, and the Conservation Organizations incorporate the entire contents of the 2013 Zedler Report into these comments as though fully set forth herein.¹⁸⁶ Dr. Zedler is eminently qualified to evaluate the Project. Dr. Zedler is a Professor of Botany and Aldo Leopold Chair in Restoration Ecology at the University of Wisconsin. She has published more than 250 peer reviewed publications and has participated in four panels of the National Research Council, including as Chair of the National Research Council Panel on *Compensating for Wetland Losses Under the Clean Water Act*.

The 2013 Zedler Report concludes that the analyses provided by the U.S. Environmental Protection Agency (EPA) as part of an interagency team is particularly convincing regarding the large quantity of farmed wetlands in the Project area. EPA used accepted interagency mapping conventions and combined those with field studies. These mapping conventions are designed to show evidence of inundation from multiple sources, not merely backwater flooding. As Dr. Zedler notes, “[t]here is no reason to doubt the EPA assessment.”¹⁸⁷ Copies of materials related to EPAs wetland assessments are attached to these comments at Attachment C.

FWS notes that even though EPA and FWS used different methodologies in their wetlands assessments for the Project, the agencies “are surprisingly consistent in their estimates of wetlands within the proposed project area.”¹⁸⁸ The Corps’ failure to accurately distinguish farmed wetlands from prior

¹⁸⁴ DEIS, Volume II, Part 2, June 21, 2011 Letter from Stan Johnson, Area Engineer, Missouri Department of Transportation to St. John’s Draining District.

¹⁸⁵ Personal communication with Missouri Department of Transportation staff.

¹⁸⁶ Dr. Zedler’s 2006 Report is also attached to these comments at Attachment B.

¹⁸⁷ 2013 Zedler Report at 4.

¹⁸⁸ *Id* at 18.

converted cropland “accounts for the biggest divergence between the three agencies’ estimates,”¹⁸⁹ and according to FWS underestimates the project’s wetland impacts by 10,000 or more wetland acres.¹⁹⁰

Significantly, the Corps’ own hydrologic analysis of backwater flooding establishes that there are at a minimum approximately 9,174 acres of farmed wetlands that will be all, or partially drained, by the Project.¹⁹¹ That figure is based on the precise Corps analysis of the timing and extent of flooding in the Project area showed in the hydraulics appendix. However, the DEIS fails to acknowledge these wetlands and thus fails to acknowledge these significant impacts.

The DEIS also understates the wetland impacts of the Project by failing to evaluate any wetlands above the 5-year floodplain. As the Zedler Report notes, the “DEIS indicates the Corps’ intent to ignore impacts on these wetlands on the theory that they are little influenced by backwater flooding. It is true that the flooding from the river will not be the principal source of water for these wetlands, but further reduction in flooding is likely to alter these wetlands as well. These impacts therefore should be counted.”¹⁹² By failing to evaluate the impacts the impacts to wetlands and fish and wildlife from hydrologic changes above the 5 year floodplain, the DEIS fails to account for the full suite of aquatic impacts as required by law.¹⁹³

Significantly, the Department of the Interior “has consistently” told the Corps that the Hydrogeomorphic Method (HGM) that is used “did not include all of the potentially affected wetlands” and that the model is “insensitive to hydrological changes and other important factors.”¹⁹⁴ This is a significant failure as even small alterations in wetlands hydrology can produce significant and ecosystem-wide changes. As the seminal textbook on wetlands states:

“When hydrologic conditions in wetlands change even slightly, the biota may respond with massive changes in species composition and richness and in ecosystem productivity.”¹⁹⁵

Indeed, “[h]ydrology is probably the single most important determinant of the establishment and maintenance of specific types of wetlands and wetland processes,” and even “small changes in hydrology can result in significant biotic changes.”¹⁹⁶ This is because:

Hydrology affects the species composition and richness, primary productivity, organic accumulation, and nutrient cycling in wetlands. . . . Water depth flow patterns, and duration and frequency of flooding, which are the result of all the hydrologic inputs and outputs, influence the biochemistry of the soils and are major factors in the ultimate selection of the biota of wetlands. . . . Hydrologic conditions can directly modify or change chemical and physical

¹⁸⁹ *Id.*

¹⁹⁰ *Id.* at 23-24.

¹⁹¹ Zedler Report at 4-5; DEIS Appendix C.

¹⁹² Zedler Report at 3.

¹⁹³ The Conservation Organizations also note that while the Corps has not evaluated impacts above the 5-year floodplain it has claimed benefits above the 5-year floodplain, including for example, claiming 22% of Project benefits for avoiding the need to elevate Interstate 55, which the DEIS states is not affected by flooding until a 10 year flood and with sandbagging and other efforts can be kept open through at least a 50 year flood. See DEIS at 8-9, and Section VII.D. of these comments.

¹⁹⁴ *Id.* at cover letter page 2.

¹⁹⁵ William J. Mitsch and James G. Gosselink, *Wetlands* (2nd ed.) (1993) at 68 (emphasis added).

¹⁹⁶ *Id.* at 68.

properties such as nutrient availability, degree of substrate anoxia, soil salinity, sediment properties, and pH.¹⁹⁷

As a result the impacts from even small changes in the duration and extent of inundation of wetlands in the Project area must be evaluated as such changes will likely create significant adverse affects to fisheries, wildlife habitat, water quality, water quantity, soil moisture recharge, deposition of sediments and nutrients, and flood pulse conditions.

The Department of the Interior has also concluded that the DEIS “does not account for forested wetlands that will be lost as a result of being cleared due to post-project drainage and agricultural conversion” because the Corps has restricted “its evaluation to the construction footprint and does not include the reasonably foreseeable indirect effects to forested wetlands caused by the changes in land use and hydrologic changes.”¹⁹⁸

Dr. Zedler also notes that the Corps has consistently understated the ecological value of the Project site:

“At various places, the DEIS attempts to disparage the ecological value of the project site on the grounds that it is altered both hydrologically, through alteration of the Mississippi River’s basic flows, and vegetatively, through clearing of most of the land for agriculture. It is true that these alterations somewhat alter and somewhat reduce the ecological functions. But virtually all aquatic ecosystems in the United States are heavily altered. The project area is as close to providing the functions of natural floodplains as can exist almost anywhere on the lower Mississippi River. It would be more accurate to say that in such a changed system, the persistence of the critical elements of floodplain functions by the project makes this site more important, not less.”¹⁹⁹

As discussed in detail in Section V. of these comments, the mitigation proposed by the Corps is scientifically unsound and legally inadequate. Dr. Zedler is one of the country’s leading wetland scientists and chaired a panel of the National Academy of Sciences at the request of the Corps and EPA to provide guidance on appropriate wetland mitigation. In her report, Dr. Zedler provides an extensive analysis of the problems with the Corps’ proposed mitigation including the following:

- The Project conflicts with modern scientific understanding of wetland mitigation because it eliminates extensive inundated habitat and proposes to mitigate without restoring inundation to any areas. Instead, its mitigation is based on artificial, engineered manipulation of hydrology on already inundated sites, and reforestation of already flooded lands, and by a small percentage of the impacted area. Doing so conflicts with the core principles of wetland mitigation, which are that natural hydrology should be preserved, along with spatial extent of aquatic habitat, landscape position, and habitat complexity and that mitigation should avoid engineering structures to manage hydrology.
- The new mitigation in the DEIS for the Project primarily relies on mitigation the Corps itself previously did not claim: such as claims that Big Oak Tree State Park would provide fish habitat or that extensive areas of the batture lands would provide suitable fish habitat.

¹⁹⁷ *Id.* at 67-68.

¹⁹⁸ *Id.* at Specific Comments page 11.

¹⁹⁹ Zedler Report at 3.

- The Corps' use of HEP models violates the recommendations for appropriate wetland impact and mitigation analysis because it focuses on limited attributes of habitat, oversimplifies species needs, and assumes that artificial management of small areas can replace natural flooding of larger areas. HEP models also make many judgments about the needs of different species with little or no evidence. The change of focus of wetland mitigation away from these kinds of habitat models recognized their inadequacy and that the full complement of wetland and other aquatic functions required that mitigation reproduce the more natural conditions of the aquatic areas to be lost.

F. The DEIS Significantly Understates the Fisheries Impacts and Overstates Fisheries Mitigation

A detailed analysis of impacts of fisheries and the ecological value of the Project mitigation for fisheries prepared by Richard Sparks, Ph.D. (the Sparks Report), is attached to these comments at Attachment D, and the Conservation Organizations incorporate the entire contents of this report into these comments as though fully set forth herein. Dr. Sparks is one of the country's leading fish biologists and has served on numerous panels of the National Academy of Sciences. Dr. Sparks has spent most of his career focusing on the Mississippi River system and his publications include the seminal publication on the importance of the flood pulse to understanding large river systems.

The Sparks Report analyzes the numerous flaws with the fisheries analysis in the DEIS and with the mitigation that has been proposed for the Project as it relates to fisheries. These flaws include the following:

- The DEIS greatly underestimates the impacts of reduced fish access due to the levying off of the floodway. The Corps' analysis claims that this levee closure will reduce the value of flooded habitat in the project area by only 27 percent. But this analysis is fundamentally flawed as it at best purports to examine only the impact on fish access when the gates are open. An even more basic problem is that the gates will be closed during roughly two thirds of the fish spawning and rearing seasons, even when there is just minimal flooding at 280 feet or above. Even more significantly, the gates will be closed during the overwhelming majority of days when flood levels would generate substantial habitat.
- The Corps' exclusion of much of the agricultural area of the project on the grounds that it does not meet certain hydrologic criteria is logically inconsistent with the recognition of rearing habitat, and is otherwise scientifically invalid.
- Contrary to the Corps' claims, the proposed mitigation sites within the New Madrid Floodway are unlikely to support virtually any spawning and rearing fish because they are at elevations that require the gates to be closed before backwater floodwaters reach them. That includes the large mitigation claimed for Big Oak Tree State Park. As Dr. Sparks elaborates, the impacts of the project are greatly underestimated because of the problem of fish access, and the benefits of mitigation are greatly overestimated.
- The DEIS fisheries analysis greatly underestimates the impact on permanent floodplain lakes and greatly overvalues the impact of mitigation by creating new floodplain lakes through borrow pits and levees. The result is that a few hundred acres of floodplain lake mitigation is incorrectly projected to offset the impact of reduced or eliminated inundation on thousands of acres of forest and agricultural land in key seasons.

- The mitigation sites proposed in the DEIS that will have fish access are not likely to provide valuable suitable habitat. Many of these acres would involve reforestation in the land between the levees, the batture lands. But these lands do not have the appropriate temperature or calm waters during significant floods for fish spawning and rearing equivalent to the backwater floodplain, nor do they provide the mosaic of habitats of the existing project area:

"This review indicates that all of the proposed mitigation sites offer limited potential mitigation for fish. Reforestation of areas within the floodplain will provide areas with extremely limited access by fish. Reforestation of batture lands is unlikely to provide habitat of equivalent value for spawning and rearing because of the high velocities and low temperatures. Digging of open water areas in the batture lands is likely to create habitat that will be rapidly silted in, and the changes to Riley Lake proposed are adverse: reducing fish access to already existing habitat."²⁰⁰

The Sparks report also demonstrates how the fish analysis is inconsistent with modern scientific understanding of the key attributes of fish habitat and is otherwise overly simplistic. The accepted scientific principles recognize the importance of the multiple attributes of the Project site and particularly the fundamental importance of hydrology and that these vast impacts cannot be offset by more intensive vegetative management of much smaller areas without restoring inundation to any areas that are not now subject to inundation.

G. The DEIS Significantly Overstates Shorebird Mitigation

A detailed analysis of Project impacts on shorebirds and waterfowl prepared by Bruce Dugger, Ph.D. (the Dugger Report) is attached to these comments at Attachment E, and the Conservation Organizations incorporate the entire contents of this report into these comments as though fully set forth herein. Dr. Dugger is a prominent shorebird and waterfowl expert who is also familiar with the project site through site visits and through his work for many years at a nearby University.

The Dugger Report concludes that the Project site provides ecologically important shorebird habitat:

"The connectivity between the river and floodplain in the New Madrid Floodway creates a unique wetland complex for migrating shorebirds along the Mississippi River Drainage. Although data about shorebird use of the project site are lacking, the large area of diverse floodplain wetlands scattered across the New Madrid Floodway/St. Johns Bayou area provides habitat for a wide range of shorebird species. Species commonly using floodplain wetlands in the project area include Pectoral Sandpiper (*Calidris melanotos*), Semipalmated Sandpiper (*Calidris pusilla*), Least Sandpiper (*Calidris minutilla*), Lesser Yellowlegs (*Tringa flavipes*), Greater Yellowlegs (*Tringa melanoleuca*), and Common Snipe (*Gallinago gallinago*). Shorebirds require habitats that are shallow and sparsely vegetated, thus flooded agriculture wetlands and seasonal herbaceous (moist soil) wetlands are the most important resource to shorebirds in the project area. Although farmed wetlands have limited value for some species of wildlife, they offer valuable shorebird habitat because disking and plowing set back vegetation succession keeping these wetlands available for shorebirds (Helmers 1992)."²⁰¹

²⁰⁰ Sparks Report at 18.

²⁰¹ Dugger Report.

Dr. Dugger also concludes that the proposed shorebird mitigation is not adequate. As explained in the Dugger Report, the Corps' mitigation is based on a shorebird model that calculates the average availability of extremely shallow habitat on open lands that shorebirds can use through the 93-day shorebird migrating season in the spring. It calculates that these flooded areas provide the equivalent of 935 optimal flooded acres per day. The Corps then assumes that equivalent acreage could be supplied by managing an impoundment of 1,280 acres to be flooded all 93 consecutive days every year, which the Corps asserts will provide the equivalent "optimal" habitat given their depths. However, Dr. Dugger identifies several major problems with this assumption.

First, achieving these habitats by keeping one small area flooded all 93 days will not provide comparable food resources as would exist without the Project. The Project area currently provides habitat and food resources by the flooding of tens of thousands of acres for shorter periods. When shorebirds use the same acres (as they would under the proposed mitigation), they deplete available food supplies. However, when shorebirds utilize moving areas of shallow habitat (as they do under existing conditions) flood supplies remain relatively fresh. Failure to account for this is a fundamental misapplication of the model.

Second, the Corps plans to obtain the great majority of its shorebird habitat by claiming credit for 10 Mile Pond. But 10 Mile Pond already exists and would continue to exist regardless of the Project, so it cannot provide suitable mitigation for new Project impacts. Meanwhile reforestation would further reduce shorebird habitat.

Dr. Dugger does not address the legal issues regarding the claimed use of 10 Mile Pond, but the Corps' new position is not legally justified. It is interesting that through the prior six versions of the EIS, the Corps never claimed that 10 Mile Pond could be used to provide new mitigation. However, the Corps now claims it can do so by relying on the 1986 authorization, but that language is inappropriate on its face. That authorization provided in part, "except that lands acquired by the State of Missouri after January 1, 1982, for mitigation of damage to fish and wildlife within the Ten Mile Pond mitigation area shall be counted as part of the total quantity of mitigation lands required for the project and shall be maintained by such State for such purpose." This language explicitly refers to "damage to fish and wildlife within the Ten Mile Pond mitigation area" that would be caused by the project. As a result, it permits the mitigation site to be counted as mitigation for project impacts that occur solely on those lands.

Regardless of the merits of the Corps' new interpretation of this language, it is in any event superseded by 33 U.S.C. 2283(d)(3) (A), which was enacted in 2007. Among other things, this section provides:

"To mitigate losses to flood damage reduction capabilities and fish and wildlife resulting from a water resources project, the Secretary shall ensure that the mitigation plan for each water resources project complies with the mitigation standards and policies established pursuant to the regulatory programs administered by the Secretary."

The mitigation standards and policies established pursuant to these regulatory programs do not allow mitigation credit for prior activities undertaken by separate parties (except as part of an approved mitigation bank). The Corps cannot now claim mitigation credit for these independent actions taken by independent bodies that were completed long ago.

H. The DEIS Significantly Understates the Waterfowl Impacts

The Dugger Report also discusses waterfowl impacts, which are also inadequately mitigated. Although Dr. Dugger believes that the Corps has improved its Waterfowl Assessment Model (WAM), he concludes that the fundamental problem remains that this tool is designed solely to address the feeding needs of mallards and wood ducks. It does not address their other needs.

More importantly, it does not address the needs of the large numbers of other duck species that also use the project area, and that while their numbers are smaller, are to some extent therefore of even greater conservation concern. These ducks do not consume many of the foods analyzed by WAM, and do not use their forested habitats, generally preferring more open water areas. Even to the extent the WAM model properly accounts for the food needs of mallards and wood ducks, it therefore cannot be used properly to analyze overall project impacts or the adequacy of mitigation. The Corps has failed to propose mitigation for these additional species, for whom the loss of flooded agricultural lands and marshes is extremely important and which the “mitigation” further reduces.

The Dugger Report also raises serious questions with the estimates of energy food production from many of the mitigation sites on which the Corps relies.

I. The DEIS Fails to Evaluate Impacts on Amphibians and Reptiles

The DEIS devotes a scant three paragraphs to the impacts of the Project on amphibians and reptiles.²⁰² Those paragraphs, which cite just one scientific study, conclude that some species will benefit from the project and some will be impacted, and that habitat changes to amphibians and reptiles would be represented by habitat changes calculated for other species. This is entirely inadequate to properly evaluate the impacts to any species, let alone to species like amphibians and reptiles that are facing unprecedented risks of extinction. The significant underestimate of wetland impacts and the significant underestimate of the adverse impacts that would result from the loss of connectivity between the river and floodplain further undermine the “analysis” of impacts to these at risk species.

It is well established that wetlands are extremely important to amphibians (frogs, toads, newts) and reptiles (snakes, turtles), and many endangered and threatened amphibian and reptile species are especially linked to wetlands. The enormous wetland losses and habitat fragmentation from the Project puts these species at particular risk in the Project area. This danger is amplified by the fact that amphibian populations are in precarious state world-wide.

In the United States, the IUCN Red List of Threatened Species lists 56 amphibian species and 37 reptile species as known to be critically endangered, endangered, or vulnerable.²⁰³ Worldwide, at least 1,950 species of amphibians are threatened with extinction of which 520 species are critically endangered, 783 are endangered, and 647 species are vulnerable. This represents 30 percent of all known amphibian

²⁰² DEIS at 138.

²⁰³ IUCN Red List version 2013:2, Table 5: Threatened species in each country (totals by taxonomic group), available at http://cmsdocs.s3.amazonaws.com/summarystats/2013_2_RL_Stats_Table5.pdf (visited on November 24, 2013.)

species.²⁰⁴ In 2004, scientists estimated that most of 1,300 other amphibian species are also threatened though sufficient data are currently lacking to be able to accurately assess the status of those species.²⁰⁵ The IUCN Red List of Threatened Species also lists 879 species of reptiles as threatened with extinction worldwide, which represents 21 percent of all evaluated reptile species.²⁰⁶

A recent study demonstrates the increasingly dire conditions of amphibians worldwide:

"Current extinction rates are most likely 136–2707 times greater than the background amphibian extinction rate. These are staggering rates of extinction that are difficult to explain via natural processes. No previous extinction event approaches the rate since 1980 (Benton and King, 1989)."

"Despite the catastrophic rates at which amphibians are currently going extinct, these are dwarfed by expectations for the next 50 yr (Fig. 1). If the figure provided by Stuart et al. (2004) is true (but see Pimenta et al., 2005; Stuart et al., 2005), one-third of the extant amphibians are in danger of extinction. This portends an extinction rate of 25,000–45,000 times the expected background rate. Episodes of this stature are unprecedented. Four previous mass extinctions could be tied to catastrophic events such as super volcanoes and extraterrestrial impacts that occur every 10 million to 100 million years (Wilson, 1992). The other mass extinction seems to be tied to continental drift of Pangea into polar regions leading to mass glaciation, reduced sea levels, and lower global temperatures (Wilson, 1992). The current event far exceeds these earlier extinction rates suggesting a global stressor(s), with possible human ties."²⁰⁷

As noted in the July 2013 Draft Fish and Wildlife Coordination Act Report, the Project area provides vital habitat for amphibians and reptiles:

"Johnson (1997) notes that the native swamplands of southeast Missouri provide unmatched habitat for many species of amphibians and reptiles. Amphibians expected to occur on stream and lake edges, ponds, and in forested wetlands in the project area include the western lesser siren, marbled and small mouth salamanders, Fowler's toad, eastern narrow-mouthed toad, spring peeper, green treefrog, and bronze frog. Wetlands in the project area also support a number of State-listed rare species including the three-toed amphiuma, Illinois chorus frog, and the eastern spadefoot toad."²⁰⁸

²⁰⁴ IUCN Red List version 2013:2, Table 3a: Status category summary by major taxonomic group (animals), available at http://cmsdocs.s3.amazonaws.com/summarystats/2013_2_RL_Stats_Table3a.pdf (visited on November 24, 2013).

²⁰⁵ Science Daily, *Amphibians In Dramatic Decline; Study Finds Nearly One-Third Of Species Threatened With Extinction* (October 15, 2004), available at <http://www.sciencedaily.com/releases/2004/10/041015103700.htm> (visited on November 24, 2013).

²⁰⁶ IUCN Red List version 2013:2, Table 3a: Status category summary by major taxonomic group (animals), available at http://cmsdocs.s3.amazonaws.com/summarystats/2013_2_RL_Stats_Table3a.pdf (visited on November 24, 2013).

²⁰⁷ McCallum, M. L. (2007). "Amphibian Decline or Extinction? Current Declines Dwarf Background Extinction Rate." *Journal of Herpetology* 41 (3): 483–491. doi:10.1670/0022-1511(2007)41[483:ADOECD]2.0.CO;2.

²⁰⁸ July 2013 Draft U.S. Fish and Wildlife Service Fish and Wildlife Coordination Act Report, DEIS Appendix Q, Part 1 at 8.

"Reptiles found in sloughs, swamps, ditches, oxbows, and ponds in the project area include Mississippi mud turtle, stinkpot, southern painted turtle, State-listed rare western chicken turtle, red-eared slider, alligator snapping turtle and the eastern spiny softshell, broadhead skink, black rat snake, State-listed rare dusky hognose snake, speckled king snake, water snakes, western ribbon snake, eastern garter snake, and rough green snake. This exceptional floral and faunal diversity at the study area can be traced to dynamic water levels, nutrients, and energy associated with connection to the Mississippi River."²⁰⁹

"Many species of amphibians throughout the project area require shallow waters to successfully reproduce. In addition to permanent ponds, sloughs, and ditches, spring flooding can cover up to 75,000 acres in the New Madrid Floodway alone. As those waters recede, they create thousands of ephemeral ponds critical to maintaining a healthy and diverse amphibian population. Habitats with variable flooding regimes have been shown to support highly diverse herptofauna. Work by Galat et al. (1998) documented differential use and abundance of reptiles and amphibians in a variety of wetland types. For example, connected scours were dominated by false map turtles and softshells; remnant wetlands had more sliders and painted and snapping turtles. Scour holes contained to the river contained the highest species richness. Remnant wetlands had the more species of salamanders and snakes than other types of wetlands. Those various wetland types also supported a diverse bird assemblage, where species use of a particular type of wetlands appeared to depend on wetland size, structural diversity, and depth. In addition, flooding increases invertebrate biomass, which becomes an important protein source for waterfowl and shorebirds on their migration to northern breeding grounds (Helmers 1992, Reinecke et al. 1989)."²¹⁰

The Fish and Wildlife Coordination Act report also concludes that:

"Project implementation is also expected to negatively affect reptiles and amphibians in the project area. Eliminating seasonal backwater flooding over thousands of acres, and the ephemeral ponds that remain after flood waters recede will significantly reduce suitable habitat for reptiles and amphibians, particularly during spring breeding. In addition, project-related changes to surface water patterns may eliminate ponding in many areas in all but the wettest years. This would not only reduce available habitat, but further fragment and isolate tracts of remaining habitat and their reptile and amphibian populations."²¹¹

"Fish and wildlife species with limited mobility (i.e.,reptiles and amphibians) will experience a net loss of habitat within the project area that will not be compensated through the proposed mitigation lands."²¹²

Some of the most common dangers to species survival are habitat destruction, fragmentation, and alteration – the very impacts that would result from the Project.

²⁰⁹ *Id.*

²¹⁰ *Id.* at 15.

²¹¹ *Id.* at 31.

²¹² *Id.* at iii and 50.

Amphibians thrive in cool wetland environments, and are found in all types of wetlands except more saline coastal environments. Small, isolated wetlands play especially important roles in amphibian productivity.²¹³

Amphibian populations thrive when there are a variety of small ecosystems within a regional landscape in which a “dynamic equilibrium” of different populations becomes established.²¹⁴ However, if the environment becomes overly fragmented, the dynamic equilibrium is disturbed because patterns of emigration and immigration may be disrupted.

Amphibians spend part of their life cycles in an aquatic environment and part in a terrestrial environment (typically returning to water to breed). For example, some salamanders undergo larval development within an aquatic environment, and then live along wet streambeds following metamorphosis into adult stages. Those that do not breed in water still need moist environments to prevent extreme dehydration.²¹⁵ The tadpoles of most frog species develop in ponds, lakes, wet prairies, and other still bodies of water, while others are known to breed in a wide variety of wetland habitats. As adults, toads, frogs and some salamanders can travel relatively great distances from water sources, but they return to water to reproduce.

Agricultural practices can have negative impacts on amphibian populations. In addition to replacing natural habitat with foreign species, agriculture can dramatically change the ecosystem. For example, on the southeastern Coastal Plain, where pine plantations have replaced the native longleaf pine savanna, ditches to speed water runoff caused thousands of acres of wetlands to disappear. Ditching between ponds to facilitate water transfer can shorten hydroperiods for amphibian larval development. Ditching wetlands lowers water tables, subsequently changing the local vegetation and altering or eliminating hydroperiods. Studies have demonstrated that unditched ponds, on the other hand, have greater amphibian species richness during dry periods,²¹⁶ which is especially important for those pond-breeding species that return to breeding sites.

Land use changes caused by activities such as road building can also affect amphibian populations in a number of ways. In addition to the dangers of habitat fragmentation mentioned above,²¹⁷ roads can separate overwintering sites from breeding sites and increase mortality as animals attempt to cross. For example, one study showed that as few as 26 vehicles per hour on one road prevented any toads from

²¹³ Gibbons, J. Whitfield, Christopher Winne, et. al. 2006. Remarkable Amphibian Biomass and Abundance in an Isolated Wetland: Implications for Wetland Conservation. *Conservation Biology* Volume 20, No. 5, 1457–1465.

²¹⁴ Mann, W., P. Dorn, and R. Brandl. 1991. Local distribution of amphibians: The importance of habitat fragmentation. *Global Ecology and Biogeography Letters* 1:36-41.

²¹⁵ Semlitsch, R. D. 1987. Relationship of pond drying to the reproductive success of the salamander *Ambystoma talpoideum*. *Copeia* 1987:61-69; Pechmann, J. H. K., D. E. Scott, J. W. Gibbons, and R. D. Semlitsch. 1989. Influence of wetland hydroperiod on diversity and abundance of metamorphosing juvenile amphibians. *Wetlands Ecology and Management* 1:3-11.

²¹⁶ Harris, L. D. and C. R. Vickers. 1984. Some faunal community characteristics of cypress ponds and the changes induced by perturbations. In *Cypress Swamps*. K. C. Ewel, and H. T. Odum (eds.). University Presses of Florida, Gainesville, FL, p. 171-185; Vickers, C. R., L. D. Harris, and B. F. Swindel. 1985. Changes in herpetofauna resulting from ditching of cypress ponds in coastal plains. *Forest Ecology and Management* 11:17-29.

²¹⁷ Laan, R., and B. Verboom. 1990. Effects of pool size and isolation on amphibian communities. *Biological Conservation* 54:251-262; Sjogren, P. 1991b. Genetic variation in relation to demography of peripheral pool frog populations (*Rana lessonae*). *Evolutionary Ecology* 5:248-271.

crossing it.²¹⁸ Land use changes that destroy environments can also alter the breeding habits of amphibians. For example, building U.S. Highway 44 in 1963 caused toxic silt from roadfill to spill into the local aquatic environment, eliminating nearly all aquatic life downstream of the road.²¹⁹

Recent studies also point to the role of global climate change in promoting potentially catastrophic impacts to amphibian populations. For example:

- Global climate change will result in changes to weather and rainfall patterns that can have significant adverse effects on amphibians. Drought can lead to localized extirpation. Cold can induce winterkill in torpid amphibians. It is possible that the additional stress of climate change, on top of the stresses already created by severe loss of habitat and habitat fragmentation may jeopardize many amphibian species.²²⁰
- Recent studies suggest that climate change may be causing global mass extinctions of amphibian populations. Particularly alarming is the fact that many of these disappearances are occurring in relatively pristine areas such as wilderness areas and national parks.²²¹ One recent study suggests that climate change has allowed the spread of a disease known as chytridiomycosis which has led to extinctions and declines in amphibians. Climate change has allowed this disease to spread by tempering the climate extremes that previously kept the disease in check.²²² About two-thirds of the 110 known harlequin frog species are believed to have vanished during the 1980s and 1990s because of the chytrid fungus *Batrachochytrium dendrobatis*. Other studies indicate that amphibians may be particularly sensitive to changes in temperature, humidity, and air and water quality because they have permeable skins, biphasic life cycles, and unshelled eggs.²²³
- Climate change may also affect amphibian breeding patterns.²²⁴ Amphibians spend a significant part of the year protecting themselves from cold or shielding themselves from heat. They receive cues to emerge from their shelters and to migrate to ponds or streams to breed from

²¹⁸ Heine, G. 1987. Einfache Meß- und Rechenmethode zur Ermittlung der Überlebenschance wandernder Amphibien beim Überqueren von Straßen. Beihefte zu den Veröffentlichungen Naturschutz und Landschaftspflege Baden-Württemberg 41:473-479.

²¹⁹ Mathews, R. C., Jr., and E. L. Morgan. 1982. Toxicity of Anakeesta Formation leachates to shovel-nosed salamander, Great Smoky Mountains National Park. Journal of Environmental Quality 11:102-106.

²²⁰ Sjogren, P. 1993a. Metapopulation dynamics and extinction in pristine habitats: A demographic explanation. Abstracts, Second World Congress of Herpetology, Adelaide, Australia, p. 244; Sjogren, P. 1993b. Applying metapopulation theory to amphibian conservation. Abstracts, Second World Congress of Herpetology, Adelaide, Australia, p. 244-245.

²²¹ Pounds, J. A., and M. L. Crump. 1994. Amphibian declines and climate disturbance: The case of the golden toad and the harlequin frog. Conservation Biology 8:72-85; Lips, K. R. 1998. Decline of a Tropical Montane Amphibian Fauna. Conservation Biology 12:106-117; Lips, K., F.Brem, R. Brenes, J.D. Reeve, R.A. Alford, J. Voyles, C. Carey, L. Livo, A. P. Pessier, and J.P. Collins 2006. Emerging infectious disease and the loss of biodiversity. Proceedings of the National Academy of Sciences 103:3165-3170.

²²² Pounds, J.A., M.P.L. Fogden, J.H. Campbell. 2006. Biological response to climate change on a tropical mountain. Nature 398, 611-615.

²²³ Carey, C., and M. A. Alexander. 2003. Climate change and amphibian declines: is there a link? Diversity and Distributions 9:111-121.

²²⁴ Carey, C., and M. A. Alexander. 2003. Climate change and amphibian declines: is there a link? Diversity and Distributions 9:111-121.

subtle increases in temperature or moisture. As the earth warms, one potential effect on amphibians is a trend towards early breeding, which makes them more vulnerable to snowmelt-induced floods and freezes common in early springs. Some studies already indicate a trend towards earlier breeding in certain amphibian species.²²⁵

- Increases in UV-B radiation in the northern hemisphere due to ozone depletion is also having an adverse impact on amphibians.²²⁶ One study suggests that ultraviolet-B (UV-B) radiation adversely affects the hatching success of amphibian larvae.²²⁷ High levels of UV-B also induced higher rates of developmental abnormalities and increased mortality in certain species (*Rana clamitans* and *R. sylvatica*) than others that were shielded from UV-B.²²⁸ UV-B also can have detrimental effects on embryo growth.

Given these stressors, the additional impacts of the Project could be catastrophic for amphibian and reptile species in the Project area. The failure of the DEIS to adequately evaluate the impacts to these species (along with the failure to adequately assess the impacts to wetlands and the impacts of the lost connectivity between the river and floodplain) render the DEIS grossly inadequate.

J. The DEIS Significantly Understates the Cumulative Impacts

The cumulative impacts analysis ensures that the reviewing agency will not “treat the identified environmental concern in a vacuum.”²²⁹ Cumulative impacts are defined as:

“the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.”²³⁰

While the DEIS provides information on the impacts of past activities, it provides little meaningful insight into the implications of those activities when combined with the adverse impacts of the Project. The cumulative impacts analysis also fails to provide a meaningful analysis of the impacts of present and reasonably foreseeable future activities, or the implications of those activities when combined with the adverse impacts of the Project.

²²⁵ Beebee, T. J. C. 1995. Amphibian Breeding and Climate. *Nature* 374:219-220; Blaustein, A. R., L. K. Belden, D. H. Olson, D. M. Green, T. L. Root, and J. M. Kiesecker. 2001. Amphibian breeding and climate change. *Conservation Biology* 15:1804-1809; Gibbs, J. P., and A. R. Breisch. 2001. Climate warming and calling phenology of frogs near Ithaca, New York, 1900-1999. *Conservation Biology* 15:1175-1178.

²²⁶ Blumthaler, M., and W. Ambach. 1990. Indication of increasing solar ultraviolet-B radiation flux in alpine regions. *Science* 248:206-208; Kerr, J. B., and C. T. McElroy. 1993. Evidence for large upward trends of ultraviolet-B radiation linked to ozone depletion. *Science* 262:1032-1034.

²²⁷ Blaustein, A. R., P. D. Hoffman, D. G. Hokit, J. M. Kiesecker, S. C. Walls, and J. B. Hays. 1994a. UV repair and resistance to solar UV-B in amphibian eggs: A link to population declines? *Proceedings of the National Academy of Science* 91:1791-1795.

²²⁸ Grant, K. P., and L. E. Licht. 1993. Effects of ultraviolet radiation on life history parameters of frogs from Ontario, Canada. Abstracts, Second World Congress of Herpetology, Adelaide, Australia, p. 101.

²²⁹ *Grand Canyon Trust v. FAA*, 290 F.3d 339, 346 (D.C. Cir. 2002).

²³⁰ 40 C.F.R. § 1508.7.

For example, despite the well-recognized impacts of operation of the Upper Mississippi River Navigation System on the loss of backwater habitat²³¹ – and that fact that this system will continue to be operated in the very long term – the cumulative impacts analysis contains only one paragraph on the potential future impacts of the navigation system, and that paragraph does not discuss the implications of continued loss of backwater or other vital habitat in connection with the adverse impacts of the Project. The DEIS also fails to evaluate the cumulative impact of the New Madrid levee on flood heights when combined with the many other flood control and navigation structures (including river training structures) in and along the Mississippi River and the Project area.²³²

In evaluating cumulative impacts:

“The analyst’s primary goal is to determine the magnitude and significance of the environmental consequences of the proposed action in the context of the cumulative effects of other past, present, and future actions. Much of the environment has been greatly modified by human activities, and most resources, ecosystems, and human communities are in the process of change as a result of cumulative effects. **The analyst must determine the realistic potential for the resource to sustain itself in the future and whether the proposed action will affect this potential; therefore, the baseline condition of the resource of concern should include a description of how conditions have changed over time and how they are likely to change in the future without the proposed action.** The potential for a resource, ecosystem, and human community to sustain its structure and function depends on its resistance to stress and its ability to recover (i.e., its resilience). Determining whether the condition of the resource is within the range of natural variability or is vulnerable to rapid degradation is frequently problematic. Ideally, the analyst can identify a threshold beyond which change in the resource condition is detrimental. More often, the analyst must review the history of that resource and evaluate whether past degradation may place it near such a threshold. For example, the loss of 50% of historical wetlands within a watershed may indicate that further losses would significantly affect the capacity of the watershed to withstand floods. **It is often the case that when a large proportion of a resource is lost, the system nears collapse as the surviving portion is pressed into service to perform more functions.**”²³³

Rather than conducting this important analysis, the DEIS simply concludes that the Project will not cause cumulative impacts because the project area is already degraded and the Project includes mitigation. This demonstrates a fundamental lack of understanding of how to conduct an appropriate cumulative

²³¹ See e.g., U.S. Geological Survey, Ecological Status and Trends of the Upper Mississippi River System 1998: A Report of the Long Term Resource Monitoring Program (April 1999); Johnson, B. L., and K. H. Hagerty, editors. 2008. U.S. Geological Survey, *Status and Trends of Selected Resources of the Upper Mississippi River System*, December 2008, Technical Report LTRMP 2008-T002. 102 pp + Appendixes A–B (Upper Midwest Environmental Sciences Center, La Crosse, Wisconsin).

²³² See Sierra Club v. U.S. Army Corps of Engineers, 494 F. Supp. 2d 1090, 1096 (W.D. Mo. 2007) (The Corps' conclusion that the proposed levee would not create a significant change in the flood profile was arbitrary and capricious because the Corps failed to consider the cumulative impact of adding the proposed levee to the flood control structures already in place.).

²³³ Council on Environmental Quality, *Considering Cumulative Effects Under the National Environmental Policy Act* (January 1997) at 41.

impacts analysis, and a stunning lack of understanding of the vital importance of the river-floodplain connection.²³⁴

Notably, the cumulative impacts analysis in the DEIS completely ignores – and makes no reference at all – to a fundamentally different conclusion reached by the independent external peer review panel convened to evaluate the DEIS:

“The panel believes that the New Madrid Floodway is unique because, in context, it is the last remaining connection between the Mississippi River and its floodplain in the State of Missouri. Therefore, it plays a much larger role in providing natural floodplain services than the other areas. If the other originally connected areas had not been disconnected, the Floodway would be playing a proportionally smaller, and less important, role in maintaining the natural ecosystem. **The loss of this last remaining connection and its ecosystem functioning would be the “straw that broke the camel’s back” in terms of the total cumulative impact.** That is, not all incremental impacts are equal and it is the impact that exceeds a threshold that is significant. In this case, the adverse impact of removing the last floodplain connection, once the other connections have already been removed, is disproportionately high.”²³⁵

In the IEPR Phase 3 document, the independent external peer review panel again concluded that the Project would have a significant cumulative impact and expressed additional concerns with the Corps’ cumulative impacts analysis:

“The DEIS assigns little value to the ecosystem services (e.g., carbon sequestration) provided by floodplain connection to the Mississippi River, based on the argument that the system has been significantly changed over time. However, the Panel believes that the ecological value of the remaining connection to the Mississippi River is high. As described in CEQ (1997), the loss of this last remaining connection is an example where additional impacts, no matter how small, will have a disproportionate cumulative effect by exceeding the threshold where floodplain connection ecosystem functioning is eliminated. **The Panel believes that closing the last connection would have a significant cumulative impact on the flood-dependent system.** While it is not required that a project compensate for historical impacts, **it is incumbent on the project not to contribute the incremental impact that may cause the project to exceed this overall threshold.**

The value of the flood-dependent system can be characterized in terms of ecosystem services such as carbon and nitrogen sequestration (Costanza et al. 1997). Throughout the DEIS, ecosystem services are not considered or are undervalued, while economic benefits may be inflated and based on previous socioeconomic data, particularly given the major changes in the Floodway after the 2011 floods.”²³⁶

²³⁴ Even a cursory review of the scientific literature would reveal the significant importance of maintaining this last remaining natural connection between the river and its floodplain in the state of Missouri. Similarly, a cursory review of the scientific literature would demonstrate the falsity of the Corps’ claim that the ecological consequences of the Mississippi River and Tributaries Project “are only starting to be understood.” DEIS at 216.

²³⁵ DEIS Volume 3 Part 3, Phase 2 IEPR at B-43.

²³⁶ DEIS Volume 3 Part 4, Phase III IEPR Final Comment Response Record at 61 (emphasis added).

“Where scientists disagree about possible adverse environmental effect, the EIS must inform decision-makers of the full range of responsible opinion on the environmental effects.’ Where the agency fails to acknowledge the opinions held by well respected scientists concerning the hazards of the proposed action, the EIS is fatally deficient.”²³⁷ It is not sufficient to include the statements of the panel in an Appendix or to refer to the panel’s position in responses to the Final Comment Response Record, they must be included and appropriately responded to in the cumulative impacts section of the DEIS.²³⁸

The Conservation Organizations also note that the cumulative impacts analysis highlights the high value and productivity of the farmland in the Project area,²³⁹ which begs the question of why it would ever be considered a wise investment of taxpayer dollars to spend at \$165 million on a project that will cause devastating environmental harm in order to increase the productivity of these already highly productive lands.

K. The DEIS Fails to Adequately Evaluate the Impacts of Climate Change

The effects of global warming on the Mississippi River and its floodplain, and on the species that rely on the floodplain, wetlands, and river-floodplain connectivity in the Project area are potentially quite significant. As a result, the EIS must carefully consider whether the impacts of climate change could exacerbate the impacts of the Project.²⁴⁰ Unfortunately, the climate change analysis in the DEIS falls far short of the rigorous analysis required by NEPA.

Because the DEIS fails to consider the impacts of climate change on the fish and wildlife resources that rely on the wetlands and river-floodplain connectivity that would be lost through the Project, the DEIS understates the adverse impacts of the TSP. The DEIS also understates the adverse impacts of the TSP because it fails to evaluate the extent to which the TSP would render the species that rely on these resources less resilient to climate change.

The Council on Environmental Quality has advised all Federal agencies that the magnifying and additive effects of global warming must be evaluated when examining the direct, indirect, and cumulative impacts of a proposed action:²⁴¹

²³⁷ *Friends of the Earth v. Hall*, 693 F. Supp. 904, 934 (W.D. Wash. 1988)(citations omitted).

²³⁸ *Id.*

²³⁹ DEIS at 216 (“The farmland found in the project area is some of the most productive found within the State of Missouri as well as the United States. The productivity of the farmland in the project area is so significant that it warrants special status from the USDA as prime and unique.”)

²⁴⁰ See *Center for Biological Diversity v. Nat'l Hwy Traffic Safety Administration*, 538 F.3d 1172, 1217 (9th Cir. 2008) (holding that analyzing the impacts of climate change is “precisely the kind of cumulative impacts analysis that NEPA requires agencies to conduct” and that NEPA requires analysis of the cumulative impact of greenhouse gas emissions when deciding not to set certain CAFE standards); *Center for Biological Diversity v. Kempthorne*, 588 F.3d 701, 711 (9th Cir. 2009) (NEPA analysis properly included analysis of the effects of climate change on polar bears, including “increased use of coastal environments, increased bear/human encounters, changes in polar bear body condition, decline in cub survival, and increased potential for stress and mortality, and energetic needs in hunting for seals, as well as traveling and swimming to denning sites and feeding areas.”).

²⁴¹ The CEQ guidance makes it clear that analyzing the impacts of climate change is not restricted to evaluating whether a project could itself exacerbate global warming. The magnifying and additive effects of global warming also must be evaluated. Council on Environmental Quality, *Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions* (February 18, 2010).

“Climate change can increase the vulnerability of a resource, ecosystem, or human community, causing a proposed action to result in consequences that are more damaging than prior experience with environmental impacts analysis might indicate [and] climate change can magnify the damaging strength of certain effects of a proposed action.”

* * *

“Agencies should consider the specific effects of the proposed action (including the proposed action’s effect on the vulnerability of affected ecosystems), the nexus of those effects with projected climate change effects on the same aspects of our environment, and the implications for the environment to adapt to the projected effects of climate change.”²⁴²

For example, climate change may cause significant adverse impacts for the many migratory species that utilize the Project area, and these impacts must be considered in evaluating the impacts of the Project particularly in the context of the cumulative impact analysis. As recognized by the United Nations Environment Program and the Convention on the Conservation of Migratory Species of Wild Animals:

“As a group, migratory wildlife appears to be particularly vulnerable to the impacts of Climate Change because it uses multiple habitats and sites and use a wide range of resources at different points of their migratory cycle. They are also subject to a wide range of physical conditions and often rely on predictable weather patterns, such as winds and ocean currents, which might change under the influence of Climate Change. Finally, they face a wide range of biological influences, such as predators, competitors and diseases that could be affected by Climate Change. While some of this is also true for more sedentary species, migrants have the potential to be affected by Climate Change not only on their breeding and non-breeding grounds but also while on migration.”

“Apart from such direct impacts, factors that affect the migratory journey itself may affect other parts of a species’ life cycle. Changes in the timing of migration may affect breeding or hibernation, for example if a species has to take longer than normal on migration, due to changes in conditions *en route*, then it may arrive late, obtain poorer quality breeding resources (such as territory) and be less productive as a result. If migration consumes more resources than normal, then individuals may have fewer resources to put into breeding”

* * *

“Key factors that are likely to affect all species, regardless of migratory tendency, are changes in prey distributions and changes or loss of habitat. Changes in prey may occur in terms of their distributions or in timing. The latter may occur through differential changes in developmental rates and can lead to a mismatch in timing between

²⁴² Council on Environmental Quality, *Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions* (February 18, 2010).

predators and prey (“phenological disjunction”). Changes in habitat quality (leading ultimately to habitat loss) may be important for migratory species that need a coherent network of sites to facilitate their migratory journeys. Habitat quality is especially important on staging or stop-over sites, as individuals need to consume large amounts of resource rapidly to continue their onward journey. Such high quality sites may [be] crucial to allow migrants to cross large ecological barriers, such as oceans or deserts.”²⁴³

Migratory birds are at particular risk from climate change. Migratory birds are affected by changes in water regime, mismatches with food supply, sea level rise, and habitat shifts, changes in prey range, and increased storm frequency.²⁴⁴

However, rather than taking the required hard look at how the impacts of the Project would be exacerbated by climate change, the DEIS uses this section to try to justify the project by asserting that “the project, combined with its compensatory mitigation, would result in significant cumulative benefits to the ecosystem within the immediate project area as well as the region.”²⁴⁵ At the most basic level, this conclusion is incorrect for two very fundamental reasons. First, the purpose of mitigation is to replace the resources lost to the project, so at the most basic level mitigation would simply replace the ecosystem services lost to the project (assuming that mitigation was successful). Second, as discussed at length in these comments, many experts have concluded that the adverse impacts of the Project cannot in fact be mitigated.

The DEIS admits that it does not account for the increased variability and extreme weather events that are the clearest signals of climate change, but instead bases its analyses solely on historical data.²⁴⁶ However, water managers now routinely warn against basing design considerations solely on historical conditions: “In view of the magnitude and ubiquity of the hydroclimatic change apparently now under way, however, we assert that stationarity is dead and should no longer serve as a central, default assumption in water-resource risk assessment and planning.”²⁴⁷ This is because the climate change-induced variability will likely lead to more extreme weather, higher flows and more severe droughts than have been experienced in the past.

While the use of scenarios is as an appropriate way to plan for uncertainty, the particular scenarios used in the DEIS are not connected to particular emissions trajectories or likely climate change impacts, but instead appear simply to be different types of situations that are not necessarily mutually exclusive

²⁴³ UNEP/CMS Secretariat, Bonn, Germany, *Migratory Species and Climate Change: Impacts of a Changing Environment on Wild Animals* (2006) at 40-41 (available at http://www.cms.int/publications/pdf/CMS_ClimateChange.pdf).

²⁴⁴ *Id.* at 42-43.

²⁴⁵ DEIS at 234.

²⁴⁶ See e.g., DEIS at 229-230 (“The project design has been optimized for the climatic conditions experienced over the past seven decades. That analysis period in itself comprehends considerable variability in temperature and precipitation. An attempt to optimize the project for one or more possible climatic futures would deemphasize the significance of the existing data collected and modeled. Moreover, if the most widely accepted forecasts of climate change should occur, there is no reason to believe that the project would be economically unfeasible, or that project mitigation areas would perform unsatisfactorily.”); DEIS at 150 (“Since input data [into the HEP model] assumed stationarity, the model does not account for any future changes as it relates to climate change.”)

²⁴⁷ P.C.D. Milly, et al., *CLIMATE CHANGE: Stationarity Is Dead: Whither Water Management?*, Science February 2008, Vol 319 (5863), pp. 573-574, available at http://www.paztcn.wr.usgs.gov/julio_pdf/milly_et_al.pdf (visited November 2, 2013).

when planning across multiple years. In addition, rather than assessing different scenarios as they may affect fish and wildlife, the scenarios mostly distinguish between impacts to farmland (where flooding would cause economic harm) and non-farmland.

Indeed, possible impacts to shorebirds is the only wildlife related topic touched on in the climate change analysis, and this is limited to a few lines: “Although shorebirds may benefit from higher flood frequency elevations, shorebirds as a group would likely be very susceptible to sea level rises. Thus any potential increases in habitat would be negated by sea level rise along the coast.”²⁴⁸

The Corps should completely redo its climate change assessment to address the types of concerns raised in these comments and should ensure that it uses the most up to date climate science in this new review. The Conservation Organizations urge the Corps to begin its new review by utilizing the regional inputs to the National Climate Assessment. The Midwest assessment can be accessed at:

http://glisa.msu.edu/great_lakes_climate/nca.php.

L. The DEIS Fails to Meaningfully Evaluate the Risk of Increased Flooding

The Corps has not carried out the necessary studies to determine whether construction of the New Madrid levee (i.e., closing the 1,500 foot gap) would itself increase flood heights. The DEIS relies on an evaluation conducted 23 years ago using a 1950s era physical model to evaluate the effect on flood heights of constructing the New Madrid levee.²⁴⁹ This dramatically outdated analysis is utterly unreliable; an accurate hydrologic analysis must be conducted using modern and verified models and modern data.

Physical models cannot be relied upon to provide accurate planning information as they lack “predictive capability.”²⁵⁰ Put another way, a physical model is wildly inadequate for predicting flood level effects.

Even if a physical model could provide something close to an accurate prediction, a physical model developed in the 1950s would not be based on existing conditions in the river. Conditions have also changed significantly since the model was last run in 1990 (or possibly earlier). For example, the data below suggest that between 1974 and 2002, there has been 2.5 foot increase in water surface elevation for a moderate flood at Hickman, KY.²⁵¹

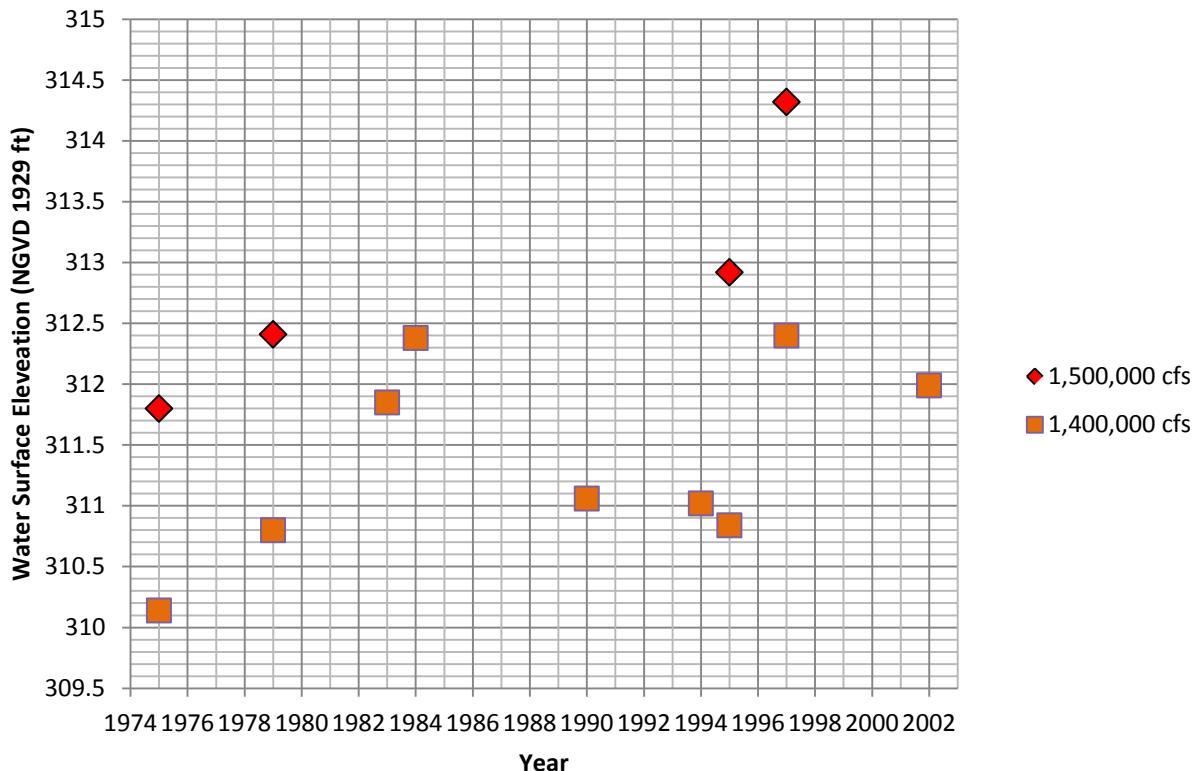
²⁴⁸ DEIS at 231.

²⁴⁹ DEIS Appendix C at C-18; Mississippi Basin Model Letter Report 89-1, Birds Point-New Madrid Floodway Reconnaissance Study, dated July 27, 1990 (“The MBM is of the fixed-bed type, reproducing a large portion of the Mississippi River and its major tributary system to a horizontal scale of 1:2000 and a vertical scale of 1:100. General features of the model, including appurtenances, instrumentation, and operating procedures, are discussed in detail in MBM Report 1-4, DESCRIPTON OF THE MISSISSIPPI BASIN MODEL, dated 18 July 1951.”)

²⁵⁰ Stephen T. Maynard, Journal of Hydraulic Engineering, *Evaluation of the Micromodel: An Extremely Small-Scale Movable Bed Model* (April 2006). While Maynard’s study reviewed a micromodel, the same problems hold true for larger scale physical models. Maynard concludes that because of the “lack of predictive evidence, micromodel should be limited to demonstration, education, and communication.”

²⁵¹ Pinter, N. Jemberie A. A., Remo J.W.F, Heine, R.A., Ickes B.S. 2010. Cumulative Impacts of River Engineering, Mississippi and Lower Missouri Rivers. River Research and Applications. DOI10.1002/rra.1269; Pinter, N., A. A. Jemberie, J. W. F. Remo, R. A. Heine, B. S. Ickes, 2008. Flood trends and river engineering on the Mississippi River system, Geophys. Res. Lett., 35, L23404, DOI:10.1029/2008GL035987.

Specific Stage at Hickman, KY 1973-2002



Source: ²⁵²

Given the potential public safety implications, it is essential that the Corps completely reassess the impacts of the TSP on flood heights using a state of the art 2-D hydrodynamic model with inputs that recognize the current conditions in the river system. In the absence of such modeling, the Corps cannot conclude that this project will not cause risks to public safety by increasing the risk of flooding during small and large scale flood events.

The Conservation Organizations also note that the Corps' 23 year old analysis shows that the Project would in fact increase flood heights by a significant amount. That analysis concludes that construction of the levee would increase flood heights at Hickman, Kentucky by 0.1 feet, at the riverside of the mainline levee near Big Oak Tree State Park by 0.3 feet, and at levee mile 81 of the Mississippi River frontline levee by 0.5 feet (according to information provided to the Conservation Organizations by the Corps this levee mile is located just above the Donaldson Point Conservation Area). These are significant flood height increases, and of course are not confined to just the precise locations measured by the Corps. For example, minimum standards for the State of Illinois limit such increases in flood heights to 0.1 foot, provided that hazardous velocities are not produced.²⁵³ The DEIS incorrectly concludes that

²⁵² *Id.*

²⁵³ Illinois State Water Survey Division, and Illinois Division of Water Resources, Governor's Task Force on Flood Control, State of Illinois Guidelines for Flood Plain Studies, March 1975; Illinois Department of Transportation, Division of Water Resources, Rules and Regulations, Regulation of Construction Within Flood Plains Established Pursuant to Section 65f, Chapter 19, Illinois Revised Statutes, Springfield, Illinois, 1973. For purposes of the

these flood height increases are not significant.

The DEIS also fails to evaluate the potential impacts of the Project on delaying the activation of the New Madrid Floodway. The implications of such a delay are significant and are discussed in more detail below.

M. The DEIS Fails to Properly Assess the Risk of Disproportionate Impacts to Low Income and Minority Communities

Executive Order 12898 requires that each Federal agency achieve environmental justice by identifying and addressing disproportionately high adverse human health or environmental effects of federal activities on minority and low-income populations. The Project will disproportionately affect the health and safety of minority and low income populations by making it harder to utilize the New Madrid Floodway to reduce the risk of catastrophic flooding during severe floods.

The Corps has not carried out the necessary studies to determine whether construction of the New Madrid levee (i.e., closing the 1,500 foot gap) would itself increase flood heights in a way that would have a disproportionate impact on low income and minority communities. As discussed in Section VII.L. of these comments, the DEIS relies on an evaluation conducted 23 years ago using a 1950s era physical model to evaluate the effect on flood heights of constructing the New Madrid levee (closing the 1,500 foot gap).²⁵⁴ This dramatically outdated analysis is utterly unreliable; an accurate hydrologic analysis must be conducted using modern and verified models and modern data.

However, the Corps' 23 year old analysis shows that the Project would in fact have a disproportionate impact on low income and minority populations by increasing flood risks at Hickman, Kentucky (see census information for Hickman below). That analysis concludes that construction of the levee would increase flood heights at Hickman, Kentucky by 0.1 feet, at the riverside of the mainline levee near Big Oak Tree State Park by 0.3 feet, and at levee mile 81 of the Mississippi River frontline levee by 0.5 feet (according to information provided to the Conservation Organizations by the Corps this levee mile is located just above the Donaldson Point Conservation Area).

These are significant flood height increases, and of course are not confined to just the precise locations measured by the Corps. For example, minimum standards for the State of Illinois limit such increases in flood heights to 0.1 foot, provided that hazardous velocities are not produced.²⁵⁵

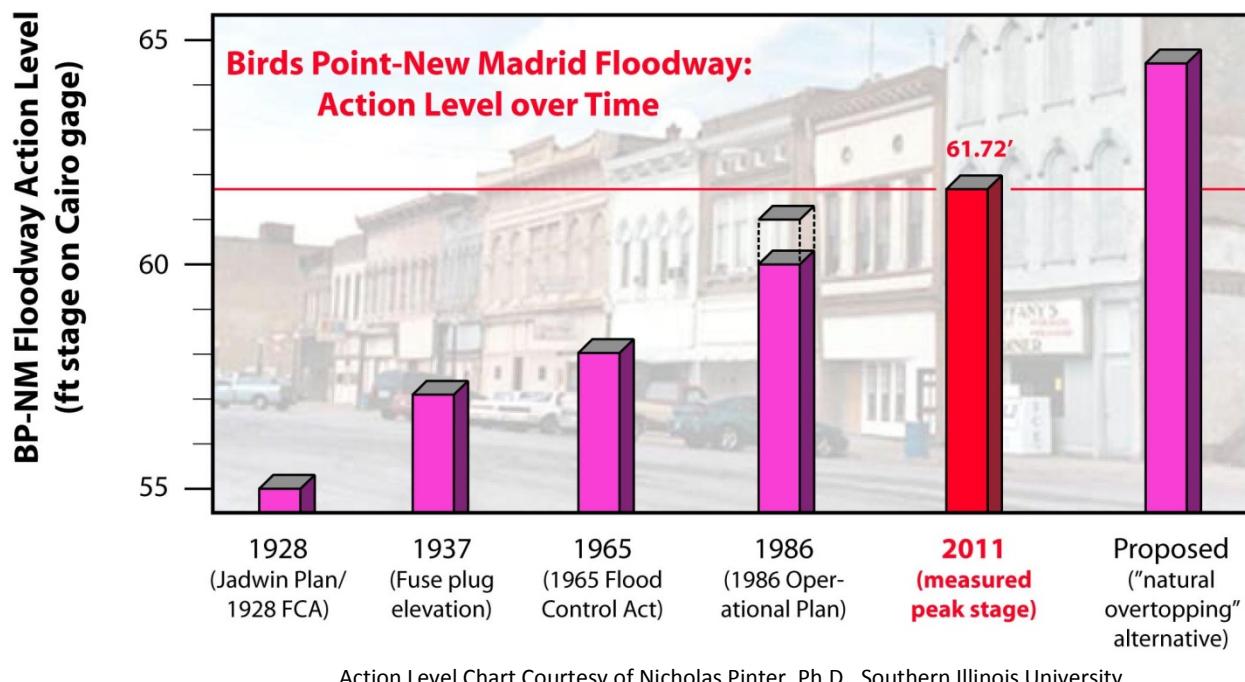
National Flood Insurance Program, FEMA establishes a maximum allowable increase of 1.0 foot, provided that hazardous velocities are not produced. FEMA Guide for Community Officials, Guide for Community Officials (December 2009), Chapter 7.

²⁵⁴ DEIS Appendix C at C-18; Mississippi Basin Model Letter Report 89-1, Birds Point-New Madrid Floodway Reconnaissance Study, dated July 27, 1990 ("The MBM is of the fixed-bed type, reproducing a large portion of the Mississippi River and its major tributary system to a horizontal scale of 1:2000 and a vertical scale of 1:100. General features of the model, including appurtenances, instrumentation, and operating procedures, are discussed in detail in MBM Report 1-4, DESCRIPTON OF THE MISSISSIPPI BASIN MODEL, dated 18 July 1951.")

²⁵⁵ Illinois State Water Survey Division, and Illinois Division of Water Resources, Governor's Task Force on Flood Control, State of Illinois Guidelines for Flood Plain Studies, March 1975; Illinois Department of Transportation, Division of Water Resources, Rules and Regulations, Regulation of Construction Within Flood Plains Established Pursuant to Section 65f, Chapter 19, Illinois Revised Statutes, Springfield, Illinois, 1973. For purposes of the National Flood Insurance Program, FEMA establishes a maximum allowable increase of 1.0 foot, provided that

Protecting communities from flooding is a fundamental objective of the Mississippi River & Tributaries program and timely activation of the floodway is an essential tool to protect communities. Prior Corps studies carried out for the Project show that levees and floodwalls would overtop in dozens of river communities in Illinois, Missouri and Kentucky if the New Madrid Floodway is not used during a severe flood.²⁵⁶ By promoting intensified use of the New Madrid Floodway, the Project will increase the pressure to prevent activation of the floodway which will make it even harder to operate the floodway to save towns in the area during the next big flood.

The pressure placed on the Corps to not utilize the floodway is significant, and the results of that pressure can be seen by the steadily increasing action levels at which the Corps is to activate the Floodway over time:



During the flood of 2011, activation of the New Madrid Floodway was delayed until well after the current activation level was reached despite advance notice of the flood threat. On April 30, the National Weather Service had predicted that the flood stage at Cairo would reach 61.5 feet by May 4.²⁵⁷

hazardous velocities are not produced. FEMA Guide for Community Officials, Guide for Community Officials (December 2009), Chapter 7.

²⁵⁶ St. Johns Bayou and New Madrid Floodway, Consolidated NEPA Document (consolidating the 2002 RSEIS and the 2006 RSEIS 2 for the St. Johns Bayou and New Madrid Floodway, MO Project), Appendix K. p. 13-14 (previously available at <http://www.mvm.usace.army.mil/stjohns/PeerReview/default.asp>; this document appears to have been removed from the Corps' website).

²⁵⁷ Camillo, Charles A., "Divine Providence: The 2011 Flood in the Mississippi River and Tributaries Project" (2012). *US Army Corps of Engineers, Omaha District*. Paper 142 at 93, available at <http://digitalcommons.unl.edu/usarmyceomaha/142> (visited on November 24, 2013).

On May 1, the river level at Cairo had surged past 59.5 feet.²⁵⁸ However, the Bird's Point levee was not blown up until May 2, 2011 at approximately 10 pm EST. By that time, the river had reached 61.72 feet at Cairo. "Missouri officials had fought hard to stop the plan, filing court actions all the way to the U.S. Supreme Court."²⁵⁹ The delay in activating the floodway has been implicated in the flooding of Olive Branch. After the floodway was activated in 2011, water levels at Cairo dropped 2.7 feet in just 48 hours.

Similar delays have occurred each time the Corps has anticipated activating the Floodway. In 1983, a lawsuit was filed that enjoined use of the floodway until April 1984; the Corps ultimately did not activate the Floodway during this flood event because the water levels did not reach the activation level. In 1937, the National Guard had to be called in to quell armed opposition to the floodway's use.

The communities most likely to be affected by delays in activating the New Madrid Floodway have significant minority and low-income populations:

| United States Census Data ²⁶⁰ | | | |
|--|---------------|---------------|--------------------------------|
| Town | Poverty Level | Child Poverty | Minority Population |
| Cairo, IL | 44.2% | 71.7% | 72.4% (69.6% African American) |
| Charleston, MO | 29.8% | 52.3% | 53.3% (50.4 %African American) |
| Hickman, KY | 26.1% | 40.1% | 36.1% (34.1% African American) |
| Paducah, KY | 23.6% | 40.0% | 29.0% (23.7% African American) |
| East Prairie, MO | 20.9% | 18.8% | 3.2% (2.7% African American) |
| Sikeston, MO | 20.0% | 28.0% | 31.2% (26.2% African American) |
| East Cape Girardeau, IL | 10.0% | 14.6% | 5.2% (3.4% African American) |

N. The DEIS Fails to Properly Assess Impacts to Ecosystem Services

While the Conservation Organizations appreciate the Corps' inclusion of a discussion of ecosystem services in the DEIS, that discussion fails to properly assess the value of the ecosystem services that will be lost as a result of the Project.

Moreover, we fundamentally disagree with the Corps' conclusion that "Implementation of the preferred project alternative (New Madrid Floodway 3.1 and St. Johns Bayou Basin 2.1) would yield considerable gains in ecosystem services, both within the project area as well as in adjacent and downstream ecosystems primarily from mitigation necessary to compensate for impacts to fish and wildlife resources."²⁶¹ As noted elsewhere in these comments, the purpose of mitigation is to replace the resources lost to the project, so at the most basic level mitigation would simply replace the ecosystem services lost to the project (assuming that mitigation was successful). As also discussed at length in these comments, many experts have concluded that the adverse impacts of the Project cannot in fact be mitigated.

²⁵⁸ *Id.* at 94.

²⁵⁹ CBS St. Louis, <http://stlouis.cbslocal.com/2011/05/03/watch-blowing-up-birds-point-levee/> (visited on November 24, 2013).

²⁶⁰ United States Census Bureau, *American FactFinder*, available at <http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml> (last visited November 15, 2013).

²⁶¹ DEIS at 205.

In addition, a meaningful ecosystem services valuation would assess far more services than the two evaluated by the Corps. Significant progress has been made in the science of ecosystem services evaluation and many valuable assessments have been carried out. The Conservation Organizations refer the Corps to the three ecosystem services valuations attached at Attachment F of these comments for information on preparing a meaningful ecosystem services valuation and for examples of ecosystem services valuations carried out in the Mississippi River Valley.

The Conservation Organizations urge the Corps to contract with an organization expert in conducting ecosystem services valuations, and ensure that the ecosystem services that will be lost to the Project are accounted for as project costs in the benefit-cost analysis for the Project.

VIII. Conclusion

As discussed above, the Conservation Organizations strongly oppose the Project and urge the Corps to abandon it and select the no action alternative. Should the Corps continue to pursue the Project it must substantially rewrite the DEIS to address the many legal and scientific deficiencies discussed throughout these comments. Should the Corps choose to pursue the Project despite its critically significant and unacceptable environmental impacts, the Conservation Organizations call on the Environmental Protection Agency to veto the project under Section 404(c) of the Clean Water Act, and call on the Department of the Interior to refer the project to the Council on Environmental Quality pursuant to 42 U.S.C. § 4344.

Respectfully submitted,



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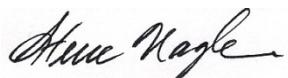
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