

September 6, 2018

Rankin Hinds Pearl River Flood Control and Drainage District
P.O. Box 154
Jackson, MS 39205

Attn: Keith Turner
Watkins and Eager PLLC
400 East Capitol St.
Jackson, MS 39201
Via e-mail: kturner@watkinseager.com

RE: Integrated Draft Feasibility and Environmental Impact Statement; Pearl River Basin, Mississippi Federal Flood Risk Management Project Hinds and Rankin Counties, MS; Rankin-Hinds Pearl River Flood and Drainage Control District – One Lake Project Proposal

Dear Mr. Turner:

Please accept the following as The Nature Conservancy's comments on the Integrated Draft Feasibility and Environmental Impact Statement (DFEIS) referenced above. The Nature Conservancy (TNC) is a non-governmental conservation organization whose mission is conserving the lands and waters on which all life depends. We have been working in the Pearl River Basin of both Mississippi and Louisiana, where the proposed project is to be located, for nearly 20 years.

The Pearl River is one of the most intact and biologically significant river systems in the Southeast. It is one of six high priority Southeastern U.S. freshwater systems identified by TNC in 2001 and 2002 as a conservation action site requiring protection (Smith, R.K. et al. Freshwater Conservation Action: A Biodiversity Assessment of the Southeastern United States. 68 pp. 2002; East Gulf Coast Ecoregional Plan, The Nature Conservancy. 35pp. 2001).

The Pearl River Basin supports one of the richest assemblages of fish and mussels in the Southeast (including 16 rare and threatened species), one of the highest quality marsh complexes in the South, and large blocks of bottomland hardwood forests and swamps, which provide high-quality contiguous habitat for migratory species such as the Swallow-tailed Kite and the Louisiana Black Bear.

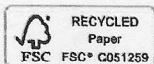
Because of the Pearl River Basin's ecological significance, TNC has a number of concerns for which we believe additional information must be developed or considered relative to the proposed project.

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There are many river basins that drain to the Gulf of Mexico that have been altered hydrologically and can serve as a basis for observing and measuring the resulting impacts to downstream coastal areas. In many instances, these alterations have detrimental outcomes for not only habitats and species, but also the human communities who rely on healthy ecosystems and coastal processes for their livelihood and protection. As an example, the series of dams and reservoirs in the Chattahoochee and Flint Rivers in Georgia have rendered freshwater flows to Apalachicola Bay unreliable to the point of threatening the local economy by reducing the productivity of oysters. Additionally, these same dams have restricted the amount of sediment being delivered from the Apalachicola River to the barrier islands that both form and protect Apalachicola Bay; the result being barrier islands that are losing ground and increasing the risk of those that live on them and are protected from storms by them.

Louisiana produces more oysters than any other state in the nation, and Mississippi has embarked on an ambitious plan to restore and recover its oyster resources so that the fishery is commercially viable and coastal communities can benefit from the protection and improved water quality that healthy oyster reefs afford. Any further alteration of Pearl River flows may put these restoration efforts in peril.

In regard to the DFEIS, TNC has identified issues for which we request additional information be developed.

AQUATIC SPECIES

In Louisiana, there are approximately 120 species of fish in the Pearl River, with 14 of them being species of conservation concern. There are 28 species of freshwater mussels, including the Inflated Heelsplitter, which, in addition to being federally listed, is considered critically imperiled by the Louisiana Department of Wildlife and Fisheries (LDWF). The department has identified 47 species of concern in the Lower Pearl River Watershed. A 2015 LDWF report including the status of Pearl River fisheries and species of concern may be found at

http://www.wlf.louisiana.gov/sites/default/files/pdf/document/39505-pearl-river/pearl_river_mpa_2015_update.pdf.

Mussels:

In the discussion of sediment samples collected from the Pearl River, mention is made (Appendix C, Preliminary Sediment Analysis, p3) of mussel shells mixed with coarse sand and gravel sediments. This observation is critical in that it could be indicative of active mussel beds in this reach of the Pearl River. The sample in question was collected within sinuous reach of the Pearl River below Ross Barnett Dam (RBD) and upstream of Hanging Moss Creek (reach 2 as defined in the DFEIS). Because of the sinuosity, this reach would be expecting to contain a rich and diverse range of substrate types and habitats types that could harbor successful mussel beds.

The origin of the mussel shells, and their indication of the potential occurrence of active mussel beds, must be evaluated to determine the presence or absence of active mussel beds within the project footprint. Southern sand-bed, alluvial rivers such as the White, Ouachita, Pascagoula, Bayou Bartholomew, Saline and Cache, harbor rich mussel beds that typically contain one or more of the Federally Listed Threatened and Endangered (T& E) mussel species. Determination of the presence of additional T&E species (in addition to those discussed on p80-85 of the DFEIS) in the reach of the Pearl

River downstream from the Ross Barnett Dam (RBD) would be a significant and essential analysis to be considered in the final alternative selection.

Estuarine Species:

A wide variety of estuarine species in the Mississippi Sound, including oysters, crabs, shrimp and many varieties of fish depend upon the amount, temperature and timing of the flow of the Pearl River, and could be negatively impacted by alterations to that regime. As previously mentioned, the states of Louisiana and Mississippi have both embarked on efforts to improve the overall health of oyster fisheries, for the benefit of the ecosystem and the communities that depend upon them. Alternatives impacting those fisheries should be carefully evaluated.

Migratory Fish:

There are sixteen species of migratory fish, including the threatened Gulf Sturgeon, that utilize the Pearl River Basin. The site of the proposed project is located within the area designated as critical habitat for the Gulf Sturgeon. The proposed relocation of the low-head weir could result in conversion from swift-water to slackwater habitats, which could negatively impact both migratory fish as well as mussels, as previously noted. Alternatives should also consider on-going restoration efforts to improve access for the migratory fish species, as well as on-going efforts to recover from the impacts associated with the Deepwater Horizon spill. Efforts to restore fish passage in the Lower Pearl River are advancing in concert with U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers (USACE), the Louisiana Department of Wildlife and Fisheries (LDWF) and conservation organizations including TNC. Removal of three sills in the Lower Pearl River will greatly enhance migratory fish movement throughout the river. Such migratory fish movement, however, could be hampered by altered flows and barriers proposed as part of the One Lake Project proposal.

CHANNEL STABILITY

Documentation of the current channel conditions and stability are generally summarized in the DFEIS, but the conclusions are not supported by adequate evidence. No quantitative methods, such as USDA's Stream Visual Assessment Protocol (SVAP), or Rosgen's Bank Erosion Height Index (BEHI) are referenced in the DFEIS. Both methods are widely applied in river assessments nationwide and have been previously applied to the Pearl River for the entire reach below RBD. Both SVAP and BEHI are readily applied and result in systematic quantitative assessment of channel status and conditions that would be more objective and useful than the largely subjective assessment included in the DFEIS. The specific stage analysis and aerial photo analysis discussed in the DFEIS are also widely used in river assessment, but the DFEIS discussion lacks specifics and the basic data to allow for independent review of the conclusions. Longitudinal profiles and cross sections of the impacted reach of the Pearl River are not provided, and such data are also necessary for a rigorous evaluation of channel conditions and stability, and the likely future channel stability impacts of the selected project alternative.

SEDIMENT

Grain-size distribution from channel and bank materials are discussed in the DFEIS and used to draw general conclusions regarding bank and channel composition within the reach of interest in the Pearl River. The context of the sediment samples, such as where they were collected with respect to channel features such as pools, runs, glides, and riffles is not documented. Such context is essential to interpret the sediment measurements as grain size can vary widely for each feature, and general conclusions based on samples lacking such context can severely limit the ultimate usefulness of the cited data in addressing sediment transport and channel stability questions. There is no description of bank angle and stratification, and both parameters are essential factors in assessing bank stability.

CLIMATE CHANGE AND WATER BUDGET

All flood event descriptions and analyses are based on statistical analysis of the historical gage data for the Pearl River. Such an approach is a well-accepted practice, but that approach makes the assumption that the past can be used to predict the future. As such, the potential impacts of climate-induced changes in regional precipitation patterns are not discussed and factored into the design of the alternatives. This omission is a significant short-coming of the hydraulic analysis in the DFEIS. The modeling completed by TNC's Louisiana Office and its subcontractor for the Pearl River Basin (using the Waterfall Model) provides a rigorous, well-documented approach to modeling future river flow scenarios that will result from regional changes in precipitation patterns influenced by climate change. Additionally, the Mississippi Department of Environmental Quality (MDEQ) has contracted for a major flow modeling effort of the Pearl River Basin. Progress and results from the MDEQ effort should also be considered. The absence of consideration of such likely future flow alterations will likely result in the design of a project to meet flood and water flow conditions which may be totally different in 10 or more years into the future. Thus, the project may be inadequate or completely fail to address future conditions.

PROJECT ALTERNATIVES

The project is proposed to alleviate flooding by the Pearl River in the Jackson, MS area. In essence, the goal of the project is to increase the volume and rate of flood water routing through the area in order to lower flood stages and durations.

River flow can be simply summarized by the equation:

$$\text{Flow} = \text{Channel Area} \times \text{Flow Velocity}$$

The two independent variables, channel area and flow velocity, are both impacted by the project alternatives to varying degrees. Channel area is increased by widening or deepening the channel, and flow velocity is increased by increasing stream gradient or decreasing channel roughness. The goal of the alternatives is to increase flow so that the corresponding flood stage associated with a given flow is lowered within the project area. Given these basic parameters and our initial review of the DFEIS, the alternatives can be compared as follows:

Alternative A – The no action alternative, little changes to current conditions.

Alternative B – This alternative increases channel area by increasing channel depth, by raising levee elevations and by increasing levee extent. Because of the increase in channel depth during floods, shear stress on the channel bottom will increase and channel incision may result, the ramifications of which would be extreme degradation of in-channel and bature habitats and increased bank failure.

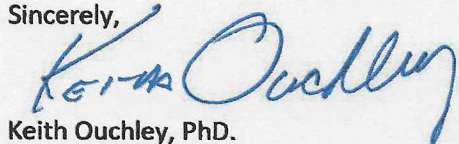
Alternative C – This alternative increases channel area by increasing channel width by relocating levees away from the channel and by implementing channel “modifications” (likely channel straightening). Flow velocity is also increased by floodplain clearing and channel straightening (if included in the alternative) which would increase the gradient of the river. This alternative also includes a downstream weir, which will act as a grade control structure to prevent channel incision, and the structure will also provide a backwater (“One Lake”). The interactions and ramifications of the weir and the other channel modifications are complex and beyond the scope of these comments, however, it is difficult to determine why the weir is necessary to meet the demands of the flow equation discussed above while reducing flood stage. The structure may simply serve as a sediment trap to be infilled, and, much as the reservoir behind RBD is rapidly in-filling from upstream sediment, the proposed One Lake may be very short lived. If the feature acts as a sediment trap, it will also have downstream ramifications including impacting downstream aquatic habitats.

In addition, TNC has concerns about the proposed disposition of the hazardous waste areas in the affected reach in Mississippi. The Creosote Bayou site likely contains Dense Non-Aqueous Liquids (DNAPLs) in the subsurface, which we have been advised are extremely difficult to remediate and could be a long-term source of contamination to floodplain groundwater.

We also encourage, in relation to RBD operations for both water and sediment routing, that the development of the alternatives optimizes all uses of the Pearl River system, including aquatic habitat, floodplain functionality, flood control, water supply, and recreation. TNC has a long history of collaboration with various U.S Army Corps of Engineers Districts and other partners nationwide in implementing environmental restoration and conservation projects. We would be pleased to share information related to those initiatives as well as our work in the Pearl River as you consider flood risk reduction alternatives.

Thank you in advance for consideration of these comments. Please contact Karen Gautreaux, our office’s Director of Government Relations at kgautreaux@tnc.org if we can provide additional information or assistance.

Sincerely,



Keith Ouchley, PhD.

State Director, TNC LA

C: Major General Richard G. Kaiser, Commander, Mississippi Valley Division, USACE

Colonel Michael C. Derosier, Commander, Vicksburg District, USACE

Mr. Johnny Bradberry, Chair, Louisiana Coastal Protection and Restoration Authority

Dr. Chuck Carr Brown, Secretary, Louisiana Department of Environmental Quality

Dr. Thomas Harris, Secretary, Louisiana Department of Natural Resources

Honorable Jack Montoucet, Secretary, Louisiana Department of Wildlife and Fisheries