



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
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Office of the Regional Administrator

December 10, 2020

Colonel Stephen F. Murphy
U.S. Army Corps of Engineers
New Orleans District
7400 Leake Avenue
New Orleans, Louisiana 70118-3651

RE: Bayou aux Carpes Clean Water Act Section 404(c) Final Determination
Request for Exception 3 Consistency Determination (Bayou aux Carpes Augmentation Project)

Dear Colonel Murphy:

This letter is in response to the February 11, 2020, letter from the U.S. Army Corps of Engineers (Corps), New Orleans District (District) proposing a project to enhance the hydrology, fisheries habitat, and aquatic organism access in the Bayou aux Carpes Clean Water Act (CWA) Section 404(c) site. The project would offset potential secondary impacts that may result due to the Corps' construction of the floodwall component of the West Bank and Vicinity Project, West Closure Complex. The District requested that the Environmental Protection Agency (EPA) approve the proposed project under the 1985 Bayou aux Carpes Final Determination (FD) Exception 3. Exception 3 removes from prohibition "...discharges associated with projects with the sole purpose of habitat enhancement and specifically approved by the EPA." After reviewing the District's proposed project, EPA has determined that the work associated with the proposed project will satisfy Exception 3.

EPA issued the October 16, 1985, Bayou aux Carpes Section 404(c) FD for approximately 3000 acres of wetlands that comprised the location of a proposed Corps of Engineers (Corps) flood control project—the Harvey Canal-Bayou Barataria Levee Project. EPA based its 1985 FD on unacceptable adverse effects to shellfish beds, fishery areas (including spawning and breeding areas), wildlife, and recreational areas. In the 1985 FD, EPA determined the Bayou aux Carpes site provided valuable habitat for fish and wildlife, contributed organic material that fed fish and shellfish communities in the adjacent estuary, acted as a pollutant filtering mechanism to reduce degradation of water quality in adjacent waters, and provided opportunities for public recreation.

The completion of the original Corps flood control project and subsequent filling activities would have caused the loss of the wetland site and the wildlife habitat it provided to the American alligator (which was a threatened species in Louisiana), the osprey and the wood duck (which were National Species of Special Emphasis) as well as a number of other species. The loss of the wetland also would have eliminated fisheries habitat utilized by estuarine species of commercial importance, including the blue crab, and recreational value, including the blue catfish. The loss of wetlands would also have reduced the production and export of detritus consumed by fish species of commercial and recreational

importance. In addition, the site would no longer have been able to filter pollutants and excess nutrients to protect the downstream water quality. EPA also noted in the FD that the significance of these impacts was even greater in the context of wetlands alterations within coastal Louisiana, which had lost over 800,000 acres of land during the 80 years prior to 1985.

The 1985 Bayou aux Carpes Section 404(c) FD prohibits the discharge of dredged or fill material into waters of the United States, including wetlands within the Bayou aux Carpes site, unless a proposed discharge satisfies one of three exceptions. The FD noted that discharges meeting any of these exceptions “are unlikely to result in significant adverse effects to the aquatic environment as long as they are performed in accordance with these restrictions and as well as any permit conditions which may be imposed by the Corps of Engineers through the permit process.” The three exceptions include:

Exception 1: “discharges associated with completion of a modified Harvey Canal-Bayou Barataria Levee Project,”

Exception 2: “discharges associated with routine operation and maintenance of the Southern Natural Gas Pipeline Company,” and

Exception 3: “discharges associated with projects with the sole purpose of habitat enhancement and specifically approved by EPA.”

In 2009, EPA modified the 1985 FD to allow for the Corps’ construction of the floodwall component of the West Bank and Vicinity Project, West Closure Complex. The 2009 modification required that the Corps provide, in addition to mitigation for the direct impacts from the wall construction to Bayou aux Carpes wetland resources, a project with habitat benefits to the Bayou aux Carpes site for expected secondary impacts to the Bayou aux Carpes aquatic resources.

The hydrology and topography in the Bayou aux Carpes site and vicinity has been highly altered through a variety of actions, such as the construction of roads, levees, spoil banks, canals, and transmission rights-of-way. For example, historically, Bayou aux Carpes was the major natural waterway draining and providing a tidal exchange for the site. In 1974, Jefferson Parish severed this waterway’s connection to Bayou Barataria, its historic receiving waterway, by constructing an earthen and shell plug at the confluence of Bayou aux Carpes and Bayou Barataria. This hydrologic alteration limited sediment deposition to combat natural subsidence, resulting in marsh deterioration and restricting the movement of nutrients and aquatic species into and out of the Bayou aux Carpes site. The 1974 Jefferson Parish plug adversely impacted tidal connectivity within the site, and today the primary connectivity is maintained through the Southern Natural Gas Pipeline (SNGP) canal that courses through the site and a few oil and gas canals that connect the SNGP canal with Bayou aux Carpes.

To address the Corps’ 2009 modification commitment to provide a habitat-benefit project to Bayou aux Carpes, the District proposed to enhance the hydrology, fisheries habitat, and aquatic organism access in the site by restoring a more natural connection between Bayou aux Carpes and Bayou Barataria.

(Figure 1). The District’s proposed plan would involve clearing, excavation of the Jefferson Parish plug, and disposal of excavated material. The site work would encompass an area of approximately 2.5 acres; in total, approximately 3,000 cubic yards of material would be excavated and deposited on both sides of the Bayou aux Carpes waterway from the mouth of Bayou aux Carpes at Bayou Barataria upstream approximately 1500 feet. (Figure 2).

The District conducted hydrodynamic modeling on the effects of removing the Jefferson Parish plug. This modeling demonstrated that removing the plug at the historic confluence of the Bayou aux Carpes natural waterway with Bayou Barataria would increase sheet flow through the area's wetlands and improve drainage, thereby benefiting the existing swamps and marshes found within the Bayou aux Carpes site, as well as benefitting fishery and aquatic organism access into Bayou aux Carpes.

Additionally, any excavated plug material deposited on either side of the Bayou aux Carpes waterway, as depicted in Figure 2, would create shallow water habitat. This shallow water habitat could be used as a spawning and nursery habitat for many fish species and other aquatic organisms.

Wetlands benefit coastal communities by providing protection from flooding, helping to maintain water quality, and providing habitat for fish and wildlife like estuarine organisms, wintering waterfowl, and neotropical migrant birds. Absent adequate reclamation measures such as removing the Jefferson Parish plug, the Bayou aux Carpes site would continue to stress the site's aquatic resources and values, thereby causing adverse impacts on natural hydrology, ecology, water quality, and wetland functions.

The District proposes to remove the Jefferson Parish plug, restoring the natural connection of Bayou aux Carpes to Bayou Barataria, and place the excavated material from the plug along a portion of the Bayou aux Carpes waterway to create shallow water habitat. A barge-mounted excavator would remove the plug from the Bayou Barataria side. Plug material will either be stored on the barge until the barge can break through to the Bayou side or be placed temporarily on the adjacent ridge/levee. The excavated plug material will then be used beneficially to create improved shallow water habitat inside of Bayou aux Carpes. This plan has been closely coordinated with the Interagency Environmental Team (IET) and has been received favorably. The IET is comprised of federal representatives from the New Orleans Corps District, National Park Service (NPS), US Fish and Wildlife Service, and EPA, as well as representatives from state partners.

EPA Region 6 conducted a review of the information provided by the District in the February 11, 2020, letter, the District's October 2019 Bayou Aux Carpes Section 404(c) Augmentation Measures Evaluation, and the District's September 2020 Bayou aux Capes Section 404(c) Augmentation Measures Plug Removal Plans. EPA also participated in a February 19, 2020 site visit with the NPS and the District. EPA also reviewed research on the effects to wetlands, water quality, and aquatic organisms caused by non-natural waterway restrictions, such as the plug in Bayou aux Carpes (Enclosure 1).

After reviewing the District's proposed project, EPA has determined that the work associated with the proposed project will satisfy Exception 3 of the 1985 Bayou aux Carpes CWA Section 404(c) FD. The sole purpose of the District's proposed project is to enhance the hydrology, fisheries habitat, and aquatic organism access in the site by restoring a more natural connection between Bayou aux Carpes and Bayou Barataria, thereby benefitting the restoration and maintenance of the integrity of the ecological and biological processes of Bayou aux Carpes aquatic resources. EPA approves the proposed discharges provided that such discharges comply with the conditions and best management practices identified in Enclosure 2 consistent with the District's proposal. Furthermore, it is the responsibility of the District to obtain all necessary federal, state, and/or local authorizations and conducting all required regulatory coordination and approvals prior to implementing the proposed project.

Any discharges of dredged or fill material within the Bayou aux Carpes site that are inconsistent with the February 11, 2020, District proposal or the September 2020 Bayou aux Capes Section 404(c) Augmentation Measures Plug Removal Plans, or that fail to implement the conditions and best management practices provided in this letter are not approved as qualifying for the exception. EPA's

technical analysis of the proposal (Enclosure 1), the required conditions and best management practices for EPA's project approval (Enclosure 2), and a copy of the 1985 FD (Enclosure 3) are enclosed.

EPA appreciates the efforts of the District to address the requirements of the 1985 Bayou aux Carpes CWA Section 404(c) FD. We also recognize and appreciate the efforts of the District to reclaim and restore the aquatic resources of the Bayou aux Carpes site. If we may be of further assistance, please feel free to contact Dr. Raul Gutierrez in the EPA Region 6 Wetland Review Section at (214) 665-6697.

Sincerely,

A handwritten signature in black ink, appearing to read "Ken McQueen". The signature is written in a cursive, slightly slanted style.

Ken McQueen
Regional Administrator

Figures 1 and 2
Enclosures 1, 2, and 3

cc: Lee Forsgren, EPA
Ryan Fisher, Department of the Army

Enclosure 1

**Environmental Protection Agency
Technical Analysis of Proposed
US Army Corps of Engineers, New Orleans District
Bayou aux Carpes Augmentation Project
Removal of Jefferson Parish Plug in Bayou aux Carpes Waterway**

Background

As noted in the cover letter, the 1985 Bayou aux Carpes Clean Water Act Section 404(c) Final Determination (FD) placed prohibitions on the discharge of dredged or fill material into waters of the United States, including wetlands within the Bayou aux Carpes site, unless the proposed discharge is covered under one of the exceptions stated in the FD. The FD provided three exceptions to the prohibition of discharges of dredged or fill material in the Bayou aux Carpes site. Discharges of dredged or fill material would be allowable for:

Exception 1: discharges associated with the completion of a modified Harvey Canal-Bayou Barataria Levee Project,

Exception 2: discharges associated with routine operation and maintenance of the Southern Natural Gas Pipeline Company, and

Exception 3: discharges associated with projects with the sole purpose of habitat enhancement and specifically approved by EPA.

The District has requested EPA's approval of a proposal to discharge dredged and/or fill material into waters of the U.S. within the Bayou aux Carpes 404(c) site. The discharges are proposed as a response to satisfy the habitat augmentation requirements of the 2009 modification to the FD that allowed not only for discharges associated with the construction of flood wall in Jefferson Parish, but also required the District to plan, design, fund, implement, and monitor augmentation measures that would enhance wetland functions and values within the Bayou aux Carpes site. The District's request is for EPA to review the proposed project and determine if it would be consistent with 1985 Bayou aux Carpes Section 404(c) FD Exception 3.

Proposed Project Description

The District's Bayou aux Carpes plug removal project involves excavating a man-made shell plug at the mouth of Bayou aux Carpes, where it empties in Bayou Barataria. The plug was constructed by Jefferson Parish in the mid-1970s and severed the natural connection between the two waterways. It remains an impediment to the exchange of water, nutrient, and aquatic wildlife. The purpose of the proposed project is to restore flow exchange between Bayou aux Carpes and Bayou Barataria, allowing for better ingress and egress of water and aquatic organisms.

The shell plug has altered the hydrology of the area by restricting water flow between Bayou aux Carpes and Bayou Barataria, leading to a limited exchange of sediments, nutrients, and aquatic organisms thereby, stressing the wetland vegetation, increasing subsidence, and leading to swamp and marsh deterioration. Other significant impacts attributed to the plug include increased retention of saltwater intrusion, stressed wetland vegetation, and deterioration of swamp and marsh habitats adjacent to the Bayou aux Carpes. These wetlands provide habitat for fish, shellfish, and wildlife, including estuarine

organisms, wintering waterfowl, and neotropical migrant birds. The diminished wetland functions caused by the severed connection between the two waterways continues to adversely impact the entire Bayou aux Carpes site.

Approximately 3000 cubic yards covering a footprint of 0.7 acres at the confluence of the Bayou aux Carpes with the Bayou Barataria are proposed to be removed. The resulting material will be placed along the banks of the Bayou aux Carpes upstream of its confluence with the Bayou Barataria. The material will be placed at or below the level of the surrounding wetlands and partially fill the open water of the Bayou aux Carpes.

EPA Review for Consistency with FD Exception 3 Determination

For the discharges to be approved under Exception 3, they must be associated with a project with the sole purpose of habitat enhancement, meaning the project will result in habitat enhancement. EPA reviewed the information provided by the District, as well as participated in an onsite field visit facilitated by the District and the National Park Service. Additionally, EPA conducted a review of the current research on restoring hydrologic connections between two formerly interacting waterways and the expected effects of these activities on wetlands. The following is a list of expected benefits associated with the proposed project.

1. Benefit: Restoration of hydrologic connectivity.

The removal of the plug is expected to improve hydrologic conditions by allowing natural ingress and egress of water between the Bayou aux Carpes and Bayou Barataria, as well as improving the hydrologic connection of the adjacent Bayou aux Carpes wetlands to Bayou Barataria. The plug currently acts to retain water, which leads to stagnation where the bayou forms a dead end at the plug, as normal flushing of the bayou no longer occurs. Stagnation can result in higher water temperatures and lower dissolved oxygen (Mason et al., 2007) and can stress native wetland vegetation in the swamps and marshes adjacent to the Bayou aux Carpes. Unimpeded ingress and egress of water into Bayou aux Carpes and onto the adjacent wetlands will reduce stagnation and will ultimately lead to healthier marsh and swamp habitats.

2. Benefit: Increased fish and shellfish access.

The plug at the mouth of the Bayou aux Carpes acts as a barrier or impediment to fish and shellfish access to the site. Removal of barriers such as the plug would restore the connectivity between both bayous and wetlands adjacent to the Bayou aux Carpes, increasing the importance of the site as valuable spawning and breeding areas for species of commercial and recreational concern (Neill & Turner, 1987b).

3. Benefit: Decreased retention times for saltwater intrusion.

The plug at the mouth of the Bayou aux Carpes is an impediment to access into the interior of the site, and it holds water back on the site after high water events. Of particular interest are high waters associated with storm events, which have the potential to push saltwater over the plug and into the freshwater marshes and cypress swamps of the site. Surface and pore water salinities can increase, which can result in stress to freshwater wetland vegetation if the exposure is prolonged (Swenson & Turner 1987). Research has shown that the removal of the hydrologic impediments such as the plug at the mouth of the Bayou aux Carpes will reduce prolonged flooding of adjacent marsh and swamp habitat (Neill and Turner, 1987a; Swenson and Turner, 1987) and decrease stress to marsh vegetation (Baustian and Turner, 2006; Turner, 1987; Turner and McClenachan, 2018). The removal

of the plug would allow for improved connectivity between the Bayou aux Carpes, Bayou Baratavia, and adjacent wetlands, increasing the rate at which saltwater can drain from the site and allowing these waterbodies to return to pre-storm surge condition at a faster rate (Craig et al., 1979).

4. Benefit: Partial to complete restoration of wetland habitat along the banks of Bayou aux Carpes.

The placement of the excavated material from the Jefferson Parish plug in the Bayou aux Carpes waterway will become shallow along the banks where the resulting plug material will be placed beneficially, allowing for marsh edge habitat to be created where the adjacent wetlands will transition more naturally into the Bayou. This shallow transition zone will provide habitat and access to adjacent wetlands for various wildlife such as waterfowl, fish, and other aquatic species (Baustian and Turner, 2006; Neill and Turner, 1987a; Peterson and Turner, 1994).

Conclusion

After a review of information provided by the District, participation in an onsite field visit, and review of the research pertinent to the removal of flow impediments and restoration of hydrologic connectivity, EPA has determined that the District's proposal to remove the plug at the mouth of Bayou aux Carpes, as described in the District's February 11, 2020, request is solely for the purpose of and will result in habitat enhancement for the Bayou aux Carpes site and is consistent with the 1985 Bayou aux Carpes Final Determination's Exception 3, subject to the Conditions and Best Management Practices in Enclosure 2.

Literature Cited

- Baustian, J. J., and R. E. Turner. 2006. Restoration success of backfilling canals in coastal Louisiana marshes. *Restoration Ecology* 14: 636-644.
- Craig, N. J., R. E. Turner, and J. W. Day, Jr. 1979. Land loss in coastal Louisiana (U.S.A). *Environmental Management* 3: 133-144.
- Mason, A., Y. Jun Xu, P. Saska, A. Viosca, J. M. Grace, J. Beede, and R. Stich. 2007. Streamflow and nutrient dependence of temperature effects on dissolved oxygen in low-order forest streams. *Proceedings of the Fourth Conference on Watershed Management to Meet Water Quality Standards and TMDLs*.
- Neill, C., and R. E. Turner. 1987a. Backfilling canals to mitigate wetland dredging in Louisiana coastal marshes. *Environmental Management* 11: 823-836.
- Neill, C., and R. E. Turner. 1987b. Comparison of fish communities in open and plugged backfilled canals in Louisiana coastal marshes. *North American Journal of Fisheries Management* 7: 57-62.
- Peterson, G. W., and R. E. Turner. 1994. The value of salt marsh edge vs. interior habitat for fish and decapod crustaceans in a Louisiana tidal marsh. *Estuaries* 17: 235-262.
- Swenson, E. M., and R. E. Turner. 1987. Spoil banks: effects on a coastal marsh water-level regime. *Estuarine, Coastal and Shelf Science* 24: 599-609.
- Turner, R. E. 1987. Relationship between canal and levee density and coastal land loss in Louisiana. U. S. Fish and Wildlife Service Biological Report, Washington, D. C.
- Turner, R. E., and G. McClenachan. 2018. Reversing wetland death from 35,000 cuts: opportunities to restore Louisiana's dredged canals. *PLoS ONE* 13(12): e0207717.
<https://doi.org/10.1371/journal.pone.0207717>

Enclosure 2

**Conditions and Best Management Practices
for the Proposed
US Army Corps of Engineers, New Orleans District
Bayou aux Carpes Augmentation Project
Removal of Jefferson Parish Plug in Bayou aux Carpes Waterway**

Any augmentation project activities associated with the proposed Jefferson Parish plug removal shall not cause more than minimal and temporary water quality impacts to any adjacent wetland, stream, or water body. EPA determined that the following conditions and best management practices (BMPs) are necessary to ensure that any discharges of dredged or fill material to comply with the terms of the 1985 Bayou aux Carpes 404(c) Final Determination:

1. The US Army Corps of Engineers, New Orleans District (District) must confirm in writing with any contractors conducting work as a part of this project the boundaries of the project worksite, per District proposal, so as to prevent unapproved impacts to adjacent wetlands through unauthorized machinery/equipment access or unapproved discharges of dredged or fill material. Discharges of dredged or fill material are restricted to those areas specified in the project proposal.
2. During final project design, the District shall utilize all feasible engineering and construction practices to minimize the potential for impacts to the Bayou aux Carpes wetlands outside the project footprint.
3. The approved mode of transportation of excavated material to the final discharge site, as proposed by the District, is for barge transport. Should other means of transport be proposed, the District must seek approval from EPA Region 6 prior to implementation.
4. Prior to project implementation, the District shall confer with the U.S. Fish and Wildlife Service (USFWS) and comply with any specified endangered species requirements identified by the USFWS.
5. The District shall be responsible for obtaining all necessary federal, state and/or local authorizations and conducting all required regulatory coordination and approvals prior to implementing proposed project.
6. Throughout the life of the project, the District shall ensure that any necessary adaptive construction modifications that significantly deviate from the proposed District plan shall be approved by EPA Region 6 prior to implementation.
7. The District shall be responsible for ensuring compliance with the terms of this approval, including the conditions and BMPs. The District shall be responsible for ensuring that all employees and contractors working within the Bayou aux Carpes CWA Section 404(c) site understand the terms and extent of this approval.
8. Any violation of the terms of this approval shall be reported by the District to EPA Region 6 by telephone immediately upon discovery, followed by a written report by District describing the circumstances and ecological impacts. In this event, all related work activities shall cease until resolution is reached with EPA.

In the event that EPA determines during the life of the project that construction of the approved project is causing unanticipated and unacceptable wetland impacts in the Bayou aux Carpes site, EPA may modify the terms of these conditions and BMPs.

Enclosure 3

Copy of 1985 Bayou aux Carpes CWA 404(c) Final Determination

[pdf to be attached]