

April 21, 2023

Mr. Kenny Blanke
United States Army Corps of Engineers
7400 Leake Avenue
New Orleans, LA 70118

**RE: University Lakes, LLC – University Lakes Aquatic Restoration & Flood Risk Reduction Project
EPA 404 (b)(1) Guidelines
MVN-2021-00140-CQ
East Baton Rouge Parish, LA
CSRS Project No 216194**

Dear Mr. Blanke,

CSRS, LLC (CSRS) on behalf of University Lakes, LLC provides the following responses to the United States Army Corps of Engineers (USACE) letter dated April 13, 2023 regarding EPA's 404 (b)(1) guidelines for the University Lakes Aquatic Restoration & Flood Risk Reduction Project for the University Lakes located in Baton Rouge, East Baton Rouge Parish, Louisiana.

USACE Comment #1: Justification, Onsite Alternatives, Minimization of impacts to special aquatic sites: Please further discuss reasons for the proposed aquatic restoration and flood risk reduction project. The permit application states that the proposed project is needed to correct water quality issues in the 6-lake system through dredging. The application also states that the dredging will increase the productivity in the lakes and create a diverse ecosystem suitable for aquatic life. **(A)** Can you please elaborate on the proposed benefits of the project and what temporary impacts to water quality and aquatic organisms may be present during construction? **(B)** Documentation of justification is required to demonstrate the extent of the public and private need for a proposed project, as required per 33 CFR 320.4(a)(2)(i). The information should clearly demonstrate reason and justification supporting the public interest in the project. The project proposes to impact approximately 2.64 acres of jurisdictional wetlands. **(C)** Has there been any consideration and or evaluation of alternatives specific to this project where special aquatic sites (i.e.-wetlands) are not proposed to be filled? **(D)** Your submittal should demonstrate a review of alternative onsite methods or construction methods that may avoid or minimize impacts to wetlands and discuss whether or not they are practicable.

CSRS Response #1:

(A) Benefits of the Proposed Project and Temporary Impacts to Water Quality and Aquatic Organisms

Proposed benefits of the project include but not limited to thermal stratification of the lakes, improved water quality, increased habitats for wildlife, improved quality of wetlands, and improved maintenance of the lakes. In 2018, Gulf Engineers & Consultants, Inc. (GEC) prepared the *Baton Rouge Lakes Master Plan Water Quality Data Report* (2018 GEC Report) for the Baton Rouge Area Foundation that evaluated the water quality of the University Lakes. According to the report, the University Lakes are considered eutrophic or hypereutrophic due to manmade impacts and land use around the lakes. These conditions have persisted since at least the early 1980s when studies were first documented by a study conducted by Dr. Malone. The 2018 GEC Report is provided in **Attachment 1**.

Thermal Stratification

Water temperatures are high within the University Lakes, especially during the summer months. The 2018 GEC Report noted an average mean temperature of 82.2 degrees Fahrenheit for the months June to August. The proposed project will rectify the elevated water temperature by dredging the water bottom sediments to create a thermal stratification within the water column - meaning water temperatures decrease as water depth increases. Thermal stratification will allow aquatic life to escape the hot summer temperatures by occupying the deeper cooler depths within the lakes.

Improve Water Quality

Thermal stratification will also improve the water quality of the University Lakes. According to the 2018 GEC Report, increased water temperatures will increase the rate of algal growth and reduce the solubility of oxygen which reduces the dissolved oxygen (DO) concentrations. A decrease in water temperature will lower the rate of algal growth and increase the DO concentrations as what is expected with the proposed project. Increased water temperature has also been linked to nutrient exchange within the water column leading to higher levels of nitrogen and phosphorus; therefore, a decrease in water temperature will result in lower concentrations of nitrogen and phosphorus.

Additionally, the proposed project includes the construction of the May Street Bridge between University Lake and City Park Lake. The design basis for construction of the bridge is to create a greater connectivity between the two lakes. Currently, there is only a small culvert that links the two lakes. Thus, water flow between the two lakes is negligible causing stagnation of the water. Stagnation of the water only intensifies the poor water quality issues discussed in the previous paragraph. Therefore, increasing the depth of the water column and connectivity between the two larger lakes will drastically improve the conditions of the University Lakes, especially in University Lake and City Park Lake where majority of the issues have been observed.

Poor water quality has been correlated to the observed fish kills within the University Lakes. Improving water quality will lead to aquatic life being able to flourish.

Increased Habitats for Wildlife

As discussed in the previous sections of this response, improvement of water quality of the University will promote underwater habitats for aquatic life. The proposed project intends to build out the bird sanctuary located on the north side of the University Lake and construct wetlands along the shoreline and on proposed islands. The proposed project aims to increase the acreage of the bird sanctuary by relocating some of the dredged material to the Bird Sanctuary through the use of geotextile tubes. The proposed creation of 32.42 acres of wetlands will serve as habitats for aquatic life and wildlife by providing shade and home to insects and grub for wildlife.

Improve Quality of Wetlands

Currently, the wetlands that are present along the shoreline are considered poor quality wetlands. The proposed project intends to create a living shoreline by planting high quality native wetland vegetation along the banks of the lakes and on the proposed islands.

Improved Maintenance of the Lakes

The proposed project includes construction of forebays at the point where stormwater outfalls into the University Lakes. The forebays will act as sediment traps for incoming stormwater. Future maintenance of the University Lakes is expected to be localized to the forebays and not to the entire lake system which will reduce future costs and impact to the areas surrounding the University Lakes.

Temporary Impacts to Water Quality and Aquatic Organisms During Construction

Water bottom sediment will be pumped directly into the geotextile tubes (i.e. Geotubes®) or mechanically removed and placed on the shoreline. The heavy woven material of the geotextile tubes will only allow for water to pass through and not sediment; thus, creating a closed loop system for sediment. Any resuspension of sediment is expected to be temporary and *de minimis* at the point where sediment is taken up through the pump or mechanically removed; therefore, impacts to water quality and aquatic organisms will be negligible.

(B) Justification for Project

In 2013, the USACE gave a presentation on a proposed Ecosystem Restoration Project for the University Lakes. In the presentation, the USACE noted that a study conducted in 2009 indicated there was an “*extensive*” nutrient pollution issue (phosphorus loading), shallow depth, high temperature, and poor water quality. The activities that the project that the USACE proposed included the following: complete drainage of the University and City Park Lakes, excavate 815,000 cubic yards of material that would be redistributed around the perimeter and for aquatic/fish benches for riparian habitat, and create a 5-acre Moist Soil Management Unit for bird habitat. The University Lakes Aquatic Restoration & Flood Risk Reduction Project that University Lakes, LLC proposes in this application includes similar tasks proposed by the USACE – excavate water bottom sediment and redistribute it around the perimeter and to expand on the bird sanctuary that is present on the perimeter of University Lake. The USACE, itself, established over ten years ago the justification and need for the proposed project as required in 33 CFR 320.4(a)(2)(i). The USACE Ecosystem Restoration Project presentation is provided as **Attachment 2**.

(C) Alternatives to 2.64 acres of Jurisdictional Wetlands

Avoidance and minimization of wetland impact was a primary consideration during the development phase of the project. Approximately 2.065 acres of the 2.64 acres of jurisdictional wetland impacts proposed in the project are considered low quality wetlands and are a result of extending the shoreline into the University Lakes. The proposed project intends to create approximately 32.42 acres of high-quality emergent wetlands along the shoreline and proposed islands that will offset the 2.64 acres of jurisdictional wetlands lost.

(D) Alternatives to Onsite Methods or Construction Methods that May Avoid Impacts to Wetlands

There were five alternatives that were considered during the development of the project:

- (1) Pumping the dredge material to the Mississippi River – This alternative was eliminated due to infeasibility and costs of constructing a dredge pipeline to the river
- (2) Hydraulically Dredge into geotextile tubes, allow to dewater, then haul sediment out to landfill – This alternative was eliminated due to long dewatering time, insufficient locations/laydown space to dewater all sediment, and large cost associated with the disposal.
- (3) Mechanically dredge sediment on small, shallow draft hopper barges, stabilize with Portland cement to make the materials suitable for truck transport, transfer to trucks and haul to landfill – This alternative was eliminated due to large cost.
- (4) Alum Treatment – This alternative was eliminated because it is not practical as it does not achieve the project goal of sustainable water quality improvement and auxiliary flood risk reduction benefits.
- (5) Dredge and Beneficially Reuse Locally – This alternative was selected because beneficially reuse is considered a best management practice (BMP), benefits of the reuse of sediment for aquatic life and wildlife habitats, and lower costs compared to hauling off soil and bringing in fill material. The USACE has been at the forefront of this movement across the United States for more than twenty years (<http://budm.el.erdc.dren.mil/>).

USACE Comment #2: Best Management Practices, Maintenance of Dredged Material. Please explain how on-site best management practices will be utilized (A) pre-, post-, and during construction of the proposed project. (B) The proposed project will dredge approximately 1,045,451 cubic yards of waterbottoms material from the 6-lake system and proposes to create approximately 63.93 acres of upland areas and 32.42 acres of wetlands. Can you please provide information regarding post construction maintenance of the site that would ensure material does not cause any siltation issues or how future maintenance of the lakes system will be addressed? (C) Can you please provide any information regarding the proposed created wetland habitats? Are there any proposed wetland plantings and or monitoring plans that can be provided?

CSRS Response #2:

(A) Best Management Practices for Pre-, Post- and During Construction

The design of the dredge excavation and placement boundaries have included substantial protection for both critical root zones and overhead branches of existing trees. This includes shoreline trees where overhead equipment may impact overhanging tree limbs and/or disturbance of emergent tree root zones, notably bald cypress (*Taxodium distichum*). Along with carefully considered dredge areas, trees near the dredge placement areas will be protected from damage or soil compaction via a 6-foot chain link fence and site protection signs placed outside of the critical root zone and dripline.

(B) Post Construction Maintenance

Construction of the shoreline wetland benches and new island additions include hydraulically and mechanically placed dredge fill, depending on exact locations within the lake area. Stabilization of these areas include the use of earthen containment dykes and anchored Geotubes® with an average settlement timeline of 90 days. A biodegradable erosion mat will be used to further stabilize newly formed island edges. In all dredge fill locations, an interim vegetation strategy will be utilized to reduce erosion runoff as well as create a quickly establishing native floral community. In total, 35 locally native plant species will be installed in the form of seed mixes, established deep liner plugs, tree whips, and small container shrubs. Species selection has been based on local nativity, ecological benefits, aesthetics, and the ability to establish quickly and repopulate the landscape through additional seed or rhizome colonization. The interim landscape includes over 100lbs of native seed, approximately 100,000 deepliner plugs, 1,200 tree whips, and approximately 3,000 small shrubs. Plant species included in the upland areas are a mix of Facultative Wetland (FACW), Facultative (FAC), and Facultative Upland (FACU) as defined by the U.S. Army Corps of Engineers National Wetland Plant List (NWPL). The Interim Landscape 100% Construction Documents is provided as **Attachment 3**.

(C) Wetland Habitats, Wetland Plantings and/or Monitoring Plans

In addition to newly created upland and lakeshore habitat, dredge will be used to create a series of wetland benches which increases the area, diversity, and complexity of the lake littoral zone. The addition of 32.42 acres of added wetlands are divided into four primary planting zones based on proposed water depth and NWPL wetland indicator status. Plantings within these zones include nearly 40,000 deepliner plugs spaced at various intervals. A shoreline fringe utilizes seven facultative (FACW) native species, while the emergent zone is divided by depth- utilizing nine obligate wetland species (OBL) in high and low elevations. The addition of a submerged plant at deeper levels increases lacustrine habitat with four additional species. Species of plant are provided in **Attachment 3**.

Monitoring of all planting areas will begin during construction and will follow the life of the project during its various phases. While the interim landscape and the restoration-styled revegetation strategy is intended to provide immediate environmental benefits, future accessibility improvements will bring landscape additions to planting, site amenities, and maintenance. Landscape performance, including invasive species presence and pressure will be monitored and addressed during each successive phase.

The project has already developed academic connections with staff and students at Louisiana State University to continue water quality monitoring and restoration impacts.

USACE Comment #3: Secondary/ Cumulative Drainage Impacts: What impact if any, will your proposed project have on drainage in the surrounding area? Specifically, please demonstrate how the proposed project will not cause secondary and cumulative impacts to the adjacent areas located upstream or downstream of your proposed project. The application states that this project will be designed to detain the 100-year rainfall event. Has there been any local drainage approval or evaluation of the proposed project to ensure compliance with the local drainage authority's standards?

CSRS Response #3: The proposed project is not expected to cause secondary and cumulative impacts to the adjacent areas upstream or downstream of the proposed project. In 2022, Baird prepared the *University Lakes System: Flood Risk Reduction Design Services Report*. The report is provided as **Attachment 4**. The results of the H&H modeling showed that the surrounding areas are not overtopped for the 10-year, 25-year, 50-year, or 100-year storm events. The report also showed that creating forebays north of Interstate 10 will promote localized sedimentation and dramatically reduce accretion throughout the rest of City Park Lake.

USACE Comment #4: Environmental Justice Affirmation Statement. We are now required to assess all projects qualifying for Standard Individual Permits for potential adverse human health or environmental effects on minority populations, low-income populations, and/or disadvantaged communities historically marginalized or overburdened by pollution that may be present in the vicinity of the project. We now require you to provide appropriate justification for your assessment that either this project will not have a high and adverse effect on these populations OR that this project is not in the vicinity of any minority populations, low-income populations, and/or disadvantaged communities historically marginalized or overburdened by pollution. If any of these communities are identified and/or the project may have a high and adverse effect, additional steps must now be taken to ensure these communities have the opportunity to provide input/participate meaningfully in the permit evaluation process. This is independent of the Public Notice procedure.

If you have not yet evaluated this project for these effects, please do so now using your preferred assessment tool. If you have used the EPA's Environmental Justice Screening and Mapping Tool (EJSCREEN) <https://www.epa.gov/ejscreen> or the CEQ's Climate and Economic Justice Screening Tool <https://screeningtool.geoplatform.gov/en/>, please provide the Summary Report(s) and your interpretation/assessment. If you have used another means of assessment, please provide your data, sources, and valuation. Please specifically address the following:

- Have disadvantaged communities been identified within the vicinity of the proposed project? If so, what factors/causes are identified to determine the community(ies) as such?
- What direct and indirect effects would this project have on those factors?
- Will project impacts fall disproportionately on disadvantaged communities?
- Are any mitigative measures being considered to minimize these impacts (sound barriers, construction timing, community engagement, etc.)?

CSRS Response #4: The proposed project is not expected to adversely affect disadvantaged communities within the vicinity of the proposed project. According to the EJ Screen Report the demographics within a 2-mile radius of the project area include 40 percent of people of color and 43 percent of the community is considered low income. The EJ Screen is provided as **Attachment 5**.

The proposed project will benefit two community lifelines: transportation and health. The design of the proposed project includes improvements to bike and pedestrian paths around City Park Lake. These paths will provide important alternative transportation connections to the low to moderate income (LMI) areas to the

west of the City Park Lake which rank in the 81st percentile for households with no available vehicles according to the CDC's Social Vulnerability Index.

If you have any questions or additional concerns, please contact me at (504) 473-3338 or kelly.fauber@csrsinc.com.

Respectfully,



Kelly Faerber
Water Permits Specialist

Inc: Attachments 1 - 5

CC: Mark Goodson, CSRS

Leu Anne Greco, LSU Foundation