U.S. Army Corps
Of Engineers
St. Louis District

August 2023

Middle Mississippi Island Creation Pilot Project
Middle Mississippi River (RM 103 & 174)
Perry County, MO & St. Clair County, IL

DRAFT ENVIRONMENTAL ASSESSMENT
WITH FINDING OF NO SIGNIFICANT IMPACT

U.S. Army Corps of Engineers, St. Louis District
Regional Planning & Environmental Division North (CEMVS-PD-C)
1222 Spruce Street
St. Louis, Missouri 63103-2833
Telephone Number: (314) 331-8458

Table of Contents

1. PURPOSE OF AND NEED FOR ACTION

1.1 INTRODUCTION

The U.S. Army Corps of Engineers (Corps), Mississippi Valley Division (MVD), St. Louis District (District), proposes to establish two islands within the Middle Mississippi River (MMR). One of the islands would be established along the right descending bank (RBD) near river mile (RM) 103 and one along the left descending bank (LDB) at RM 174. The project areas are in Perry County, Missouri, and St. Clair County, Illinois (Figure 1, 2).

The St. Louis District has drafted this Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) to evaluate the potential impacts associated with the MMR Island Creation Pilot Project. This EA has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 and the 2021 Council on Environmental Quality's Regulations (40 Code of Federal Regulations §1500-1508), as reflected in the USACE Engineering Regulation 200-2-2. Impacts on environmental resources are discussed in detail in this EA and summarized in the FONSI).

1.2 NEED FOR THE PROPOSED ACTION

The Congress of the United States, through the enactment of a series of Rivers and Harbors Acts beginning in 1824, authorized the Secretary of the Army, by and through the District, to provide a safe and dependable navigation channel, currently 9-feet deep and not less than 300-feet wide, with additional width in the bends as required on the reach between the confluences of the Ohio and Missouri rivers (RM 0-195), known as the MMR[1]. This ongoing effort is also commonly referred to as the Regulating Works Project. The Regulating Works Project utilizes bank stabilization and sediment management to maintain bank stability and ensure adequate navigation depth and width. Bank stabilization is achieved by revetments and river training structures, while sediment management is achieved by river training structures (also referred to as regulating works structures). Other activities performed to obtain authorized channel dimensions of the navigation channel are rock relocation (in very limited areas) and channel maintenance dredging. The Regulating Works Project is maintained through dredging and any needed maintenance to already constructed features. Therefore, both river training structures and

[1] Congress originally authorized the project of improving navigation of the Mississippi River from the mouth of the Missouri to New Orleans in the Rivers and Harbors Act dated May 24, 1824, by the removal of trees that were endangering the safety of navigating the river. In the Rivers and Harbors Act dated Jun 10, 1872, Section 2, Congress mandated that an examination and/or survey be completed of the Mississippi River between the mouth of the Missouri River and the mouth of the Ohio River, providing the first Congressional action to define this portion of the Mississippi River as distinct from the rest of the Mississippi River. Congress authorized the specific improvement of the Mississippi River between the mouth of the Missouri River and the mouth of the Ohio River in the Rivers and Harbors Act dated March 3, 1873. Between 1874-1892, Congress expanded this section of the Mississippi River to include that portion between the mouth of the Missouri River and the mouth of the Illinois, but in the Rivers and Harbors Act dated July 13, 1892, Congress removed this additional section of the river and once again referred to it as the Mississippi River between the mouth of the Ohio River and the mouth of the Missouri River. In the Rivers and Harbors Act dated June 25, 1910, Congress provided exactly how this Project was to be carried out by authorizing the construction, completion, repair, and preservation of "[i]mproving [the] Mississippi River from the mouth of the Ohio River to and including the mouth of the Missouri River: Continuing improvement in accordance with the plan adopted in [1881], which has for its object to eventually obtain by regularization works and by dredging a minimum depth." The 1881 plan called for the removal of rock hindering navigation, the contraction of the river to compel the river to scour its bed (now known as regulating works), and to be aided by dredging, if necessary. The 1881 plan also provided for bank protection improvements (now known as revetment) wherever the river is causing any serious caving of its banks. (Letter from the Secretary of War, dated November 25, 1881, 47th Congress, 1st Session, Ex. Doc. No. 10). The Project's current dimensions of the navigation channel were established in the Rivers and Harbors Act dated January 21, 1927 and July 3, 1930. The Rivers and Harbors Act dated January 21, 1927 modified the Project pursuant to the Chief of Engineers recommendations, which further detailed the purpose of the Project to construct the channel through regulating works and augment this by dredging, stating that dredging should be reduced to a minimum. The Project was also later modified to provide for the Chain of Rocks Canal and Lock 27 in Rivers and Harbors Acts dated March 2, 1945 to address the rock formation hindering navigation in this area, and the rock filled low water dam at the Chain of Rocks was authorized in the Rivers and Harbors Act dated July 3, 1958 to assure adequate depth over the lower gate sills at Lock and Dam 26.

dredging are all part of the overall Regulating Works Project. The long-term goal of the Regulating Works Project, as authorized by Congress, is to reduce the amount of annual maintenance dredging needed to maintain the 9-foot navigation channel. However, river engineering (e.g., channelization) for navigation and flood protection has led to a marked decline in the quality and quantity of island and side-channel habitat available and present within the MMR, and presently many side-channels only function effectively within a narrow range of flows (USFWS 2000).

1.3 PURPOSE OF THE PROPOSED ACTION

Multiple life stages of pallid sturgeon (*Scaphirhynchus albus*) use island and side-channel habitats. The combination of desirable flows, abundance of woody debris, and food availability makes this valuable habitat for pallid sturgeon, as well as other aquatic species. Aquatic habitats around islands and islands themselves when they are flooded appear to be important nursery habitat for larval sturgeon. The slower velocity currents within side channels and flooded islands offer a refuge from the higher flows in the main channel and the woody debris found in these habitats can lead to greater food (i.e., macroinvertebrates) production and availability for multiple life stages of sturgeon species.

River restoration that creates more island/side-channel habitat and makes these habitats available across a wide range of flows would likely benefit pallid sturgeon, especially at early life stages. Therefore, the primary objective of the project is to create permanent island and associated side channel habitats within the project areas.

1.4 SCOPING SUMMARY

Scoping is an early and open process for determining the range of issues to be addressed and for identifying the significant issues related to a proposed action. Scoping is conducted early in the planning process using a variety of communication methods (such as meetings and letters) with affected public, agencies, organizations, and tribes.

1.4.1 Laws, Regulations, and Guidance that Influence Scoping

1.4.1.1 Biological Opinion for the Operation and Maintenance of the 9-foot Navigation Channel on the Upper Mississippi River System (UMRS)[2]

Through a formal consultation process under the Endangered Species Act between the Corps and the U.S. Fish and Wildlife Service (Service), a Biological Opinion for the Operation and Maintenance of the 9-foot Navigation Channel on the Upper Mississippi River System (UMRS)[2] was submitted to the Corps from the Service on May 15, 2000 (USFWS 2000; hereinafter also referred to as the Biological Opinion). The Service outlined several factors affecting pallid sturgeon and their habitat within the MMR including, but not limited to, channel training structures (i.e., river training structures and revetment), and dredging and resulting dredge disposal.

The Corps agreed to proceed with the future operation and maintenance of the 9-foot channel navigation projects for the UMRS in light of its ESA obligations and the information provided to the Corps in the Service's Biological Opinion of May 15, 2000, resulting in a number of requirements under a Reasonable and Prudent Alternative (RPA) to avoid the likelihood of jeopardizing the continued existence of the federally endangered pallid sturgeon; and a series of Reasonable and Prudent Measures (RPM) to minimize the incidental take of pallid sturgeon and the now delisted interior least tern (*Sterna antillarum*).

---

[2] The Upper Mississippi River System is defined in the Biological Opinion as the commercially navigable portions of the Mississippi (Upper River Miles 0-854), Illinois (River Miles 0-327), Kaskaskia, Minnesota, St. Croix, and Black rivers (UMRS). There are multiple Corps authorized projects for the 9-foot navigation channel within the UMRS, including the Regulating Works Project.

One such RPA requirement is the implementation of a long-term aquatic habitat restoration program to restore habitat quality, quantity, and diversity, as well as the implementation of short-term aquatic habitat rehabilitation measures in the MMR that are expected to benefit the pallid sturgeon (i.e., pilot projects). These pilot projects can include dike alteration and island building to facilitate development of a diversified aquatic habitat to benefit fish assemblages. Further, the Biological Opinion provided other requirements such as using dredge disposal material in the MMR to restore sandbar and aquatic habitats. The proposed project is being conducted in accordance with Reasonable and Prudent Alternatives and the Reasonable and Prudent Measures of the Biological Opinion for the pallid sturgeon.

1.4.1.2 Section 125 of the Water Resources Development Act of 2020

Section 125 of the Water Resources Development Act (WRDA) of 2020 requires the Assistant Secretary of the Army, Civil Works to maximize the beneficial use of dredged material obtained from construction or operation and maintenance (O&M) of the Corps of Engineers water resource development projects. Dredge frequency and quantity of material dredged were two important factors in selecting potential locations for an island building pilot project in the MMR. Implementing one, or both, of these pilot projects would allow the District to use dredge material obtained to maintain the navigation channel in a beneficial manner while keeping the material within the river system.

1.4.2 Agency and Organization Scoping

The District began discussions in earnest centered around island creation in 2010 during a meeting with resource agencies to help identify potential suitable island building locations in the MMR. The details of this proposed island building pilot project, including the project locations, were developed through a collaborative effort with the Service, the Missouri Department of Conservation (MDC), and the Illinois Department of Natural Resources (IDNR). These agencies provided input on the project objectives, potential features, project location, and project monitoring.

1.4.3 Tribal Scoping

The United States government has a unique legal relationship with federally recognized American Indian Tribes, based on the inherent powers of Tribal sovereignty and self-government. The District will continue to uphold this special relationship and implement its activities in a manner consistent with it. Communication with 28 federally recognized tribes affiliated with the St. Louis District was initiated by the District's tribal liaison with a letter dated 22 June 2022 (Appendix A).

1.4.4 Public Scoping

This draft environmental assessment is available for a 30-day public review period (28 August – 27 September 2023) on the USACE St. Louis District's website at:

www.mvs.usace.army.mil/Portals/54/docs/pm/Reports/EA/MMRIslandCreation.pdf.

The District notified interested individuals of the availability of the draft environmental assessment via email, dated 28 August 2023, as well as posted in the U.S. Coast Guard's Local Notice to Mariners.

2. ALTERNATIVES INCLUDING THE PROPOSED ACTION

This chapter describes the alternatives in detail and compares the alternatives in terms of their environmental impacts and their achievement of objective outlined in Section 1.2. The following sections describe the no action alternative and one action alternative in detail and provide a summary comparison.

2.1 SITE SELECTION & ALTERNATIVE DEVELOPMENT

The District and collaborating agencies evaluated various potential project locations throughout the MMR to establish island and side channel habitats. Ultimately, the project locations described in this environmental assessment were chosen because of their existing bathymetry and continued need for navigation channel maintenance dredging. Both project locations are relatively shallow off-channel areas that exhibit depositional patterns, which provides a higher elevation to build on, and a reliable source of additional substrate for construction (i.e., channel maintenance dredge material).

Recent bathymetry and low water aerial photos show high amounts of deposition within both proposed project locations. A 2020 bathymetric survey and 2021 low water aerial imagery show a bar forming at RM 174 up to 13 ft above the Low Water Reference Plane (LWRP). LWRP represents the approximate water level resulting from a river flow in the Mississippi River that is exceeded 97% of the time. LWRP is used to determine sufficient channel depths and used to assist in the determination of the elevation of river training structures. The St. Louis District maintains a 9-ft navigation channel at LWRP and new river training structures are generally constructed at an elevation that corresponds to +18 LWRP (15+ at St. Louis Gage). In relation to monitored gage heights, LWRP is -3.2 ft at the gage in the St. Louis Harbor and -0.4 ft at the Chester, IL gage.

Although a sandbar is not visible at RM 103, the 2020 bathymetric survey shows deposition up to 5 ft above LWRP. Variations in area and height of the sand bars are expected to continue at both locations due to natural erosion and deposition from fluctuating river stages.

The use of concentrated dredge material placement and conventional rock structures were considered during initial project planning. The concentrated placement of dredge material using the flexible dredge pipe has been previously attempted at, or in the vicinity of, both project areas as a part of routine navigation channel maintenance dredging. Most recently in October 2021, dredge material was concentrated at two locations within the RM 103 project area. The dredge material placement formed two small ephemeral sandbars that lasted approximately two weeks before the areas were inundated, and the placed material eroded away. Similar efforts have been attempted within and between river training structures elsewhere in the MMR, with limited success at creating permanent sandbars or islands. Because of these past experiences, the unstructured placement of dredge material within the open river or between traditional rock structures were determined to not be reasonable alternatives or actions, since they would not produce an outcome that would meet project objectives.

Due to the complex existing conditions and previous experience at each site, site-specific actions were developed with the assistance of technical experts throughout USACE, including individuals from St. Paul, Portland, and St. Louis Districts as well as the Engineer Research and Development Center (ERDC), and from collaborating agencies. Site specific plans which use natural processes were developed to meet the purpose and need of the proposed project while minimizing and avoiding adverse environmental impacts. The creation of the two islands has been combined into one action alternative and is explained in detail below.

2.2 ALTERNATIVES CONSIDERED IN DETAIL

Based on the planning and coordination with technical experts and collaborating agencies, two alternatives were considered for further detailed analysis.

2.2.1 Alternative 1: Continue Present Maintenance Dredge Operations (No Action)

Under the No Action Alternative, the District would not construct any features to aid in the establishment of islands. In addition, the District would not alter routine maintenance dredging and dredge material placement within the project areas. Navigation channel maintenance adjacent to the project locations would continue to be conducted by dredging on a nearly annual basis. Dredge material disposal is often completed via the traditional side-casting method, using a rigid pipe to deposit the material parallel to the dredge cuts. However, the District may use a flexible pipe to allow for concentrated dredge material deposition at both locations.

2.2.2 Alternative 2: Island Creation with Pile Dikes

Under this alternative, the District would use a combination of wooden pile dikes and dredge material to establish islands within each proposed project area. Specifically, the District would construct four pile dikes at RM 103 and three pile dikes at RM 174 (Figure 1) followed by the placement of dredge material within the pile dike fields. The most upstream dike at both locations would consist of a double row of piles (Figure 2), with the second row offset to the center of the first rows spacing. The downstream dikes at both locations would be a single row of piles with piles spaced every 5 ft. Individual piles would be constructed out of clean-peeled, untreated wooden poles, 40 to 50 ft in length, in one piece, and 12-inch diameter. Individual piles would be driven to a minimum depth of 20 ft below the current bed elevation. Individual piles would stand at varying heights depending on existing bathymetry with a maximum height of +30 LWRP.

The length of the pile dikes and the upstream to downstream spacing would vary between locations. At RM 103, the dikes would be spaced 600 ft apart with the most upstream dike at 400 ft long, followed by two 600-ft long structures, and then one 400 ft long dike at the downstream end. At RM 103, the center two structures would project 200 ft beyond the upstream and downstream dikes along the riverward side. At RM 174, the dikes would be spaced approximately 1000 ft apart and would be approximately 400 ft long. Rock would be placed at the base of the pile dikes to reduce local erosion around each pile and increase the durability of the structure.

Timing of construction would be dependent on river stage as higher stages would be needed in these shallow areas to allow access for construction barges. Construction at one project area is anticipated to take less than 90 days. The RM 103 location would be constructed first and monitored as outlined in Section 2.2.2.1 for two years prior to any work beginning at RM 174. In addition, The EPA has identified the following list of contaminants of concern (i.e., polychlorinated biphenyls (PCBs), phosphorus, P,P'-DDT, P,P'-DDD, naphthalene, manganese, dieldrin, chloroform, chlorobenzene, benzene, barium, antimony, and 2,3,7,8-tetrachlorodibenzo-p-dioxin) that may be migrating into the RM 174 proposed project site from a Superfund site (EPA, 2023; see Section 3.9). Given the existing conditions adjacent to RM 174, project implementation at this location may not proceed until the Superfund site is remediated, or until the risk of contaminant exposure, mobilization, or concentration has been reduced.

Wooden pile dikes are being proposed instead of conventional rock dikes in order to encourage natural processes to induce additional deposition within and downstream of the dike field over time (Figure 3). The District would continue to concentrate the placement of dredge material in the project areas using the flexible dredge pipe as needed to maintain the navigation channel, consistent with the Final Supplemental Environmental Impact Statement for the Mississippi River Between the Ohio and Missouri Rivers (Regulating Works) Project, Record of Decision signed 2017. The use of dredge material may expedite the island forming process. The pile dikes would also capture woody debris and other organic matter, further increasing deposition and enhancing aquatic habitat diversity.

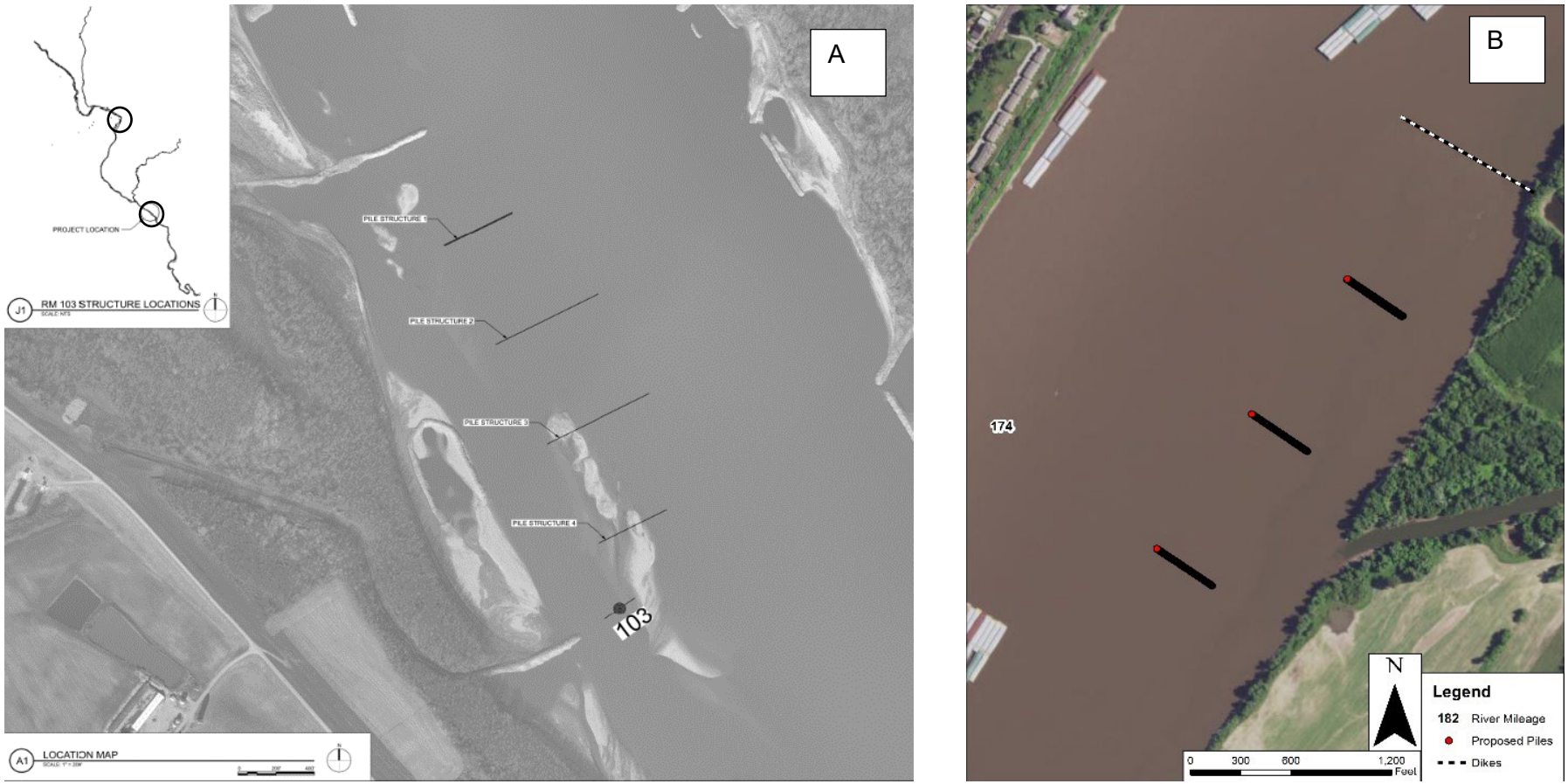


Figure 1. Proposed pile dike field within the RM 103 project area (A) and within the RM 174 project area (B).

Figure 2. An existing pile dike with two or more piles constructed on the lower Missouri River. Piles are extending out of the sand by approximately three feet. Deposition has occurred within the pile dike. Photo was taken on 07 November 2022.

Figure 3. An existing pile dike with. Deposition has occurred within the pile dike. Photo was taken on 07 November 2022.

2.2.2.1 Monitoring Requirements

Currently, hydrodynamic modeling software is unable to capture the island building process and cannot distinguish between the materials and methods needed to produce desired outcomes (i.e., vegetated islands, unvegetated island, or ephemeral sand bars). The data and information collected for this island creation pilot project would be incorporated into USACE modeling platforms to improve modeling capabilities. The data collected as part of this project would add to this knowledge base and would be used to guide the development of future island creation projects.

Physical monitoring of the project areas would occur twice a year and would include single-beam bathymetric surveys, acoustic Doppler Current Profiler (ADCP) surveys, and sediment core samples. If deposition has increased to a point where bathymetric surveys via boat are no longer possible due to shallow water or continually exposed terrestrial habitat, the proposed project areas would also be surveyed at low-water with LiDAR to capture elevation changes of any exposed island or sand bar.

The biological component of the monitoring plan consists of a fish sampling protocol designed to collect young of year (age-0) sturgeon and suspected pallid sturgeon prey species. Transects would be established throughout the project areas and a combination of bottom trawling and benthic sled methodologies would be used to sample the benthic fish and macroinvertebrate assemblages along the same transects. A bottom trawl would be manually deployed and collected from the boat bow during fish sampling. Benthic macroinvertebrates would be sampled using the benthic sled methodology outlined by Harrison et al. (2018).

2.2.2.2 Success Criteria & Adaptive Management

A minimum target deposition elevation of +20 LWRP was established as the physical success criteria for this pilot project. Island shape, size, and elevation can be affected by channel geometry, river slope, hydrograph, sediment characteristics, and the presence of vegetation and hydraulic structures. A review of depositional and island areas throughout the MMR, indicated that stable non-vegetated islands and vegetated islands stand at approximately +20 and +25 LWRP, respectively (USACE 2011).

The likelihood of establishing an island at the desired elevation within the project areas would be dependent on the current bed elevation of the proposed project areas and the river stages once the project was implemented. If a stable elevation was reached that was below the target elevation of +20 LWRP, then additional pile dikes would be installed between the previously installed pile dikes to induce further deposition. The additional rows of pile dikes would be designed similarly to the previously installed pile dikes.

Material dredged from the adjacent navigation channel, dredged as needed to maintain authorized channel dimensions, would continue to be concentrated within the pile dike fields until the target elevation stabilized at or above +20 LWRP. Fine grain (i.e., predominantly silt and/or clay) dredge material may be used to cap the project area to allow vegetation to establish, if such material does not deposit naturally. This dredge material would be taken from other channel maintenance dredge locations and would be tested for hazardous materials prior to being used for this project. No management actions at elevations above the ordinary highwater mark (OHWM) are included as part of this project at this time. Should the target elevation for island creation be met or exceeded, USACE would realize all aquatic benefits created by the project as applicable to Biological Opinion RPAs and RPMs.

The intent of the pilot project is to establish free standing islands and associated side channel habitats. If deposition aggrades between the island and the riverbanks, alterations to the pile structures, or other existing structures in the vicinity, may be needed to maintain the side channel habitat. These alterations could include the shortening of the pile dikes or modifications (i.e., notching, lowering, etc.) to the existing river training structures upstream.

2.3 COMPARISON OF ALTERNATIVES

Table 1. Comparison of the no action and action alternatives for resources identified within and surrounding the project areas.

Resource	Alternative 1	Alternative 2
Physical	No changes to physical resources are anticipated.	Increases in elevation, extent, and diversity of depositional areas expected. Increase in vegetation expected if +25 LWRP is reached.
Hydraulics & River Stage	No changes to hydraulics and river stage are anticipated	Changes to the channel cross section are expected. Reduced velocities through pile dike fields and increased deposition in off-channel areas while depths and velocities may increase in the main channel. No impacts to river stage are expected.
Navigation & Channel Maintenance	No alterations to existing river training structures or channel maintenance dredging are expected.	Establishment of island may increase depths in the navigation channel and reduce maintenance dredging.
Water Quality	No changes to water quality are anticipated.	May reduce suspended sediment concentrations in the area in the long term.
Bald Eagles & Migratory Birds	No impact to Bald Eagles or migratory birds.	May benefit shorebirds and species that prefer floodplain habitats for breeding.
Aquatic Organisms & Habitat	No changes to aquatic organisms and habitat are anticipated.	Creation of side channel habitat is expected as well as increased habitat diversity throughout the project areas.
Threatened & Endangered Species	No changes to threatened & endangered species are anticipated.	Create main channel border sandbar, side channel, and island habitats thought to be utilized by pallid sturgeon and enhance prey base for bat species.
Cultural & Tribal Resources	No impacts on cultural or tribal resources are anticipated.	No adverse effects on historic properties.
Hazardous Toxic Radioactive Waste	No changes to HTRW issues are anticipated.	Potential for HTRW issues at RM 174 due to adjacent EPA Superfund site. Phase 1 ESA to be completed.

Air Quality	No changes to air quality are anticipated.	Temporarily increase noise levels near the project areas
Environmental Justice	No disproportionate adverse impacts to low-income or minority populations are anticipated.	No disproportionate adverse impacts to low-income or minority populations are anticipated.

3. AFFECTED ENVIRONMENT & ENVIRONMENTAL CONSEQUENCES

3.1 PHYSICAL SETTING

3.1.1 Existing Conditions

The proposed project areas consist of a segment of main channel border situated on the MMR along the RBD between RM 104 – 102 in Perry County, Missouri, and along the LDB between RM 174 – 173 in Randolph and St. Clair Counties, Illinois.

The RM 104 – 102 proposed project area is approximately six miles downstream from the city of Chester, IL (Figure 4), adjacent to the Bois Brule Levee & Drainage District and the Crain's Island Rehabilitation and Enhancement Project. The main channel adjacent to the project area is similar to other main channel areas in the MMR, with characteristic rolling sand waves and high velocity current. Multi-beam bathymetric surveys conducted by the District in 2021 show that elevations of the project area range between -5 and +5 LWRP.

The RM 174 project area is within the St. Louis Harbor along the LDB approximately five miles upstream from the I-255 bridge and adjacent to the Prairie Du Pont Levee system (Figure 5). Prairie Du Pont Creek discharges into the proposed project area at RM 174. Multi-beam bathymetric surveys conducted by the District in 2021 show that elevations of bed in the vicinity of the proposed pile dike field range between +6 and +13 LWRP. Low water aerial imagery from 2020 showed an exposed sandbar of approximately 84 acres. The riparian zones on the LDB between the river and Prairie Du Pont levee have sparse natural vegetation and some areas of agriculture. The riparian zone on the RDB consists of a floodwall and the City of St. Louis with minimal natural vegetation.

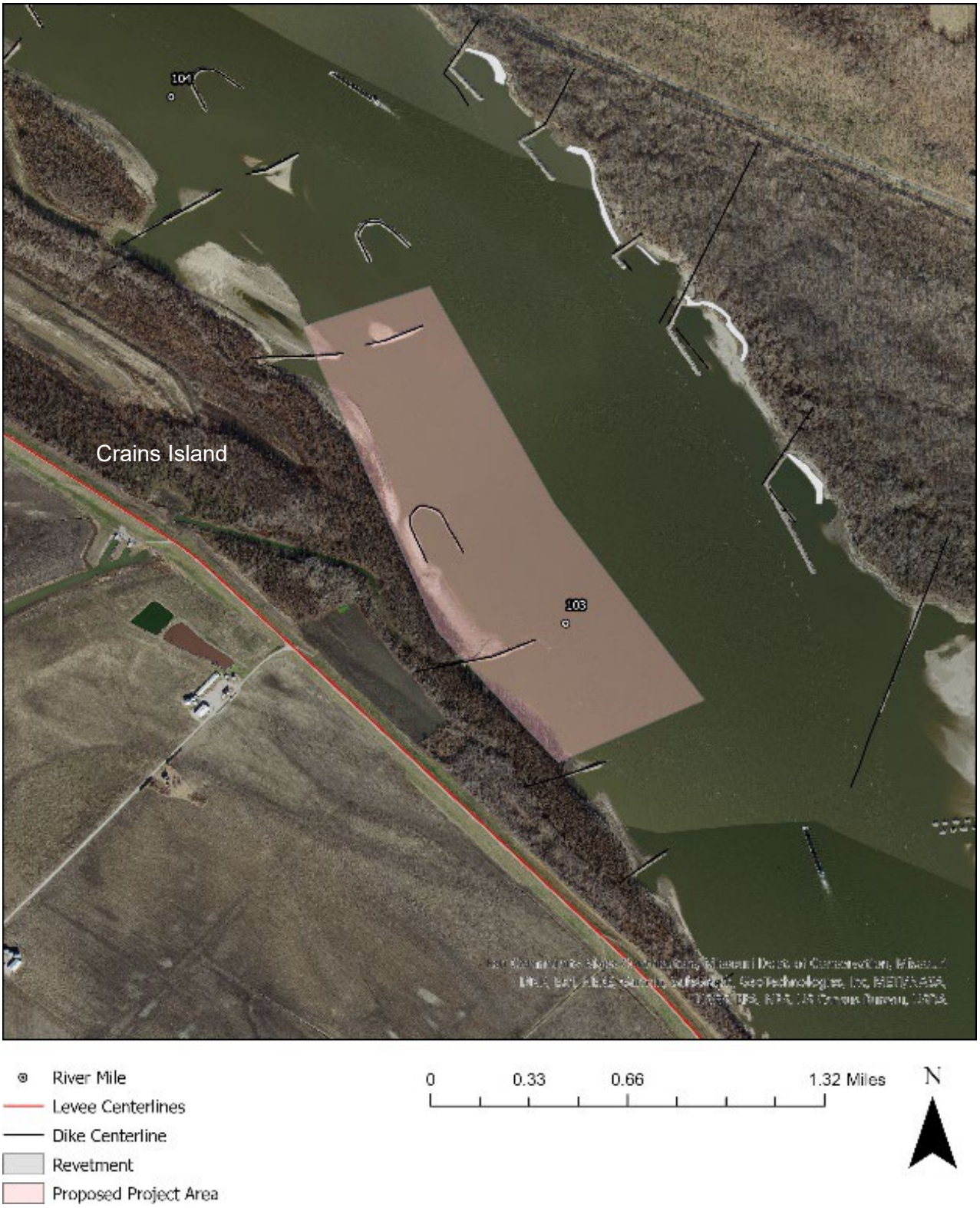


Figure 4. The RM 104 – 102 project area approximately six miles downstream from the city of Chester, IL and adjacent to the Bois Brule Levee & Drainage District and the Crain's Island Rehabilitation and Enhancement Project implemented under the Upper Mississippi River Restoration Program.

Figure 5. The RM 174 project area within the St. Louis Harbor along the left descending bank approximately five miles upstream from the I-255 bridge and adjacent to the Prairie Du Pont Levee system. Aerial photo was taken 12/21/20 when St. Louis gage was at 1.7.

The riparian zones on both riverbanks are well vegetated. However, the presence of the Bois Brule Levee system reduces the width of the riparian zone along the RDB. These riparian zones are characteristic of riverfront forests along the MMR, likely dominated by tree species such as eastern cottonwood (*Populus deltoides*), sycamore (*Planatus occidentalis*), silver maple (*Acer saccharinum*), and willows (*Salix sp.*).

Current uses of the project areas are primarily recreation at RM 103 and commercial barge fleeting at RM 174. Recreation at RM 103 is limited to certain river stages due to shallow water; however, anglers often target the existing river training structures in the project area. Commercial barge fleeting at RM 174 is limited to high river stages only, due to shallow water and an exposed sand bar at lower river stages. Public and private uses of the project areas are expected to remain unchanged.

3.1.2 Alternative 1: Continue Present Maintenance Dredge Operations (No Action)

Under the no action alternative, the physical setting of the project area is expected to remain similar to its existing condition. Sand bars and depositional areas within both project areas are expected to remain. However, size, shape, and height of the sand bars and depositional areas at both locations are expected to vary into the future due to natural erosion and deposition from fluctuating river stages. Riparian zones within both project areas are expected to remain consistent with existing conditions. Public and private uses of the project areas are expected to remain unchanged.

3.1.3 Alternative 2: Island Creation with Pile Dikes

This alternative would alter the bathymetry of both project areas using a combination of pile dikes and dredge material placement. Pile dikes are expected to enhance natural depositional processes within the project areas. Piles dikes, in addition to the placement of dredge material, are expected to increase bathymetric elevation to +5 to +25 LWRP. The amount of deposition needed to reach a target elevation of +25 LWRP would vary based on the bathymetry of the site when construction starts. Deposited sediments are expected to contain a majority of coarse to fine grain sands with some organic matter, silts, and clays. If no fine organic sediments deposit naturally on the bars or islands, clean material from a dredge location may be used to cap the project sites to allow for vegetation growth by means of natural recruitment.

The likelihood of building to the desired maximum elevation of +25 LWRP at the two project areas is heavily dependent on a number of variables. These variables include: the river stage following construction, the current bed elevation of the project areas, and annual dredging needs within the adjacent navigation channel. Based on the existing conditions, areas within each project area may accumulate 8 to 30 ft of sediments over time. However, the time needed to accumulate this amount of sediment is unknown, but the District anticipates the deposition and erosion within the project areas to stabilize approximately five years after pile dike construction is completed. The implementation of the physical monitoring and adaptive management plans would help ensure the project reaches the minimum target elevation of +20 LWRP. This minimum target elevation would still enhance the bathymetric diversity through the creation of permanent sandbar habitat, which should provide habitat for the endangered pallid sturgeon.

The construction of this alternative would be confined strictly to aquatic areas. Therefore, no negative impacts are expected to occur on any existing terrestrial habitats. However, one of the potential outcomes of this project may be the establishment of a vegetated island. The proposed project areas may mimic the natural succession of a sandbar to a vegetated island. Ideally, vegetation, likely dominated by willow species (*Salix* sp.), would naturally establish on the permanent sandbar. As this vegetation captures fine organic material, other vegetative species

would naturally become established, depending on flow regimes and habitat elevation. If the island reaches +25 LWRP or greater, typical floodplain and island species (e.g., cottonwoods, sycamores, silver maple, green ash, dogwood, etc.) may become established. As the island reaches the target maximum elevation, aquatic side channel habitat would also become established, further providing important habitat for pallid sturgeon and other aquatic organisms. Public use of the aquatic areas would remain unchanged.

3.2 HYDRAULICS & RIVER STAGE

3.2.1 Existing Conditions

Hydraulic conditions near both project areas are typical of MMR main channel and channel border areas with river training structures. The existing river training structures produce areas of high velocity flow and localized scour, followed by slower velocity areas further downstream and along the bankline, often creating areas of deposition. The RM 174 project area is an example of the deposition patterns that can occur between river training structures (Figure 4).

Based on the monthly water surface elevation of the Mississippi River from 2002-2021, the sand bar at RM 103, is inundated year-round (Figure 6). Conversely, the existing sand bar at RM 174 is inundated for six months out of the year when water surface elevations are above 386 ft NAV88 (+12.2 LWRP; Figure 7).

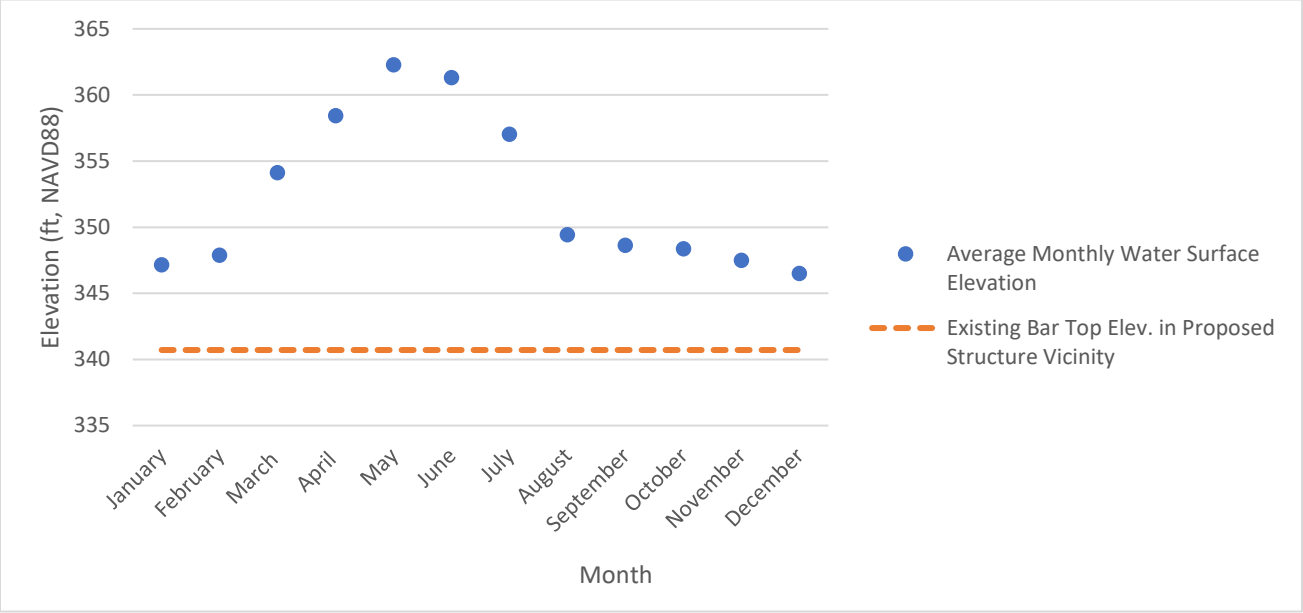


Figure 6. Monthly Water Surface Elevation (2002-2021) and Existing Bar Top Elevation in Structure Proposed Structure Vicinity - RM 103.

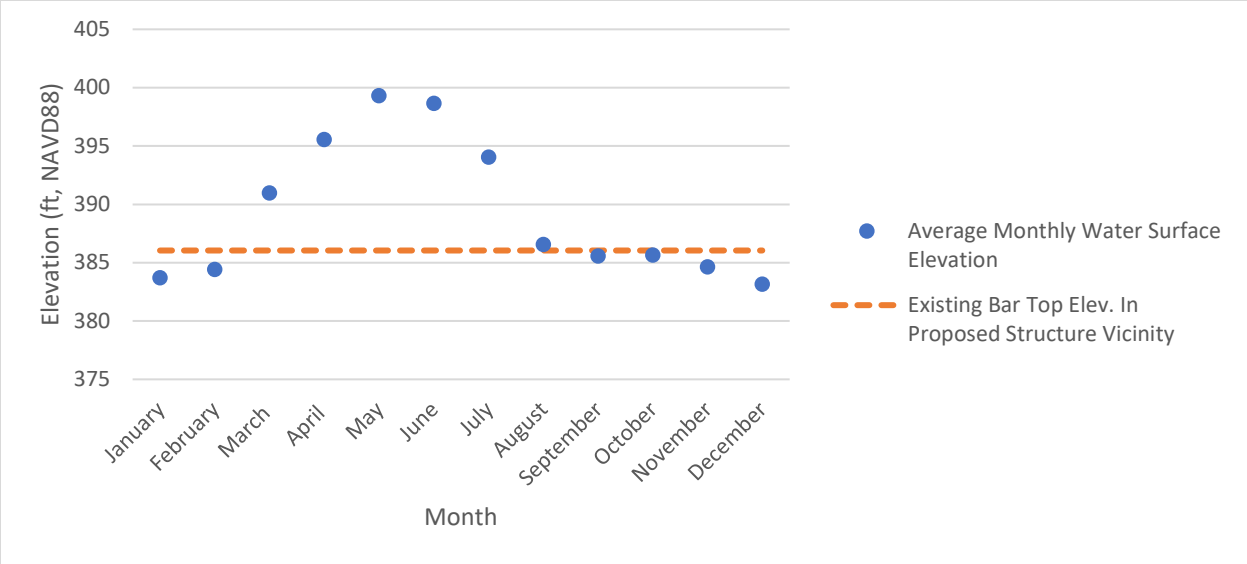


Figure 7. Monthly Water Surface Elevation (2002-2021) and Existing Bar Top Elevation in Structure Proposed Structure Vicinity - RM 174

3.2.2 Alternative 1: Continue Present Maintenance Dredge Operations (No Action)

Under the no action alternative, the hydraulics and river stages within the project areas are expected to remain similar to the existing condition. The existing river training structures would continue to maintain the navigation channel. The accretion of sediment in the navigation channel adjacent to the project areas is expected to continue, requiring further channel maintenance dredging, and disposal of dredged material within the project areas. Use of the traditional rigid pipe side casting method is anticipated with future channel maintenance dredging as is the use of the flexible dredge pipe. Using the flexible dredge pipe would temporarily concentrate dredge material within, or near, the project areas. The material is typically erodible and may create minor and temporary changes to localized hydraulics.

3.2.3 Alternative 2: Island Creation with Pile Dikes

Changes to the channel cross section would be expected as a result of pile dike construction. The pile dike field would be expected to decrease velocities over the existing sand bars and are anticipated to increase deposition rates in the center of the sand bars. This deposition would raise the elevation of the center of the bar to the point that an island develops. The pile dike fields are expected to transition from a submerged sand bar to an exposed island. If the target island elevation is achieved from the initial round of pile dike construction, the island would become fully exposed under most river stages and may vegetate if appropriate soil conditions naturally deposit (Figure 8). If this does not happen, additional pile dikes with a higher top elevation may be constructed between the currently planned pile dikes to initiate further deposition or the area may be capped with non-sand material to aid in the establishment of vegetation.

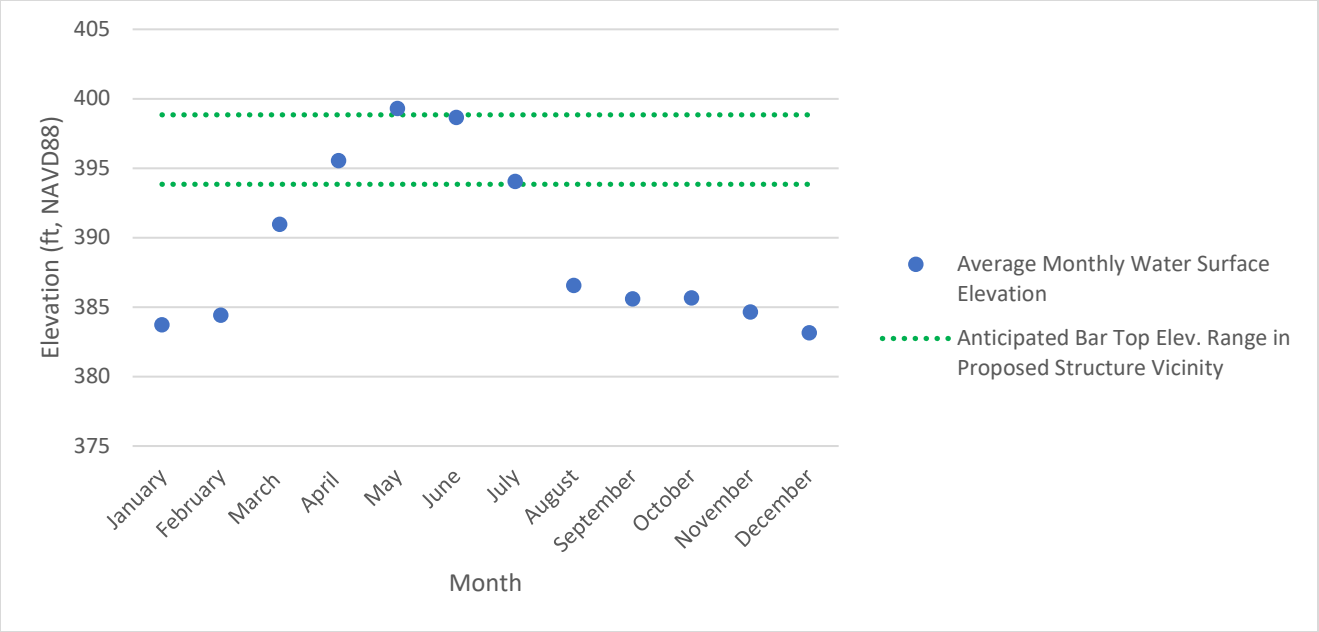


Figure 8. Monthly Water Surface Elevation (2002-2021) and Anticipated Bar Top Elevation Range in Structure Proposed Structure Vicinity - RM 174

Adjacent to the island, the pile dikes, and later the resulting deposition, are anticipated to constrict the main channel, promoting a temporary increase in velocities, additional channel self-scour and channel deepening in the main channel. The constriction is anticipated to have a similar effect in promoting a secondary channel between the center of the bar in the vicinity of the proposed pile dikes and the adjacent banks as water becomes less likely to flow over the bar center. It is expected that this project would not impact river stages, which is consistent with the conclusions detailed in the Final Supplemental Environmental Impact Statement for the Mississippi River Between the Ohio and Missouri Rivers (Regulating Works) Project (USACE 2017). Middle Mississippi River stages can fluctuate up to 40 feet per hydrologic cycle. Localized impacts to velocities around the pile structures are expected to be homogenous, independent of river stage.

The effects of the pile dike construction on the main channel, bar, and anticipated side channel will be monitored periodically via a combination of multi-beam bathymetric survey, and eventually, terrestrial LiDAR and aerial photography. This monitoring would continue until an approximate dynamic equilibrium is reached as indicated by minor subsequent changes between successive surveys.

3.3 NAVIGATION & CHANNEL MAINTENANCE

3.3.1 Existing Conditions

No fleeting occurs within or in the vicinity of the RM 103 project area. Navigation traffic is mostly limited to the navigation channel within this stretch of the MMR.

The main channel adjacent to the RM 174 project area is part of the larger St. Louis Harbor. This stretch of river has high barge traffic with widespread fleeting and port terminals along both riverbanks. Commercial barge fleeting occurs adjacent to and within the RM 174 project area, but occurs only during high river stages due to shallow water and exposure of the sand bar at lower river stages.

Deposition within the adjacent navigation channel has resulted in routine dredging in the vicinity of the project areas since 2011 (Table 2). Dredge material has been placed using the traditional side-cast method and flexible pipe along the RDB between RM 104 – 102, and the LDB between RM 173 – 175, as well as other locations in the St. Louis Harbor. An analysis of the dredge material during the most recent dredge event in both project areas show the composition is primarily coarse to fine sands and gravels, with more gravel present at RM 174 (Table 2).

Table 2. The navigation channel adjacent to both projects areas have been dredged frequently since 2011 with over 2 million cubic yards (CY) of material removed from each site during this time period.

Project Area	# Dredge Events	Average Vol / Event (CY)	Total Volume (CY)	% Gravel	% Sand	% Silt & Clay
RM 103	9	288,390	2,595,517	3.5	96.4	<.1
RM 174	19	109,773	2,085,692	21.2	78.7	<.1

River training structures were constructed within, and in the vicinity of, both project areas to reduce the dredging need and to maintain navigation channel dimensions. The river training structures within the vicinity of the RM 103 project area consist of a variety of traditional rock dikes, bankline revetment, four chevron structures, and one multiple round point structure. River training structures within the vicinity of the RM 174 project area consist of a variety of traditional rock dikes and bankline revetment.

3.3.2 Alternative 1: Continue Present Maintenance Dredge Operations (No Action)

Under the no action alternative, the channel maintenance needs within the project areas are expected to remain unchanged. The existing river training structures combined with routine dredging would continue to maintain the navigation channel. The accretion of sediment in the navigation channel adjacent to the project areas is expected to continue, requiring persistent channel maintenance dredging and disposal of dredged material within the project areas. Use of the traditional rigid pipe side casting method is anticipated with future channel maintenance dredging as is the use of the flexible dredge pipe. Using the flexible dredge pipe would temporarily enhance bathymetric diversity in the area, but it is not expected to create long-lasting or permanent habitat for pallid sturgeon or least tern. Public and private uses of the project areas are expected to remain unchanged.

3.3.3 Alternative 2: Island Creation with Pile Dikes

In the near-term, the District would expect the current navigation channel maintenance adjacent to the project locations to continue. During channel maintenance dredging, the District would use the flexible dredge pipe to place dredge material immediately upstream and within the pile dike fields to help accelerate the sandbar and island formation processes.

It is possible that the District may see a reduction in the quantity of dredge material removed from the adjacent navigation channel or a reduction in dredge frequency over time. Pile dikes themselves may produce similar velocity magnitudes in the adjacent channel as those produced by conventional rock dikes (USACE 2019). However, the pile dikes proposed under this alternative have been designed to enhance natural deposition processes and have different spacing, between piles and between dikes, and orientation than those used to maintain navigation so the beneficial impacts to navigation may be minimal. The sediment capture within the pile dike fields may reduce future dredging needs downstream of the project areas; however, the extent and magnitude of those benefits currently cannot be quantified. Finally, the formation of a

vegetated island would alter the cross-sectional area of the river, which may also result in reduced navigation channel maintenance.

Current navigation channel maintenance adjacent to the proposed project locations is expected to continue. However, the pile dikes may produce similar velocity magnitudes in the adjacent channel as those produced by conventional rock dikes (USACE 2019). In addition, the formation of a vegetated island would alter the cross-sectional area of the river, which may result in a deepening of the main channel and the formation of a side channel. As a result, the District may see a reduction in the quantity of dredge material removed from the adjacent navigation channel or a reduction in dredge frequency over time. Recreation at the RM 103 project area may be enhanced due to increased bathymetric and habitat diversity because of this project. Navigation fleeting at the RM 174 project area may be altered as the available area for use may no longer be accessible at high water levels. Three permitted fleeting areas currently exist within the project vicinity but do not directly overlap with the proposed project area.

3.4 WATER QUALITY

3.4.1 Existing Conditions

The 2020 Waterbody Quality Assessment Report for the Mississippi River near the RM 103 project areas lists 119.5 miles as “good” in Missouri for all designated use categories, but as “impaired” in Illinois for fish consumption and primary human contact due to elevated levels of fecal coliform, mercury, and polychlorinated biphenyls (PCBs; USEPA 2018). The 2020 Waterbody Quality Assessment Report for the Mississippi River near RM 174 lists 28.3 miles of the river as “good” in Missouri for boating and canoeing, drinking water supply, and protection of warm water aquatic life and fish consumption, as well as for other designated uses. However, the 2018 Waterbody Quality Assessment Report for the Mississippi River near RM 174 lists 58.7 miles as “impaired” in Illinois for fish consumption and primary human contact due to elevated levels of mercury and polychlorinated biphenyls (PCBs).

The Missouri Department of Natural Resources and Illinois Environmental Protection Agency have issued Water Quality Certification (WQC) under the Clean Water Act of 1977, and subsequent revisions, for the hydraulic and mechanical maintenance dredging of the navigation channel between river miles 0.0 to 300.0 of the Upper Mississippi River. Both offices state that on-going maintenance dredging activities would not cause water quality criteria to be exceeded nor impair beneficial uses (e.g., fish consumption, primary human contact, etc.) as long as the conditions outlined in the Water Quality Certifications are met.

3.4.2 Alternative 1: Continue Present Maintenance Dredge Operations (No Action)

Under the no action alternative, the channel maintenance activities within the project areas are expected to remain unchanged. The existing river training structures combined with routine dredging would continue to maintain the navigation channel. The accretion of sediment in the navigation channel adjacent to the project areas is expected to continue, requiring further channel maintenance dredging and disposal of dredged material within the project areas. Use of the traditional rigid pipe side casting method is anticipated with future channel maintenance dredging as is the use of the flexible dredge pipe. All channel maintenance activities would continue to abide by the conditions outlined in the WQCs issued by Missouri and Illinois under the Clean Water Act.

3.4.3 Alternative 2: Island Creation with Pile Dikes

Implementation of this Alternative would require discharge of approximately 50,000 CY of stone at the base of the pile dikes. The rock apron would extend approximately 20’ downstream and

would be approximately 8’ deep. Stone specified for this work would primarily consist of locally acquired 5000 lb. and 2500 lb. top size Grade-A Limestone. The stone specified for this Alternative would be considered as a clean fill and would have minor impacts to water quality. Temporary impacts would include localized, minor increases to turbidity, pH, alkalinity, and hardness. No impacts to nutrient levels, dissolved oxygen, temperature, color, odor, or salinity are expected. Impacts to water quality would be bound by designated state mixing zones.

Pile dikes are traditionally designed to alter current and sedimentation patterns to improve the depth and/or alignment of the navigation channel. The purpose of the pile dikes implemented under this Alternative would be to alter current and sedimentation patterns in main channel border project areas by creating diverse areas of slack water, eddies, and current breaks. The increased deposition within the project areas may reduce suspended sediment concentration in the immediate vicinity of placement locations indefinitely. When compared to the typical sediment load in the Mississippi River, the reduction in suspended sediment associated with this alternative could be considered negligible.

No violations of state water quality standards are anticipated. Rock fill material used for construction is intended to be stable and resistant to the erosive forces of the river. This Alternative would be covered under the terms and conditions of Nationwide Permit 27 for aquatic habitat restoration, enhancement, and establishment activities authorized under Section 404 of the Clean Water Act and Section 10 Rivers and Harbors Act. This Alternative would comply with the general conditions outlined in the Section 401 of the Clean Water Act Water Quality Certification issued by the Missouri Department of Natural Resources and Illinois Environmental Protection Agency; therefore, individual Water Quality Certifications would not be required.

Fine grain, non-sand, dredge material may be needed to cap the project area to allow vegetation to become established, if such material does not deposit naturally. This dredge material would be taken from other channel maintenance dredge locations and would abide by WQC conditions. If material is needed from outside the navigation channel, the District would coordinate those efforts with state and Federal agencies, as required.

3.5 BALD EAGLE & MIGRATORY BIRDS

3.5.1 Existing Conditions

Although the bald eagle (*Haliaeetus leucocephalus*) was removed from the federal list of threatened and endangered species in 2007, it continues to be protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act (BGEPA). The BGEPA prohibits unregulated take of bald eagles, including disturbance. The Service developed the National Bald Eagle Management Guidelines (USFWS 2007) to provide landowners, land managers, and others with information and recommendations regarding how to minimize potential Project impacts to bald eagles, particularly where such impacts may constitute disturbance. No bald eagles or nests have been identified near either project areas.

Similar to the bald eagle, the least tern (*Sterna antillarum*) was removed from the federal list of threatened and endangered species in 2021 and it continues to be protected under the Migratory Bird Treaty Act. The interior population of the least tern is characterized as a colonial, migratory waterbird, which resides and breeds along the Mississippi River during the spring and summer. Least tern arrive on the Mississippi River from late April to mid-May. Reproduction takes place from May through August, and the birds migrate to the wintering grounds in late August or early September (USACE, 1999). Sparsely vegetated portions of sandbars and islands are typical breeding, nesting, rearing, loafing, and roosting sites for least tern along the MMR. Nests are

often at higher elevations and well removed from the water's edge as nesting starts when river stages are relatively high (USACE, 1999). The availability of sandbar habitat to least terns for breeding, nesting, and rearing of chicks from 15 May to 31 August is a key variable in the specie's population ecology. Only portions of sandbars that are not densely covered by woody vegetation and are emergent during the 15 May to 31 August period are potentially available to least terns (USACE, 1999).

Least terns are almost exclusively piscivorous (Anderson, 1983), preying on small fish, primarily minnows (Cyprinidae). Prey size appears to be a more important factor determining dietary composition than preference for a particular species or group of fishes (Moseley, 1976; Whitman, 1988, USACE, 1999). Fishing occurs close to the nesting colonies and may occur in both shallow and deep water, in main channel and backwater habitats. Radiotelemetry studies have shown that least tern will travel up to 2.5 miles to fish (Sidle and Harrison, 1990; USACE 1999). Along the Mississippi River, individuals are commonly observed hovering and diving for fish over current divergences (boils) in the main channel, in areas of turbulence, over eddies along natural and revetted banks, and at "run outs" from floodplain lakes where forage fish may be concentrated (USACE, 1999; Niles and Hartman, 2009). Least terns have not been observed foraging near or nesting on the sandbar at RM 174 and foraging as not been observed near the RM 103 project area; however, individuals have been observed upstream and downstream of both project areas.

In addition to the bald eagle, the Service identified 13 Birds of Conservation Concern that may be present within the proposed project areas (Table 3). According to publicly-sourced bird count data, several of the Birds of Conservation Concern, as well as many species of waterfowl, have been documented at the Red Rock Landing Conservation area, approximately 5 miles south of the RM 103 project area. As recently as August 2022, such as the Kentucky Warbler, Rusty Blackbird, Prothonotary warbler, and wood thrush (ebird, August 2022) were documented at the Conservation area. None of the identified Birds of Conservation Concern have been reported near the RM 174 project area. However, many species of waterfowl, such as Canada Goose, Wood Duck, and Greater and Lesser Scaup, have been report at Bellerive and Sister Marie Charles Parks, directly across the river from the RM 174 project area (ebird, August 2022).

Table 3. Birds of Conservation Concern that may occur within the project areas were identified by the U.S. Fish and Wildlife Service. Limited data exists within both project areas; however, species have been recorded within five miles of the project areas.

Common Name (Scientific Name)	Habitat	Breeding
American Golden-plover (*Pluvialis domi*)	Northward migration in spring mostly through Great Plains and Mississippi Valley. Often forage in open fields and prairies, far from water.	Breeds on Arctic tundra.
Bobolink (*Dolichonyx oryzi*)	Northward migration in spring mostly through Florida and West Indies. Migrants forage in fields and marches, often feeding in rice fields.	Breeds northern U.S. and southern Canada.
Cerulean Warbler (*Dendroica cerulea*)	Deciduous forests, especially in river valleys. Breeds in mature hardwoods with clear understory.	Breeds in IL & MO. Apr 21 to Jul 2

Common Name (Scientific Name)	Habitat	Breeding
Eastern Whip-poor-will (*Antrostomus vociferus*)	Nest sites often on ground in shady woods near the edge of a clearing on open soil with dead leaves.	Breeds in IL & MO. May 1 to Aug 2
Henslow's Sparrow (*Ammodramus henslowii*)	Breeds in fields and meadows, often in low-lying or damp areas, with tall grass, standing dead weeds, and scattered shrubs. Sometimes in old pastures, occasionally in hayfields.	Breeds in parts of IL & MO. May 1 to Aug 3
Kentucky Warbler (*Oporornis formosa*)	Prefers deep shaded woods with dense, humid thickets, bottomlands near creeks and rivers, ravines in upland deciduous woods, and edges of swamps.	Breeds in parts of IL & MO. Apr 20 to Aug 2
Lesser Yellowlegs (*Tringa flavipes*)	Northward migration is late spring through Mississippi Valley, as well as other locations. Forages in very shallow water in marshes, mudflats, and edges of lake and ponds.	Breeds northern Canada.
Prairie Warbler (*Dendroica discolor*)	Breeds in dry old clearings, edges of forest, and sandy pine barrens with undergrowth of scrub oaks, especially on ends of slopes and ridges. Likes thick second-growth of hickory, dogwood, hazel, or laurel with blackberry vines.	Breeds in southern IL & MO. May 1 to Jul 3
Prothonotary Warbler (*Protonotaria citrea*)	Breeds in flooded river bottom hardwoods including black willow, ash, buttonbush, sweetgum, red maple, hackberry, river birch, and elm; or wetlands with bay trees surrounded by cypress swamp. Also nests near borders of lakes, rivers and ponds, normally only in areas with slow moving or standing water.	Breeds in IL & MO. Apr 1 to Jul 3
Red-headed Woodpecker (*Melanerpes erythrocephalus*)	Cavity nesting species found in clearings in woods, forest edges, orchards, oak savannahs.	Year around resident. Breeds in IL & MO. May 10 to Sep 1
Rusty Blackbird (*Euphagus carolinus*)	Overwintering habitat may include river bottoms and wooded swamps. Forages by wading in shallow water.	Breeds elsewhere. Overwinters in IL & MO.
Short-billed Dowitcher (*Limnodromus gris*)	Uncommon migrant through the Mississippi Valley, more common along the coasts and Great plains. Typically forages by wading in shallow water along mudflats.	Breeds northern Canada.

Common Name (Scientific Name)	Habitat	Breeding
Wood Thrush (*Hylocichla mustelina*)	Breeds in the understory of woodlands, mostly deciduous but sometimes mixed, in areas with tall trees. More numerous in damp forest and near streams.	Breeds in parts of IL & MO. May 10 to Aug 3

3.5.2 Alternative 1: Continue Present Maintenance Dredge Operations (No Action)

Under the no action alternative, the bird communities would be expected to remain similar to the existing populations.

3.5.3 Alternative 2: Island Creation with Pile Dikes

The proposed action could have a beneficial effect for nesting least tern. Using dredge disposal material to create sandbar habitat could increase the total area of nesting habitat available to least terns in the MMR, depending on river stage fluctuations within a few years after project completion. This would improve the potential for successful reproduction and recruitment of least tern. In addition, the creation of shallow water habitat may provide more foraging opportunities for least tern and other waterfowl.

Other migratory birds may also benefit from the establishment of an island or permanent sand bar. For example, many warbler species (i.e., Cerulean, Prothonotary, Kentucky) prefer floodplain habitats for breeding. The establishment of a forested island may increase the habitat available to these species. Exposed sandbars or shallow water areas associated with island edges or submerged islands may also provide foraging and resting habitats for migratory birds traveling to their breeding grounds, like the Lesser Yellowlegs or the American Golden-plover.

3.6 AQUATIC ORGANISMS & HABITATS

3.6.1 Existing Conditions

Habitat types in the MMR are typically categorized using common Mississippi River habitat classifications which include main channel, structured and unstructured main channel borders, and side channels (Barko et al. 2004, Phelps et al. 2010). Aquatic habitat types in the proposed project areas include the main channel and structured (i.e., has river training structures) main channel borders. Habitat types that are lacking the proposed project areas include side channels and unstructured main channel borders.

The project areas likely contain the habitat requirements for the major habitat guilds of large river fishes: fluvial specialists, fluvial dependents, and macrohabitat generalists. Fluvial specialists are species found almost exclusively in lotic (flowing water) habitat and require flowing water for all of their life cycles (Kinsolving and Bain 1993). Examples of fluvial specialist common in the MMR, and likely in the project areas, include channel shiner (*Notropis wickliffi*) and blue catfish (*Ictalurus furcatus*) (Galat et al. 2005). Fluvial dependent species occur in both lentic (non-flowing water) and lotic habitats but require flowing water during one or more life stages (e.g., reproduction; Galat et al. 2005). Examples of fluvial dependent species include white bass (*Morone chrysops*) and silver carp (*Hypophthalmichthys molitrix*) (Galat et al. 2005). Macrohabitat generalist species are also commonly found in both lentic and lotic habitats, but do not require flowing water for any particular life stage (Kinsolving and Bain 1993). Examples of macrohabitat generalist species include gizzard shad (*Dorosoma cepedianum*), emerald shiner (*Notropis atherinoides*),

freshwater drum (*Aplodinotus grunniens*), and buffalo species (*Ictiobus* sp.) amongst others (Galat et al. 2005).

Within both project areas, structured main channel border areas produce pockets of lentic habitat downstream of river training structures in the form of flow refugia and plunge pools, providing habitat often used by macrohabitat generalists. Stretches of main channel and unstructured main channel border areas provide the preferred habitat of MMR fluvial specialists and fluvial dependents: moderate depths of flowing water over a sandy substrate.

The IDNR was contacted via the Ecological Compliance Assessment Tool (EcoCAT) website on 13 July 2022 for a list of Illinois State threatened and endangered species that could potentially be located in the work areas (IDNR project number: 2104070; Appendix A). No Illinois Natural Area Inventory (INAI) sites or state listed species of concern were identified in or near the project area at RM 174.

A Natural Heritage Review was initiated with the MDC on 13 July 2022. The Natural Heritage Review indicated that there are records of species listed under the Endangered Species Act, further discussed in Section 3.7, and potentially records for species listed by the State of Missouri and/or Natural Communities of Conservation Concern within of near the RM 103 project area. MDC identified eight species in the vicinity of the project area (Table 4).

Table 4. Species listed by State of Missouri and/or Natural Communities of Conservation Concern within of near the RM 103 project area.

Common Name (Scientific name)	**Habitat**
Sturgeon chub (*Macrhybopsis gelida*)	Bottom-dwelling in open river channels in areas of swift current over sand and fine gravel. Fluvial specialist.
Ohio shrimp (*Macrobrachium ohione*)	Side channels and main channel borders
Mississippi silvery minnow (*Hybognathus nuchalis*)	Pools and backwaters. Macrohabitat generalist.
Western sand darter (*Ammocrypta clara*)	Extensive sand flats in areas with moderate to strong currents. Fluvial specialist.
Pugnose minnow (*Opsopoeodus emiliae*)	Clear water with aquatic vegetation where the bottom is comprised of organic debris or sand. Macrohabitat generalist.
Striped mullet (*Mugil cephalus*)	Occupies marine or estuarine habitat, but occasionally migrates upstream in large rivers (Mississippi)
Alabama shad (*Alosa alabamae*)	Spends most of life in the sea and enters freshwater to spawn. Young likely migrate elsewhere after their first few months of life.
River darter (*Percina shumardi*)	Areas with swift currents and gravel/rock bottom. Stays in water depths over 4’ during the day and moves to shallower water to feed at night. Fluvial specialist.

Regarding freshwater mussels, surveys conducted by Keevin et al. (2013) on the MMR demonstrate that mussel abundance and diversity is extremely low in main channel border habitat, and that no true mussel beds are known to exist in the MMR. They attribute this to unstable sand substrate, the continuous downstream movement of sand waves, and the high level of turbidity that enters the MMR from the Missouri River.

3.6.2 Alternative 1: Continue Present Maintenance Dredge Operations (No Action)

Under the No Action Alternative, aquatic habitat types in the project areas would remain similar to the existing conditions. Side channels and unstructured main channel borders would still be lacking in the project areas. The existing river training structures would continue to provide habitats for macrohabitat generalists along the main channel border and some fluvial specialist in the main channel. The existing sand bar within the RM 174 project area would continue to provide shallow water habitat during certain river stages.

3.6.3 Alternative 2: Island Creation with Pile Dikes

The installation of pile dikes and the associated rock apron would create a diversity of velocities and substrates within the proposed project areas when compared to the existing conditions. The riverward tips of the pile dikes may produce a localized increase in water velocity and pockets of deeper water creating habitat for fluvial specialist and macrohabitat generalists, while areas within the pile dike field may have reduced velocities which provides habitat for all three groups. The wood piles and large rocks around the piles may provide additional habitat for small-bodied fishes and forage (i.e., macroinvertebrates) further increasing habitat suitability in the project areas.

As sand deposition occurs within the pile dike fields, the area is expected to get shallower. The creation of continuous shallow sandbar habitat may provide suitable habitat for a variety of species, including sturgeon species, sturgeon chub, and western sand darter.

As further deposition and the potential development of a vegetated island forms, the area could continue to change in terms of the available aquatic habitats and the species these habitats can support. Side channels provide arguably the most important habitat type in the MMR, as they create lateral connectivity and are likely used as surrogates for floodplain and backwater habitat by many species in the MMR. Data collected by the Upper Mississippi River Restoration Long Term Resource Monitoring (UMRR-LTRM) component in the MMR demonstrate that most macrohabitat generalists are collected in greater relative abundance from side channels compared to other macrohabitat types, such as main channel border habitat, presumably due to the shallow, low-velocity habitat they provide at certain river stages (Simmons 2015).

Side channels in the MMR are more supportive to mussel populations than are main channel areas, although densities are also very low in the side channels and the fauna is typically composed of species that occur in backwater habitats (Keevin and Cummings 2000). Three species, *Anadonta grandis*, *Leptodea fragilis*, and *Potamilus ohiensis*, made up 87.5 percent of the total number of specimens collected during Keevin and Cummings' (2000) mussel survey of the MMR, which is likely representative of the mussels that could occur within any side channel that may develop within the project areas as a result of the island creation.

The biotic monitoring conducted as part of the proposed action would further inform the District and project partners on the distribution and habitat use of any species of conservation concern and other aquatic organisms in the vicinity of the project area.

3.7 THREATENED & ENDANGERED SPECIES – BIOLOGICAL ASSESSMENT

3.7.1 Existing Conditions

In compliance with Section 7(c) of the Endangered Species Act of 1973, as amended, official lists of species and critical habitats potentially occurring in the vicinity of the proposed project was acquired from the Service's Information for Planning and Conservation (IPaC) website at (https://ecos.fws.gov/ipac/) on 18 July 2023 (Project Code: 2023-0105893) (Table 5).

Table 5. List of federally threatened and endangered species and habitat potentially occurring in the vicinity of the proposed project.

Common Name (Scientific Name)	Classification	Habitat	Alternative 2 Determination
Indiana bat (*Myotis sodalis)*	Endangered	Caves, mines (winter hibernacula); trees (summer roosting); and small stream corridors with well-developed riparian woods; upland forests (foraging)	May affect but not likely to adversely affect
Tricolored bat *(Perimyotis subflavus)*	Proposed Endangered	Caves, mines (winter hibernacula); roost in trees, crevices in cliffsides, and human-made structures	Not likely to jeopardize the continued existence
Little brown bat (*Myotis lucifugus*)	Under Review	Caves, mines (winter hibernacula); roost in trees, crevices in cliffsides, and human-made structures	Not likely to jeopardize the continued existence
Northern long-eared bat (*Myotis septentrionalis*)	Threatened	Caves, mines; rivers and reservoirs adjacent to forests	May affect but not likely to adversely affect
Monarch butterfly (*Danaus plexippus*)	Candidate	Variety of habitats, from rural to urban centers, where its host plant milkweed (Asclepias sp.) is found	No effect
Pallid sturgeon (*Scaphirhynchus albus*)	Endangered	Mississippi and Missouri Rivers	May affect but not likely to adversely affect
Decurrent False Aster (*Boltonia decurrens*)	Threatened	Perennial plant found in moist, sandy floodplains and prairie wetlands along the Illinois & Mississippi Rivers	May affect but not likely to adversely affect

Indiana Bat

The range of the Indiana bat (*Myotis sodalis*) includes much of the eastern half of the United States, including southern Missouri. Indiana bats migrate seasonally between winter hibernacula and summer roosting habitats. Winter hibernacula include caves and abandoned mines. Females emerge from hibernation in late March or early April to migrate to summer roosts. During the summer, the Indiana bat frequents the corridors of small streams with well-developed riparian woods, as well as mature upland forests. It forages for insects along stream corridors, within the canopy of floodplain and upland forests, over clearings with early successional vegetation (old

fields), along the borders of croplands, along wooded fencerows, and over farm ponds in pastures. Females form nursery colonies under the loose bark of trees (dead or alive) and/or cavities, where each female gives birth to a single young in June or early July. A maternity colony may include from one to 100 individuals. A single colony may utilize a number of roost trees during the summer, typically a primary roost tree and several alternates. Some males remain in the area near the winter hibernacula during summer months, but others disperse throughout the range of the species and roost individually or in small numbers in the same types of trees as females. The leading causes of the Indiana bat population decline includes disturbance, vandalism, improper cave gates and structures, natural hazards such as flooding or freezing, microclimate changes, land use changes in maternity range (i.e., tree clearing), and chemical contamination (USFWS 2000). Suitable Indiana bat summer roosting and foraging habitat may occur in the forested areas adjacent to the project areas.

Northern Long-Eared Bat

The northern long-eared (*Myotis septentrionalis*) bat is a federally threatened bat species. The northern long-eared bat is sparsely found across much of the eastern and north central United States, and all Canadian provinces from the Atlantic Ocean west to the southern Yukon Territory and eastern British Columbia. Northern long-eared bats spend winter hibernating in large caves and mines. During summer, this species roosts singly or in colonies underneath bark, in cavities, in crevices of both live and dead trees. Foraging occurs in interior upland forests. Forest fragmentation, logging and forest conversion are major threats to the species. One of the primary threats to the northern long-eared bat is the fungal disease white-nose syndrome, which has killed an estimated 5.5 million cave-hibernating bats in the Northeast, Southeast, Midwest and Canada. Suitable northern long-eared bat summer roosting and foraging habitat may occur in the forested areas adjacent to the project areas.

Tricolored Bat

Tricolored Bats are usually found roosting singly, only sometimes in pair or clusters of up to a dozen individuals (MDC 2022b). In winter, Tricolored bats hibernate in caves. They prefer caves that are humid and warm. In summer, they may leave their hibernation caves to roost in trees, crevices in cliffsides, and human-made structures. They forage for insects high in the air along forest edges and boundaries of streams or open water. Maternity colonies begin forming in mid-April and females bear 1 to 2 pups by late May to mid-July. Suitable tricolored bat summer roosting and foraging habitat may occur in the forested areas adjacent to the project areas.

Little Brown Bat

Little Brown Bats are widely distributed throughout Missouri but are uncommon in the counties where they occur (MDC 2022c). In winter, they hibernate in caves and mines. In spring and summer, they roost in trees, cliffside crevices, and sometimes in human-made structures (e.g., attics, barns, and other quiet, isolated structures). They forage for insects along the border between the dense cover of forests and open fields and open water. Suitable little brown bat summer roosting and foraging habitat may occur in the forested areas adjacent to the project areas.

Monarch Butterfly

Much of the monarch butterfly's life is spent migrating between Canada, Mexico, and the U.S. Even though Monarchs do not overwinter in Missouri or Illinois (U.S. Fish & Wildlife Service, 2021), they spend the breeding season foraging and searching for suitable habitat to lay eggs. Of the over 100 species of milkweed that exist in North America, only about one fourth of them are known to be important host plants for monarch butterflies. The main monarch host plant is

Common Milkweed (*Asclepias syriaca*) (Kaul & Wilsey, 2019). Other common hosts include Swamp Milkweed (*Asclepias incarnata*), Butterflyweed (*Asclepias tuberosa*), Whorled Milkweed (*Asclepias verticillata*), and Poke Milkweed (*Asclepias exaltata*) (U.S. Fish & Wildlife Service, 2021). Three factors appear most important to explain the decline of Monarchs: loss of milkweed breeding habitat and native prairie foraging habitat, habitat destruction at overwintering sites, and climate change and extreme weather. In addition, diseases, predators, and parasites, as well as insecticides used in agricultural areas may also contribute to the decline. Recent public awareness of the decline of the Monarch and suitable milkweed habitat has led to an increase in public and private efforts to plant and grow pollinator habitats, which include milkweed. Because of these efforts, the Monarch can be found in a variety of areas, from rural to urban centers, where it searches for its host plant, milkweed (*Asclepias* sp.), and suitable foraging plants. Most milkweed species, with the exception of swamp milkweed, are typically found along roadsides and in fields, prairies, and pastures, and are typically not associated with floodplains or aquatic habitats.

Pallid Sturgeon

The pallid sturgeon is federally endangered big-river fish species. It is the position of the Service that over time, river training structures have adversely affected pallid sturgeon by impacting the quality and quantity of habitats in the MMR to which the species is adapted (e.g., braided channels, irregular flow patterns, flood cycles, extensive microhabitat diversity, and turbid waters). According to the Service, this loss of habitat has reduced pallid sturgeon reproduction, growth, and survival by (1) decreasing the availability of spawning habitat; (2) reducing larval and juvenile pallid sturgeon rearing habitat; (3) reducing the availability of seasonal refugia; and (4) reducing the availability of foraging habitat (USFWS 2000). In addition to the habitat changes, reduction in the natural forage base for the pallid sturgeon is likely another factor contributing to the species decline (Mayden and Kuhajda 1997, USFWS 2000). According to Sheehan et al. (1998) pallid sturgeon exhibit a strong preference for downstream island tips, which in the MMR are sandy depositional areas. Age-0 pallid sturgeon have been collected downstream of the RM 103 project area near the downstream island tip of Rockwood Island.

Decurrent False Aster

Decurrent False Aster is a perennial plant found in moist, sandy floodplains and prairie wetlands along the Illinois & Mississippi Rivers. Although not very tolerant to prolonged flooding, this plant relies on periodic flooding to scour away other plants that compete for the same habitat. In addition, flood waters can transport seeds to new locations. Populations of *Boltonia decurrens* are known to occur north of the RM 174 project area and to the south of the RM 103 project area.

3.7.2 Alternative 1: Continue Present Maintenance Dredge Operations (No Action)

Under the no action alternative, pile dikes would not be constructed to induce deposition to create permanent sandbar or island habitats. Dredge placement may still be conducted using the flex-pipe to create ephemeral sandbar habitat, as outlined in the existing conditions. However, the habitat of the project areas would remain similar to its current condition, providing no enhanced habitat diversity for threatened or endangered species.

3.7.3 Alternative 2: Island Creation with Pile Dikes

Indiana, Northern Long-Eared, Tricolored, and Little Brown Bats

The proposed project does not call for the removal of any trees. Pile dike construction, dredging, and dredge disposal would all be completed by river-based equipment and will not result in the destruction of any forested riparian habitat. However, incidental effects from construction activities

(e.g., noise, vibration, etc.), could potentially disturb bats roosting on the land adjacent to the project area. Construction would only occur during the day so no impacts to foraging would be expected. The creation of shallow off-channel areas with the incorporation of large woody debris may increase the macroinvertebrates in the project area, which may result in an increase forage base for bat species. In addition, the creation of a forested island may provide additional bat roosting habitat. Therefore, the proposed action *may affect, but is not likely to adversely affect* the Indiana bat and Northern long-eared bat, and *is not likely to jeopardize the continued existence of* the Tricolored bat, and Little Brown bat.

Monarch Butterfly

Monarch butterfly habitat may exist along agricultural and riparian areas adjacent to the project areas; however, the river-based construction is not expected to impact these areas. Individual monarchs may use the Mississippi River as a corridor to travel between habitats but due to the mobile nature of the species, the proposed project is *not likely to jeopardize the continued existence* of the Monarch Butterfly.

Pallid Sturgeon

Under the proposed action, the overall aquatic habitat within the project area would be improved for pallid sturgeon. In particular, the overall bathymetric diversity in the area would be enhanced, and the difference in elevation between deep and shallow areas would be increased. This alternative could create main channel border sandbar, side channel, and island habitats thought to be utilized by pallid sturgeon.

Permanent sandbars, islands, and side channels may be necessary for the survival and eventual recruitment of larval pallid sturgeon. Phelps et al. (2010) collected age-0 sturgeon in greater abundance from low velocity areas in the MMR, such as channel borders and island tips. Phelps et al. (2010) also demonstrate a link between sand substrate and greater abundance of age-0 sturgeon. Similar to the aforementioned studies, Allen et al. (2007) documented juvenile pallid sturgeon selecting sand substrate over other substrate types (e.g., gravel, wood).

Research on pallid sturgeon habitat use suggests this relatively long-lived species requires multiple habitat types throughout its life, and that habitat utilization may be different for populations inhabiting different river systems, which may be related to the severity and type of anthropogenic modifications that afflict these different systems (i.e., impounded vs. channelized). However, there does seem to be some consensus that multiple life stages of this species prefer sandy substrates for feeding. The combination of pile dikes and dredge sand from the navigation channel of the MMR to build sandbar and island habitats would create a variety of mesohabitat conditions. This type of habitat heterogeneity is expected to provide habitat to pallid sturgeon of all life stages (i.e., larval, juvenile, and adult).

Because of the enhanced habitat heterogeneity, the proposed project may result in greater abundance of pallid sturgeon within the immediate area, as well as a greater abundance of the suspected prey species for adult (i.e., sturgeon chub and sicklefin chub), juvenile, and age-0 pallid sturgeon (i.e., chironomid larvae). However, there may be minor and short-term impacts associated with the construction of the pile dikes. Impacts from the use of dredge material from the navigation channel would be minimized by adhering to the existing requirements outlined in the RPA's, RPM's, and Terms and Conditions outlined in the Biological Opinion for the Operation and Maintenance of the 9-ft Navigation Channel (USFWS 2000). The biotic monitoring conducted as part of the proposed action would further inform the District and project partners on the distribution and habitat use of any sturgeon species captured as well as their potential prey

species. Therefore, the proposed project *may affect, but is not likely to adversely affect* the pallid sturgeon.

Decurrent False Aster
The proposed project has potential to increase available habitat for *Boltonia decurrens*. Achieving the maximum target elevation of +30 LWRP would increase the amount of terrestrial habitat potentially suitable for *Boltonia decurrens*. However, if the maximum target elevation was not achieved, potentially suitable habitat would not be created as the area would be flooded too frequently to sustain this species. Therefore, the proposed project *may affect, but is not likely to adversely affect* the Decurrent False Aster.

3.8 CULTURAL & TRIBAL RESOURCES

3.8.1 Existing Conditions
Section 106 of the National Historic Preservation Act of 1966 (NHPA), as amended, requires that each federal agency identify and assess the effects its actions may have on historic properties. Both project areas are entirely within the Mississippi River, therefore, any potential cultural resources present within the proposed project areas are limited to submerged cultural resources. Primary among these submerged resources are historic period shipwrecks.

During the summer of 1988 when the Mississippi River was at a particularly low level, the St. Louis District conducted an aerial survey of exposed wrecks between Saverton, Missouri, and the mouth of the Ohio River. The nearest observed wreck to the RM 173 – 174 project location is 1.7 miles upstream. The nearest wreck to the RM 104 – 102 project location is 2.3 miles downstream.

The riverbed in the project areas is surveyed every few years, with the latest processed surveys having been completed in 2020. No topographic anomalies suggesting wrecks are visible on the resulting bathymetric maps of the project areas. Additionally, parts of the project areas are visible in periods of low water and no wrecks or other anthropogenic structures are visible.

3.8.2 Alternative 1: Continue Present Maintenance Dredge Operations (No Action)
It is not anticipated that any historic properties or tribal resources would be affected by continued dredge operations.

3.8.3 Alternative 2: Island Creation with Pile Dikes
All the proposed project work will be undertaken via the river, without the need for land access; therefore, any effects are limited to submerged cultural resources. Primary among these are historic period shipwrecks. Given the continual river flow and associated sedimentary erosion, deposition, and reworking, it is highly unlikely that any ephemeral cultural material remains on the riverbed. Prior to project commencement, additional surveys are planned, which will be examined for anomalies.

Given the features' construction method (with no land impact), the previous disturbance of the riverbed, and the lack of any survey evidence for extant wrecks that would be impacted, it is the District's opinion that the proposed federal undertaking would not have any adverse effects on historic properties.

The District entered consultations with both the Missouri and Illinois State Historic Preservation Offices (SHPO) regarding the project via letters both dated 13 May 2022. Missouri SHPO assigned the project number 007-PY-22 and indicated in a letter dated 1 June 2022 that they concurred with the District's determination that no historic properties were affected. In a letter

dated 1 June 2022, Illinois SHPO assigned the project the log number 003051822 and also determined that no historic properties were affected.

The St. Louis District initiated consultation via a letter on 6 June 2022 with 26 federally recognized Indian Tribes that have an interest in this area. The Nottawaseppi Huron Band of Potawatomi (16 June 2022) stated that the project was not within their historic ceded territories they defer to other Tribes. The Delaware Nation (23 June 2022), Delaware Tribe (5 July 2022), Eastern Shawnee Tribe of Oklahoma (30 June 2022), Forest County Potawatomi Community (6 June 2022), Iowa Tribe of Kansas and Nebraska (8 June 2022), Match-e-be-nash-she-wish Band of Pottawatomi Indians (8 July 2022), Miami Tribe of Oklahoma (9 June 2022), and Shawnee Tribe (15 June 2022) had no objections to the project but requested to be contacted if archaeological or human remains are identified within the project area. The St. Louis District will reach back out to federally recognized Indian Tribes if archaeological or human remains are discovered during project implementation.

3.9 HAZARDOUS TOXIC RADIOACTIVE WASTE (HTRW)

3.9.1 Existing Conditions

The U.S. Army Corps of Engineers Regulations (ER 1165-2-132 and ER 200-2-3) and St. Louis District policy require procedures be established to facilitate early identification and appropriate consideration of potential hazardous, toxic, or radioactive waste (HTRW) in feasibility, preconstruction engineering and design, land acquisition, construction, operations and maintenance, repairs, replacement, and rehabilitation phases of water resources studies or projects by conducting HTRW Initial Hazard Assessments (IHA). USACE specifies that these assessments follow the process/standard practices for conducting Phase I Environmental Site Assessments (ESA) published by the American Society for Testing and Materials (ASTM).

The purpose of a Phase I ESA is to identify, to the extent feasible in the absence of sampling and analysis, the recognized environmental conditions (RECs) in connection with a given property(s), within the scope of EPA Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and petroleum products.

A preliminary review of available imagery and environmental databases was performed. The project area at RM 103 contains no sites of interest nor poses significant HTRW concerns. The left descending bank at RM 174 is the location of where Prairie Du Pont Creek empties into the Mississippi River. Dead Creek empties into Du Pont Creek approximately 1 mile upstream of the Mississippi River. Dead Creek provides drainage for a highly industrialized area which includes Sauget Area 1 - an EPA Superfund site (EPA ID: ILD980792006).

Preliminary findings for the RM 174 proposed project location revealed local area wastes, including chemical and industrial wastes from a variety of processes and sources, have been disposed of in Sauget Area 1 starting prior to the 1920’s (EPA, 2013). The Sauget Area 1 Superfund site consists of three closed waste disposal facilities, a closed construction debris disposal area, a backfilled impoundment, an inactive borrow pit, and about 3.5 miles of Dead Creek. The EPA has identified the following list of contaminants of concern: polychlorinated biphenyls (PCBs), phosphorus, P,P'-DDT, P,P'-DDD, naphthalene, manganese, dieldrin, chloroform, chlorobenzene, benzene, barium, antimony, and 2,3,7,8-tetrachlorodibenzo-p-dioxin (EPA, 2023).

3.9.2 Alternative 1: Continue Present Maintenance Dredge Operations (no action)

Under the no action alternative, HTRW concerns at RM 103 and 174 would be expected to remain similar to existing conditions.

3.9.3 Alternative 2: Island Creation with Pile Dikes

Implementation of this alternative at RM 103 should not introduce hazardous, toxic, or radioactive wastes. However, the existing conditions at RM 174 show potential for hazardous, toxic, or radioactive wastes migrating into the project site. In addition, the proposed pile structures at RM 174 may concentrate contaminated sediments further increasing potential environmental impacts. Given the existing conditions at RM 174, project implementation at this location may not proceed until the Superfund site is remediated, or until the risk of contaminant exposure, mobilization, or concentration has been reduced. A Phase 2 Environmental Site Assessment would be completed prior to construction to assess risk and obtained more detailed site conditions.

3.10 AIR QUALITY & GREENHOUSE GASES

3.10.1 Existing Conditions

The Clean Air Act of 1963 requires the U.S. Environmental Protection Agency (EPA) to designate National Ambient Air Quality Standards (NAAQS). The EPA has identified standards for 6 pollutants: lead, sulfur dioxide, carbon monoxide, nitrogen dioxide, ozone, particulate matter (less than 10 microns and less than 2.5 microns in diameter), along with some heavy metals, nitrates, sulfates, volatile organic and toxic compounds (Table 6). The St. Louis, MO-IL is a designated nonattainment area (NA) which includes portions of St. Clair County and the RM 174 project area. The St. Louis, MO-IL NA is currently in non-attainment for 8-Hour Ozone quality standards (USEPA, 2022a). Perry County, MO, is currently in attainment for all air quality pollutants (USEPA, 2022a).

Table 6. U.S. EPA NAAQS pollutants with criteria limits.

Pollutant	Averaging time	Criteria	Form
Carbon monoxide	8 hours	9 ppm	Not to be exceeded more than once per year
	1 hour	35 ppm	
Lead	Rolling 3 month	0.15 µg/m^3	Not to be exceeded
Nitrogen dioxide	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	1 year	53 ppb	Annual Mean
Ozone	8 hours	0.070 ppm	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particle Pollution ($PM_{2.5}$)	1 year	12.0 µg/m^3	Annual mean, averaged over 3 years
	24 hours	35 µg/m^3	98th percentile, averaged over 3 years
Sulfur dioxide	1 hour	75 ppb	99th percentile of 1-hour daily

			maximum concentrations, averaged over 3 years

The RM 174 project area is within a metropolitan area with heavy road traffic along both riverbanks, and several interstates, state highways, and railroad bridges across the Mississippi River upstream and downstream of the project area. In addition, this project area is also within the St. Louis Harbor, which has numerous dock and port facilities that load and unload barges, trains, and other commercial vehicles as well as many manufacturing industries (e.g., steel and chemical production). The higher concentration of industrial facilities and traffic has led to the non-attainment status of the St. Louis region and likely higher amounts of greenhouse gas emissions. Finally, due to all the regular traffic, the ambient noise on the river is higher than a rural setting. Due to a variety of activities in the area, noise levels can range widely, from very quiet to the piercing sound of gunshots.

The RM 103 project area is in a more natural area with some noise from agricultural activities within the Bois Brule Levee District and from recreational and navigational boat traffic.

3.10.2 Alternative 1: Continue Present Maintenance Dredge Operations (No Action)

Air quality and noise levels within the project areas would remain consistent with the existing conditions.

3.10.3 Alternative 2: Island Creation with Pile Dikes

Emissions from construction equipment may minimally increase ozone, carbon monoxide, suspended airborne particulates, and carbon dioxide levels in the vicinity of the construction site. Due to the limited duration of the construction the expected increases in emissions would be negligible and would cease after construction. EPA has set *de minimis* emission levels beneath which conformity to the state implementation plan (SIP) does not need to be demonstrated. Due to the relatively small scale of the work, emissions of particulate matter are clearly *de minimis*; therefore, an emissions analysis was not performed. However, the Contractor shall comply with all applicable federal, state, and local laws and regulations. The Contractor shall provide environmental protective measures and procedures to prevent and control dust and emissions, limit habitat disruption, and correct environmental damage that occurs during construction. The expected increases would be negligible and would cease after construction. The construction, operation, and maintenance of the islands likely would not significantly increase the production of greenhouse gas emissions. The creation of a new vegetated island may help sequester carbon; however, these effects may be minimal.

The proposed work would be expected to temporarily increase noise levels near the project areas. The U.S. Environmental Protection Agency has set a limit of 85 decibels on the A scale (the most widely used sound level filter) for eight hours of continuous exposure to protect against permanent hearing loss. Based upon similar construction activities conducted in the past, noise above this level would not be expected to occur for periods longer than eight hours. Noise levels would return to normal after construction completion. In addition, there are no sensitive noise receptors in the work areas.

3.11 Environmental Justice

Executive Orders 12898 and 14008 direct federal agencies to take the appropriate steps to identify and address any disproportionately high and adverse human health or environmental effects of federal programs, policies, and activities on minority and low-income populations.

Minority populations are those persons who identify themselves as Black, Hispanic, Asian American, American Indian/Alaskan Native, and Pacific Islander. A minority population exists where the percentage of minorities in an affected area either exceeds 50 percent or is meaningfully greater than in the general population.

The nearest population to the proposed actions on the LDB near RM 174 with available demographic information is Cahokia Village, IL. The population of Cahokia Village is approximately 71.0% African-American, 0.5% American Indian or Alaskan Native, 0.1% Asian, 0.1% Native Hawaiian or Pacific Islander, and 4.5% more than one race (US Census 2020; Table 7). The population is 2.4% Hispanic or Latino (US Census 2020). There are approximately 53.7% of households in the Cahokia Heights area whose income in the past 12 months falls below the national poverty level (US Census 2021).

Table 7. Cahokia Heights and Illinois population demographics. (US Census, 2020).

	Cahokia Village		**Illinois**	
	Population	**%**	**Population**	**%**
White	2,745	22.7	7,868,227	61.4
Black or African American	8,593	71.0	1,808,271	14.1
American Indian and Alaska Native	61	0.5	96,496	0.8
Asian	12	0.1	754,878	5.8
Native Hawaiian and Other Pacific Islander	6	0.1	4,501	0.1
Other	138	1.1	1,135,149	8.9
Two or more races	541	4.5	1,144,984	8.9
Total	12,096	100.0	12,812,508	100.0

The nearest population to the proposed actions on the RDB near RM 103-104 with available demographic information is Perryville, MO. The population of Perryville is approximately 1.0% African-American, 0.3% American Indian or Alaskan Native, 1.2% Asian, 0.0% Native Hawaiian or Pacific Islander, and 5.4% more than one race (US Census 2020; Table 8). The population is 3.4% Hispanic or Latino (US Census 2020). There are approximately 27.7% of households in the Perryville area whose income in the past 12 months falls below the national poverty level (US Census 2021).

Table 8. Perryville and Missouri population demographics. (US Census, 2020).

	Perryville		**Missouri**	
	Population	**%**	**Population**	**%**
White	7,725	90.3	4,740,335	77.0
Black or African American	81	1.0	699,840	11.4
American Indian and Alaska Native	26	0.3	30,518	0.5
Asian	100	1.2	133,377	2.2
Native Hawaiian and Other Pacific Islander	0	0.0	9,730	0.2
Other	154	1.8	127,942	2.0
Two or more races	469	5.4	413,171	6.7
Total	8,555	100.0	6,154,913	100.0

The socioeconomic landscape within the project vicinity varies widely due to agricultural and industrial practices along the Mississippi River. Multiple census block groups immediately adjacent to the proposed action area are considered disadvantaged populations based on criteria such as low income, unemployment rate, housing cost burden, energy burden, low life expectancy, and medically underserved (CEQ 2022; USEPA 2022b). However, the proposed

project would not result in disproportionate adverse impacts to low-income or minority populations.

4. CUMULATIVE IMPACTS

The discussion of cumulative impacts considers the effects on the resource that result from the incremental impact of the action being considered 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. This section identifies possible cumulative effects of the considered alternatives when combined with past trends and other ongoing or expected future plans and projects.

A comprehensive analysis of the cumulative impacts of the Middle Mississippi River Navigation Project (Regulating Works Project) on the geomorphic and biological resources of the MMR has been described in the Supplemental Environmental Impact Statement for the (USACE 2017) and UMR-IWW System Navigation Feasibility Study (USACE 2004). These studies provided a cumulative effects analysis of the 9-foot Navigation project for the entire UMR and MMR. The above documents and analyses are incorporated by reference into this analysis and are available for review at:

http://www.mvs.usace.army.mil/Missions/Navigation/SEIS/Library.aspx

In addition, Biological Opinion for the Operation and Maintenance of the 9-foot Navigation Channel on the Upper Mississippi River System (UMRS; USFWS 2000) as described in Section 1.4.1.1, further evaluates the cumulative effects of the operation and maintenance of the navigation channel on pallid sturgeon. The proposed island creation pilot project outlined in this Environmental Assessment was designed to alleviate the cumulative impacts that have resulted from these operation and maintenance activities, as required under the Biological Opinion. Similar aquatic habitat improvement actions are currently being implemented or planned throughout the MMR and are being funded through the Upper Mississippi River Restoration Program (UMRR) and Navigation and Environmental Sustainability Program (NESP). The measures being considered or implemented under these programs include dike alteration, side channel creation, island creation, and improvements to backwater and floodplain habitats. The projects implemented under these programs would have a largely beneficial impact on aquatic resources, including species listed under the ESA.

5. RELATIONSHIP TO OTHER ENVIRONMENTAL LAWS & REGULATIONS

Table 9. Compliance with applicable environmental laws and regulations.

Guidance	Compliance
Federal Statutes	
Archaeological and Historic Preservation Act, as Amended, 16 U.S.C. 469, et seq.	PC[1]
Bald and Golden Eagle Protection Act, 16 USC 668-668d	FC
Clean Air Act, as Amended, 42 U.S.C. 7401-7542	FC
Clean Water Act, as Amended 33 U.S.C. 1251-1375	PC[2]
Comprehensive Environmental Response, Compensation, and Liability Act, 42 USC 9601-9675	FC
Endangered Species Act, as Amended, 16 U.S.C. 1531-1544	PC[2]
Federal Water Project Recreation Act, as Amended. 16 U.S.C. 4601, et seq.	FC
Fish and Wildlife Coordination Act, as Amended, 16 U.S.C. 661-666c	PC[2]
Land and Water Conservation Fund Act, as Amended, 16 U.S.C. 4601, et seq.	FC
National Environmental Policy Act, as Amended, 42 U.S.C. 4321- 4347	PC[3]
National Historic Preservation Act, as Amended, 54 U.S.C 300101, et seq.	PC[1]
Noise Control Act, 42 USC 4901, et seq.	FC
Migratory Bird Treaty Act of 1918, 16 USC 703-712	PC[2]
Resource Conservation and Recovery Act, 42 USC 6901-6987	FC
Executive Orders	
Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (EO 12898)	FC
Tackling the Climate Crisis at Home and Aboard (EO 14008)	FC
Floodplain Management, E.O. 11988 as amended by E.O. 12148	FC
Protection of Wetlands, E.O 11990 as amended by E.O. 12608	FC
Protection and Enhancement of the Cultural Environment, E.O. 11593	PC[1]
Consultation and Coordination with Indian Tribal Governments E.O. 13175	PC[1]
Protection of Migratory Birds E.O. 13186	FC

FC = Full Compliance, PC = Partial Compliance.

1. FC attained after completion of all required archaeological investigations, reports, and coordination.
2. FC attained upon completion of any permitting requirements or coordination with other agencies.
3. FC attained upon signing of the NEPA decision document.

To ensure compliance with the National Environmental Policy Act and other applicable environmental laws and regulations, coordination with these entities and individuals will continue, as required, throughout the execution of the proposed project.

6. COORDINATION AND PUBLIC REVIEW

Notification of the DRAFT Environmental Assessment and unsigned Finding of No Significant Impact was sent to several relevant officials, agencies, organizations, and individuals for review

and comment. Additionally, an electronic copy was available on the St. Louis District's website during the 30-day public review period at the following url:

https://www.mvs.usace.army.mil/Portals/54/docs/pm/Reports/EA/IslandCreationEA.pdf

Please note that the Finding of No Significant Impact is unsigned during the public review period. These documents would be signed into effect only after having carefully considered comments received as a result of the public review. A signed FONSI is required before implementation of the action could occur.

To assure compliance with the National Environmental Policy Act, Endangered Species Act, and other applicable environmental laws and regulations, coordination with these agencies would continue as required throughout the planning and construction phases of the proposed work.

7. List of Preparers

Alison M. Anderson, Ph.D. – Environmental Tech Lead
Rachel Steiger – Wildlife Biologist
Michael Skrabacz – Water Quality Specialist
Mark Smith, Ph.D. – Cultural Resources
Meredith Trautt – Tribal Resources
Timothy Lauth, P.E. – Hydrology & Hydraulics
Edward Brauer, P.E. – Hydrology & Hydraulics
Chuck Frerker – Regulatory Project Manager
Michael Rodgers – Project Manager

8. Resources Cited

Allen, T. C., Phelps, Q. E., Davinroy, R. D., & Lamm, D. M. (2007). A laboratory examination of substrate, water depth, and light use at two water velocity levels by individual juvenile pallid (*Scaphirhynchus albus*) and shovelnose (*Scaphirhynchus platorynchus*) sturgeon. Journal of Applied Ichthyology, 23(4), 375-381.

Anderson, E.A. (1983). Nesting Productivity of the interior least tern in Illinois. Unpublished Report. Cooperative Wildlife Research Laboratory, Southern Illinois University, Carbondale, Illinois, 19 pp.

Barko, V. A., Herzog, D. P., Hrabik, R. A., & Scheibe, J. S. (2004). Relationship among fish assemblages and main-channel-border physical habitats in the unimpounded upper Mississippi River. Transactions of the American Fisheries Society, 133(2), 371-384.

CEQ. (2022). Council on Environmental Quality. Climate and Economic Justice Screening Tool. 22 November 2022.

eBird. (2022). The Cornell Lab of Ornithology. Retrieved August 2022.

EPA. (2013). Record of Decision. Sauget Area 1 Superfund Site. (Report No. 446573). United States Environmental Protection Agency.

EPA. (2023). Superfund Site: Sauget Area 1 Sauget, IL Contaminant List. Retrieved from: https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0500753

Galat, D. L., Berry, C. R., Gardner, W. M., Hendrickson, J. C., Mestl, G. E., Power, G. J., ... & Winston, M. R. (2005). Spatiotemporal patterns and changes in Missouri River fishes.

Harrison, A. B., Slack, W. T., Lewis, B. R., Collins, J. A., & Murphy, C. E. (2018). Reliable and effective sampling gear type for large river substrate dwelling macroinvertebrates. River Systems, 2018, 1-8.

IDNR. (2022). Illinois Department of Natural Resources. Ecological Compliance Assessment Tool (EcoCAT). Retrieved 13 July 2022.

Kaul, A. D., & Wilsey, B. J. (2019). Monarch butterfly host plant (milkweed *Asclepias* sp.) abundance varies by habitat type across 98 prairies. Restoration Ecology, 1274-1281.

Keevin, T. M., and Cummings, K.S. (2000). The freshwater mussel fauna of the middle Mississippi River. Melvin Price Locks and Dam, Design Memorandum No. 24 Avoid and Minimize Measures, Progress Report 1999. 15 pp.

Keevin, T. M., Tiemann, J.S., and Cummings, K.S. (2013). The Freshwater Mussels of the Middle Mississippi River. Poster

Kinsolving, A. D., & Bain, M. B. (1993). Fish assemblage recovery along a riverine disturbance gradient. Ecological Applications, 3(3), 531-544.

Mayden, R. L., & Kuhajda, B. R. (1997). Threatened fishes of the world: *Scaphirhynchus albus* (Forbes & Richardson, 1905) (Acipenseridae). In Sturgeon biodiversity and conservation (pp. 420-421). Springer, Dordrecht.

MDC. (2022a) Missouri Department of Conservation. Natural Heritage Review. Retrieved 13 July 2022.

MDC. (2022b). Missouri Department of Conservation. Tri-Colored Bat Field Guide. Retrieved from https://mdc.mo.gov/discover-nature/field-guide/tri-colored-bat

MCD. (2022c). Missouri Department of Conservation. Little Brown Bat Field Guide. Retrieved from https://mdc.mo.gov/discover-nature/field-guide/little-brown-myotis-little-brown-bat

Moseley, L. J. (1976). Behavior and Communication in the Least Tern (Sterna albifrons). The University of North Carolina at Chapel Hill.

Niles, J. M., & Hartman, K. J. (2009). Larval fish use of dike structures on a navigable river. North American Journal of Fisheries Management, 29(4), 1035-1045.

Phelps, Q. E., Tripp, S. J., Garvey, J. E., Herzog, D. P., Ostendorf, D. E., Ridings, J. W., & Hrabik, R. A. (2010). Habitat use during early life history infers recovery needs for shovelnose sturgeon and pallid sturgeon in the middle Mississippi River. Transactions of the American Fisheries Society, 139(4), 1060-1068.

Sidle, J.G. and W.F. Harrison. (1990). Recovery Plan for the Interior Population of the Least Tern (Sterna antillarum). U.S. Fish and Wildlife Service, Twin Cities, Minnesota. 90 pp. (1)

Simmons, S.M. (2015). A Comparison of Fish Communities Between the Main Channel and Side Channels of the Middle Mississippi River. Unpublished M.S. Thesis. Southeast Missouri State University.

Simons, D. B., Schumm, S. A., & Stevens, M. A. (1974). Geomorphology of the middle Mississippi River. Colorado State University Fort Collins Engineering Research Center.

USACE (U.S. Army Corps of Engineers). (1999). Biological assessment, interior population of the least tern, sterna antillarum, regulating works project, Upper Mississippi River (river miles 0-195) and Mississippi River and tributaries project, channel improvement feature, Lower Mississippi River (river miles 0-954.5, AHP). U. S. Army Corps of Engineers, Mississippi Valley Division/Mississippi River Commission, Vicksburg, Mississippi.

USACE. (2004). Final Integrated Feasibility Report and Programmatic Environmental Impact Statement for the UMR-IWW System Navigation Feasibility Study. Rock Island, IL: U.S. Army Corps of Engineers, St. Paul, Rock Island, and St. Louis Districts.

USACE. (2011). Engineering Considerations for Island and Sandbar Creation using Flexible Floating Dredge Disposal Pipe, Middle Mississippi River, Miles 200.0 to 0.0. M57 Technical Report. St. Louis District. St. Louis, MO.

USACE. (2017). Final Supplement to the Final Environmental Impact Statement for the Mississippi River Between the Ohio and Missouri Rivers (Regulating Works) Project. Record of Decision Signed May 2017. St. Louis District. St. Louis, MO.

USACE. (2019). Numerical Model Study of the Flows around Pile Dikes and Conventional Rock Dikes in the Columbia River. U.S. Army Engineer Research and Development Center. Vicksburg, MS

USEPA. (2018). U.S. Environmental Protection Agency. Waterbody Quality Assessment Report for the Mississippi River.

USEPA. (2020). U.S. Environmental Protection Agency. Waterbody Quality Assessment Report for the Mississippi River.

USEPA. (2022a). U.S. Environmental Protection Agency. National Ambient Air Quality Standards (NAAQS).

USEPA. (2022b). U.S. Environmental Protection Agency. Environmental Justice Screening and Mapping Tool (EJScreen).

USFWS. (2000). U.S. Fish & Wildlife Service. Biological Opinion for the Operation and Maintenance of the 9-foot Navigation Channel on the Upper Mississippi River System.

USFWS. (2007). U.S. Fish & Wildlife Service. National Bald Eagle Management Guidelines.

USFWS. (2021). U.S. Fish & Wildlife Service. Monarch Butterfly. 19 July 2021. Retrieved from https://www.fws.gov/savethemonarch/

USFWS. (2022). U.S. Fish & Wildlife Service. Information for Planning and Conservation (IPaC). Retrieved 01 February 2023 and 27 June 2022 from https://ecos.fws.gov/ipac/

US Census. (2020). U.S. Census Bureau. Decennial Census 2020 for Cahokia Village, Illinois. Perryville, Missouri. Retrieved from https://data.census.gov/

US Census. (2021). U.S. Census Bureau. American Community Survey (ACS) 2021 5-Year Estimates Cahokia Village, Illinois. Perryville, Missouri. Retrieved from https://data.census.gov/

WEST Consultants, Inc. (2000). Upper Mississippi River and Illinois Waterway Navigation Feasibility Study - Cumulative Effects Study, Volumes 1-2. Rock Island, IL: U.S. Army Corps of Engineers, Rock Island District.

Whitman, P. L. (1988). Biology and conservation of the endangered interior least tern: a literature review.

Rogala, J. T., Wlosinski, J. H., & Landwehr, K. J. (1999). Pool 13 drawdown: Predicting success rates and affected areas. Long term resource monitoring program--technical report (No. PB-99-145393/XAB; LTRMP-99-T002). Geological Survey, Upper Midwest Environmental Sciences Center, La Crosse, WI (United States); Army Engineer District, Rock Island, IL (United States).

WRDA. (2020). Water Resources Development Act of 2020. H.R. 7575 – 116th Congress. Section 125. Beneficial Reuse of Dredged Material; Dredged Material Management Plans. https://www.congress.gov/bill/116th-congress/house-bill/7575/text#toc-H21D55EC8857749A4975A0403B0B382C8

FINDING OF NO SIGNIFICANT IMPACT

Middle Mississippi Island Creation Pilot Project

Middle Mississippi River (RM 103 & 174)

Perry County, MO & St. Clair County, IL

1. I have reviewed and evaluated the documents relevant to the proposed island creation pilot project. The Action Alternative would result in pile dike construction and the beneficial use of dredge material to establish islands in two areas of the Middle Mississippi River. This action is being conducted in accordance with Reasonable and Prudent Alternatives (RPA) and the Reasonable and Prudent Measures (RPM) of the 2000 Operation and Maintenance (O&M) of the 9-Foot Navigation Channel Biological Opinion (BO) for the pallid sturgeon.

2. I have also evaluated pertinent data concerning practicable alternatives relative to my decision on this action. As part of this evaluation, I have considered the following alternatives:

    a. No Action Alternative: Under the no-action alternative, the federal government will not establish islands using pile dikes at River Miles 103 and 174. The St. Louis District will continue to perform operations and maintenance activities required to maintain the navigation channel at these River Miles.

    b. Island Creation with Pile Dikes Alternative: Under this alternative, the St. Louis District will use a combination of pile dikes and dredge material to establish islands within each project area. Specifically, the St. Louis District will construct four pile dikes at RM 103 and three pile dikes at RM 174 followed by the placement of dredge material, obtained during channel maintenance dredging, within the pile dike fields. Monitoring and adaptive management of the project areas will continue until success criteria are met.

3. The possible consequences of the No Action and Island Creation with Pile Dikes Alternatives have been studied for physical, environmental, cultural, social, and economic effects, and engineering feasibility. Major findings of this investigation include the following:

    a. The No Action Alternative was evaluated and determined to be unacceptable as the St. Louis District is obligated to perform such activities to remain in compliance with the 2000 O&M Navigation BO issued under the Endangered Species Act.

    b. Island Creation with Pile Dikes Alternative will be covered under the terms and conditions of Nationwide Permit 27 for aquatic habitat restoration, enhancement, and establishment activities authorized under Section 404 of the Clean Water Act and Section 10 Rivers and Harbors Act. The Island Creation with Pile Dikes Alternative will comply with the general conditions outlined in the Section 401 of the Clean Water Act Water Quality Certification issued by the Missouri Department of Natural Resources and Illinois Environmental Protection Agency.

c. The Island Creation with Pile Dikes Alternative is not expected to cause significant adverse impacts to natural resources such as fish, wildlife, riparian habitat, bottomland hardwood forest, wetlands, or streams. No appreciable effects to air quality, noise, or recreation would result from the Island Creation with Pile Dikes Alternative.

d. The Island Creation with Pile Dikes Alternative is not expected to adversely impact river stages or navigation.

e. The RM 174 location has potential for hazardous, toxic, or radioactive wastes migrating into the project site. A Phase 2 Environmental Site Assessment will be completed prior to construction to assess risk and obtained more detailed site conditions. Project implementation at this location will not proceed until the Superfund site is remediated, or until the risk of contaminant exposure, mobilization, or concentration is reduced.

f. No Federally protected or endangered or threatened species are anticipated to be adversely impacted by the Island Creation with Pile Dikes Alternative.

g. No significant impacts to historic properties or tribal resources are anticipated as a result of the Island Creation with Pile Dikes Alternative.

h. The Island Creation with Pile Dikes Alternative would not disproportionately affect low-income or minority populations.

i. The Contractor shall comply with all applicable federal, state, and local laws and regulations. The Contractor shall provide environmental protective measures and procedures to prevent and control pollution, limit habitat disruption, and correct environmental damage that occurs during construction.

4. Based upon the evaluation and disclosure of impacts contained in the Environmental Assessment, no significant impacts to the environment are anticipated to occur as a result of implementing the Island Creation with Pile Dikes Alternative. The Environmental Assessment has been coordinated with appropriate resource agencies and the public, and there are no significant unresolved issues. Therefore, an Environmental Impact Statement will not be prepared prior to proceeding with this action.

_____ _____

Date

Andy J. Pannier
Colonel, U.S. Army
District Commander

APPENDIX A – AGENCY, TRIBAL, AND PUBLIC COORDINATION

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Southern Illinois Sub-Office
Southern Illinois Sub-office
8588 Route 148
Marion, IL 62959-5822
Phone: (618) 998-5945
Email Address: Marion@fws.gov
https://www.fws.gov/office/illinois-iowa-ecological-services

In Reply Refer To: July 18, 2023
Project Code: 2023-0105893
Project Name: Island Creation Pilot Project

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The attached species list identifies federally threatened, endangered, proposed and candidate species that may occur within the boundary of your proposed project or may be affected by your proposed project. The list also includes designated critical habitat, if present, within your proposed project area or affected by your project. This list is provided to you as the initial step of the consultation process required under section 7(c) of the Endangered Species Act, also referred to as Section 7 Consultation.

Under 50 CFR 402.12(e) (the regulations that implement Section 7 of the Endangered Species Act) **the accuracy of this species list should be verified after 90 days**. This verification can be completed formally or informally. You may verify the list by visiting the ECOSPHERE Information for Planning and Consultation (IPaC) website https://ipac.ecosphere.fws.gov at regular intervals during project planning and implementation and completing the same process you used to receive the attached list.

Section 7 Consultation

Section 7 of the Endangered Species Act of 1973 requires that actions authorized, funded, or carried out by Federal agencies not jeopardize federally threatened or endangered species or adversely modify designated critical habitat. To fulfill this mandate, Federal agencies (or their designated non-federal representative) must consult with the U.S. Fish and Wildlife Service (Service) if they determine their project “may affect” listed species or designated critical habitat. Under the ESA, it is the responsibility of the Federal action agency or its designated representative to determine if a proposed action may affect endangered, threatened, or

proposed species, or designated critical habitat, and if so, to consult with the Service further. Similarly, it is the responsibility of the Federal action agency or project proponent, not the Service to make "no effect" determinations. If you determine that your proposed action will have no effect on threatened or endangered species or their respective designated critical habitat, you do not need to seek concurrence with the Service.

Note: For some species or projects, IPaC will present you with *Determination Keys*. You may be able to use one or more Determination Keys to conclude consultation on your action for species covered by those keys.

Technical Assistance for Listed Species

1. For assistance in determining if suitable habitat for listed, candidate, or proposed species occurs within your project area or if species may be affected by project activities, you can obtain information on the species life history, species status, current range, and other documents by selecting the species from the thumbnails or list view and visiting the species profile page.???????

No Effect Determinations for Listed Species

1. If there are *no* species or designated critical habitats on the Endangered Species portion of the species list: conclude "no species and no critical habitat present" and document your finding in your project records. No consultation under ESA section 7(a)(2) is required if the action would result in no effects to listed species or critical habitat. Maintain a copy of this letter and IPaC official species list for your records.

2. If any species or designated critical habitat are listed as potentially present in the **action area** of the proposed project the project proponents are responsible for determining if the proposed action will have “no effect” on any federally listed species or critical habitat. No effect, with respect to species, means that no individuals of a species will be exposed to any consequence of a federal action or that they will not respond to such exposure.

3. If the species habitat is not present within the action area or current data (surveys) for the species in the action area are negative: conclude “no species habitat or species present” and document your finding in your project records. For example, if the project area is located entirely within a “developed area” (an area that is already graveled/paved or supports structures and the only vegetation is limited to frequently mowed grass or conventional landscaping, is located within an existing maintained facility yard, or is in cultivated cropland conclude no species habitat present. Be careful when assessing actions that affect: 1) rights-of-ways that contains natural or semi-natural vegetation despite periodic mowing or other management; structures that have been known to support listed species (example: bridges), and 2) surface water or groundwater. Several species inhabit rights-of-ways, and you should carefully consider effects to surface water or groundwater, which often extend outside of a project’s immediate footprint.

4. Adequacy of Information & Surveys - Agencies may base their determinations on the best evidence that is available or can be developed during consultation. Agencies must give the benefit of any doubt to the species when there are any inadequacies in the information. Inadequacies may include uncertainty in any step of the analysis. To provide adequate information on which to base a determination, it may be appropriate to conduct surveys to determine whether listed species or their habitats are present in the action area. Please contact our office for more information or see the survey guidelines that the Service has made available in IPaC.

May Effect Determinations for Listed Species

1. If the species habitat is present within the action area and survey data is unavailable or inconclusive: assume the species is present or plan and implement surveys and interpret results in coordination with our office. If assuming species present or surveys for the species are positive continue with the may affect determination process. May affect, with respect to a species, is the appropriate conclusion when a species might be exposed to a consequence of a federal action and could respond to that exposure. For critical habitat, ‘may affect’ is the appropriate conclusion if the action area overlaps with mapped areas of critical habitat and an essential physical or biological feature may be exposed to a consequence of a federal action and could change in response to that exposure.

2. Identify stressors or effects to the species and to the essential physical and biological features of critical habitat that overlaps with the action area. Consider all consequences of the action and assess the potential for each life stage of the species that occurs in the action area to be exposed to the stressors. Deconstruct the action into its component parts to be sure that you do not miss any part of the action that could cause effects to the species or physical and biological features of critical habitat. Stressors that affect species’ resources may have consequences even if the species is not present when the project is implemented.

3. If no listed or proposed species will be exposed to stressors caused by the action, a ‘no effect’ determination may be appropriate – be sure to separately assess effects to critical habitat, if any overlaps with the action area. If you determined that the proposed action or other activities that are caused by the proposed action may affect a species or critical habitat, the next step is to describe the manner in which they will respond or be altered. Specifically, to assess whether the species/critical habitat is "not likely to be adversely affected" or "likely to be adversely affected."

4. Determine how the habitat or the resource will respond to the proposed action (for example, changes in habitat quality, quantity, availability, or distribution), and assess how the species is expected to respond to the effects to its habitat or other resources. Critical habitat analyses focus on how the proposed action will affect the physical and biological features of the critical habitat in the action area. If there will be only beneficial effects or

the effects of the action are expected to be insignificant or discountable, conclude "may affect, not likely to adversely affect" and submit your finding and supporting rationale to our office and request concurrence.

5. If you cannot conclude that the effects of the action will be wholly beneficial, insignificant, or discountable, check IPaC for species-specific Section 7 guidance and conservation measures to determine whether there are any measures that may be implemented to avoid or minimize the negative effects. If you modify your proposed action to include conservation measures, assess how inclusion of those measures will likely change the effects of the action. If you cannot conclude that the effects of the action will be wholly beneficial, insignificant, or discountable, contact our office for assistance.

6. Letters with requests for consultation or correspondence about your project should include the Consultation Tracking Number in the header. Electronic submission is preferred.

For additional information on completing Section 7 Consultation including a Glossary of Terms used in the Section 7 Process, information requirements for completing Section 7, and example letters visit the Midwest Region Section 7 Consultations website at: https://www.fws.gov/library/collections/midwest-region-section-7-consultations.
You may find more specific information on completing Section 7 on communication towers and transmission lines on the following websites:

- Incidental Take Beneficial Practices: Power Lines - https://www.fws.gov/story/incidental-take-beneficial-practices-power-lines
- Recommended Best Practices for Communication Tower Design, Siting, Construction, Operation, Maintenance, and Decommissioning. - https://www.fws.gov/media/recommended-best-practices-communication-tower-design-siting-construction-operation

Tricolored Bat Update

On September 14, 2022, the Service published a proposal in the Federal Register to list the tricolored bat (Perimyotis subflavus) as endangered under the Endangered Species Act (ESA). The Service has up to 12-months from the date the proposal published to make a final determination, either to list the tricolored bat under the Act or to withdraw the proposal. The Service determined the bat faces extinction primarily due to the rangewide impacts of white-nose syndrome (WNS), a deadly fungal disease affecting cave-dwelling bats across North America. Because tricolored bat populations have been greatly reduced due to WNS, surviving bat populations are now more vulnerable to other stressors such as human disturbance and habitat loss. Species proposed for listing are not afforded protection under the ESA; however, as soon as a listing becomes effective (typically 30 days after publication of the final rule in the Federal Register), the prohibitions against jeopardizing its continued existence and “take” will apply. Therefore, if your future or existing project has the potential to adversely affect tricolored bats after the potential new listing goes into effect, we recommend that the effects of the project on tricolored bat and their habitat be analyzed to determine whether authorization under ESA

section 7 or 10 is necessary. Projects with an existing section 7 biological opinion may require reinitiation of consultation, and projects with an existing section 10 incidental take permit may require an amendment to provide uninterrupted authorization for covered activities. Contact our office for assistance.

Bald and Golden Eagles

Although no longer protected under the Endangered Species Act, be aware that bald eagles are protected under the Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act, as are golden eagles. Projects affecting these species may require measures to avoid harming eagles or may require a permit. If your project is near an eagle nest or winter roost area, please contact our office for further coordination. For more information on permits and other eagle information visit our website https://www.fws.gov/library/collections/bald-and-golden-eagle-management.

We appreciate your concern for threatened and endangered species. Please feel free to contact our office with questions or for additional information.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Southern Illinois Sub-Office
Southern Illinois Sub-office
8588 Route 148
Marion, IL 62959-5822
(618) 998-5945

PROJECT SUMMARY

Project Code: 2023-0105893
Project Name: Island Creation Pilot Project
Project Type: Levee / Dike - New Construction
Project Description: Under this alternative, the District would use a combination of pile dikes and dredge material to establish islands within each project area. Specifically, the District would construct three pile dikes at RM 174 and four pile dikes at RM 103 followed by the placement of dredge material within the pile dike fields. The most upstream dike at both location would consist of a double row of piles, with the second row offset to the center be a single row of piles with piles spaced every 5 ft. The length of the pile dikes and the upstream to downstream spacing would vary between location. At RM 174, the dikes would be spaced approximately 1000 ft apart and would be approximately 400 ft long. At RM 103, the dikes would be spaced 600 ft apart with the most upstream dike at 400 ft long, followed by two 600-ft long structures and then one 400 ft long dike at the downstream end. At RM 103, the center two structures would project 200 ft beyond the upstream and downstream dikes along the riverward side. All piles would be driven to an uniform height. Rock would be placed at the base of the pile dikes to reduce local erosion around each pile and increase the durability of the structure.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@37.852804,-89.74636450385867,14z

Counties: Randolph and St. Clair counties, Illinois

ENDANGERED SPECIES ACT SPECIES

There is a total of 6 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Indiana Bat *Myotis sodalis* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Endangered
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

FISHES

NAME	STATUS
Pallid Sturgeon *Scaphirhynchus albus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7162	Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

FLOWERING PLANTS

NAME	STATUS
Decurrent False Aster *Boltonia decurrens*	Threatened

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/7705

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

IPAC USER CONTACT INFORMATION

Agency: Army Corps of Engineers
Name: Rachel Steiger
Address: 1222 Spruce St
City: Saint Louis
State: MO
Zip: 63103
Email rachel.l.steiger@usace.army.mil
Phone: 3143318027

EcoCAT
Ecological Compliance Assessment Tool

ILLINOIS DEPARTMENT OF NATURAL RESOURCES

Applicant: U.S. Army Corps of Engineers
Contact: Alison Anderson
Address: 1222 Spruce Street
St. Louis , MO 63103

IDNR Project Number: 2300787
Date: 07/13/2022

Project: Island Creation Pilot Project
Address: Metro East & Chester, Metro East & Chester

Description: the District would construct three pile dikes at RM 174 and four pile dikes at RM 103 followed by the placement of dredge material within the pile dike fields. The most upstream dike at both location would consist of a double row of piles, with the second row offset to the center of the first row's spacing. The downstream dikes at both locations would be a single row of piles with piles spaced every 5 ft. Individual piles would be 40 to 50 ft in length and driven to a standard depth of 20 ft. Individuals piles would stand at varying heights, ranging between +15 to +30 LWRP, depending on existing bathymetry. The length of the pile dikes and the upstream to downstream spacing would vary between location. At RM 174, the dikes would be spaced approximately 1000 ft apart and would be approximately 400 ft long. At RM 103, the dikes would be spaced 600 ft apart with the most upstream dike at 400 ft long, followed by two 600-ft long structures and then one 400 ft long dike at the downstream end. At RM 103, the center two structures would project 200 ft beyond the upstream and downstream dikes along the riverward side. Rock would be placed at the base of the pile dikes to reduce local erosion around each pile and increase the durability of the structure.

Natural Resource Review Results

The Illinois Natural Heritage Database contains no record of State-listed threatened or endangered species, Illinois Natural Area Inventory sites, dedicated Illinois Nature Preserves, or registered Land and Water Reserves in the vicinity of the project location.

Consultation is terminated. This consultation is valid for two years unless new information becomes available that was not previously considered; the proposed action is modified; or additional species, essential habitat, or Natural Areas are identified in the vicinity. If the project has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary. Termination does not imply IDNR's authorization or endorsement.

Location

The applicant is responsible for the accuracy of the location submitted for the project.

County: St. Clair

Township, Range, Section:
1N, 10W, 5
1N, 10W, 7
1N, 10W, 8

IL Department of Natural Resources Contact
Bradley Hayes
217-785-5500
Division of Ecosystems & Environment

Government Jurisdiction
U.S. Army Corps of Engineers

Disclaimer

The Illinois Natural Heritage Database cannot provide a conclusive statement on the presence, absence, or condition of natural resources in Illinois. This review reflects the information existing in the Database at the time of this inquiry, and should not be regarded as a final statement on the site being considered, nor should it be a substitute for detailed site surveys or field surveys required for environmental assessments. If additional protected resources are encountered during the project's implementation, compliance with applicable statutes and regulations is required.

Terms of Use

By using this website, you acknowledge that you have read and agree to these terms. These terms may be revised by IDNR as necessary. If you continue to use the EcoCAT application after we post changes to these terms, it will mean that you accept such changes. If at any time you do not accept the Terms of Use, you may not continue to use the website.

1. The IDNR EcoCAT website was developed so that units of local government, state agencies and the public could request information or begin natural resource consultations on-line for the Illinois Endangered Species Protection Act, Illinois Natural Areas Preservation Act, and Illinois Interagency Wetland Policy Act. EcoCAT uses databases, Geographic Information System mapping, and a set of programmed decision rules to determine if proposed actions are in the vicinity of protected natural resources. By indicating your agreement to the Terms of Use for this application, you warrant that you will not use this web site for any other purpose.

2. Unauthorized attempts to upload, download, or change information on this website are strictly prohibited and may be punishable under the Computer Fraud and Abuse Act of 1986 and/or the National Information Infrastructure Protection Act.

3. IDNR reserves the right to enhance, modify, alter, or suspend the website at any time without notice, or to terminate or restrict access.

Security

EcoCAT operates on a state of Illinois computer system. We may use software to monitor traffic and to identify unauthorized attempts to upload, download, or change information, to cause harm or otherwise to damage this site. Unauthorized attempts to upload, download, or change information on this server is strictly prohibited by law.

Unauthorized use, tampering with or modification of this system, including supporting hardware or software, may subject the violator to criminal and civil penalties. In the event of unauthorized intrusion, all relevant information regarding possible violation of law may be provided to law enforcement officials.

Privacy

EcoCAT generates a public record subject to disclosure under the Freedom of Information Act. Otherwise, IDNR uses the information submitted to EcoCAT solely for internal tracking purposes.

Missouri Department of Conservation

Missouri Department of Conservation's Mission is to
protect and manage the forest, fish, and
wildlife resources of the state and to
facilitate and provide opportunities for all citizens to
use, enjoy and learn about these resources.

Natural Heritage Review Level Three Report: Species Listed Under the Federal Endangered Species Act

There are records of species listed under the Federal Endangered Species Act, and possibly also records for species listed Endangered by the state, or Missouri Species and/or Natural Communities of Conservation Concern within or near the the defined Project Area. Please contact the U.S. Fish and Wildlife Service and the Missouri Department of Conservation for further coordination.

Foreword: Thank you for accessing the Missouri Natural Heritage Review Website developed by the Missouri Department of Conservation with assistance from the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, Missouri Department of Transportation and NatureServe. The purpose of this website is to provide information to federal, state and local agencies, organizations, municipalities, corporations and consultants regarding sensitive fish, wildlife, plants, natural communities and habitats to assist in planning, designing and permitting stages of projects.

PROJECT INFORMATION

Project Name and ID Number: Island Creation Pilot Project #11168
Project Description: Under this alternative, the District would use a combination of pile dikes and dredge material to establish islands within each project area. Specifically, the District would construct three pile dikes at RM 174 and four pile dikes at RM 103 followed by the placement of dredge material within the pile dike fields. The most upstream dike at both location would consist of a double row of piles, with the second row offset to the center of the first row's spacing. The downstream dikes at both locations would be a single row of piles with piles spaced every 5 ft. Individual piles would be 40 to 50 ft in length and driven to a standard depth of 20 ft. Individuals piles would stand at varying heights, ranging between +15 to +30 LWRP, depending on existing bathymetry. The length of the pile dikes and the upstream to downstream spacing would vary between location. At RM 174, the dikes would be spaced approximately 1000 ft apart and would be approximately 400 ft long. At RM 103, the dikes would be spaced 600 ft apart with the most upstream dike at 400 ft long, followed by two 600-ft long structures and then one 400 ft long dike at the downstream end. At RM 103, the center two structures would project 200 ft beyond the upstream and downstream dikes along the riverward side. Rock would be placed at the base of the pile dikes to reduce local erosion around each pile and increase the durability of the structure.
Project Type: Habitat Conservation and Restoration, In-stream habitat restoration (habitat improvement structures)
Contact Person: Alison Anderson
Contact Information: Alison.M.Anderson@usace.army.mil or 314-331-8458

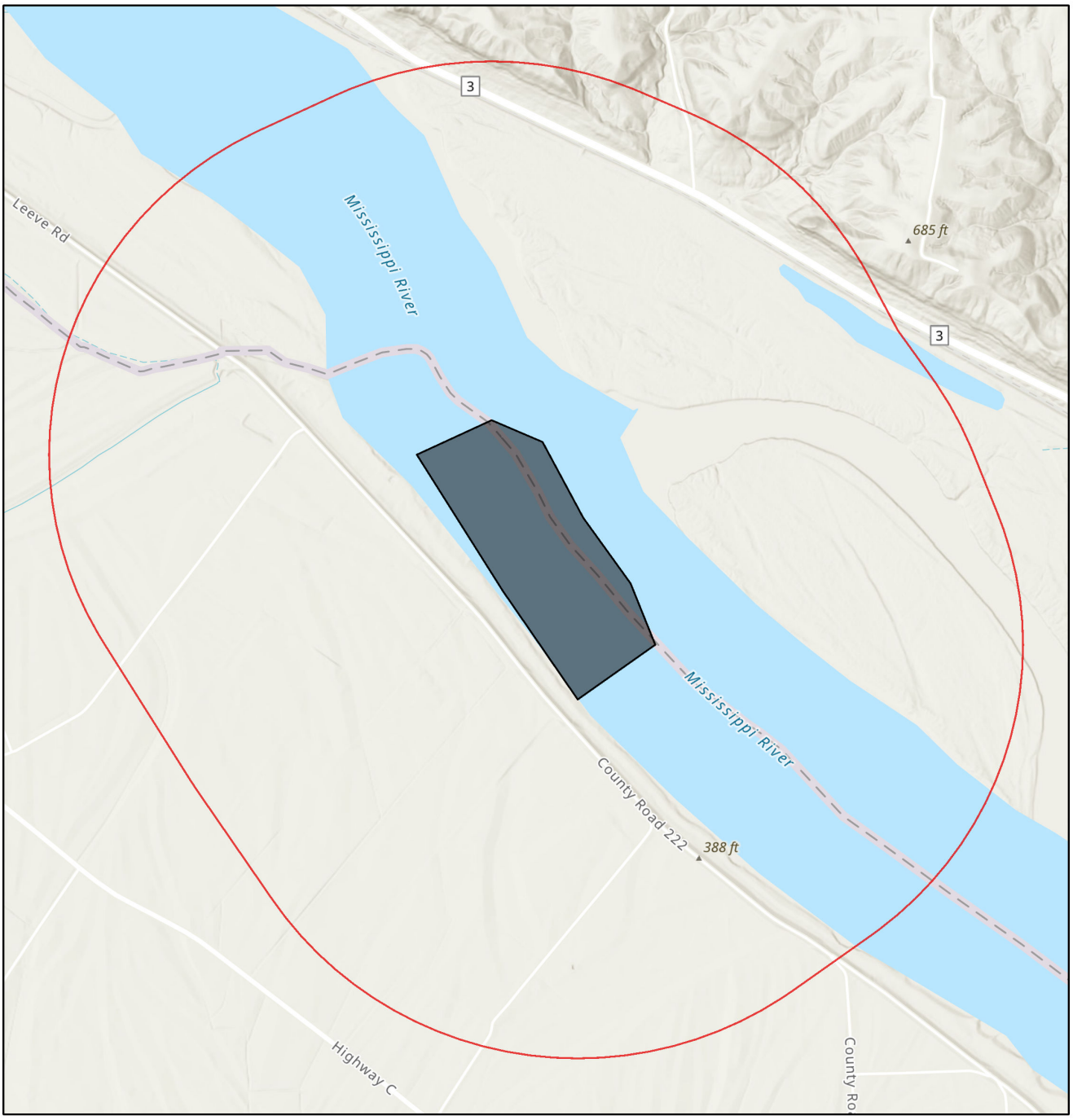
Disclaimer: The NATURAL HERITAGE REVIEW REPORT produced by this website identifies if a species tracked by the Natural Heritage Program is known to occur within or near the area submitted for your project, and shares suggested recommendations on ways to avoid or minimize project impacts to sensitive species or special habitats. If an occurrence record is present, or the proposed project might affect federally listed species, the user must contact the Department of Conservation or U.S. Fish and Wildlife Service for more information. The Natural Heritage Program tracks occurrences of sensitive species and natural communities where the species or natural community has been found. Lack of an occurrence record does not mean that a sensitive plant, animal or natural community is not present on or near the project area. Depending on the project, current habitat conditions, and geographic location in the state, surveys may be necessary. Additionally, because land use conditions change and animals move, the existence of an occurrence record does not mean the species/habitat is still present. Therefore, Reports include information about records near but not necessarily on the project site.

The Natural Heritage Report is not a site clearance letter for the project. It provides an indication of whether or not public lands and sensitive resources are known to be (or are likely to be) located close to the proposed project. Incorporating information from the Natural Heritage Program into project plans is an important step that can help reduce unnecessary impacts to Missouri's sensitive fish, forest and wildlife resources. However, the Natural Heritage Program is only one reference that should be used to evaluate potential adverse project impacts. Other types of information, such as wetland and soils maps and on-site inspections or surveys, should be considered. Reviewing current landscape and habitat information, and species' biological characteristics would additionally ensure that Missouri Species of Conservation Concern are appropriately identified and addressed in planning efforts.

U.S. Fish and Wildlife Service – Endangered Species Act (ESA) Coordination: Lack of a Natural Heritage Program occurrence record for federally listed species in your project area does not mean the species is not present, as the area may never have been surveyed. Presence of a Natural Heritage Program occurrence record does not mean the project will result in negative impacts. The information within this report is not intended to replace Endangered Species Act consultation with the U.S. Fish and Wildlife Service (USFWS) for listed species. Direct contact with the USFWS may be necessary to complete consultation and it is required for actions with a federal connection, such as federal funding or a federal permit; direct contact is also required if ESA concurrence is necessary. Visit the USFWS Information for Planning and Conservation (IPaC) website at https://ecos.fws.gov/ipac/ for further information. This site was developed to help streamline the USFWS environmental review process and is a first step in ESA coordination. The Columbia Missouri Ecological Field Services Office may be reached at 573-234-2132, or by mail at 101 Park Deville Drive, Suite A, Columbia, MO 65203.

Transportation Projects: If the project involves the use of Federal Highway Administration transportation funds, these recommendations may not fulfill all contract requirements. Please contact the Missouri Department of Transportation at 573-526-4778 or visit https://www.modot.org/ for additional information on recommendations.

Island Creation Pilot Project



July 13, 2022

1:24,473

Buffered Project Boundary

Project Boundary

0 0.2 0.4 0.8 mi

0 0.33 0.65 1.3 km

Esri, NASA, NGA, USGS, FEMA, Missouri Dept. of Conservation, Missouri DNR, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

Species or Communities of Conservation Concern within the Area:

There are records of species listed under the Federal Endangered Species Act, and possibly also records for species listed Endangered by the state, or Missouri Species and/or Natural Communities of Conservation Concern within or near the defined Project Area. Please contact the U.S. Fish and Wildlife Service and the Missouri Department of Conservation for further coordination.

Email (preferred): NaturalHeritageReview@mdc.mo.gov
MDC Natural Heritage Review
Science Branch
P.O. Box 180
Jefferson City, MO
65102-0180
Phone: 573-522-4115 ext. 3182

U.S. Fish and Wildlife Service
Ecological Service
101 Park Deville Drive
Suite A
Columbia, MO
65203-0007
Phone: 573-234-2132

Other Special Search Results:

The project occurs on or near public land, MIDDLE MISSISSIPPI RIVER NATIONAL WILDLIFE REFUGE, please contact USFWS.

Your project is near a designated Natural Area . Please contact Missouri Department of Conservation (NaturalHeritageReview@mdc.mo.gov) for further coordination.

Project Type Recommendations:

No recommendations have been identified for this project type.

Project Location and/or Species Recommendations:

Endangered Species Act Coordination - Indiana bats *(Myotis sodalis*, federal- and state-listed endangered) and **Northern long-eared bats** (*Myotis septentrionalis,* federal-listed threatened) may occur near the project area. Both of these species of bats hibernate during winter months in caves and mines. During the summer months, they roost and raise young under the bark of trees in wooded areas, often riparian forests and upland forests near perennial streams. During project activities, avoid degrading stream quality and where possible leave snags standing and preserve mature forest canopy. Do not enter caves known to harbor Indiana bats or Northern long-eared bats, especially from September to April. **If any trees need to be removed for your project, please contact the U.S. Fish and Wildlife Service (Ecological Services, 101 Park Deville Drive, Suite A, Columbia, Missouri 65203-0007; Phone 573-234-2132 ext. 100 for Ecological Services) for further coordination under the Endangered Species Act.**

The project location submitted and evaluated is within the geographic range of nesting Bald Eagles in Missouri. Bald Eagles (*Haliaeetus leucocephalus*) may nest near streams or water bodies in the project area. Nests are large and fairly easy to identify. Adults begin nesting activity in late December and January and young birds leave the nest in late spring to early summer. While no longer listed as endangered, eagles continue to be protected by the federal government under the Bald and Golden Eagle Protection Act. Work managers should be alert for nesting areas within 1500 meters of project activities, and follow federal guidelines at: Do I need an eagle take permit? | U.S. Fish & Wildlife Service (fws.gov) if eagle nests are seen.

The project location submitted and evaluated is located within or adjacent to the Mississippi or Missouri rivers. Pallid Sturgeons (*Scaphirhynchus albus*, federal- and state-listed endangered) are big river fish that range widely in the Mississippi and Missouri River system (including parts of some major tributaries). Any project that modifies big river habitat or impacts water quality should consider the possible impact to pallid sturgeon populations. See Pallid Sturgeon Best Management Practices (mo.gov) for Best Management Practices. Additional coordination with the U.S. Fish and Wildlife Service under the Endangered Species Act may be necessary (U.S. Fish and Wildlife Service, Ecological Services, 101 Park DeVille Drive, Suite A, Columbia, Missouri 65203-0007; phone 573-234-2132.)

Invasive exotic species are a significant issue for fish, wildlife and agriculture in Missouri. Seeds, eggs, and larvae may be moved to new sites on boats or construction equipment. Please inspect and clean equipment thoroughly before moving between project sites. See https://mdc.mo.gov/community-conservation/managing-invasive-species-your-community for more information.

- Remove any mud, soil, trash, plants or animals from equipment before leaving any water body or work area.
- Drain water from boats and machinery that have operated in water, checking motor cavities, live-well, bilge and transom wells, tracks, buckets, and any other water reservoirs.
- When possible, wash and rinse equipment thoroughly with hard spray or HOT water (>140° F, typically available at do-it-yourself car wash sites), and dry in the hot sun before using again.

Streams and Wetlands – Clean Water Act Permits: Streams and wetlands in the project area should be protected from activities that degrade habitat conditions. For example, soil erosion, water pollution, placement of fill, dredging, in-stream activities, and riparian corridor removal, can modify or diminish aquatic habitats. Streams and wetlands may be protected under the Clean Water Act and require a permit for any activities that result in fill or other modifications to the site. Conditions provided within the U.S. Army Corps of Engineers (USACE) Clean Water Act Section 404 permit (http://www.nwk.usace.army.mil/Missions/RegulatoryBranch.aspx) and the Missouri Department of Natural Resources (DNR) issued Clean Water Act Section 401 Water Quality Certification (http://dnr.mo.gov/env/wpp/401/index.html), if required, should help minimize impacts to the aquatic organisms and aquatic habitat within the area. Depending on your project type, additional permits may be required by the Missouri Department of Natural Resources, such as permits for stormwater, wastewater treatment facilities, and confined animal feeding operations. Visit http://dnr.mo.gov/env/wpp/permits/index.html for more information on DNR permits. Visit both the USACE and DNR for more information on Clean Water Act permitting.

For further coordination with the Missouri Department of Conservation and the U.S. Fish and Wildlife Services, please see the contact information below:

Email (preferred): NaturalHeritageReview@mdc.mo.gov
MDC Natural Heritage Review
Science Branch
P.O. Box 180
Jefferson City, MO
65102-0180
Phone: 573-522-4115 ext. 3182

U.S. Fish and Wildlife Service
Ecological Service
101 Park Deville Drive
Suite A
Columbia, MO
65203-0007
Phone: 573-234-2132

Miscellaneous Information
FEDERAL Concerns are species/habitats protected under the Federal Endangered Species Act and that have been known near enough to the project site to warrant consideration. For these, project managers must contact the U.S. Fish and Wildlife Service Ecological Services (101 Park Deville Drive Suite A, Columbia, Missouri 65203-0007; Phone 573-234-2132; Fax 573-234-2181) for consultation.
STATE Concerns are species/habitats known to exist near enough to the project site to warrant concern and that are protected under the Wildlife Code of Missouri (RSMo 3 CSR 1 0). "State Endangered Status" is determined by the Missouri Conservation Commission under constitutional authority, with requirements expressed in the Missouri Wildlife Code, rule 3CSR 1 0-4.111. Species tracked by the Natural Heritage Program have a "State Rank" which is a numeric rank of relative rarity. Species tracked by this program and all native Missouri wildlife are protected under rule 3CSR 10-4.110 General Provisions of the Wildlife Code.

See Missouri Species and Communities of Conservation Concern Checklist (mo.gov) for a complete list of species and communities of conservation concern. Detailed information about the animals and some plants mentioned may be accessed at Missouri Fish and Wildlife Information System (MOFWIS). Please contact the Missouri Department of Conservation to request printed copies of any materials linked in this document.

From: Matt Vitello
To: Anderson, Alison M CIV USARMY CEMVP (USA)
Subject: [Non-DoD Source] RE: Island Creation - MDC Heritage Review
Date: Friday, July 22, 2022 2:38:20 PM

HI Alison,

Here are the state SOCCs in the project vicinity.

1. Sturgeon chub, Macrhybopsis gelida
2. Ohio shrimp, Macrobrachium ohione
3. Mississippi silvery minnow, Hybognathus nuchalis
4. Western sand darter, Ammocrypta clara
5. Pugnose minnow, Opsopoeodus emiliae
6. Striped mullet, Mugil cephalus
7. Alabama shad, Alosa alabamae
8. River darter, Percina shumardi

Let me know if you need additional information.

Matt Vitello, P.E.
Policy Coordinator
Missouri Department of Conservation
573-522-4115 ext. 3191
Matt.vitello@mdc.mo.gov

From: Anderson, Alison M CIV USARMY CEMVP (USA) <Alison.M.Anderson@usace.army.mil>
Sent: Wednesday, July 13, 2022 2:23 PM
To: Matt Vitello <Matt.Vitello@mdc.mo.gov>
Subject: Island Creation - MDC Heritage Review

Hi Matt,

I submitted our project information for the pilot island creation project and received the attached report. We are coordinating with Matt Mangan for federally listed species. Do you have any additional information in regard to state identified resources?

Thanks,
Alison

Alison Anderson, Ph.D.
Aquatic Ecologist
U.S. Army Corps of Engineers
St. Louis District
Regional Planning and Environmental Division-North

Environmental Compliance Section CEMVP-PD-C
Office: (314) 331-8458
Cell: (419) 305-4167

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, ST. LOUIS DISTRICT
1222 SPRUCE STREET
ST. LOUIS, MISSOURI 63103-2833

June 6, 2022

Engineering and Construction Division
Curation and Archives Analysis Branch (EC-Z)

Subject: Middle Mississippi Island Creation Pilot Project

Ms. Devon Frazier Smith
Tribal Historic Preservation Officer
Absentee-Shawnee Tribe of Indians of Oklahoma
2025 S. Gordon Cooper Drive
Shawnee, OK 74801

Dear Ms. Frazier Smith:

The U.S. Army Corps of Engineers (USACE), St. Louis District (District), has proposed the Middle Mississippi Island Creation Pilot Project in Perry County, Missouri, and Randolph and St. Clair Counties, Illinois. The District is proposing the establishment of two islands within the Mississippi River along the right descending bank at river miles (RM 104-102 and left descending RM 174-172 (Figure 1)). The District is contacting your tribe to initiate consultation pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA), its implementing regulation 36 CFR 800, and the National Environmental Policy Act of 1969, as amended, and its 2022 implementing regulation 40 CFR 1501.9.

The purpose of this letter is to provide the general authority and background for the federal action, the general nature of the proposed project, as well as known cultural resources within the area of the proposed project. Currently, the District is preparing an Environmental Assessment, which will evaluate the potential impacts of the proposed action on the environment, as well as other reasonable alternatives. . A public notice for this project has not been sent out at this time.

Background and Authority

Beginning in 1824, Congress authorized the Secretary of the Army, by and through USACE, to make improvements to the Mississippi River, and some of its major tributaries, for the purposed of obtaining and maintaining an inland navigation channel for waterway commercial transportation throughout the United States. Congress determined that the Mississippi River navigation channel should be at least nine feet deep from the Gulf of Mexico to Minneapolis, Minnesota. Pursuant to the Rivers and Harbors Act of 1927, Congress determined the majority of the Middle Mississippi River (from the confluence of the Ohio River to the confluence of the Missouri River), the

navigation channel will be nine feet deep and not less than 200 feet wide, with additional width in the bends as required.

In performing this responsibility, USACE is committed to complying with the endangered Species Act (ESA). In executing responsibilities under the ESA, USACE recognized deference to the U.S. Fish and Wildlife Service (Service). It is incumbent upon the Service to provide biological advice and guidance that allows USACE to achieve compliance with the ESA within USACE's statutory authorities and appropriations. Through the implementation of the proposed Middle Mississippi Island Creation Pilot Project, the District will remain in compliance with the ESA for the Regulating Works Project.

Voluntary formal consultation between the District and the Service led to a Biological Opinion for the Operation and Maintenance of the 9-foot Navigation Channel on the Upper Mississippi River System (Biological Opinion) was submitted to the District by the Service on May 15, 2000. Further discussions led to a letter submitted by the District on August 11, 2000 to the Service with proposed future operation and maintenance of the navigation channel in light of its ESA obligations and the information provided in the Service's Biological Opinion.

The Biological Opinion provided a number of requirements under a "Reasonable and Prudent Alternative" to avoid the likelihood of jeopardizing the continued existence of the federally endangered pallid sturgeon. One requirement was to implement aquatic habitat restoration measures in the Middle Mississippi River that are expected to benefit the pallid sturgeon, such as using dredge disposal material to restore habitat. Further, the Biological Opinion provided "Reasonable and Prudent Measures" to minimize the incidental take of the federally endangered interior least tern by utilizing dredge material to restore sandbar habitat. The proposed action is being conducted in accordance with the Reasonable and Prudent Alternative and the Reasonable and Prudent Measures of the Biological Opinion.

Purpose and Project

The primary objective of the pilot project is to create permanent island and associated side channel habitats for the pallid sturgeon within the areas. The secondary objective of the pilot project is to provide a beneficial use of dredge material. The proposed action would involve establishing two island within the Middle Mississippi River along the right descending RM 104-102 and left descending RM 174-172. This would be achieved by constructing pile dikes in two areas of shallow water (Figures 1-3). The pile dikes would allow for natural deposition that would form a reliable sand bar and capture woody debris that increases the amount of deposition and enhances aquatic habitat diversity. USACE would continue to concentrate dredge material in the project areas as needed to maintain the navigation channel using the flexible dredge pipe until the sand bar was visible at higher river stages.

Multiple life stages of *Scaphirhynchus* spp. utilize island and side-channel habitats. The combination of desirable flows, abundance of woody debris, and food availability makes this valuable habitat for pallid sturgeon. Aquatic habitats around islands, and flooded islands themselves, appear to be important nursery habitat for larval sturgeon. The slower velocity currents offer a refuge from the higher flows in the main channel and the woody debris found in these habitats can lead to greater food (i.e., macroinvertebrates) production. River restoration that creates more island/side-channel habitat and makes these habitats available across a wide range of flows would likely benefit pallid sturgeon, especially at early life stages.

Potential Effects on Cultural Resources

All the project work would be undertaken via the river, without recourse to land access; therefore, any effects are limited to submerged cultural resources. Primary among these are historic period shipwrecks. Given the continual river flow and associated sedimentary erosion, deposition, and reworking, it is highly unlikely that any ephemeral cultural material remains on the riverbed.

Possible Shipwrecks

In the summer of 1988, the Mississippi River was at low levels. The District conducted aerial surveys of exposed shipwrecks between Saverton, Missouri and the mouth of the Ohio River. The nearest observed wreck to RM 173 – 173 project location is 1.7 miles upstream. The nearest wreck to RM 104 – 102 project location is 2.3 miles downstream. The riverbed in the project area is surveyed every few years, with the last survey completed in 2020. No topographic anomalies suggesting wrecks are visible on the resulting bathymetric maps of the project areas. Prior to project commencement additional surveys are planned, which will similarly be examined for anomalies. Additionally, parts of the project areas are visible in periods of low water and no wrecks or other anthropogenic structures are visible.

If your tribe has any questions, comments, or areas of concern, please feel free to contact me at (314) 331-8855, or Meredith Hawkins Trautt (Tribal Liaison) at (314) 925-5031 or email Meredith.M.Trautt@usace.army.mil.

Sincerely,

SIGNED

Jennifer L. Riordan
Chief, Curation and Archives
Analysis Branch

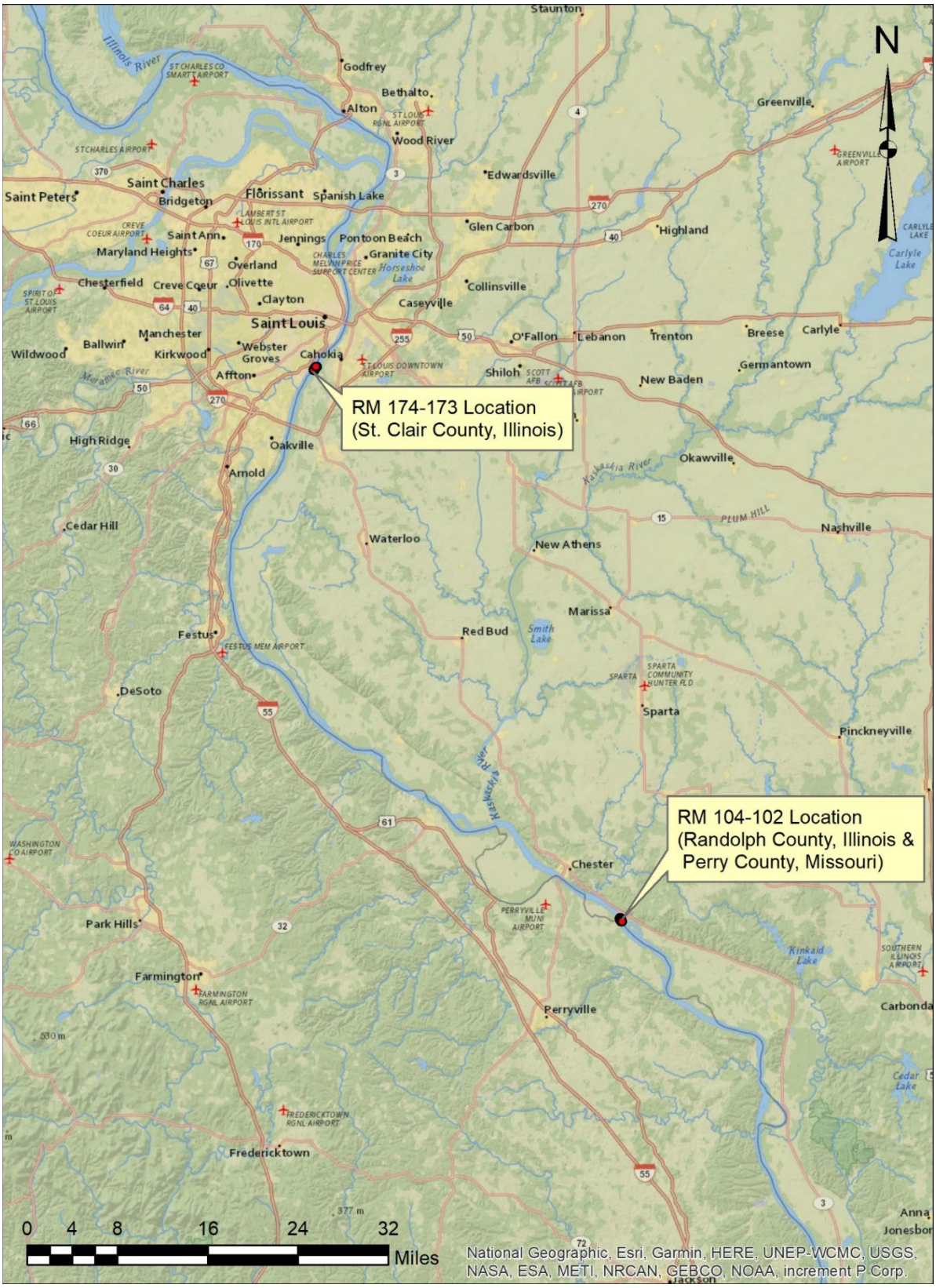


Figure 1. Project Locations

Figure 2. RM 174-173 Location

Figure 3. RM 104-102 location

MVS Leaders

Tribe	Title	Name (First, Middle, Last)	Last Name	Street Address	Street Address 2	City	State	Zipcode	Furnished Copy
Absentee-Shawnee Tribe of Indians of Oklahoma	Governor	John Raymond Johnson c/o Representative Alicia Miller	Johnson	2025 S. Gordon Cooper Drive		Shawnee	OK	74801	Ms. Carol Butler and Ms. Devon Frazier Smith
Caddo Nation of Oklahoma	Chairman	Bobby Gonzalez	Gonzalez	P.O. Box 487		Binger	OK	73009	Mr. Jonathan M. Rohrer
Citizen Potawatomi Nation, Oklahoma	Chairman	John Barrett	Barrett	1601 S. Gordon Cooper Drive		Shawnee	OK	74801	Ms. Tracy Wind
Delaware Nation, Oklahoma	President	Deborah Dotson	Dotson	P.O. Box 825		Anadarko	OK	73005	Ms. Erin Paden
Delaware Tribe of Indians	Chief	Brad KillsCrow	KillsCrow	5100 Tuxedo Boulevard		Bartlesville	OK	74006	Mr. Larry Heady
Eastern Shawnee Tribe of Oklahoma	Chief	Glenna J. Wallace	Wallace	12755 S. 705 Road		Wyandotte	OK	74370	Mr. Paul Barton
Forest County Potawatomi Community, Wisconsin	Chairman	Ned Daniels, Jr.	Daniels	P.O. Box 340		Crandon	WI	54520	Mr. Benjamin Rhodd
Hannahville Indian Community, Michigan	Chairman	Kenneth Meshigaud	Meshigaud	N 14911 Hannahville B-1 Road		Wilson	MI	49896	Mr. Earl Meshigaud
Ho-Chunk Nation of Wisconsin	President	Marlon White Eagle	White Eagle	P.O. Box 667		Black River Falls	WI	54615	Mr. William Quackenbush
Iowa Tribe of Kansas and Nebraska	Chairman	Tim Rhodd	Rhodd	3345 Thrasher Road, #8		White Cloud	KS	66094	Mr. Lance Foster and Mr. Alan Kelley
Iowa Tribe of Oklahoma	Chairman	Edgar B. Kent, Jr.	Kent	335588 E. 750 Rd		Perkins	OK	74059	Ms. Candace Pershall
Kickapoo Tribe of Indians of the Kickapoo Reservation in Kansas	Chairman	Lester Randall	Randall	824 111th Drive		Horton	KS	66439	Ms. Johanna Thomas
Kickapoo Tribe of Oklahoma	Chairman	Darwin Kaskaske	Kaskaske	105365 S. Hwy 102		McCloud	OK	74851	Mr. Everett Suke
Match-E-Be-Nash-She-Wish Band of Potawatomi Indians	Chairman	Bob Peters	Peters	2872 Mission Dr.		Shelbyville	MI	49344	Ms. Lakota Pochedley
Miami Tribe of Oklahoma	Chief	Douglas Lankford	Lankford	P.O. Box 1326		Miami	OK	74355	Ms. Diane Hunter
Nottawaseppi Huron Band of the Potawatomi, Michigan	Chairman	Jamie Stuck	Stuck	2221—1 & 1/2 Mile Road		Fulton	MI	49052	Mr. Douglas R. Taylor
Peoria Tribe of Indians of Oklahoma	Chief	Craig Harper	Harper	118 S. Eight Tribes Trail		Miami	OK	74354	Ms. Charla EchoHawk
Pokagon Band of Potawatomi Indians, Michigan and Indiana	Chairman	Matthew Wesaw	Wesaw	P.O. Box 180		Dowagiac	MI	49047	Mr. Matthew Bussler
Prairie Band Potawatomi Nation	Chairman	Joseph Rupnick	Rupnick	Government Center	16281 Q Road	Mayetta	KS	66509	Ms. Tara Mitchell
Sac & Fox Nation of Missouri in Kansas and Nebraska	Chairperson	Tiauna Carnes	Carnes	305 N. Main Street		Reserve	KS	66434	Mr. Gary Bahr
Sac & Fox Nation, Oklahoma	Principal Chief	Justin F. Woods	Woods	920963 S Highway 99	Building A	Stroud	OK	74079	Mr. Chris Boyd
Sac & Fox Tribe of the Mississippi in Iowa	Chairman	Troy Wanatee	Wanatee	349 Meskwaki Road		Tama	IA	52339	Mr. Johnathan Buffalo
Shawnee Tribe	Chief	Benjamin Barnes	Barnes	P.O. Box 189		Miami	OK	74355	Ms. Tonya Tipton
The Osage Nation	Principal Chief	Geoffrey Standing Bear	Standing Bear	P.O. Box 779		Pawhuska	OK	74056	Dr. Andrea Hunter
Quapaw Nation	Chairman	Joseph Byrd	Byrd	P.O. Box 765		Quapaw	OK	74363	Mr. Everett Bandy
United Keetoowah Band of Cherokee of Oklahoma	Chief	Joe Bunch	Bunch	P.O. Box 746		Tahlequah	OK	74464	Mr. Acee Watt

MVS Reps

Tribe	Title	Name (First, Middle, Last)	Last Name	Position	Street Address	Street Address 2	City	State	Zipcode	Email
Absentee-Shawnee Tribe of Indians of Oklahoma	Ms.	Devon Frazier Smith	Frazier Smith	Tribal Historic Preservation Officer	2025 S. Gordon Cooper Drive		Shawnee	OK	74801	dfrazier@astribe.com
Absentee-Shawnee Tribe of Indians of Oklahoma	Ms.	Carol Butler	Butler	Cultural Preservation Director	2025 S. Gordon Cooper Drive		Shawnee	OK	74801	cbutler@astribe.com
Caddo Nation of Oklahoma	Mr.	Jonathan M. Rohrer	Rohrer	Tribal Historic Preservation Officer	P.O. Box 487		Binger	OK	73009	jrohrer@mycaddonation.com
Citizen Potawatomi Nation, Oklahoma	Ms.	Tracy Wind	Wind	Assistant Tribal Historic Preservation Officer	Cultural Heritage Center	1601 S. Gordon Cooper Drive	Shawnee	OK	74801	tracy.wind@potawatomi.org; cpnthpo@potawatomi.org
Delaware Nation, Oklahoma	Ms.	Erin Paden	Paden	Tribal Historic Preservation Officer	P.O. Box 825		Anardarko	OK	73005	epaden@delawarenation-nsn.gov
Delaware Tribe of Indians	Mr.	Larry Heady	Heady	Tribal Historic Preservation Officer	125 Dorry Lane		Grants Pass	OR	97527	lheady@delawaretribe.org; cc: temple@delawaretribe.org
Eastern Shawnee Tribe of Oklahoma	Mr.	Paul Barton	Barton	Tribal Historic Preservation Officer	70500 E. 128 Road		Wyandotte	OK	74370	pbarton@estoo.net
Forest County Potawatomi Community, Wisconsin	Mr	Benjamin Rhodd	Rhodd	Tribal Historic Preservation Officer	8130 Mish ko Swen Dr.	P.O. Box 340	Crandon	WI	54520	Benjamin.Rhodd@fcp-nsn.gov
Hannahville Indian Community, Michigan	Mr.	Earl Meshigaud	Meshigaud	Historic Preservation Office	P.O. Box 351, Highway 2 & 41		Harris	MI	49845	earlmeshigaud@hannahville.org
Ho-Chunk Nation of Wisconsin	Mr.	William Quackenbush	Quackenbush	Tribal Historic Preservation Officer	P.O. Box 667		Black River Falls	WI	54615	bill.quackenbush@ho-chunk.com
Iowa Tribe of Kansas and Nebraska	Mr.	Lance Foster	Foster	Tribal Historic Preservation Officer	3345B Thrasher Road		White Cloud	KS	66094	lfoster@iowas.org
Iowa Tribe of Kansas and Nebraska	Mr.	Alan Kelley	Kelley	Deputy Tribal Historic Preservaiton Offier	3345 Thrasher Road		White Cloud	KS	66094	akelley@iowas.org
Iowa Tribe of Oklahoma	Ms.	Candace Pershall	Pershall	Cultural Preservation	335588 E. 750 Rd		Perkins	OK	74875	cpershall@iowanation.org
Kickapoo Tribe of Indians of the Kickapoo Reservation in Kansas	Ms.	Johanna Thomas	Thomas	Vice Chairman	824 111th Drive		Horton	KS	66439	johannathomas83@yahoo.com
Kickapoo Tribe of Oklahoma	Mr.	Everett Suke	Suke	Vice Chairman	P.O. Box 70	105365 S. Hwy 102	McCloud	OK	74851	bc@okkt.net
Match-E-Be-Nash-She-Wish Band of Potawatomi Indians	Ms.	Lakota Pochedley	Pochedley	Tribal Historic Preservation Officer	2872 Mission Drive		Shelbyville	MI	49344	Lakota.Pochedley@glt-nsn.gov; mbpi_thpo@glt-nsn.gov
Miami Tribe of Oklahoma	Ms.	Diane Hunter	Hunter	Tribal Historic Preservation Officer	202 S. Eight Tribes Trail	P.O. Box 1326	Miami	OK	74355	dhunter@miamination.com
Nottawaseppi Huron Band of the Potawatomi, Michigan	Mr.	Douglas R. Taylor	Taylor	Tribal Historic Preservation Officer	1301 T Dr S		Fulton	MI	49052	Douglas.Taylor@nhbp-nsn.gov
Peoria Tribe of Indians of Oklahoma	Ms.	Charla EchoHawk	EchoHawk	Director of Cultural Preservation	118 S. Eight Tribes Trail		Miami	OK	74354	cechohawk@peoriatribe.com
Pokagon Band of Potawatomi Indians, Michigan and Indiana	Mr.	Matthew Bussler	Bussler	Tribal Historic Preservation Officer	P.O. Box 180		Dowagiac	MI	49047	matthew.bussler@pokagonband-nsn.gov
Prairie Band Potawatomi Nation	Ms.	Tara Mitchell	Mitchell	Deputy Tribal Historic Preservation Officer	Government Center	16281 Q Road	Mayetta	KS	66509	taramitchell@pbpnation.org
Sac & Fox Nation of Missouri in Kansas and Nebraska	Mr.	Gary Bahr	Bahr	Vice Chairperson	305 N. Main Street		Reserve	KS	66434	gary.bahr@sacfoxks.com
Sac & Fox Nation, Oklahoma	Mr.	Chris Boyd	Boyd	NAGPRA/Historic Preservation Office	920963 S Highway 99	Building A	Stroud	OK	74079	chris.boyd@sacandfoxnation-nsn.gov
Sac & Fox Tribe of the Mississippi in Iowa	Mr.	Johnathan Buffalo	Buffalo	Historic Preservation Office	349 Meskwaki Road		Tama	IA	52339	sp.historical@meskwaki-nsn.gov
Shawnee Tribe	Ms.	Tonya Tipton	Tipton	Historic Preservation Office	P.O. Box 189		Miami	OK	74355	tonya@shawnee-tribe.com
The Osage Nation	Dr.	Andrea Hunter	Hunter	Historic Preservation Office	627 Grandview Avenue		Pawhuska	OK	74056	ahunter@osagenation-nsn.gov
Quapaw Nation	Mr.	Everett Bandy	Bandy	Tribal Historic Preservation Officer	ATTN: QNHPP	P.O. Box 765	Quapaw	OK	74363	ebandy@quapawnation.com
United Keetoowah Band of Cherokee of Oklahoma	Mr.	Acee Watt	Watt	Tribal Historic Preservation Officer	P.O. Box 746		Tahlequah	OK	74464	awatt@ukb-nsn.gov; ukbthpo@ukb-nsn.gov (send Section 106 correspondence here)