

**UPPER MISSISSIPPI RIVER RESTORATION
FEASIBILITY REPORT
WITH INTEGRATED ENVIRONMENTAL ASSESSMENT**

**BEAVER ISLAND
HABITAT REHABILITATION AND ENHANCEMENT
PROJECT**

**POOL 14, UPPER MISSISSIPPI RIVER MILES 513.0-517.0
CLINTON COUNTY, IOWA**

APPENDIX B

**CLEAN WATER ACT
SECTION 404 ASSESSMENT:
NWP 27 JUSTIFICATION**

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I. PROJECT DESCRIPTION

A. Location. The *Beaver Island Habitat Rehabilitation and Enhancement Project* (Project) is located along the right descending bank of the Upper Mississippi River System in the southern portion of Clinton County, Iowa. The Project area is in Pool 14 between river miles 513.0 and 517.0 adjacent to the cities of Clinton and Camanche, Iowa.

B. General Description. The U.S. Army Corps of Engineers (Corps), Rock Island District (District) proposes to rehabilitate and enhance the Project through construction of measures which will increase the quality of year-round habitat for the fish community, increase floodplain forest vegetation diversity, and improve the overall structure and function of the Project. The purpose of this feasibility report is to present a detailed account of the planning, engineering, and construction details of the Recommended Plan to allow final design and construction to proceed subsequent to approval of this document.

The need for rehabilitation and enhancement of the Project is based on the following factors:

- The existing aquatic habitat currently lacks adequate centrarchid overwintering habitat (i.e., depth and flows) important for year-round habitat functioning. Without action, the available overwintering habitat will continue to decrease.
- The existing topography lacks forest diversity and a significant amount of the island is inundated during a typical flooding event. Consequently, floodplain forest regeneration, growth, and survival are reduced. Without action, floodplain habitat will decrease in quality through succession to silver maple, open canopy, and/or reed canary grass (invasive species).
- Albany Slough, the existing secondary channel habitat, has degrading geomorphologic features, structure, and function. Over time the Island is likely to continue eroding, which would have major detrimental effects on existing mussel communities inhabiting the side channel and the fish species which serve as hosts.

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C. Authority and Purpose. The Upper Mississippi River Restoration’s authorizing legislation is the Water Resources Development Act of 1986 (Public Law 99-662), Section 1103, as amended. The purpose of this Project is to rehabilitate and enhance fish and wildlife habitat. The Project is the result of planning efforts by the State of Iowa, the U.S. Fish and Wildlife Service (USFWS), and the Corps.

D. General Description of Excavated and Fill Material. An estimated total of 305,570 cubic yards (CY) of material will be mechanically excavated within the Project area. Geotechnical soil borings from the pools indicate the material is soft lean clays and fat clays with an underlying layer of medium to fine sand. Elutriate testing or sieve analyses are not required (under Section 401 of the Clean Water Act) for this Project because mechanical excavation is being used.

An estimated total of 21,000 tons (TN) of clean riprap will be used to construct the Beaver Island closure structure (5,000 TN), Albany Island chevron (5,300 TN), and Albany Island bank stabilization (10,700 TN) (Appendix O, Plate 17, C-112 through Plate 22, C-304). An additional 900 TN of river stone will be used for the Albany Island mussel substrate feature. Eighty-one acres of tree removal will be required for topographic diversity and forest enhancement. The excavated material will be placed within the topographic diversity sites which have a total capacity for 351,200 CY of material, to allow for any excess material which may be encountered due to changed site conditions. Refer to Table B-1 for further details on the quantities for cuts and placement.

Table B-1: Excavation Data Summary

| Cuts | Cut | | Placement | |
|-----------------------------|-----------------------|-----------------------------|----------------|------------------|
| | Length (linear FT) | Excavation Quantity (CY) | Length (FT) | Capacity (CY) |
| Lower Cut (Entrance) | 3,800 | 124,590 | 4,700 | 155,800 |
| Stewart Lake | 800 | 21,700 | 475 | 19,800 |
| Blue Bell | 1,708 | 59,390 | 3,230 | 135,500 |
| Sand Burr | 2,466 | 88,190 | 1,229 | 40,100 |
| Blue Bell to Sand Burr | 361 | 5,400 | - | - |
| Sand Burr to Hulzinger | 298 | 6,300 | - | - |
| Totals for Recommended Plan | 9,433 | 305,570 | 9,634 | 351,200 |

E. Description of the Proposed Topographic Diversity/Placement Sites. Plate 10, C-105 through Plate 16, C-111 in Appendix O show the placement sites for all Project features in the Recommended Plan.

The placement sites were selected to be in areas which were in need of topographic diversity. While originally only locations adjacent to the aquatic restoration areas were considered, several other factors were considered in the final design selection:

- Areas of low forest diversity, based on forest surveys.
- Areas with older trees present (average over 88 years, ranged 1874 to 1964) old and contained little production in the understory
- Avoidance of threatened and/or endangered bat habitat.
- Avoidance of utilities.

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- Avoidance of heron rookeries.
- Following natural contours.
- Minimizing footprint for clearing.
- Providing capacity for material excavated from aquatic restoration cuts.
- No impact to the floodplain.
- No impact to navigation.
- Concurrence from State and Federal Project sponsors.

Elevations for the forest diversity sites were selected using many factors. The PDT, including the USFWS and the IADNR, developed optimum heights for the survival of minimally tolerant trees, using the HEC-EFM tool, forest survey results, hydraulic river data, and existing topography. Based on this information, a period of analysis of 50 years, and a climate change analysis, a minimum elevation for expected tree survivability for the most susceptible floodplain forest trees was selected. The upper limit for the tree planting elevation was based upon the 25 percent exceedance probability for the minimally tolerant growing season inundation criteria (25-day inundation duration), which is 577.9 feet at RM 514. The lower limit for the tree planting elevation was determined based upon the 25 percent exceedance probability for the moderately tolerant growing season inundation criteria (35-day inundation duration), which is 576.7 feet at RM 514. As discussed in Section VIII, these elevations were further revised to provide greater resiliency based on the incorporation of climate change. More information is provided in Appendix H, *Hydrology and Hydraulics*.

The areas selected for the topographic diversity sites have a maximum elevation roughly 2 feet below the 2-year flood elevation and are populated with an even-aged mature silver maple dominated forest community. The areas will be cleared of trees (up to 81 acres total). Cleared trees will either be used to increase cover and foraging habitat for fish in Stewart, Sand Burr, and Blue Bell Lakes, or they will be disposed of offsite. Material will be placed as described in Section F. Description of Placement Method below. The maximum elevation of the placement sites does not exceed an elevation of 579.80.

Tree planting will be accomplished following the shaping of the placement sites. Native floodplain tree species will be planted equally at various elevations to discern potential species specific differences in survival, growth, and regeneration capabilities as a function of water inundation duration. Restoring forest diversity in select areas of Beaver Island by increasing existing elevations and planting trees, shrubs, understory plants, and buffer species to address the Project objective of diversifying floodplain forest habitat (See Main Report, Tables VI-9 through VI-12 for species lists). Plantings are to be at 1 foot in depth to allow for successful establishment.

Surficial soils within the placement sites are generally fluvaquent soils, which is described as an alluvium product in the U.S. Department of Agriculture (USDA) classification system. This series is described as frequently flooded and water table is said to vary between ground surface and 1 foot deep. Subsurface borings indicate the area generally consists of soft fat clays gradually changing into stiff clay with increasing depth. Underlying this clay layer down to the bottom of the boring is clayey sand.

F. Description of the Placement Method. Mechanically excavated material will be placed within topographic diversity sites, allowed to dry, and then mechanically shaped to desired dimensions.

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Material will be handled multiple times. Riprap placement for the closure structure, chevron, bank stabilization, and mussel substrate will be barged to the site then placed mechanically.

II. FACTUAL DETERMINATIONS

A. Physical Substrate Determinations

1. Substrate Elevation and Slope. Flat pool in the Project area is approximately elevation 571.2 (Lock and Dam 14, Le Claire, Iowa). The proposed Project features intend to increase the floodplain elevation to increase topographic diversity. The maximum elevation of the placement sites is at elevation 579.80 NAVD88. Riprap slopes would be 2H:1V river side and 3H:1V land side for the closure structure. The chevron, bank stabilization, and mussel substrate features will be placed at a 2H:1V slope with 24 inches of riprap and a 6 foot weighted toe.

2. Sediment Type. Surficial soils within the placement sites are generally fluvaquent soils, which is described as an alluvium product in the USDA classification system. This series is described as frequently flooded and water table is said to vary between ground surface and 1 foot deep. Subsurface borings indicate the area generally consists of soft fat clays gradually changing into stiff clay with increasing depth. Underlying this clay layer down to the bottom of the boring is clayey sand.

3. Excavated/Fill Material Movement. Excavated material placement sites are in areas located above flat pool or low flow conditions, which indicates minimal movement of materials. Placement areas will be heavily planted with native mast trees, scrub/shrub species, and native grass species, which will help to ensure stability. Flat slopes have been designed to reduce any loss of slope or height that may occur as a result of settling or erosion during high flow events (2-year flood). Rock placement should experience minimal material movement. Adequate rock size is proposed to reduce settling and material movement during high flow events.

4. Physical Effects on Benthos. Any immobile benthos present at the placement site would be buried as a result of construction activities. With the increase in aquatic vegetation, woody debris, and rock, benthic organisms should recolonize quickly.

5. Actions Taken to Minimize Impacts. The construction footprint was kept as small as possible to minimize impacts to the benthic community. Construction materials to be used are physically stable and clean, reducing the chances for impacting the river. Mechanical excavation prevents excess water runoff back into the river and reduces instability by keeping the material consolidated. Tree plantings, ground cover, and erosion control materials will be installed following berm shaping.

B. Water Circulation, Fluctuation, and Salinity Determinations

1. Water. No significant differences in water chemistry are expected following Project construction, and no violations of applicable state water standards are anticipated. The rock materials

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are inert material that would have little effect on water chemistry. Water clarity, odor, taste, pH, temperature, and dissolved gas levels would not change. The nature of all fill materials would not cause any significant changes in nutrient levels. The construction should not impair the aquatic ecosystem's capability to sustain life, or reduce the suitability of the Mississippi River for aquatic organisms, human consumption, recreation, or aesthetics.

2. Current Patterns and Circulation. Shallow water placements could have a minor effect on flow patterns in the immediate vicinity of the structures. However, no measurable reductions of inflow to backwater areas are anticipated. No significant effects to existing current patterns or water circulation are expected to result from this action.

3. Normal Water Level Fluctuation. No changes in normal water level fluctuations are anticipated to result from the proposed Project.

4. Salinity Gradient. This consideration is not applicable in the location of the proposed Project.

5. Actions Taken to Minimize Impacts. The construction footprint was kept as small as possible and berms were designed and aligned to minimize any potential for adverse effects to water circulation and fluctuation.

C. Suspended Particulate/Turbidity Determinations

1. Expected Changes in Suspended Particles and Turbidity Levels in Vicinity of Placement Site. Suspended solids and turbidity values would be expected to temporarily increase during excavation and placement. A return to ambient conditions should occur shortly after completion of construction. No long-term impacts to suspended solids and turbidity levels are anticipated.

2. Effects on Physical and Chemical Properties of the Water Column

- **Light Penetration.** The Project would have short-term adverse impacts during construction due to turbidity plumes. Following construction, turbidity and associated light penetration would be expected to return to pre-construction levels.
- **Dissolved Oxygen (DO).** Placement of excavated material should have no short- or long-term adverse impacts on DO levels. Aquatic features should help to maintain DO in the Project area at levels (5 mg/l minimum) suitable for year-round fish habitat.
- **Toxic Metals and Organics.** No increase in contaminants in the aquatic environment would result from the placement of fill material. Excavating and placement of fine material is not expected to have toxic effects on fish, wildlife, or other aquatic organisms.
- **Aesthetics.** Temporary increases in suspended sediments would have a minor short-term impact on aesthetics in the Project area. No long-term negative effects on aesthetics are anticipated to result from the Project.

3. Effects on Biota. Minor disturbances to organisms present in the construction zone could occur as a result of fill activity and excavating. These disturbances are short-term and are offset by the

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overall lift to the local natural resources. The overall long-term benefits to biota and function in the Project area and the river system are demonstrated in Tables B-2 and B-3. For example, the placement of 81 acres material in low-quality forested wetland will be offset by the 157 acres of high-quality bottomland forested wetland restoration.

Table B-2: Management Measures that Restore Process and Area of Restored Process

| Management Measure | Process Restored | Area of Restored Process |
|---|---|--|
| Backwater Excavation and Substrate/Cover | Habitat connectivity, lacustrine and littoral habitat structure and function | Excavated area plus area of direct influence resulting from the interconnection of habitat. This area includes the restored photic zone, littoral zone, and interconnected spawning, rearing, and overwintering fish habitat. |
| Closure Structure | Sedimentation reduction and hydrology – reduced flow and velocity | Reduced sedimentation and area of low flow created by structure during overwintering conditions. |
| Island Protection and Stabilization | Hydrology - flow, velocity, sediment transport; Littoral processes, habitat connectivity, habitat structure | Area of flow, sediment transport, and habitat structure and function restored, (compared to existing hydrology) by the feature. |
| Increased Floodplain Elevation through Excavated Material Placement | Hydrology - water inundation and duration | Footprint plus area in which the measure has an influence on forest canopy cover, species or composition; or reproduction, rearing, and foraging habitat. This edge influence has been shown to be more than 100m for some primary and secondary processes (Harper et al. 2005). |
| Mast Tree Planting | Habitat connectivity, forest structure and function | |

Table B-3: Direct Impacts Offset by Overall Lift from Project

| Habitat Type | Placement/Excavation (ac) | Area of Restored Process (ac) |
|-------------------------------|----------------------------------|--------------------------------------|
| Bottomland Forest Restoration | 81 | 157 |
| Backwater Overwintering | 55 | 216 |

D. Contaminant Determinations. No contaminants that would exceed State standards have been identified in substrates to be excavated. Possible introduction by equipment or construction-related contaminants would be controlled by adherence to runoff monitoring plans during construction activity. No toxic materials would be introduced to the area as a result of construction activities. Rock riprap would be clean, uncontaminated stone from an approved source.

E. Aquatic Ecosystem and Organism Determinations

1. Effects on Plankton. Only short-term and minimal effects are anticipated to occur as a result of excavating and fill activity. No significant impacts to plankton are expected.

2. Effects on Benthos. No significant impacts to benthos at the placement site or at the location of mechanical excavating are anticipated. For the most part, aquatic substrates would be affected

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incidentally to adjacent construction activities. Aquatic substrates would be directly affected by mechanical excavating. These substrates would eventually be covered with material of similar character. Recolonization of benthic organisms should occur quickly.

3. Effects on Nekton. The restoration of backwaters would substantially improve the quality of fish habitat in this area. The primary factor that is limited at present and at risk in the future is overwintering habitat, due to limited deep off-channel aquatic areas protected from high current velocities. Channel excavation in the aforementioned backwater lakes would ensure areas of suitable depth, flow, dissolved oxygen, and temperature would be available during severe winter conditions in the future.

4. Effects on Aquatic Food Web. The loss of the benthic organisms within the footprint of the riprap bank protection should not cause any significant impact to any level/segment of the aquatic food web, or disrupt the flow of energy between trophic levels. This small benthic loss should not result in the reduction or potential elimination of food chain organism populations and should not cause any decrease in the overall productivity and nutrient export capability of the ecosystem.

Improvements in backwater and riverine habitat through aquatic vegetation establishment, spawning habitat protection, and increased depth should increase primary and secondary production in the Project area. This increase in production should lead to an increased forage base for fish and wildlife.

5. Effects on Special Aquatic Sites

- **Sanctuaries and Refuges.** The Project area is located within the Upper Mississippi River Wildlife and Fish Refuge. There are designated “closed areas” found in the Refuge and Project areas. These areas are closed to the public during critical times of migration, reproduction, and nursery. The proposed Project will not impede, hinder, or otherwise affect the physical features, location, or timing of the designated closed areas.
- **Wetlands, Mud Flats and Vegetated Shallows.** The 2,300-acre Beaver Island Complex represents 16 percent of Pool 14 backwater habitat. The Project area contains 1,678 acres of interconnected backwaters, secondary channels, wetlands, and floodplain habitat. The Project involves excavating material from Lower Cut and Stewart, Sand Burr, and Blue Bell Lakes to restore approximately 55 acres of backwater overwintering habitat. In order to be considered a wetland under the 1987 Corps of Engineers Wetland Delineation Manual, three criteria are required: *hydric soils, hydrophilic vegetation, and hydrology*. The following describes how the proposed sites will stay within this criteria after placement of material to provide topographic diversity:
 - **Hydric Soils.** Information in a pre-published soil survey indicated that the types of soils that are present in and around Beaver Island generally classify as Fluvent-Ambraw soil series, which is described as an alluvium product in the NRCS classification system. This series is described as frequently flooded with a water table that varies between ground surface and 1 foot deep. Surficial soils within the placement sites are generally fluvaquent soils, which is described as an alluvium

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product in the USDA classification system. This series is described as frequently flooded and water table is said to vary between ground surface and 1 foot deep. Subsurface borings indicate the area generally consists of soft fat clays gradually changing into stiff clay with increasing depth. The borings were approximately 14 feet deep from the top of water elevation. Below ground surface, a top layer of approximately 5 feet is composed of soft lean clays and fat clays that showed gradual change in stiffness with increased depth. Underlying this clay layer, until the bottom of the borings, is medium to fine sand approximately 4 to 6 feet down from ground elevation. Atterberg limit tests were performed on several of the clay samples gathered throughout the site. Results for liquid limits expressed as an index ranged between 51 and 41, and plastic limits expressed as an index ranged between 22 and 20. Borings BI-14-04 and BI-14-05 (Appendix O, Plate 5, B-301) were taken downstream and upstream of Upper/Deep Cut Channel, respectively. BI-14-04 showed similar soils composition to those found on borings BI-14-01 through BI-14-03. BI-14-05 showed similar materials to those found in all the other borings, although the thickness of the top clay layer was significantly thinner than the one found on all the other borings. The difference in layer thickness can be directly correlated to higher flow velocity that would not allow the fine sediment to deposit as observed in the other borings.

o **Vegetation.** The dominant wetland type that currently exist on Beaver Island is considered freshwater forested. Following placement of the excavated material, 81 acres of low quality, even-aged silver maple dominated forested wetland will be converted to higher quality bottomland hardwoods. Roughly 17% of the island is at an elevation (>576 feet) suitable to contain mast producing trees, compared to the reference condition (i.e., pre-dam) of about 47.0%. The areas with mast trees present are on average over 88 years (ranged 1874 to 1964) old and contain little production in the understory. This lack of production is directly related to increased water inundation and duration. Current topography shows a significant portion of the Project is low in elevation and below the threshold for producing a sustainable nut producing tree population. It is highly unlikely nut producing trees will regenerate without intervention in the next 50 years. The proposed plan effectively works to stop and reverse this trend; thus, increasing habitat availability and quality for migratory birds (i.e., neotropical, waterfowl, bald eagle, heron rookeries), endangered species (i.e., Indiana bat, northern long-eared bats), general wildlife, reptiles and amphibians, etc.

The placement sites will either be sloped to drain, or will have +/- 1 foot elevation changes to create swales across the wider sites. Once shaping is complete, temporary seeding may be employed if permanent seeding cannot occur immediately. This area would be planted with various forested wetland trees, understory species, forested wetland shrubs, and be surrounded by buffer species as listed in Main Report, Tables VI-9 through VI-12.

According to the Corps' National Wetland Plant List and Indicator Rating Definitions, obligate indicator status is defined as occurring at a 99% rating under natural conditions in wetlands. Currently, obligate species (buttonbush) is present above

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elevations of 579.8 at Beaver Island. Therefore, it is assumed that the wetland vegetation planted at/or above 579.8 feet will be successful for the life of the Project.

○ **Hydrology.** Corps Regulatory defines wetland hydrology (1987 Corps of Engineers Wetlands Delineation Manual) as inundation or saturation to the surface continuously for at least 5% of the growing season in most years (50% probability of recurrence). Utilizing further guidance in this manual, the growing season for Clinton County was established using the NOAA Regional Climate Center AgACIS output for the days above 28 degrees F with a 50% chance of the growing season occurring therein, and the 1984-2013 period of temperature record. The resulting growing season was April 12 to October 20. 5% of the growing season (191 days) is equivalent to 9.55 days which is rounded to 10. River stages at the Camanche gage (RM 511.8) for the 20-year period 1994-2013 were used in HEC-EFM to determine the maximum of the 10-day minimum elevations (during the growing season) that has a 50% probability of occurring. The resulting elevation was interpolated upstream to the Project location (RM 514) and converted to the NAVD88 datum arriving at elevation **578.9 feet**. The upper limit for the tree planting elevation was based upon the 25 percent exceedance probability for the minimally tolerant growing season inundation criteria (25-day inundation duration), which is 577.9 feet at RM 514. In compliance with ECB 2014-10, consideration of climate change and future hydrologic conditions during the 50-year period of analysis was given with the appropriate floodplain forest design elevation selected at a maximum of **579.80 feet**. While the maximum wetland elevation in this area was lower than the maximum elevation selected by the PDT for the proposed Project, the 1987 Corps Regulatory Manual does not include consideration of climate change and future hydrology.

- **Threatened and Endangered Species.** A bat survey was conducted in August 2015 and resulted in the capture of several species of bat including the northern long-eared bat. No Indiana bats were captured. Two summer mussel surveys resulted in the identification of low to moderate quality mussel habitat including the capture of the Higgins eye pearly mussel.

The proposed Beaver Island Project may directly affect the Indiana and Northern long eared bats by temporarily reducing the amount of potential roosting and foraging habitat and create short-term fragmented woodlands within the action area. The Project would potentially affect approximately 81 acres of floodplain forest through clearing of trees for topographic diversity construction. The overall forested habitat which exists on Beaver Island proper is approximately 1,500 acres. When compared to the number of acres potentially affected by the Project, the District determined it to be about 5.4 percent of the total.

The proposed excavating of the backwaters in Beaver Island should have no direct impacts to the Higgins eye pearly mussel since the backwaters do not appear to contain suitable habitat. It is estimated approximately 350 acres of active timber stand improvements strategies will be implemented in the future on Beaver Island.

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Correspondence from the USFWS indicates no impacts are anticipated to threatened or endangered species or their habitats, provided construction activities are scheduled and monitored to avoid direct impacts, conservation measures as described in the Biological Assessment are implemented, and conditions do not change significantly (Appendix A, *Correspondence*).

- **Other Wildlife.** Wildlife species which utilize forested and non-forested wetland habitats should benefit in the long term from the proposed action.

F. Proposed Placement Site Determinations

1. Mixing Zone Determinations. Discussions pertaining to turbidity and suspended particulates are summarized in Section II. C. Contaminants were discussed previously in Section II. D. A small amount of fine-grained material could migrate from the placement sites and become diluted with adjacent side channel and main channel border flow. Fine-grained material used for construction of the topographic diversity feature would result in temporary localized increases in suspended material. The use of mechanical excavating should help to minimize these effects.

2. Determination of Compliance with Applicable Water Quality Standards. Due to the nature of this Project and the proposed aquatic habitat improvement, it will be covered under an Individual Permit (IP), which will include authorization under Section 404 of the Clean Water Act.

3. Potential Effects on Human-Use Characteristics. Implementation of the proposed Project will have no significant adverse effects on municipal or private water supplies; recreational or commercial fisheries; water-related recreation or aesthetics; parks; national monuments; or other similar preserves.

4. Determination of Cumulative Effects on the Aquatic Ecosystem. The District continues the operation and maintenance of the 9-foot Channel Project. This includes continuation of excavating and placement of sediment and dike construction (i.e., chevrons, closing structures, and wing dams).

District Foresters continue to implement timber stand improvements measures at locations within Beaver Island. These measures include timber harvests, mast tree plantings, and non-desirable vegetation maintenance. These efforts will continue in the future on the island. It is estimated approximately 100 acres of active timber stand improvements strategies will be implemented in the next 20 years on Beaver Island by District Foresters in addition to the proposed Project.

It is anticipated within the next 10 years, the Steamboat HREP and other HREP Projects will commence planning efforts for implementation. These would be similar to Beaver Island with objectives for increased backwater depth, topographic diversity, floodplain vegetation diversity, and restored aquatic processes.

Cumulative impacts of the proposed action are not expected to be significant. The Beaver Island HREP offers a unique opportunity to restore and enhance fish and wildlife resources in this section of Pool 14. The multi-agency coordination effort has demonstrated the value of this Project towards

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maintaining a high quality UMR ecosystem while avoiding adverse impacts. Beaver Island represents the largest and single most important habitat restoration Project in Pool 14 to restore degraded environmental conditions within the backwater and floodplain forest habitats that will benefit migratory birds, fish, other wildlife, and plants.

5. Determination of Secondary Effects on the Aquatic Ecosystem. No significant secondary effects should result from construction of the proposed Project.

III. NATIONWIDE PERMIT COMPLIANCE DOCUMENTATION (NWP)

In order to use an NWP, the Project must comply with three sets of conditions:

1. General NWP Conditions for NWPs;
2. NWP 27 Conditions; and
3. Iowa 401 Water Quality Certification Conditions

Table B-4 shows the 28 general NWP conditions and the District's compliance responses. Table B-5 shows the NWP 27 conditions and the District's compliance responses.

Iowa has conditioned Section 401 water quality certification applicable to NWP 27. Department of the Army authorization pursuant to Section 404 of the CWA (33U.S.C.1344) under NWP 27 will be subject to the Iowa conditions.

Table B-6 shows the Iowa Section 401 Water Quality Certification conditions for NWP 27 and the District's compliance responses

IV. CONCLUSION

The PDT concludes this Project meets the conditions of Section 404 of the CWA by an existing Department of Army NWP for aquatic habitat restoration, establishment and enhancement activities, as described in the March 12, 2007, Federal Register, Reissuance of Nationwide Permits; Notice (72 FR 11185), Appendix A (B) (27).

The District and USFWS realize NWP 27 may be modified, reissued, or revoked prior to Project construction. The PDT will remain informed of changes to the NWPs. If construction activities are not completed prior to 12 months from the date of the modifications or revocation of the NWP, the team will reevaluate the Project's 404 compliance status and will coordinate the Project with the District's Regulatory Branch. The Project will be in full compliance with the current CWA regulations prior to any construction and activities.

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Section 404 Assessment:
NWP 27 Justification*

Table B-4: General NWP Conditions and Compliance Responses

| # | General NWP Condition | Compliance Response |
|----|-------------------------------------|---|
| 1 | Navigation | No navigation impacts expected. Project features would not impact the 9-foot navigation channel. The Project would not impact barge operation, safety, or tow handling. |
| 2 | Aquatic Life Movements | Positive impacts expected with restored river connectivity, overwintering habitat, and mussel habitat features. |
| 3 | Spawning Areas | Project features would continue to provide quality spawning habitats over the life of the Project for fish and wildlife. This quality would last over the life of the Project. Without Project, spawning areas would decline from sedimentation, water quality issues, and erosion. |
| 4 | Migratory Bird Breeding Areas | Project features avoid and minimize disturbances to existing migratory bird nesting and rookeries. |
| 5 | Shellfish Beds | Freshwater mussel habitat restoration will improve habitat for all native freshwater mussels. |
| 6 | Suitable Material | Local material would be used for constructing topographic diversity features that contains an ample seed bed of local wetland plants. Water control features would require standard construction materials. |
| 7 | Water Supply Intakes | No public water supply intakes present in planning/impact area. |
| 8 | Adverse Effects From Impoundments | The Project will not impound water within or around the Project area. |
| 9 | Management of Water Flows | Project features would handle fluctuating water levels including fluctuating river levels. |
| 10 | Fills Within 100-Year Floodplains | This Project would comply with applicable FEMA approved floodplain management requirements. |
| 11 | Equipment | Heavy equipment will be used and operated within the stream channel. However, it shall be performed in such a manner as to minimize the duration of the disturbance, turbidity increases, substrate disturbance, bank disturbance, and riparian vegetation as evaluated earlier. |
| 12 | Soil Erosion and Sediment Controls | The Project would require standard construction guidelines to avoid erosion and sediment resuspension. |
| 13 | Removal of Temporary Fills | Not Applicable. |
| 14 | Proper Maintenance | USFWS would maintain Project features over the Project life. |
| 15 | Wild and Scenic Rivers | Not Applicable. |
| 16 | Tribal Rights | Not Applicable. |
| 17 | Endangered Species | Full Compliance. See Main Report Section IX.E. |
| 18 | Historic Properties | Full Compliance. See Main Report Section IX.G. |
| 19 | Designated Critical Resource Waters | This Project does not have any designated critical resources. |
| 20 | Mitigation | This Project would not require wetland mitigation. |
| 21 | Water Quality | This Project would comply with the Iowa water quality certification conditions for NWP 27 (see Table B-5). |
| 22 | Coastal Zone Management | Not Applicable. |
| 23 | Regional and Case-By-Case | Not Applicable. |
| 24 | Use of Multiple Nationwide Permits | The Project PDT requests only NWP 27. |
| 25 | Transfer of NWP Verifications | All lands are in Federal ownership. |
| 26 | Compliance Certification | Full compliance expected. |
| 27 | Pre-Construction Notification | Full compliance expected. |
| 28 | Single and Complete Project | The Beaver Island HREP would be a single project. |

*Beaver Island
Upper Mississippi River Restoration
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*Appendix B
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Table B-5: Nationwide Permit 27 Conditions and Compliance Responses

| # | NWP 27 Condition | Compliance Response |
|---|--|--|
| 1 | Project Intent. Does it meet the intent of aquatic habitat restoration, establishment, and enhancement activities? | This Project’s goals and objectives (Main Report) focus solely on aquatic habitat restoration. |
| 2 | Tidal Areas | This Project does not include any tidal areas. |
| 3 | Net increase in aquatic resource function and services. | Backwater, riverine, and mussel habitat would provide quality aquatic resources/habitats over the life of the Project for fish and wildlife. In the absence of our Project, areas would decline from sedimentation, erosion, and winter water quality impacts (see Appendix D), which demonstrates a net increase in aquatic habitat value. See Table B-3 for overall lift in acres. |
| 4 | Project features meet the NWP intent | The proposed Project features work together to cumulatively provide significant benefits to topographic diversity, overwintering fish habitat, freshwater mussel habitat, and island habitat. |
| 5 | Alteration of a stream or natural wetlands is prohibited | The proposed Project would not alter any stream or areal quantity of wetland habitats. |
| 6 | Reversion | USACE requires O&M through an MOA between the USFWS and USACE. |
| 7 | Reporting | The USFWS and USACE would comply with all pre-construction reporting requirements. |
| 8 | Notifications | The USFWS and USACE would comply with all pre-construction notification requirements. |

Table B-6: Iowa Section 401 Water Quality Certification for NWP 27 Conditions

| # | Iowa Section 401 Water Quality Certification for NWP 27 | Compliance Response |
|---|---|---|
| 1 | For projects that impact an outstanding national resource water, outstanding Iowa water, fens, bogs, seeps, or sedge meadows, an individual Section 401 Water Quality Certification will be required. | Mississippi River is a Special Waters of Concern and Project will be coordinated for comments. |
| 2 | For nationwide permits when the Corps District Engineer has issued a waiver to allow the permittee to exceed the limits of the nationwide permit, an individual Section 401 Water Quality Certification will be required. | Not applicable. |
| 3 | Heavy equipment shall not be used or operated within the stream channel. If in-stream work is unavoidable, it shall be performed in such a manner as to minimize the duration of the disturbance, turbidity increases, substrate disturbance, bank disturbance, and riparian vegetation impacts. This condition does not further restrict otherwise authorized drainage ditch maintenance activities. | Heavy equipment will be used and operated within the stream channel. However, it shall be performed in such a manner as to minimize the duration of the disturbance, turbidity increases, substrate disturbance, bank disturbance, and riparian vegetation impacts, as evaluated earlier. |

UPPER MISSISSIPPI RIVER RESTORATION
FEASIBILITY REPORT
WITH INTEGRATED ENVIRONMENTAL ASSESSMENT

BEAVER ISLAND
HABITAT REHABILITATION AND ENHANCEMENT PROJECT

POOL 14, UPPER MISSISSIPPI RIVER MILES 513.0-517.0
CLINTON COUNTY, IOWA

APPENDIX B

CLEAN WATER ACT
SECTION 404 ASSESSMENT:
NWP 27 JUSTIFICATION

FINDINGS OF COMPLIANCE WITH CWA AND NWP 27

1. Alternatives which were considered for the proposed action are as follows:

Alternative A: No Federal Action

Alternative B: Recommended Plan. This includes excavating deep water habitat, placement and shaping of excavated material to improve topographic diversity for the purposes of restoring a diverse mast tree community, construction of a closure structure, and rock placement at Albany Island to construct a chevron, provide bank stabilization, and improve mussel substrate.

2. No significant impact to federally-listed endangered species will result from this Project. The U.S. Fish and Wildlife Service, Ecological Services Office, Moline, Illinois, supports this determination.
3. The proposed Project meets the conditions of Section 404 of the CWA by an existing Department of Army NWP for aquatic habitat restoration, establishment and enhancement activities, as described in the March 12, 2007, Federal Register, Reissuance of Nationwide Permits; Notice (72 FR 11185), Appendix A (B) (27).

10/10/2017

(Date)



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Colonel, US Army
Commander & District Engineer

