

EA APPENDIX B

**CLEAN WATER ACT
SECTION 404(b)(1) EVALUATION**

**SANGAMON EXPERIMENTAL SEDIMENT TRAP
LA GRANGE POOL
ILLINOIS WATERWAY RIVER MILE 88.9L**

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SECTION 1 - PROJECT DESCRIPTION

LOCATION

The proposed experimental sediment trap is located on the left descending side of the Illinois Waterway, at approximate RM (River Mile) 89, La Grange Pool, immediately upstream of the railroad bridge and just downstream of the mouth of the Sangamon River near Beardstown, Illinois, in Cass County.

GENERAL DESCRIPTION

The proposed work involves mechanical dredging and placement of dredged material from an 850-foot by 40-foot by 6-foot pilot channel and hydraulic dredging of an experimental sediment trap in the Illinois River at the mouth of the Sangamon River. The mechanically dredged pilot channel material would be placed on the banks of the 300-foot by 600-foot placement site within the Beardstown harbor. The sediments hydraulically dredged from the sediment trap will be piped into the Beardstown harbor placement site. Approximately 1 acre of the placement site is terrestrial slopes and 3 acres is in an open water area of the harbor. The sediment trap, pilot channel, and placement site are addressed in the EA (Environmental Assessment). Since each of these project features involves disturbance to Waters of the United States, they are all addressed in this Clean Water Act Section 404(b)(1) Evaluation.

AUTHORITY AND PURPOSE

The authority and purpose of the evaluation portion of this document is to comply with Section 404 of the Clean Water Act pertaining to guidelines for placement of dredged or fill material into the Waters of the United States. This evaluation, in conjunction with the EA, will assist in analysis of the alternatives for this project, resulting in the base plan (Federal Standard). Further, this evaluation will provide information and data to the Illinois Environmental Protection Agency (IL EPA), which is the State water quality certifying agency demonstrating compliance with State water quality standards. This will aid in the decision-making process concerning the Section 401 water quality certification.

GENERAL DESCRIPTION OF DREDGED MATERIAL

Sampling of the dredged sediments for the sediment trap and pilot channel was undertaken on April 3, 2002. Due to the amount of fine-grained sediment, a chemical analysis was performed in addition to the grain size analysis. Complete detailed results can be found on Tables EA-1 and EA-2 and a discussion of the methods and results can be found in Section II. Project Location and Description in the EA.

DESCRIPTION OF THE PROPOSED PLACEMENT SITES

Complete and detailed information on the Beardstown harbor placement site can be found in the EA (see Section II. Project Location and Description and Section V. Environmental Impacts of the Preferred Alternative).

DESCRIPTION OF PLACEMENT METHOD

Dredged material would be placed at the Beardstown harbor placement site by hydraulic means from the experimental sediment trap dredging and by mechanical means by the pilot channel dredging.

A hydraulic dredge utilizes a cutterhead in combination with a centrifugal pump to entrain dredged solid materials in high velocity water to excavate dredged material. Dredged material is then pumped in slurry via floating discharge lines and onto the placement areas through moveable shorepipe. Shorepipe is positioned by use of a bulldozer and pipe handlers to the desired placement site locations.

Mechanical dredged material placement requires at a minimum: one crane barge, one tender boat, two material barges, and one end loader/bulldozer. A crane barge mechanically excavates the sediment from the dredge cut and places it on the material barges. The tender boat moves the filled material barges to the off-loading site. The dredged material is off-loaded by a crane barge, backhoe, or end loader, and the bulldozer moves the material onto the placement site.

SECTION 2 - FACTUAL DETERMINATIONS

PHYSICAL SUBSTRATE DETERMINATIONS

A. Substrate Elevation and Slope. Flat pool at the project area is 429 feet Mean Sea Level. The Beardstown harbor placement site ranges in elevation from approximately 425 to 437 feet going from the open water area to the adjacent levee slope.

B. Sediment Type. Approximately 3 acres of the Beardstown harbor placement site is underlain by open water and the other 1 acre is underlain by land that has been brought to the site to create the adjacent levee or harbor peninsula. No grain size analysis was done at the Beardstown harbor placement site. The Cass County soil survey does not describe the substrate of any open water areas. The marina peninsula that would be partially used as a placement site is classified by the Cass County soil survey as a Dockery silt loam. This is the same soil type used to describe all islands in Muscooten Bay, likely due to the silty nature of the sediments that enter Muscooten Bay from the Sangamon River. The City of Beardstown itself, behind the levee system, is classified as a Plainfield sand and is considered to have formed through wind and wave action from sandy Illinois River sediments. The top few feet of the proposed sediment trap location is composed of fine sand, according to the grain size analysis from the samples taken on April 3, 2002. The pilot channel to be mechanically dredged is composed of clayey sand. The sediment trap to be hydraulically dredged is composed of fine sand in the top few feet underlain by fat clay. Only the top 3 feet of the substrate is proposed to be dredged in order to dredge primarily sands from the sediment trap location.

C. Dredged/Fill Material Movement. A containment berm would be created in order to contain the dredged material from both the mechanical and hydraulic dredging. This containment berm would be constructed of sand from Beardstown DMMP Site 1, approximately 1 mile downstream of the placement site. The mechanically dredged pilot channel sediment would be placed behind the containment berm during high water. The containment berm is proposed to be constructed to a top elevation of 437. If high water exceeds the height of the containment berm during or immediately after placement of the mechanically dredged material, silt screens would be placed on top of the containment berm to contain the material within the placement site. The material would not be expected to migrate into the open water area beyond the placement site.

The hydraulically dredged material from the creation of the experimental sediment trap would be piped to the placement site. A drop structure would be installed in the containment berm after the mechanical dredging of the pilot channel and before the hydraulic dredging of the sediment trap in order to allow for adequate drainage of the placement site during hydraulic dredging.

Approximately 24,200 cubic yards of primarily sandy sediments would be dredged over an approximately 5.1-acre area to construct the sediment trap.

D. Physical Effects on Benthos. The proposed placement site in the Beardstown harbor has been slowly filling in with fine-grained sediment as part of the overall filling in of Muscooten Bay, and the site does not contain any emergent or submergent vegetation. Therefore, a large or diverse population of benthic organisms is not expected at the site. The pilot channel itself contains mudflats where egrets have been seen feeding during site visits. This would indicate that a fisheries and/or aquatic invertebrate community is present within that pilot channel, which will be impacted through excavation of the channel to the proposed 6-foot depth.

E. Actions Taken to Minimize Impacts. As described in paragraph C above, a containment berm would be constructed at the Beardstown harbor placement site to keep the dredged material in place as the site dewater.

WATER CIRCULATION AND FLUCTUATION

A. Water. Approximately 3 acres of open water is proposed to be permanently filled in at the Beardstown harbor placement site. This open water would be replaced by land up to 12 feet above the existing ground level. Outside of the placement site, the effluent may have a temporary impact on water chemistry, water temperature, pH, clarity, color, odor, taste, dissolved gas levels, nutrient levels or organic matter influxes that may cause negative impacts to aquatic organisms. Impacts to the human population concerning the suitability of this water body for human consumption would be negligible. Water-based human recreation would be improved through increased boating access to the Beardstown harbor. The aesthetic value of the existing shallow water area and mudflats with feeding and loafing egrets within the pilot channel is high, but a larger open water area after excavation of the pilot channel will also have an aesthetic value. The aesthetics of the sediment trap itself will not change after construction since the activity is all under the water surface. The Beardstown harbor placement site will change from a mostly open water area to an upland area underneath approximately 12 feet of fill, potentially topped by a parking lot in the future. The aesthetic value of the open water area would be lost, but many local residents would be pleased with the change from an unusable area to an area to be used for parking for a future potential marina in that location.

B. Current Patterns and Water Circulation. The excavation of the experimental sediment trap, approximately 3 feet deep, may slightly change the water currents as the Sangamon River flows into the Illinois Waterway. Increasing the cross-sectional area of the stream will result in localized lower velocity, which will permit sedimentation of some material. The excavation of the pilot channel will allow for more Sangamon River water to flow through the pilot channel and potentially carry sediment that will settle downstream of the pilot channel between the Beardstown levee and the island downstream of the pilot channel. That area is currently almost entirely filled in, so some sediment may settle at and slightly upstream of the pilot channel entrance to the Beardstown harbor over time. The use of the Beardstown harbor placement site would change water circulation patterns since there will be less open water area for water to flow after the filling of the approximately 3 acres of open water.

C. Normal Water Level Fluctuation. The loss of 3 acres of floodwater storage area has the potential to raise localized flood elevations, but is not considered significant by the State of Illinois, even when considered cumulatively with other filling projects. A State floodplain construction permit for this 3-acre placement site has been issued to the City of Beardstown. The filling of the open water at the Beardstown harbor placement site would reduce the area available for water to flow, which, when considered cumulatively with other filling projects within the river, can have a negative impact during floods when high water loses its traditional floodplain. The excavation of the experimental sediment trap would help to mitigate that floodplain area loss for a temporary period of time, but it is expected to fill in over time, whereas the Beardstown harbor placement site will be permanently converted to an upland area.

D. Actions Taken to Minimize Impacts. The placement site has been kept to the minimum size necessary to contain the dredged material in order to avoid additional impacts to open water within the Beardstown harbor.

SUSPENDED PARTICULATE/TURBIDITY DETERMINATIONS

A. Effects on Physical and Chemical Properties of the Water Column. The impacts to the water column from placement of the dredged material onto the Beardstown harbor placement site would be considerable. The water column itself would be replaced by material excavated from the experimental sediment trap within the 3-acre area of open water within the placement site. The impacts to the physical and chemical properties of the water column within the sediment trap itself from the hydraulic dredging of the sediment trap would be negligible due to the removal of material from the site. The area is located at the mouth of the Sangamon River and already has high turbidity and suspended particulate levels. This is not expected to change after construction of the experimental sediment trap.

The effluent from the placement site would likely contain minimal suspended sediments that would move into the water column outside of the placement site. The sediments to be dredged are primarily sands and the containment berm with drop structure is expected to contain the sediments. Any minimal suspended sediment impacts on turbidity would disperse in open water farther away from the placement site.

B. Effects on Biota. No significant impacts to aquatic biota are expected due to any increase in suspended particulates or turbidity since species currently living in the river at this location are accustomed to high turbidity. Any aquatic biota living within the Beardstown harbor placement site would be impacted through placement of dredged material on the open water portion of the site. Little or no aquatic vegetation exists within that open water area, and the siltation of the harbor area over time has reduced the habitat potential of that area, so no significant effects are expected.

C. Actions Taken to Minimize Impacts. The containment berm was designed to contain all of the sediments to be mechanically and hydraulically dredged as part of this project. In addition, the hydraulic dredging is expected to primarily dredge sandy sediments since the depth of the sediment trap was determined based on the limits of the sands that overlay a fat clay in that area.

CONTAMINANT DETERMINATIONS

A summary of the grain size analysis and chemical analysis from the proposed experimental sediment trap and pilot channel locations is located on page EA-6 and in Tables EA-1 And EA-2. Since fine-grained sediments were found underlying the sands at the sediment trap location, chemical, ambient water, and elutriate analyses were performed to determine whether the water column would be affected by contaminants through the proposed action. The analyses showed that the sediments are not contaminated and elutriate ammonia nitrogen concentrations were typical of those commonly found in fine-grained Illinois River sediments. Existing information for this project provides a sufficient basis for making factual determinations concerning impacts to waters of the United States.

AQUATIC ECOSYSTEM and ORGANISMIC DETERMINATIONS

A. Effects on Plankton and Nekton. The Beardstown harbor placement site contains approximately 3 acres of open water. This open water could be expected to contain a population of plankton and nekton, although that population may be low due to high turbidity and lack of aquatic vegetation within the open water area. Any plankton and nekton located within that open water area, however, would be permanently impacted through the filling of the 3 acres of open water.

B. Effects on Benthos. There would be permanent negative effects on benthos within the 3-acre open water area proposed to be filled with dredged material from the experimental sediment trap.

C. Effects on Aquatic Food Web. The aquatic food web within the 3-acre open water area of the Beardstown harbor placement site would be permanently eliminated through the filling of the open water with hydraulically dredged material from the experimental sediment trap. The pilot channel to be excavated currently contains habitat for birds, amphibians, and aquatic invertebrates, as seen during a site visit in 2002. This habitat will be eliminated during and after excavation of a 6-foot-deep pilot channel. If the pilot channel were allowed to fill in over time with sediments deposited from the Sangamon River, those impacts could be considered temporary. The current plans by the City of Beardstown, however, include the maintenance of the pilot channel to allow for access to a proposed marina within the Beardstown harbor. That would mean that the impacts to the aquatic food web within the pilot channel area may be permanent. The experimental sediment trap itself is expected to fill in over time, so any impacts to the aquatic food web from the dredging of the sediment trap are considered to be temporary.

D. Effects on Special Aquatic Sites. Special aquatic sites are defined in the Clean Water Act as sanctuaries and refuges, wetlands, mudflats, vegetated shallows, coral reefs, and riffle and pool complexes. Of these, this project will impact wetlands and mudflats. Approximately 0.4 acre of emergent, scrub-shrub, and forested wetlands are proposed to be impacted to create the pilot channel to provide pipeline access to the Beardstown harbor placement site. Those wetlands currently provide habitat for birds, amphibians, and invertebrates. The mitigation plan as described in EA Appendix D is proposed to enhance approximately 1.7 acres of existing wetlands to restore hydrology and create a more diverse vegetative community or to create approximately 0.8 acre of wetlands in a sandy area known to be used by the state-threatened Illinois chorus frog. Those wetlands could be used as breeding habitat for the frogs. The mudflats located within the pilot channel provide habitat for aquatic invertebrates and provide a feeding area for egrets that have been seen utilizing the mudflats during site visits. The area of mudflats to be impacted is included in the 0.4-acre estimate of wetland impacts since the expected future condition of the mudflats is that they would continue to fill in with sediments from the Sangamon River and would eventually convert to wetland habitat.

E. Threatened and Endangered Species. No threatened and endangered species are expected to be impacted as a result of this project. See EA Section V. Environmental Impacts of the Preferred Alternative, C. Natural Resources, Threatened and Endangered Species for a more detailed discussion.

F. Other Wildlife. No wildlife usage has been observed during site visits to the Beardstown harbor placement site. Wildlife usage of the sediment trap area would likely be minimal and limited to nektonic species. The pilot channel wetlands are utilized by aquatic species, but also by songbirds that perch on the trees and shrubs.

G. Actions Taken to Minimize Impacts. The pilot channel width has been reduced from 60 feet to 40 feet to minimize wetland impacts.

PROPOSED PLACEMENT SITE DETERMINATIONS

A. Mixing Zone Determinations. According to the State of Illinois water quality regulations, a mixing zone means a portion of waters of the State identified as a region within which mixing is allowed. A zone of initial dilution is a portion of a mixing zone within which acute toxicity standards need not be met. For the hydraulic dredging of the sediment trap, the District intends to request a mixing zone adjacent to the drop structure at the placement site in order to comply with the water quality standards as provided by the State of Illinois. The placement of mechanically dredged material would not result in an open water discharge since that material would be maintained behind the containment berm.

B. Determination of Compliance with Applicable Water Quality Standards. A preliminary Section 401 permit application was submitted to the Illinois Environmental

Protection Agency (IL EPA) in September 2002. They responded in July 2003 with a request for further information on the temporary placement of pilot channel sediment into the open water area of the sediment trap, further information on the design of the containment berm, and a water quality monitoring plan for total suspended solids and ammonia. They also advised that the return water discharge from the disposal area must be below the total suspended solid effluent standard of 15 mg/L. The District will provide all information requested by the IL EPA and will undertake any actions required by the IL EPA to ensure compliance with State water quality standards.

C. Potential Effects on Human-Use Characteristics. Implementation of the preferred alternative for this project would have a positive effect on recreation since there would be access from the Beardstown harbor to the Illinois River. There would be no significant negative effect on municipal or private water supplies; recreational or commercial fisheries; parks; national monuments; or other similar preserves. There would be temporary disruption to water-related recreation and commercial fisheries in the immediate area of the project while the dredging is being done.

DETERMINATION OF CUMULATIVE EFFECTS ON THE AQUATIC ECOSYSTEM

The filling of 3 acres of open water within the Illinois River valley would have a minor cumulative negative impact on floodflows within the lower Illinois River. The lower Illinois River has been heavily cut off from its natural floodplain, and periodic flooding is often a threat, although the extensive system of levees and floodwalls along the river help to decrease damages due to flooding. There are no expected differences to flood heights due to this 3-acre placement area because it is located within the hydraulic shadow of existing conveyance conditions. The Illinois DNR has issued a floodplain permit to the City of Beardstown to place dredged material in the same location proposed to be used by the District for placement of dredged material, and the DNR floodplain permit states that there would be a negligible increase in flood heights. The excavation of the experimental sediment trap is not likely to involve any significant direct or indirect cumulative impacts since the sediment trap will be in place only temporarily and is expected to quickly revert to its previous contours. The excavation of the pilot channel will impact wetlands, but many wetlands are being created in that area through siltation of Muscooten Bay from Sangamon River sediment. In addition, approximately 1.7 acres of wetland enhancement or 0.8 acre of wetland creation will take place as compensatory wetland mitigation.

DETERMINATION OF SECONDARY EFFECTS ON THE AQUATIC ECOSYSTEM

One of the features of the preferred alternative is the excavation of a pilot channel through an existing island to allow for pipeline and workboat access from the experimental sediment trap to the Beardstown harbor placement site. The pilot channel may be maintained in the future as part of the marina development currently in the planning phase

by the City of Beardstown. The City of Beardstown is keenly interested in the opening of the pilot channel to begin their marina development. Once the pilot channel is excavated, the City is expected to put more effort into the development of the marina, potentially including an existing proposal to fill in a wetland island within the harbor to create additional marina facilities. Currently, many wading birds utilize the harbor and the wetland island. If the potential marina begins operations, the aquatic ecosystem of Muscooten Bay would be negatively impacted through increased motorized boating, with associated noise, pollution, and wetland fill impacts. These are secondary effects of the proposed project.

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**SECTION 3 - FINDINGS OF COMPLIANCE OR NONCOMPLIANCE
WITH THE RESTRICTIONS ON PLACEMENT**

1. This experimental sediment trap project has been evaluated in accordance with the 404(b)(1) Guidelines and is expected to comply with those guidelines with the inclusion of conditions imposed by the Illinois Environmental Protection Agency in the Section 401 Water Quality Certification. This one time experiment would involve the permanent filling of approximately 3 acres of open water within the Beardstown harbor area of Muscooten Bay and the excavation of approximately 0.4 acre of wetlands and mudflats to an open water channel.
2. Alternatives that were considered in addition to the preferred alternative were as follows:
 - No Project
 - Sediment trap, harbor placement site with overland pipe access
 - Sediment trap, DMMP Site 1 placement site
 - Sediment trap, DMMP Site 3 placement site
 - Sediment trap, harbor placement site, and pilot channel in low water conditions
 - Sediment trap in high water, harbor placement site
3. Certification under Section 401 of the Clean Water Act would be obtained from the State of Illinois prior to implementation.
4. The project would not introduce hazardous or toxic substances into the waters of the United States nor result in appreciable increases in existing levels of toxic materials.
5. No significant impact to state or federally listed threatened or endangered species is anticipated from this project.
6. No municipal or private water supplies would be affected. There would be no adverse impacts to recreational or commercial fishing.
7. No contamination of the river is anticipated. The permanent filling of approximately 3 acres of open water and the excavation of 0.4 acre of wetlands and mudflats is not considered to have significant impacts to the riverine environment although it will have adverse environmental effects, both separately and cumulatively.

8. The No Action alternative is the only practicable alternative that has been identified other than the preferred alternative.

9. Approximately 0.8 acre of wetlands will be created as Mitigation Site 3 to offset the loss of 0.4 acre of wetlands and mudflats to create the pilot channel. Mitigation Site 2 would be constructed if Site 3 becomes infeasible.

8 Apr 2004
Date


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