

**404(b)(1) EVALUATION**  
**St. Francis Basin Construction**  
**Below Kennett/Drainage District (DD) 48 Seepage Remediation**  
**Dunklin County, Missouri**

**I. Project Description**

a. Location

The proposed seepage control project is located in Dunklin County, Missouri, in the Missouri Bootheel. The proposed project is approximately 8 miles long, essentially from Missouri County Road 438 south along the existing East Bank St. Francis River Levee System to just south of Missouri County Road 513 (levee baseline stations 19/18+00 and 28/00+00). The study area is directly west of Kennett, Missouri and runs south towards the Varney River confluence with the St. Francis River. (Figure 1). The study area is directly west of Kennett, Missouri, and runs south towards the Varney River confluence with the St. Francis River. Borrow would be obtained from previously cleared agricultural fields within the project vicinity. Project features include the construction of landside berms and modification of existing ditches to accommodate drainage. Access to the project area would be from county roads or from roads on top of the levee. Heavy construction equipment would be used to modify and fill the existing ditches and construct berms. Post-construction hydrology would be similar to pre-existing conditions for both proposed projects.

b. General Description

- 1) The proposed project involves implementing seepage control measures along the St. Francis River Levee in Dunklin County, Missouri.

The proposed project involves implementing seepage control measures along the St. Francis River Levee in Dunklin County, Missouri, via a 150-foot wide continuous, semi-pervious landside berm to be constructed at the toe of the existing levee, except in several locations where wider berms (up to 300 feet wide) are required to reduce seepage issues. Other project features include modifying existing ditches and re-grading 254 acres of adjacent agricultural lands to re-route flow away from the levee toe. Access to the project areas would be State/County roads and levee roads. Approximately 1,200,000 cubic yards of material will be required to construct the landside berms. Approximately 3,000 tons of R-200 riprap and approximately 1,000 tons of bedding material would be needed for the estimated 22 culverts, weirs, and reinforced pipe locations in order to complete the project. Proposed berms would be between approximately 150 – 300 feet wide, depending on location. Throughout the 8 mile project reach, existing ditches would be filled and new ditches constructed approximately 150 feet from the existing levee toe (Figure 1).

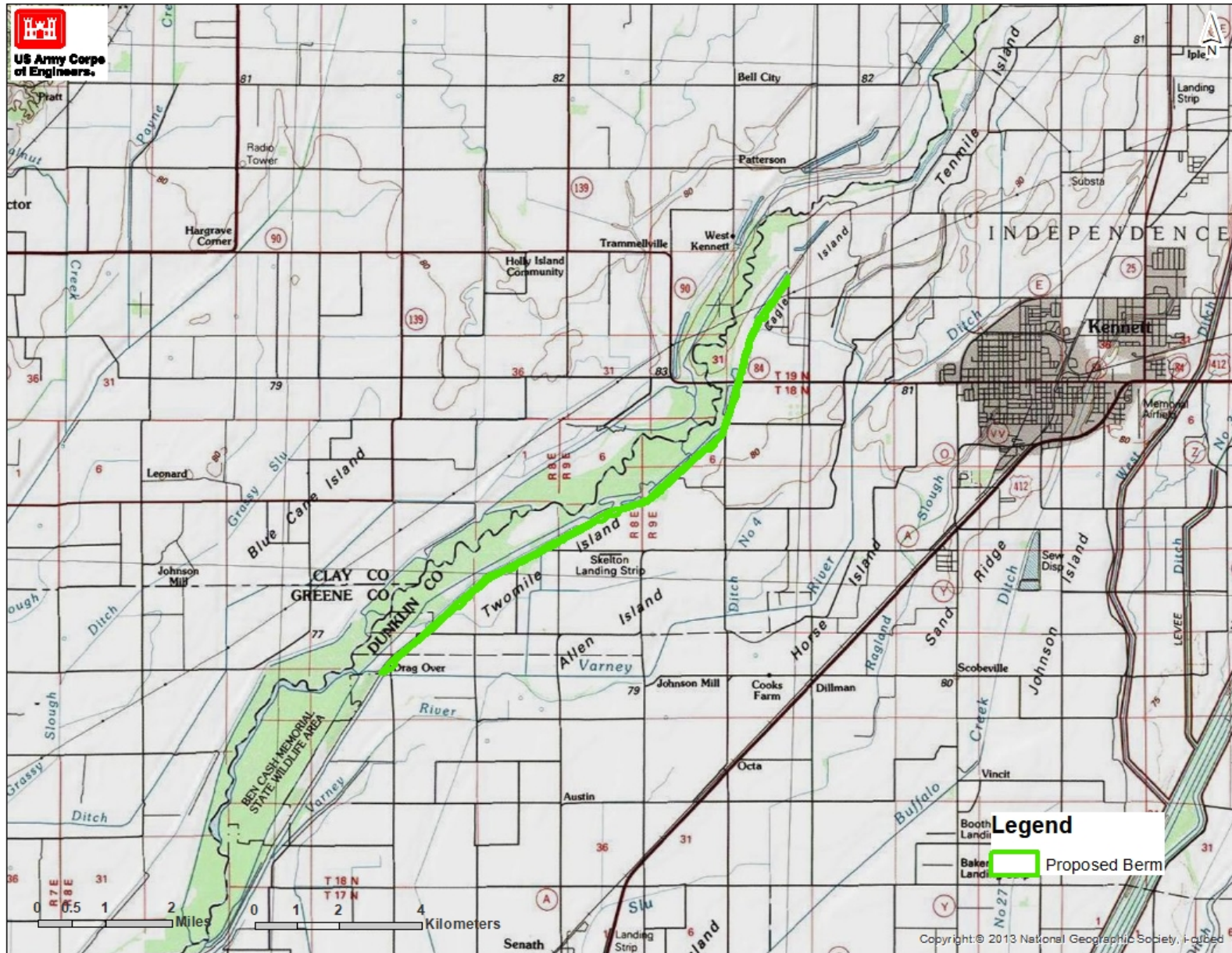
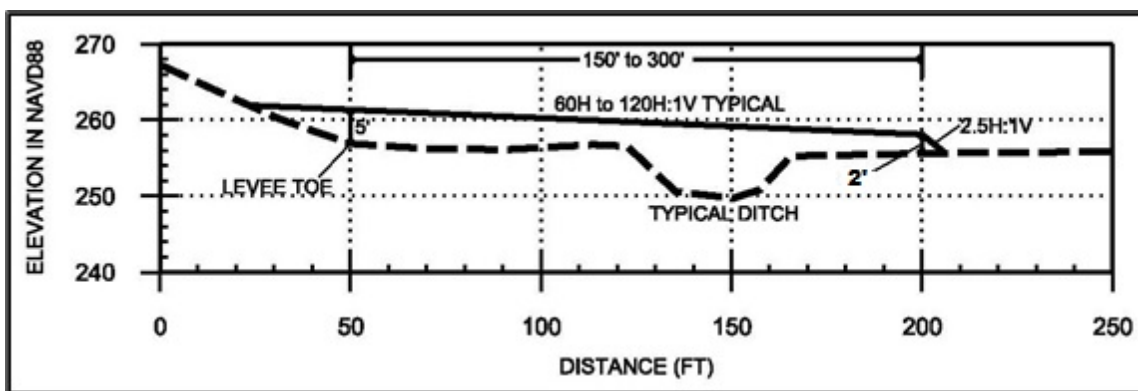


Figure 1. Location of Proposed Below Kennett/DD 48 Seepage Remediation Project, Dunklin County, Missouri.

Borrow is proposed to be obtained from an approximate 160-acre tract currently in agricultural production located in the approximate middle portion of the proposed project location. Proposed work would be split into two phases. Phase I would be constructed first and begin just south of State Highway 84, in the vicinity of Missouri County Road 500 and continue south approximately 5.5 miles. Phase I was also designed to receive runoff from north of Highway 84, in order to preserve current hydrology. Phase II covers the remaining approximately 2.5 miles and would be constructed at a later date. Design plans for Phase II are currently not as advanced as Phase I plans but are developed enough to forecast potential project impacts. For the purposes of this EA, anticipated impacts for both phases are calculated with both phases considered as one overall project.

All berms would be approximately 5 feet in thickness at the levee toe sloping to approximately 2.5 feet at the berm toe (Figure 2). A 150-foot wide continuous, semi-pervious landside berm is proposed, except in locations where wider berms (up to 300 feet wide) are required to reduce seepage issues. A toe ditch would be constructed approximately 150 feet from the berm toe. Interior drainage would be re-orientated away from the levee through a combination of existing/new ditch work and re-grading approximately 285 acres of fields adjacent to the levee. The proposed ditches would be maintained as shallow as possible and still provide adequate drainage as required.

Access to the project areas would be via State/County and levee roads.



**Figure 2. Typical Landside Berm from the St. Francis Basin Construction 48-Below Kennett Seepage Berm Design Documentation Report.**

c. Authority and Purpose

The proposed action is authorized as part of the Flood Control Act of 15 May 1928 as amended by the Acts of 15 June 1936, 18 August 1941, 24 July 1946, 27 October 1965, and 13 August 1968. These Acts provided for the construction, enlargement, and strengthening of the levees of the St. Francis Basin Project to safely pass the floodwaters of the St. Francis River and its tributaries. Local cooperation requirements for the Below Kennett/DD48 project were modified by the Flood Control Act of 24 July 1946, and limited local responsibility to ordinary maintenance as defined by Section 3 of the Flood Control Act of 1928. The Below Kennett/DD48 project site is covered by the 1964 USACE General Design Memorandum 104.

d. General Description of Dredged or Fill Material

1) General Characteristics of Material

Riprap – All ditches would have R-200 riprap placed 5 feet upstream and 10 feet downstream of any culverts. All riprap would be placed in 2-foot thickness and extend continuously from one side slope to the other side slope.

Backfill –Excavated material from borrow location(s) would be placed in a 150-foot wide continuous, semi-pervious landside berm, except in locations where wider berms (up to 300 feet wide) are required to reduce seepage issues. All berms would be approximately 5 feet in thickness at the levee toe, sloping to approximately 2.5 feet at the berm toe. Approximately 1,200,000 cubic yards of material would be required.

2) Quantity of Material

Riprap – Approximately 3,000 tons of R-200 riprap and approximately 1,000 tons of bedding material would be needed for the estimated 22 culverts draining associated fields, weirs, or reinforced pipe locations.

Backfill – Approximately 1,200,000 cubic yards would be required for project construction.

3) Source of Material – The riprap and associated silt fencing and other site protection measures would be provided from commercial sources. The backfill would be obtained from an approximate 160-acre cleared agricultural field landside of the existing levee within the project area.

e. Description of the Proposed Discharge Site(s)

1) Location – The project area is in Dunklin County, Missouri and would drain via re-created ditches eventually towards the St. Francis River via the Varney River; the same drainage layout would be kept with ditches at the toe of the constructed seepage berm. All construction would be conducted landside of the St. Francis River, a permanent waterbody.

- 2) Size – The St. Francis River levee provides flood protection from west of Kennett, Missouri to the Varney River sleeve levee confluence near the Cash Memorial Conservation Area, Missouri. Approximately 10,000 acres are drained by the proposed project with flow eventually returning to the St. Francis River.
- 3) Type(s) of Habitat – Available in-stream habitat is sparse throughout the project area as there are few trees along the existing ditches to provide any allochthonous input. The ditch sediment load consists of agricultural and rain run-off and very little stable habitat. The immediate riparian zone is dominated by grasses, weed species, and agricultural lands with no trees or shrubs. There are some woody vegetated areas along the existing levee toe that would be removed during berm construction. Outside the immediate vicinity of the ditches, the surrounding area is dominated by land in row crop production.
- 4) Timing and Duration of Discharge –Construction of Phase 1 would take place as soon as possible, but every effort would be made to construct during periods of low water and dry conditions. Phase 2 would be initiated as soon as plans are finalized. However, for purposes of water quality and environmental products, the project is considered as one complete project.

f. Description of Disposal Method

Approximately 6.75 acres of farmed wetlands and approximately 20.0 acres of bottomland hardwood (BLH) would be cleared along the levee toe to allow for berm construction and equipment access for all phases of construction. Minimal amounts of excavation of the ditch channel bottom would be necessary to create the suitable slope and drainage flows required during construction. Construction would take place during periods of low water.

## **II. Factual Determinations**

a. Physical Substrate Determinations

- 1) Substrate Elevation and Slope – Slopes not steeper than 3H:1V would be created to re-route drainage away from the levee toe. Average ditch widths are 6 feet with 2-8 feet in depth. R-200 riprap and bedding material would be utilized at culvert locations for erosion protection.
- 2) Sediment Type – The study area is located on braided relict alluvial fan deposits. The material within these types of deposits generally consist of approximately 5 to 15 feet of clay with occasional layers of fine sand and silt. The major soil association of the project area is of the Lilbourn fine sandy loam series with Sharkey silty clay. Lilbourn soils are somewhat poorly drained, nearly level soils on natural levees. The Sharkey series are deep, nearly level, poorly drained soils on slack-water flats. The soils in the vicinity of the borrow pit are Lilbourn fine sandy loam and Dubbs-Silverdale, rarely flooded. Dubbs-Silverdale soils are deep, well-drained, nearly level soils on natural levees.

- 3) Dredged/Fill Material Movement – Material would be excavated from the proposed borrow area and deposited adjacent to the levee to create the appropriate berm section along the levee toe.
- 4) Physical Effects on Benthos – Excavation of sediment to replace culverts would have a minimal impact on benthos. Benthic communities would return to pre-existing conditions shortly after project completion. Benthic communities in the existing toe ditches would be negatively impacted by the filling in of the toe ditches but would be expected to re-colonize the created drainage ditches.
- 5) Other Effects – not applicable.
- 6) Actions Taken to Minimize Impacts - The following actions would be implemented during construction to minimize impacts:
  - The recommended plan is the least environmentally damaging plan that is economically feasible.
  - Effective erosion control would be in place prior to construction and maintained throughout the construction period.
  - Construction would take place during periods of low rainfall and low water stages.
  - Discharge material would be clean and free of pollutants, contaminants, toxic materials, hazardous substances, waste metal, construction debris and trash, and other wastes.
  - Vegetation to be cleared would be the minimum necessary to allow for construction access.
  - All disturbed areas would be seeded within 30 days after construction is completed.
  - Heavy equipment shall be kept out of free flowing water.
  - Construction debris would be kept from entering the ditch channel and shall be disposed of properly.
  - Appropriate steps shall be taken to ensure that petroleum products or other chemical pollutants are prevented from entering the water.

b. Water Circulation, Fluctuation, and Salinity Determinations

- 1) Water. No change in water quality is expected due to this project.
  - a) Salinity – not applicable.



- b) Water Chemistry – There would be no significant effects on water chemistry. However, a slight increase in water quality may occur due to buffer strips that will be planted alongside ditch right-of-ways.
- c) Clarity – There would be limited disturbances to water clarity during construction due to minor increases in suspended particulates and turbidity levels. Water clarity is expected to return to pre-construction levels shortly after construction is completed.
- d) Color – Water color is not expected to change significantly.
- e) Odor – Odor of the water is not expected to change significantly.
- f) Taste – The taste of the water is not expected to change significantly.
- g) Dissolved Gas Levels – Dissolved gas levels are not expected to change significantly.
- h) Nutrients – Nutrients are not expected to change significantly.
- i) Eutrophication – No significant changes to eutrophication rates are expected from the discharge. There may be a slight decrease in eutrophication due to buffer strips that will be planted alongside ditch right-of-ways.
- j) Others - not applicable.

## 2) Current Patterns and Circulation

- a) Current Patterns and Flow – Current patterns and flows are not expected to be altered. Post-construction drainage will be similar to pre-existing conditions except for flow will be directed away from the levee instead of flowing along the levee toe before entering downstream drainage ditches.
- b) Velocity – Water velocity is not expected to be affected. Average and low-flow conditions would not be affected.
- c) Stratification – No significant changes to stratification are expected from project construction.
- d) Hydrologic Regime – No significant changes to the hydraulic regime are expected. Post-construction hydrology of the project area will be similar to pre-existing conditions.

## 3) Normal Water Level Fluctuations – The existing water levels in the ditches are determined by rainfall and channel capacity. Some enlargement of existing ditches and is mentioned previously in this document with the storage capacity

within the ditches to remain the same. Water level fluctuations would remain the same.

4) Salinity Gradients – not applicable.

Actions Taken to Minimize Impacts – Actions that would be implemented during construction to minimize impacts have been previously described in the Factual Determinations section above.

c. Suspended Particulate/Turbidity Determinations

1) Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Disposal Site – Minor increases in suspended particulates and turbidity levels are expected during construction. Best management practices would be used throughout the construction process to minimize the impact. Ambient conditions are expected to return shortly after completion of construction.

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

a) Light Penetration – Minor impacts are expected to light penetration due to an expected increase in turbidity levels during construction. Ambient conditions are expected to return shortly after completion of construction.

b) Dissolved Oxygen – No change is expected due to the shallow water depth and minimal currents.

c) Toxic Metals and Organics – No effect on toxic metals and organics are expected.

d) Pathogens – not applicable.

Aesthetics – Aesthetics would be temporarily impacted during construction due to the presence of construction equipment.

e) Others as Appropriate – None noted.

3) Effects on Biota

a) Primary Production – Aquatic vegetation is limited within the existing ditches. The proposed work should have little effect on primary production after the banks revegetate.

b) Suspension/Filter Feeders – Increased turbidity would be of short duration, and any organisms that are impacted should repopulate the area after project completion.

c) Sight Feeders – Most of the ditches are ephemeral in nature and do not sustain native populations of fishes. However, resident fish present are



adapted to turbidity increases that occur after every rainstorm. Project-related turbidity increases would be minor compared to these natural events. Since fish and other sight feeder are highly mobile, project impacts to sight-feeding organisms would be insignificant and short term.

- d) Actions taken to Minimize Impacts – Actions that would be implemented during construction to minimize impacts have been previously described in the Factual Determinations section above.
- d. Contaminant Determinations – It is not expected that any contaminants would be introduced or translocated due to construction. A hazardous, toxic, and radioactive waste survey has been conducted on the area. No potential sources of contamination were found. The discharge material would be clean and free of pollution. No testing of the discharge material is warranted.
- e. Aquatic Ecosystem and Organism Determinations
  - 1) Effects on Plankton – Effect, if any, on plankton communities are expected to be insignificant and of short duration.
  - 2) Effects on Benthos – There is an expected negative impact on benthic organisms from the filled in ditch, but these organisms are expected to re-populate the newly constructed stream with no overall impact expected to the benthic community.
  - 3) Effects on Nekton – Nekton would be temporarily displaced during construction, but would return shortly after project completion. These organisms would expect similar impacts as those indicated for the benthic organisms.
  - 4) Effects on Aquatic Food Web – Temporary reductions in benthic and suspension/filter communities should not significantly impact the aquatic food web during construction. These organisms would quickly recolonize the area after construction.
  - 5) Effects on Special Aquatic Sites
    - a) Sanctuaries and Refuges – not applicable.
    - b) Wetlands – With the implementation of the proposed project, approximately 20.0 acres of BLH and 6.75 acres of farmed wetlands are anticipated to be impacted. The farmed wetland impacts would be mitigated at a 1:1 ratio with the 20 acres of BLH impacts mitigated at a 3:1 ratio for a total of 66.75 acres of BLH restoration required. Several properties have been suggested for mitigation totaling approximately 180 acres (Figure 6). These properties are in the final stages of purchase with mitigation plans to be developed in the near future with input from an interagency team composed of members from MVM, U.S. Fish and Wildlife Service, U.S. Environmental Agency, U.S. Department of Agriculture Natural Resource Conservation Service, Missouri Department

of Natural Resources, Missouri Department of Conservation, and any other interested parties. Excess mitigation from properties identified for this project would be applied to the mitigation currently outstanding for the St. Francis River (MO) after project completion.

- c) Mud Flats – not applicable.
  - d) Vegetated Shallows – not applicable.
  - e) Coral Reefs – not applicable.
  - f) Riffle and Pool Complexes – not applicable.
- 6) Threatened and Endangered Species – In the summer of 2018, the proposed project area was surveyed using mist netting in accordance with the USFWS 2018 Range-Wide Indiana Bat Summer Survey Guidelines. No listed species were captured during the survey period. USACE has determined that project activities will not affect listed bat species due to the probable absence of listed bat species, with tree clearing proceeding with no restriction dates. The USFWS concurred with this determination 30 November 2018. Any potential roost trees would be avoided to the extent practicable, especially in areas where complete clearing is not necessary. Removal of vegetation outside peak breeding seasons to help protect bird species would also be enforced, to the extent practicable.
  - 7) Other Wildlife – Terrestrial wildlife would be minimally impacted during construction activities, but should return to pre-construction levels after construction is completed.
  - 8) Actions Taken to Minimize Impacts – Actions that would be implemented during construction to minimize impacts have been previously described in the Factual Determinations section above, chiefly construction would occur in low-flow periods and impact areas would be limited to the extent necessary for construction.
- f. Proposed Disposal Site Determinations
- 1) Mixing Zone Determinations – not applicable.
  - 2) Determination of Compliance with Applicable Water Quality Standards – A state water quality certification is being requested from the State of Missouri, Department of Natural Resources as part of this application process.
  - 3) Potential Effects on Human Use Characteristic
    - a) Municipal and Private Water Supply – not applicable.
    - b) Recreational and Commercial Fisheries – not applicable.

- c) Water Related Recreation – not applicable.
- d) Aesthetics – Any construction activities would have minimal impacts to the aesthetics of the area.
- e) Parks, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves – Ben Cash Memorial Conservation Area is located just to the south of the proposed project area. No work is proposed for this area and no project related impacts to this conservation area is expected.
- g. Determination of Cumulative Effects on the Aquatic Ecosystem – With the stabilization of the stream banks, construction of a landside berm, and re-routing of drainage seepage and piping would be reduced and could potentially reduce the amount of sediment entering the system. By creation of the landside berm, the integrity of the adjacent levee would be ensured.
- h. Determination of Secondary Effects on the Aquatic Ecosystem – not applicable.

### **III. Findings of Compliance for Seepage Control Measures**

#### **a. Evaluation of Availability of Practical Alternatives to the Proposed Discharge Site Which Would Have Less Adverse Impact on the Aquatic Ecosystem**

The original EIS and amendments direct that the completed projects are to be maintained to ensure the designed degree of protection. The recommended plan was determined to be the most cost effective and least environmentally damaging of the other alternatives studied in detail. The no action alternative was determined not to be practical. The proposed action would protect existing public infrastructure, and private homes and businesses. Without installation of seepage control measures, the integrity of the levee would be compromised. Seepage could undermine the levee and cause it to breach during a flood event.

#### **b. Compliance with Applicable State Water Quality Standards**

Application for State of Missouri water quality certification is being requested as part of the 404 analysis. A determination concerning water quality certification has not been made to date. Those making comments to this 404(b)(1) evaluation are asked to furnish a copy of their comments to the Missouri Department of Natural Resources.

#### **c. Compliance with Applicable Toxic Effluent Standard or Prohibition Under Section 307 Of the Clean Air Act**

Dunklin County is in attainment for all air quality standards. No significant impacts to air quality are expected. The equipment to be used is a mobile source. Therefore, the project is exempt from air quality permitting requirements.

- d. Compliance with Endangered Species Act of 1973

No impacts are expected to federally listed or proposed threatened or endangered species. This project has been coordinated with the Department of Interior, U.S. Fish and Wildlife Service.
- e. Compliance with Specified Protection Measures for Marine Sanctuaries Designated by the Marine Protection, Research, and Sanctuaries Act of 1972

Not applicable.
- f. Evaluation of Extent of Degradation of the Waters of the United States
  - 1) Significant Adverse Effects on Human Health and Welfare
    - a) Municipal and Private Water Supplies – not applicable.
    - b) Recreation and Commercial Fisheries – No significant impacts are expected.
    - c) Plankton – No significant impacts are expected.
    - d) Fish – No significant impacts are expected.
    - e) Shellfish – not applicable.
    - f) Wildlife – No significant impacts are expected.
    - g) Special Aquatic Sites – not applicable.
  - 2) Significant Adverse Effects on Life Stages of Aquatic Life and Other Wildlife Dependent on Aquatic Ecosystems

No significant impacts are expected.
  - 3) Significant Adverse Effects on Aquatic Ecosystem Diversity, Productivity, and Stability

No significant impacts are expected.
  - 4) Significant Adverse Effects on Recreational, Aesthetic, and Economic Values

No significant impacts are expected. Construction activities would have minimal impacts to the aesthetics of the area. Vegetation would regenerate following construction.
- g. Appropriate and Practical Steps Taken to Minimize Potential Adverse Impacts of the Discharge on the Aquatic Ecosystem

Actions that would be implemented during construction to minimize impacts have been previously described in the Factual Determinations section above, chiefly best management practices would be implemented, construction would occur during low-flow periods, and impact areas would be limited to the extent necessary for construction.

h. On the Basis of the Guidelines, the Proposed Disposal Site(s) for the Discharge of Dredged or Fill Material is:

- 1)  Specified as complying with the requirements of these guidelines; or,
- 2)  Specified as complying with the requirements of these guidelines, with the inclusion of appropriate and practical conditions to minimize pollution or adverse effects on the aquatic ecosystem; or,

**All conditions from the Missouri Department of Natural Resources would be adhered to.**

- 3)  Specified as failing to comply with the requirements of these guidelines.

25 November 2020  
Date

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