

FINAL TIERED ENVIRONMENTAL ASSESSMENT &

FINDING OF NO SIGNIFICANT IMPACT

(Tiered from the Programmatic Environmental Assessment signed May 2020)

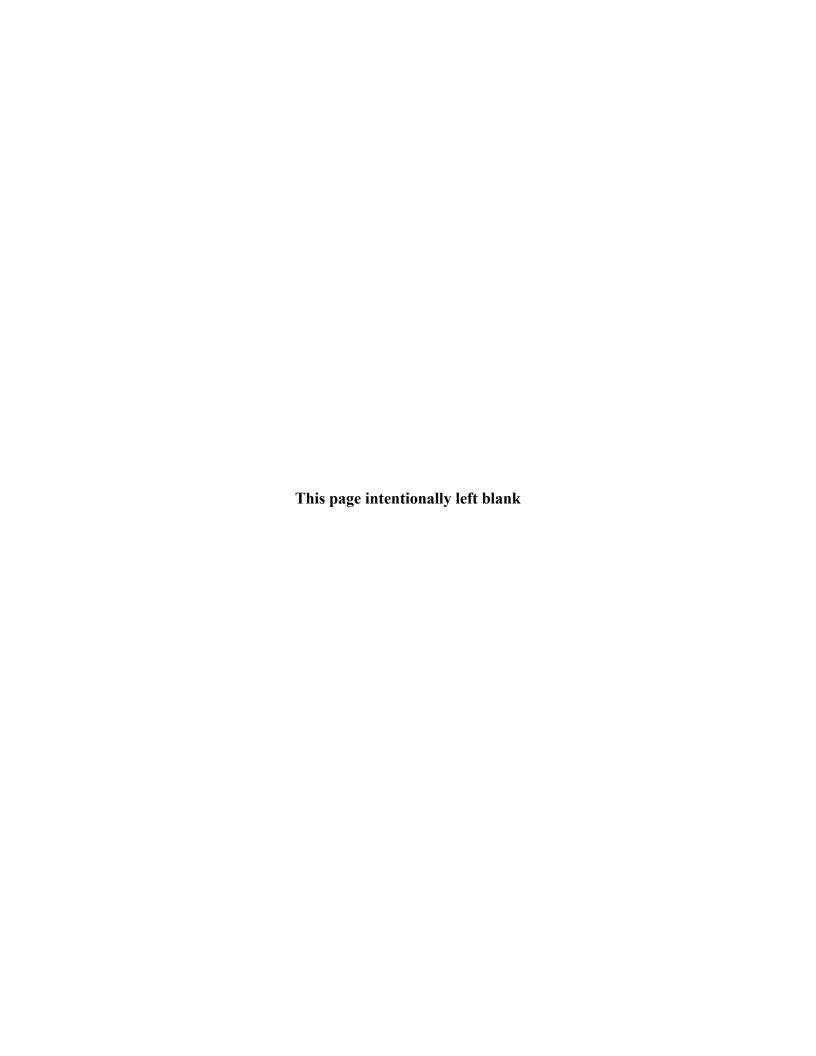
PUBLIC LAW 84-99 EMERGENCY LEVEE REHABILITATION PROGRAM & ADVANCED MEASURES CIVIL EMERGENCY MANAGEMENT PROGRAM FOR L-536 LEVEE REHABILITATION AND LARGE-SCALE LEVEE SETBACK February 2023



Setback construction on May 26, 2021, showing "borrow pit wetlands" on both sides of new levee alignment

Prepared by:

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FINAL

TIERED ENVIRONMENTAL ASSESSMENT & FINDING OF NO SIGNIFICANT IMPACT PUBLIC LAW 84-99

EMERGENCY LEVEE REHABILITATION PROGRAM

&

ADVANCED MEASURES CIVIL EMERGENCY MANAGEMENT PROGRAM FOR L-536 LEVEE REHABILITATION AND LARGE-SCALE LEVEE SETBACK February 2023

In accordance with the National Environmental Policy Act (NEPA) and implementing regulations, a Tiered Environmental Assessment (TEA) has been prepared for the PL 84-99 Emergency Levee Rehabilitation Program & Advanced Measures Civil Emergency Management Program (PL 84-99) levee repair activities for the Missouri River Levee System L-536 (L-536) in Atchison and Holt Counties, Missouri. The purpose of PL 84-99 is to provide emergency assistance to levee districts and communities in the form of levee repair and/or flood damage reduction as directed by Congress (33 U.S.C. 701n).

Five alternatives were considered: 1) in-line repairs with sheet pile, 2) in-line repairs with sand berms, 3) whole Missouri River segment setback, 4) partial Missouri River segment setback (preferred alternative), and 5) no action alternative. Alternatives 1 and 2 would result in fully inline repairs, with alternative 1 using sheet piling to repairs levee breaches, while alternative 2 would use large sand berms to repair levee breaches. Alternatives 3 and 4 would result in in-line repairs on the L-536 tie-back levees, but under alternative 3 the entire levee segment along the Missouri River would be realigned landward, while under alternative 4 only a portion of the levee segment that runs along the Missouri River would be realigned landward. The no action alternative would result in no levee repair assistance from NWO's PL 84-99 levee rehabilitation program. Selection of the no action alternative is expected to result in a "predictable action by others" as discussed in the Council on Environmental Quality Regulations (1981). This "predicable action" would consist of the public sponsor repairing the levee without assistance through the PL 84-99 program. Alternative 4 was the least cost, most technically feasibly structural repair alternative developed and satisfies the project purpose and need. Alternative 4 also incidentally results in the creation of approximately 420 acres of new depressional wetland habitat and the reconnection of over 1,000 acres of floodplain on the riverward side of the L-536 levee.

The TEA and comments received from the resource agencies, Tribes, and the public were used to determine whether the proposed action would require the preparation of an Environmental Impact Statement (EIS). All environmental, social, and economic factors relevant to the levee repair actions are evaluated in the TEA. No significant adverse impacts to these resources were expected to occur. As per ER 200-2-2, this TEA was prepared concurrently with L-536 levee rehabilitation planning, design, and construction. The L-536 levee rehabilitation actions are expected to result in the repair of the flood-damaged L-536 and

It is my finding, based on the TEA that the L-536 levee rehabilitation project would not have any significant adverse impacts on the environment and would not constitute a major federal action significantly affecting the quality of the human environment. Therefore, an EIS will not be prepared.

Date: 27FEB 2023

Mark Himes, P.E./

Colonel, Corps of Engineers

District Commander

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List of Acronyms

BiOp Biological Opinion

BSNP Bank Stabilization and Navigation Project

CA Conservation Area

CERCLA Comprehensive Environmental Response Compensation and Liability Act

CEQ Council on Environmental Quality

CFR Code of Federal Regulations

CWA Clean Water Act

EA Environmental Assessment
EIS Environmental Impact Statement

EO Executive Order

EPA Environmental Protection Agency

ER Engineer Regulation
ESA Endangered Species Act

EWPP-FPE Emergency Watershed Protection Program – Floodplain Easement

FONSI Finding of No Significant Impact

GP General Permit

IDNR Iowa Department of Natural Resources
 IPAC Information for Planning and Consultation
 MDC Missouri Department of Conservation
 MDNR Missouri Department of Natural Resources

MRRP Missouri River Recovery Program
NAAQS National Ambient Air Quality Standards

NDEQ Nebraska Department of Environmental Quality

NEPA National Environmental Policy Act NGO Non-governmental Organization

NGPC Nebraska Game and Parks Commission NHPA National Historic Preservation Act

NPDES National Pollutant Discharge Elimination System

NRCS Natural Resources Conservation Service NWK Kansas City District, Corps of Engineers NWO Omaha District, Corps of Engineers

NWP Nationwide Permit

O&M Operation and Maintenance

PEA Programmatic Environmental Assessment

PIR Project Information Report

REC Record of Environmental Consideration

RGP Regional General Permit

SHPO State Historic Preservation Office SOP Standard Operating Procedure

SWE Soil Water Equivalent

SWPPP Soil and Water Pollution Prevention Plan

TNC The Nature Conservancy
USACE U.S. Army Corps of Engineers

USC United States Code

USFWS U.S. Fish and Wildlife Service WMA Wildlife Management Area Water quality certification Water Resources Development Act WQC

WRDA

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LARGE-SCALE LEVEE SETBACK
February 2023

1 INTRODUCTION

1.1 Background

During the fall months of 2018, the lower Missouri River Basin experienced a very active weather pattern and above average rainfall resulting in wet soil conditions heading into the winter season. Extreme winter temperatures, particularly in February and early March 2019, resulted in a deep frost within the nearly saturated soils. An active storm pattern across the plains developed resulting in record snowfall in parts of the lower basin with 1 - 4 inches of snow water equivalent (SWE) persisting as late as March 12, 2019. The extreme cold temperatures also resulted in the development of thick ice on streams and rivers within the region.

Temperatures over the lower Missouri River Basin quickly warmed in conjunction with a heavy rain event from March 12 to March 14, 2019. Widespread rainfall totals of 1 - 3 inches were observed across the region with pockets receiving up to 4 inches in eastern Nebraska and southeastern South Dakota. The warmer temperatures resulted in significant snowmelt, generally 1 - 3 inches of SWE, which combined with the heavy rainfall on top of frozen saturated soil to produce high runoff. Unregulated streams in eastern Nebraska, southeastern South Dakota and western Iowa experienced extremely high flow rates with many setting new records including tributaries of the Missouri River upstream and downstream of Gavins Point Dam. Several ice jams were reported during this event and contributed to record stages in some locations. Most of the precipitation that fell upstream of Fort Randall Dam on the mainstem Missouri River fell as snow and did not produce significant short-term runoff. As a result of this event, the mainstem Missouri River experienced high flows, picking up large inflows from unregulated tributaries in southern South Dakota, western Iowa and eastern Nebraska. Record flows and stages were observed on the Missouri River south of Omaha in the proximity of and downstream of the confluence of the Platte River.

The river flows overtopped the L-536 levee, initiating erosion of the levee crest, ramps, landward side slope, and the levee/berm toe. Flood damages caused five breaches (four inlet, one outlet) and additional reaches of critical section loss (i.e., "partial breaches"). The levee sponsor, Atchison County Levee District No. 1 (ACLD) provided a letter to the U.S. Army Corps of

Engineers Omaha District (NWO) dated March 28, 2019 requesting rehabilitation assistance on the Missouri River Levee Unit L-536. The NWO completed a Project Information Report (PIR) dated May 28, 2019 requesting funds to conduct detailed engineering and design to prepare for levee repair. Due to the severity of damages and the lack of access, levee damages could not be fully assessed until early 2020.

The Rock Creek tieback levee on the upstream end of the L-536 levee system was minimally damaged compared to the Missouri River reach and downstream Mill Creek tieback. Figure 1 and Figure 2 present 2019 aerial imagery of the damaged levee with breach locations identified. Through 2019 and periodically in 2020, the system continued to be partially inundated with the majority of inflow through Breach F. The majority of the outflow exited through a breach in the Mill Creek Right Bank levee to the north of the L-536 levee Mill Creek tie-back.

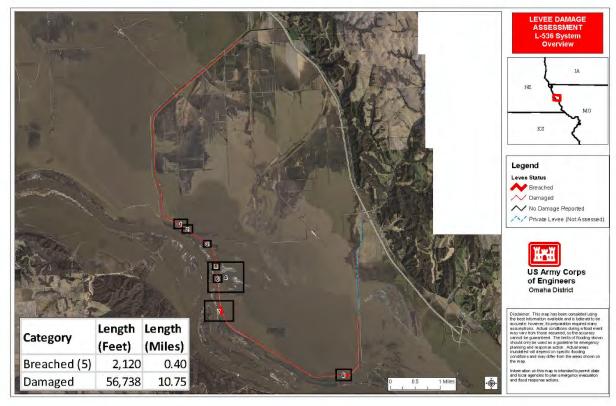


Figure 1. Full L-536 levee system damage map

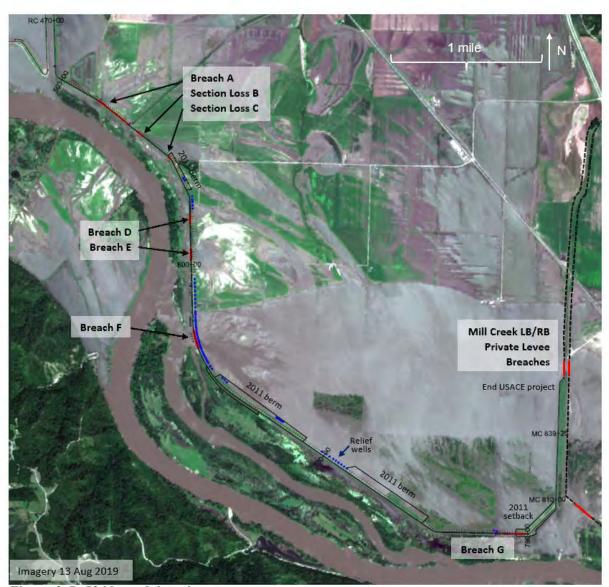


Figure 2. L-536 breach location map

1.2 Project Authority and PL 84-99 Eligibility

One of the missions of the U.S. Army Corps of Engineers (USACE) is the Emergency Levee Rehabilitation Program and the Advanced Measures Civil Emergency Management Program under the authorities/ guidance of 33 U.S.C. 701n (commonly referred to as Public Law 84-99 or PL 84-99); Army Regulation 500-60, Disaster Relief; and Engineer Regulation 1130-2-530, Flood Control Operations and Maintenance Policies. These statutes and regulations allow the USACE to provide a levee rehabilitation program for repairing levees after flood events and perform Advanced Measures prior to flooding or flood fighting to protect against loss of life and significant damages to urban and/or public facilities.

To be included in the PL 84-99 program, levees must be routinely inspected and meet construction, operation, and maintenance standards set by the USACE. There are two main

categories of levees included in the program; non-Federal and Federal levees, based on the entity that originally constructed them. Both of these categories of levees can include agricultural and urban levees. Levee rehabilitation under PL 84-99 is generally intended to restore the same level of flood risk protection to a damaged area that existed prior to any flood damage. The Engineer Regulation 500-1-1 (Civil Emergency Management Program) describes the conditions that must be met in order to be eligible for rehabilitation assistance under the PL 84-99 program (USACE, 2001.

Provided that the least cost, most technically feasible structural repair alternative (the most commonly selected repair option) is selected for rehabilitation of a damaged Federal Levee, construction is performed at 100% Federal cost.

This tiered EA provides the necessary information to fully address the potential environmental impacts of NWO's PL 84-99 levee rehabilitation efforts to the 2019 flooding along L-536 as required under the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S. Code [USC] 4321 et seq.); the President's Council of Environmental Quality (CEQ) Regulations (40 Code of Federal Regulations [CFR] 1500 – 1508) (CEQ, 1992); the US Army Corps of Engineers (USACE) Procedures for Implementing NEPA Engineer Regulation (ER) 200-2-2 (33 CFR 230); the Army Regulation 500-60, Disaster Relief; and Engineer Regulation 1130-2-530, Flood Control Operations and Maintenance Policies.

1.3 Project Location

As depicted in Figure 3 below, the L-536 levee rehabilitation project is located in Atchison and Holt Counties, Missouri on the left descending bank of the Missouri River between approximate river miles 516 and 522 with tieback levees along Rock Creek (upstream) and Mill Creek (downstream).



Figure 3. L-536 Project Location

1.4 PL 84-99 Project Planning Process

Under PL 84-99, the project planning process typically occurs prior to or concurrently with completion of the NEPA process. ER 200-2-2, paragraph 8 allows for the NWO to proceed without the specific documentation and procedural requirements of NEPA in responding to emergency situations to prevent or reduce imminent risk of life, health, and property, or severe economic losses. This emergency provision was implemented for the NEPA evaluation of the L-536 levee rehabilitation, as well as rehabilitation of other levee systems through the Omaha District.

The PL 84-99 planning process begins with development of a PIR wherein engineering, economic, and if possible, environmental evaluations typically are rapidly conducted in order to determine that damages meet the requirements for repair under PL 84-99 and that rehabilitation is economically justified. Due to the severity of damages and the lack of site access, parametric

cost estimates were completed for the levee systems along the left bank of the Missouri River during the PIR phase, which included L-536. However, a full alternative analysis to determine the least-cost, most technically feasible alternative was not completed for the L-536 project until the Engineering and Design (E&D) phase. Following approval of the PIR, a more detailed damage assessment was conducted during the E&D phase when river levels had dropped enough to access the site. Environmental and cultural resource reviews have been conducted for L-536 throughout the planning, design, and construction phases. This tiered EA provides the NEPA evaluation for the L-536 levee rehabilitation project following the 2019 flooding. Levee repair construction had been initiated at the time this document was being developed.

1.5 NEPA Approach for L-536

The purpose of this tiered EA is to comply with the procedural requirements of NEPA and to describe the environmental impacts of the L-536 levee rehabilitation project, which includes construction of a large-scale levee setback (sometimes referred to as a levee realignment). Development of this tiered EA was used to determine whether to prepare a Finding of No Significant Impact (FONSI) or prepare an EIS. The Programmatic EA (PEA) completed in 2020 for NWO's PL 84-99 levee rehabilitation efforts following the 2019 flooding concluded that the levee repair projects do not have a significant impact on the human environment, and so it was expected that a FONSI would be prepared following public comment on the draft L-536 tiered EA. This tiered EA was developed pursuant to ER 200-2-2, paragraph 8, which allows for NWO to proceed without the specific documentation and procedural requirements of NEPA in responding to emergency situations to prevent or reduce imminent risk of life, health, and property, or severe economic losses. A memo dated March 20, 2019 signed by the Omaha District Commander invoked this emergency NEPA provision (see Appendix C). Therefore, this tiered EA was developed concurrently with the planning, design, engineering evaluation, and construction of the levee rehabilitation effort. Agency coordination required in order to satisfy other environmental laws (e.g., Clean Water Act, Endangered Species Act, National Historic Preservation Act, etc.) was also conducted concurrently with design and construction, especially as new, unforeseen construction activities were determined necessary.

Some sections of the 2020 PEA are incorporated by reference in this tiered EA. Where substantive content from the 2020 PEA is referenced, it is marked with the following: (*This section of the 2020 PEA is incorporated by reference*)" and a brief summary of the content being referenced is provided. The 2020 PEA is also included in this tiered EA as Appendix A for ease of cross referencing.

1.6 NRCS as a Cooperating Agency

Early in the planning phase of this project, the NWO invited the Natural Resource Conservation Service (NRCS) Missouri office to participate as a cooperating agency, in accordance with the CEQ final implementing regulations for NEPA 40 CFR § 1501.6. As defined in 40 CFR 1508 et.seq., the NRCS possesses jurisdictional authority and special expertise in the area of various conservation easement programs associated with the levee rehabilitation construction, habitat restoration, and surrounding agricultural lands. This partnership greatly streamlined coordination with NRCS, who served as a critical partner during construction. See Appendix D for correspondence documenting cooperating agency status.

1.7 Other Relevant Documents

1.7.1 May 2020 NWO Programmatic Environmental Assessment

This EA tiers from the 2020 PEA developed by the NWO in order to provide a more detailed evaluation of the environmental impacts of the large-scale levee setback and other levee rehab actions specific to L-536. Some sections of the 2020 PEA are incorporated by reference in this tiered EA. See Appendix A for the 2020 PEA.

1.7.2 Final Missouri River Recovery Management Plan and Environmental Impact Statement

In 2018, the NWO and USACE Kansas City District completed an EIS to establish implementation priorities for the Missouri River Recovery Program (MRRP). This effort also resulted in an updated Biological Opinion (BiOp) for the MRRP's habitat restoration efforts along the Missouri River. Much of this BiOp contains relevant Endangered Species Act (ESA) compliance direction and recommendations that are applicable to the PL 84-99 actions at L-536. These documents were referenced during coordination with the U.S. Fish and Wildlife Service (USFWS) following the 2019 flooding.

1.7.3 The Nature Conservancy's Levee Setback Playbook (to be published in late 2022) TNC, in collaboration with the L-536 multi-agency partnership team, developed a playbook that will help communicate guidance and L-536 lessons learned to other levee sponsors or communities across the country interested in pursuing a levee setback. Details on the playbook can be found at the TNC's L-536 website: https://www.nature.org/en-us/about-us/where-wework/united-states/missouri/stories-in-missouri/missouri-river-levees/.

2 PURPOSE AND NEED

2.1 Purpose Statement

The purpose of this project is to provide emergency assistance to ACLD, per their written request in the form of levee repair and flood damage reduction as directed by Congress (33 U.S.C. 701n). This program is described in detail in Engineering Regulation 500-1-1. The specific purpose of the Federal action documented in this tiered EA is to rehabilitate the L-536 levee system that was damaged in the 2019 flooding. While significant habitat benefits can result from a large-scale levee setback, habitat restoration is not considered a project purpose when structural repair measures are taken as part of a PL 84-99 levee rehab action. Habitat benefits can more explicitly be part of a project purpose under PL 84-99 if a non-structural alternative plan is selected for implementation, but that was not the case with L-536. All habitat benefits that result from the L-536 project are considered incidental, but were pursed where they aligned with the least cost, most technically feasible structural repair alternative. The pursuit of such "natural and nature-based features" (NNBF) are consistent with statutes governing PL 84-99, including 33 U.S.C Sections 2289a and 2282.

2.2 Need Statement

Record flooding occurred throughout the lower Missouri River Basin including northern Missouri during the 2019 flood event. The L-536 breached in five areas with two critical loss sections (partial breaches), resulting in a levee system providing no flood risk management. This left surrounding communities, agricultural land, and critical transportation infrastructure vulnerable to future flood events. There is substantial risk of continued degradation of the levee system and additional flooding damages in previously protected areas without the implementation of levee repairs.

3 DESCRIPTION OF ALTERNATIVES

A total of four action alternatives and a no action alternative were developed for L-536 rehabilitation. During project E&D, they were evaluated in terms of technical feasibility and economic cost. A non-structural repair approach was not supported by the levee sponsor so a non-structural alternative plan was not evaluated during E&D. As a project completed under PL 84-99 taking a structural repair approach, the least cost, most technically feasible alternative was to be selected for implementation. Under alternative 1, the levee damage would have been repaired within the original levee footprint (i.e., "in-line") with sheet pile to be installed to repair the breaches. Alternative 2 would have also repaired the levee in-line, but would have constructed expanded levee sections with widened berms to repair the breaches. Under alternative 3, the levee segment along Rock Creek and Mill Creek would have been repaired inline, but the entirety of the levee segment along the Missouri River would have been reconstructed landward, avoiding any in-line breach repairs. Alternative 4 would involve completing in-line repairs along Rock Creek and through the upstream-most breaches, but most of the Missouri River levee segment would be reconstructed landward, avoiding in-line repairs to most of the breaches. Under alternative 5, the no action alternative, no levee repairs would have been completed by the NWO through the PL 84-99 program.

3.1 Alternative 1: In-Line Repairs with Sheet Pile Cutoff for Permanent Breach Repair
Alternative 1 consists of repairing the levee in its current alignment, using sheet pile cutoff
installation to repair levee breaches. See Figure 4 below for map depicting the location of
Alternative 1 repairs. Construction would involve repairing levee erosion along the Rock Creek
and Mill Creek tiebacks. The breach repairs would involve filling scour holes with sand to meet
a 2-year flood stage at approximately pre-existing ground surface and construction of a 275 ft
wide sand "pad" along with placing riverward riprap to provide erosion protection. New levee
segments across the breaches would tie into the surrounding levee segments and would consist of
a 50 ft wide cohesive blanket riverward of the levee toe with launchable riprap for under-seepage
control and future scour protection. Sheet piles would be driven down approximately 80 ft on
the riverside levee crest into the sand foundation, cutting off flow through the sand pad and
underlying sand foundation to reduce seepage quantity and pressure at the levee toe. Regionally,
bedrock depth is 75-80 ft below ground, therefore this sheet pile depth would be expected to cut
off approximately 90% of the pervious aquifer and constructing a 150 ft seepage berm on the
landside of the levee would further control uplift seepage.

Alternative 1 would result in the construction of 2,300 ft of in-line breach repairs, 26,000 ft of erosion repair, 6,100 ft of critical section loss repair, 7,700 ft of berm extensions, and 5,300 ft of rock revetments.

While Alternative 1 was being formulated, flooding was still occurring along the Missouri River and within the project area. Overall, L-536 damages that may have been exacerbating underseepage conditions were not fully known as waters had not fully receded beyond the levee toe. It is possible that river scouring continued to occur during preliminary alternative development which would have created a need for more sheet piling and fill that had not been quantified. Further design and analysis to confirm the effectiveness of the sheet pile may have allowed for

reduction in the seepage berm width. See Table 1 below for quantity estimates developed during the E&D phase.

Table 1. Alternative 1 material quantities preliminary estimates during E&D

Tubic 1. Thice much c 1 min	4	premimary est.
Description	Quantity	Unit of Measure
Detail - L536 Alt 1		
Sand (Random) Fill	1,200,00	CY
Cohesive Fill	320,000	CY
Topsoil	206,000	TON
Erosion Control Blanket	133,000	SY
Seeding	79	ACR
Surfacing	13,000	TON
Surveys	275	ACR
Relief Well Abandonments	68	EA
Drainage Structure	3	EA
Repair/Placement		
Ramp Replacements	18	EA
Access Roads	15,000	LF
Riprap	58,000	TON
Sheet Pile	184,000	SF

3.2 Alternative 2: In-Line Repairs with Wide Berm Construction for Permanent Breach Repair

Alternative 2 consists of rebuilding the levee in its current alignment, working around breach scour holes with wider (compared to Alternative 1) landward seepage berms. See Figure 4 below for map depicting the location of Alternative 2 repairs. Construction would involve repairing levee erosion along the Rock Creek and Mill Creek tiebacks. The breach repairs include filling scour holes with sand to the 2-year flood stage at approximate pre-existing ground surface, constructing a 475 ft width sand "pad," along with placing a gravel and rock erosion protection for permanent filtering of seepage along the riverward side of the sand pad. A cohesive levee would be constructed through the breaches and tie into surrounding levee segments, A 200 ft wide cohesive blanket riverward of the levee berm toe would be constructed for under-seepage control and scour protection. Additionally, a 200 ft seepage berm on the landside of the levee would be constructed to control uplift.

Alternative 2 would result in the construction of 2,300 ft of in-line breach repairs, 26,000 ft of erosion repair, 6,100 ft of critical section loss repair, 7,700 ft of berm extensions, and 5,300 ft of rock revetments. See Table 2 below for quantity estimates developed during the E&D phase.

Table 2. Alternative 2 material quantities preliminary estimates during E&D

Description	Quantities	Unit of Measure
Detail – L-536 Alt 2		Treasure
Sand (Random) Fill	1,430,000	CY
Cohesive Fill	360,000	CY
Topsoil	225,000	TON
Erosion Control Blanket	133,000	SY
Seeding	90	ACR
Surfacing	13,000	TON
Surveys	275	ACR
Relief Well Abandonments	68	EA
Drainage Structure	3	EA
Repair/Placement		
Ramp Replacements	18	EA
Access Roads	15,000	LF
Riprap	51,000	TON

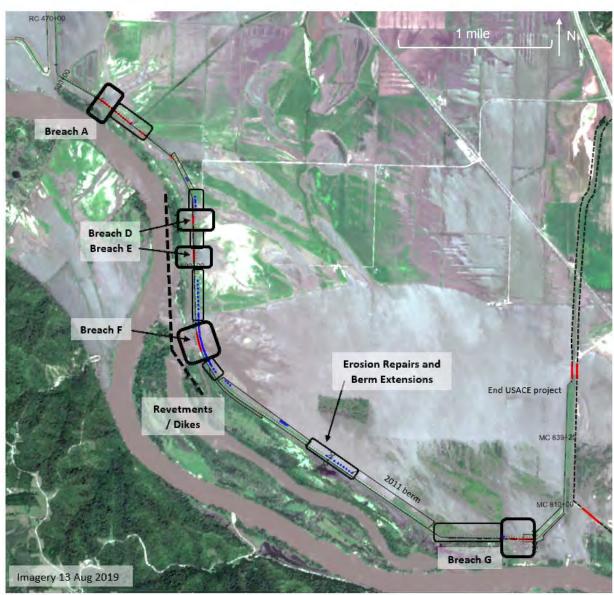


Figure 4. In-line Repairs (Alternatives 1 and 2) E&D map

3.3 Alternative 3: Whole Missouri River Segment Levee Setback

Alternative 3 would involve repairing levee erosion along the Rock Creek and Mill Creek tiebacks and constructing a new levee alignment some distance landside of the existing levee along the entire Missouri River segment of the levee, approximately 7 miles long. The realigned levee section consists of excavating an inspection trench along the entire alignment that is backfilled with cohesive material, a 5ft thick cohesive riverward face, a 15ft wide crest, 5H:1V landside slopes and a 150ft long seepage berm on the landward side. The upstream tie-in design of the setback would consider the final alignment of the L-550 levee system which is located immediately upstream of L-536 and coordination would be required during repair of the two levee systems. This setback would maintain a sufficient distance from the scour at breaches A

through F, then would follow the inland extent of government-owned habitat conservation lands to minimize the levee length and use of materials.

The downstream-most 4,000 feet of the old levee alignment would be left in place to form a trailing levee to prevent negative hydraulic impacts (e.g., direction of adverse flows, erosion, increased velocity) on the downstream left bank Mill Creek Levee and Corning Levee. This trailing levee is labeled as "Mill Creek Protection" in Figure 5 below. In addition, to prevent erosion of the trailing levee, riprap would line 500 ft on the downstream side and 300 ft of the upstream side of the tip of the trailing levee. Breach F would inundate the work site at the lowest stage compared to other breaches and would need to be at least temporarily closed (e.g., with a sand ring levee) to protect any potential borrow material stockpiles. Coordination with the Mill Creek drainage district and other local stakeholders would be required. If the left bank Mill Creek and Corning Levee are realigned/ setback (to match the east-west segment of L-536 setback that ties directly into the Mill Creek tie-back), the Mill Creek protection trailing levee may not be necessary and the right bank Mill Creek levee can be excavated and disposed of or used for borrow material. See Table 3 below for quantity estimates developed during the E&D phase.

Table 3. Alternative 3 material quantities preliminary estimates during E&D

Description	Quantities	Unit of Measure
Detail L536 Alt 3		
Sand (Random) Fill	1,340,000	CY
Cohesive Fill	830,000	CY
Topsoil	345,000	TON
Erosion Control Blanket	186,000	SY
Seeding	125	ACR
Surfacing	11,000	TON
Surveys	275	ACR
Relief Well Abandonments	68	EA
Drainage Structure Repair/Placement	3	EA
Ramp Replacements	18	EA
Access Roads	15,000	LF

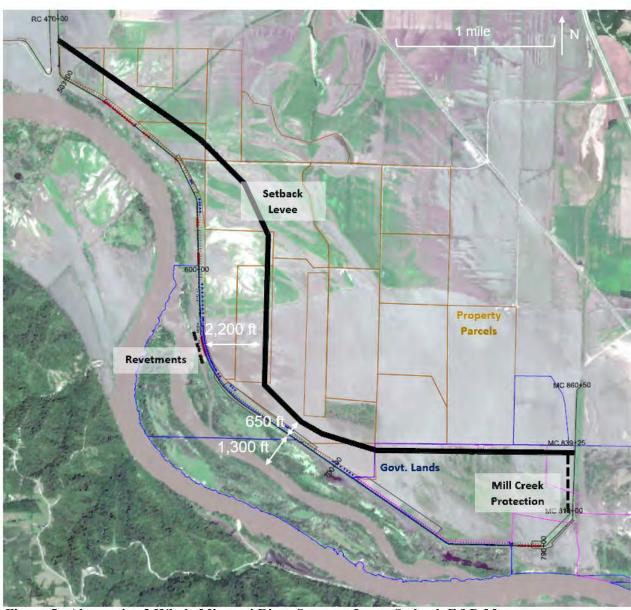


Figure 5. Alternative 3 Whole Missouri River Segment Levee Setback E&D Map

3.4 Alternative 4: Partial Missouri River Segment Levee Setback (Preferred Alternative) Alternative 4 would involve repairing levee erosion along the Rock Creek and Mill Creek tiebacks, repairing breaches A through C in-line, and constructing a new levee alignment some

distance landside of the existing levee along the majority of the Missouri River segment of the levee, approximately 5 miles long. See Figure 6 below for map depicting the location of Alternative 2 repairs. The partial levee setback will start near Section Loss C and would realign some distance landside from the pre-flood levee alignment. The setback would have the same cross-sectional dimensions as described in Alternative 3. The same level of geotechnical investigation would be conducted along the alignment as described in Alternative 3. The same trailing levee described under Alternative 3 would be implemented in Alternative 4. Breach F would require the same ring-levee to be constructed as described above for Alternative 3.

Near the end of actual construction of this alternative, 400 linear feet (LF) of sheet pile was also driven at Ditch 5 and 400 LF at Ditch 7 to help control seepage around the new gate wells installed where the ditches are culverted through the levee. See Table 4Table 3 below for quantity estimates developed during the E&D phase.

Table 4. Alternative 4 material quantities preliminary estimates during E&D

Table 4. Alternative 4 ma	premimary esti	
Description	Quantity	<u>UOM</u>
Detail - L536 Alt 4		
Sand (Random) Fill	1,370,00	CY
Cohesive Fill	770,000	CY
Topsoil	328,000	TON
Erosion Control Blanket	183,000	SY
Seeding	121	ACR
Surfacing	10,000	TON
Surveys	275	ACR
Relief Well Abandonments	68	EA
Drainage Structure Repair/Placement	3	EA
Ramp Replacements	18	EA
Access Roads	15,000	LF
Riprap	22,000	TON

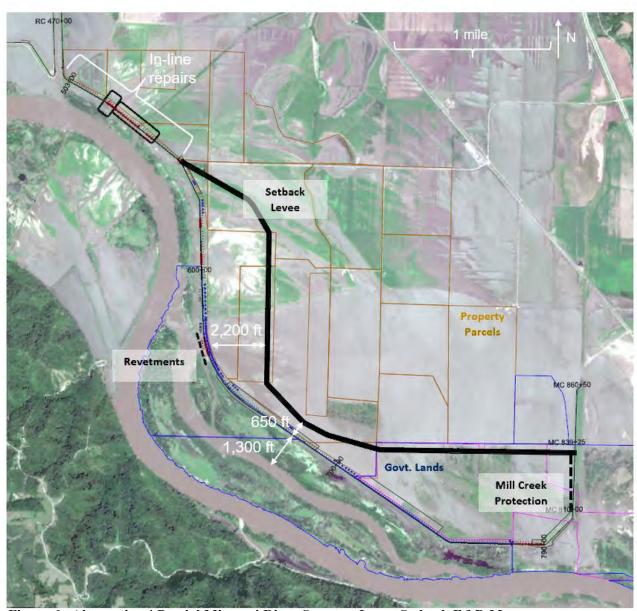


Figure 6. Alternative 4 Partial Missouri River Segment Levee Setback E&D Map

3.5 Alternative 5: No Action Alternative

The "no action" alternative would result in no levee repair assistance project from NWO's PL 84-99 program. Scenarios under the "no action" alternative are expected to include the "predictable actions by others" as discussed in CEQ (1981). Such "predicable actions" would most likely consist of the levee sponsor repairing the levee without assistance through the PL 84-99 program. It is almost always in the sponsor's and protected community's best economic interest to repair levees, with or without assistance through the PL 84-99 program because of the value of the farmland and infrastructure that the levee protects. Therefore, it is reasonable to assume that the ACLD would find ways to close the L-536 breaches and repair the other

damaged levee segment as soon as possible, understanding that it could take several years to raise funds and complete the levee repairs.

3.1.1 Reasonably Foreseeable Actions under No Action Alternative:

- Financial liabilities: The levee sponsor would be responsible for seeking funding for the repairs of the levee. It could take years before the levee rehab project to be fully-funded. In turn, repairs could be delayed, resulting in sustained flood risk. It is assumed that a levee setback would not be implemented due to the lack of partnerships. It is assumed that the in-line repairs may not be as robust as the PL-84-99 standards, potentially resulting in reduced flood risk protection during future flood events. County and State departments of road and transportation may have an increased financial burden to repair and reconstruct roadways impacted by continual floodwaters while funding continued to be sought for final levee breach closures and repairs. The no action alternative would likely still see the NRCS completing small breach repairs on the Mill Creek levee, upstream of the L-536 levee, through their Emergency Watershed Protection Program Recovery Assistance Program.
- Infrastructures at risk: In the 2019 flood event, Route 111 and bridges along it within Atchison County, Missouri were completely destroyed in certain locations (see Figure 7 below). Infrastructure would continue to be at risk without proper levee protection resulting in the constant cycle of road closures, construction of repairs, and detours necessary for traffic to work around.
- Farmland management: Farming land along the Missouri River inundated with water is impossible. Water would need to be pumped out of agricultural lands and mechanisms would need to be in place to keep water off the fields before farming could take place. Time and money are huge contributors to these problems. 18% of Atchison County cropland was unable to be planted in 2019. The remaining sand and debris left behind from the flood makes the possibility of farming in 2020 and into the future a challenge (Geist, MU Extension 2020), and the private landowners or levee sponsors may struggle to remove it all.
- Environmental consequences: Sand and debris deposits may also have environmental consequences on terrestrial and aquatic habitat, specifically at Corning and Deroin Bend Conservation Areas, both being managed for wildlife habitat and public recreation. Multiple agencies are involved with the management of these lands, with some management plans being altered or halted due to impacts from multiple past flood events. Without the removal of the sand deposited from the 2019 flooding and use as borrow material, these terrestrial sites would likely be overtaken by non-native or other aggressive native annual and/or woody vegetation, similar to what occurred at portions of Corning CA to the east of Mill Creek after the 2011 flood.



Figure 7. Photo from MDOT (2020) of Route 111 damage from 2019 flooding, east of the L-536 project area

3.6 Alternative Comparison

Potential risks:

Alternative 1 poses some risk as sand platforms associated with breach closures are susceptible to continued erosion by the river during construction and would require additional riprap protection. Borrow in this alternative was assumed to be restricted to obtaining cohesive material from surrounding private lands and possibly what was left of the washed out levee segments, which experienced significant water inundation well into December 2019 and would cause the borrow to be saturated up until the breaches were closed.

Alternative 2 poses some of the same risks as Alternative 1, with an additional concern for borrow material as sand and cohesive fill needed for repairs increased with this plan. The lack of available borrow adjacent to L-536 made this a riskier alternative when compared to Alternative 1.

There were some risks with Alternative 3 and they included the need for a timely real estate acquisition for property under the new levee setback and property that would become riverside of the new levee alignment, the financial responsibility of which falls onto the levee sponsor. In addition, a portion of the levee footprint falls on USACE owned land that has an NRCS easement. The Sponsor needed to secure replacement land to compensate the NRCS for the portion of the easement impacted by the new levee alignment. To obtain funds for real estate, multiple concurrent methods were being sought out, including NRCS easements, grants from the U.S. Economic Development Administration (EDA), assistance through Northwest Missouri Regional Council of Governments (NWMORCOG), grants from the State of Missouri, and

temporary land acquisition by The Nature Conservancy. Some of this real estate had to be obtained before construction of the setback could be started. Level of protection remained reduced in the floodplain during the construction of the levee setback by foregoing interim breach closures. If high flows occurred during construction and stage levels exceed the riverbanks, the work area would have been inundated with water resulting in construction delays. Open breaches were a concern under Alternatives 1 and 2, however Alternative 3 potentially left the breaches open for a longer time period as the realigned levee was being constructed. Breach F would have inundated the work site at the lowest stage (compared to any other full breaches) and would have needed to be temporarily closed to protect the construction site and stockpiles of borrow material.

Alternative 4 risks are similar to Alternative 3, timely real estate acquisition posed a schedule risk to the project. This alternative reduced the risk associated with needed real estate acquisition compared to Alternative 3 by repairing the upstream-most breaches in-line. The contracting approach taken under Alternative 4 also provided a flexible path to completion. If the levee sponsor was unable to acquire land for the levee setback, then in-line repairs would have begun, per Alternative 1 or 2. Similar to Alternative 3, sustained flood risk was expected due to the breaches not being filled immediately prior to setback construction. Breach F would have inundated the work site at the lowest stage (compared to any other full breaches) and needed to be temporarily closed to protect the construction site and stockpiles of borrow material.

The breached Mill Creek levee presented a risk for the project area regardless of alternative selected. Most of the flow into the breached L-536 levee system exited through the breach in the Mill Creek right bank levee, just upstream of the L-536 terminus. The levee in this location is privately owned by the Mill Creek Drainage District and is not enrolled in the PL84-99 program. USACE has no authority to repair any breaches within this system and it was unclear when the repairs would be made. While the Mill Creek breach was open, the interior of the L-536 system remained at risk of flooding even following completion of the levee rehab project. The PL 84-99 levee rehab was initiated, and this risk was communicated to all necessary stakeholders. Missouri NRCS did eventually begin repairs of this breach on the Mill Creek levee through their Emergency Watershed Protection Program – Recovery Assistance Program, which is similar to the USACE's PL 84-99 program, but on a smaller scale with different eligibility requirements.

A driving risk for both Alternative 1 and 2 was the long-term scour and under-seepage concerns related to the damaged foundation. Despite repairs, permanent damage to the cohesive blanket would be expected to remain. This was a significant concern at Breach F where the primary Missouri River channel is in close proximity. In comparison, levee setback under Alternative 3 or 4 was anticipated to be result in a more competent levee foundation (as confirmed by geotechnical investigations), the avoidance of levee breach scour holes, and the rebuilding of large levee segments with up-to-date levee design standards.

Alternative feature comparison:

All alternatives would satisfy the project's purpose and need except for the No Action Alternative. Under PL 84-99, the alternatives are compared on a technical and economic cost

basis. Additionally, consideration is made to the constructability of the alternatives and the risk to schedule and cost escalation. See Table 5 below for a summary comparison of the action alternatives. A driving risk for both alternative 1 and 2 was the long-term scour and underseepage concerns related to the damaged foundation caused by the flood and levee breaches. Despite repairs, there would still be permanent damage to the cohesive blanket relied upon for seepage control. This is a particular concern at Breach F where the primary Missouri River channel is in close proximity. In comparison, the levee setbacks under Alternatives 3 and 4 are more likely to result in a more resilient levee on more competent foundation, built with current design standards.

Table 5. Action alternative quantity, cost, and risk comparison, estimates developed during E&D

Alternative	1	2	3	4
Method	In-Line, Sheet Pile at Breaches	In-Line, Berms at Breaches	MR Segment Setback	Partial Setback
Relative cost	Highest	Medium	Medium	Lowest
Sand (Random) Fill (CY)	1,200,000	1,430,000	1,340,000	1,370,000
Cohesive Fill (CY)	320,000	360,000	830,000	770,000
Riprap (Ton)	58,000	51,000	22,000	22,000
pile (ft^2)	180,000*	0	0	0**
Cost & Schedule Risks	Placement in flow, long-term erosion, borrow availability	Placement in flow, long-term erosion, borrow availability	Real estate, interim protection	Real estate, interim protection

^{*}When considering how other Missouri River levee systems were repaired following the 2019 flooding that utilized sheet pile in in-line repairs, the actual sheet pile driven at L-536 (had this alternative been selected) may have been more than originally estimated.

Alternative 4, partial levee setback, was recommended due to being the leasttechnically feasible cost. most alternative, which also resulted in the construction risk from engineering perspective. This required acquisition and coordination of property to continue at an accelerated schedule. Alternatives 1 and 2 continued to be developed as secondary options in case property acquisition could not take place. Alternative 4 begins with in-line repair of breach A, critical section losses B and C, and a temporary ring levee around Breach F (to help minimize



Figure 8. Sheet pile installation around Ditch 5 culvert structure, taken 2022-11-17

^{**}A total of 16,000 ft² of sheet pile ended up being driven near the end of construction around Ditches 5 and 7 (see Figure 8 below)

construction site flooding during construction) prior to all the real estate being acquired for the realigned levee. This provided a more flexible path to completed repairs depending on real estate acquisition. This was preferred over Alternative 3, which required acquisition of more real estate than Alterative 4, which in turn was expected to lead to schedule delays.

3.7 Preferred Alternative

3.7.1 Preferred Alternative considerations prior to setback construction

Alternative 4 Partial Missouri River Segment Levee Setback was recommended due to having the least cost analysis and offering the lowest risk from an engineering perspective. Factors influencing hydraulic conditions were considered when determining the levee setback footprint, which included but were not limited to, the topography of the land, any upstream and downstream influences from the setback, condition of the existing levee, and downstream influence on the upstream end of the Corning Levee on the eastern side of Mill Creek. Real estate acquisition and coordination occurred throughout design and construction. Alternatives 1 and 2 continued to be developed as a secondary option in case real estate was not acquired. Alternative 4 began with in-line repairs upstream of partial breach C prior to all the real estate associated with the setback being acquired. This provided a more flexible path to complete repairs depending on real estate acquisition.

3.7.2 Preferred Alternative construction timeline details during construction

At the time of completing this tiered EA, construction of the L-536 levee repairs, including the setback, are still ongoing. This section provides details on the planning, design, and construction process of the L-536 levee repairs.

Flooding began and continued for months (March 2019 – December 2019)

- "Bomb cyclone" departs Colorado on March 13
- Historic crests observed on Missouri River, including at Brownville, NE on March 16
- USACE deploys flood fighting assistance along Missouri River
- Flood waters persist along river for several months

Damage assessment and USACE/ACLD coordination (March 2019 – September 2019)

Project Management

- ACLD submits formal application for PL 84-99 levee rehabilitation assistance
- L-536 breaches were not contributing to Interstate 29 flooding, deemed not high priority to close
- USACE conducted site visits with ACLD to discuss repair alternatives and assess damage
- ACLD discussed options with landowners
- Due to continued high water, damage assumptions documented in a PIR prepared in May 2019. In June 2019, USACE received funding from HQ to begin design and environmental compliance activities.
- USACE finished DRAFT alternatives assessment, including levee setback alternatives

Multi-agency meeting Saint Joseph, MO (August 2019)

- TNC convened meeting with prospective partners to discuss setback opportunities at L-550, but focus shifted to L-536 setback because it was not the least cost alternative at L-550
- Attendees included TNC, USACE, ACLD, NRCS (MO and NE), MDC, and MDNR

<u>Pursuing L-536 setback, multi-agency coordination begins (September 2019 – May 2020)</u> Project Management

- ACLD meets with County Commissioners in November 2019 to discuss levee setback option
- Weekly coordination calls initiated by TNC included USACE, ACLD, NRCS, MDC, MDNR, Missouri State Emergency Management Agency, NWMORCOG, EDA, and others as needed

Funding

• TNC pursues \$1M EDA grant to fund acquisition of riverward EWPP-FPE lands, MDC pledges 20% match funds for grant

Real Estate

- TNC began partnering with ACLD on real estate acquisition responsibilities
- Landowners begin submitting applications for NRCS EWPP-FPE easements in fall 2019
- MO NRCS developed EWPP-FPE application ranking metrics to include criteria that supported flood resilience. There was not enough initial EWPP-FPE funding for all MO applications, including some L-536 applications, MO NRCS requested additional funding from NRCS HQ, which was granted.
- New levee alignment design impacted existing NRCS WRP easement
- Compensation for impact results in an additional real estate acquisition item and triggered NRCS's easement administrative action (EAA) process

Design

- USACE draft alternatives assessment concluded levee setback as least cost alternative
- Iterative levee alignment refinement between USACE, ACLD, and landowners
- New levee alignment largely finalized by USACE, ACLD, and landowners in April 2020

Permitting

• NEPA documentation begins, NRCS signs on as a Cooperating Agency

Construction

- USACE begins developing construction contracts for in-line repairs with setback as a contract option in case the necessary real estate could not be secured
- ACLD obtained real estate for in-line repairs in April 2020, allowing for award of the overall construction contract in May 2020

<u>In-line repairs begin, final steps to start setback construction (May 2020 – July 2020)</u> Project Management

• July 2020 established as a due date for setback decision to begin in order to beat March 2021 flood season

Funding

• MDNR provides grant to partner with TNC in paying for real estate appraisals

Real Estate

- TNC established purchase agreement contracts with landowners to acquire the residual fee title after NRCS EWPP-FPE enrollment process is completed
- Team begins NRCS EAA process to compensate for expected WRP impacts
- EWPP-FPE applications reach NRCS "intent to purchase" milestone, in July 2020 all L-536 landowners agree to accept NRCS easement offer meeting construction deadline
- ACLD secures permanent construction easement for the levee setback footprint, NRCS compensation acres, and all other needed temporary construction easements by July 2020

Permitting

- Setback construction methods begin to be developed, triggering detailed environmental law coordination for wetland impacts, tree clearing, borrow locations, etc.
- Permitting coordination remains ongoing through construction

Construction

- Construction contract awarded in May 2020
- Upstream in-line repairs began in June 2020
- To prevent construction site from flooding, a temporary sand ring levee constructed around Breach F in June 2020
- With real estate secured for new levee footprint, setback contract option is exercised at the end of July 2020

Setback construction, significant coordination continues (August 2020 – December 2020) Project Management

 USACE, MRRP, ACLD, NRCS, TNC, MDC, and County Roads coordinate to ensure public access to state and federal lands riverward of setback, largely finalized in November 2020, refined November 2021

Funding

- Due to changes in levee design, team is unable to meet the EDA grant deadline for disaster recovery funding. Pursued a much smaller, more competitive pool of EDA grants, denied in December 2020
- MDNR coordinated SEMA funding for ACLD to remove old utility lines impacted by the setback construction and replace with new lines adjacent to the levee setback

Real Estate

- USACE's MRRP provides permission to construct on Corning Conservation Area in August 2020
- Team shifts borrow excavation focus to MRRP and NRCS conservation land due to close proximity to the project and ability to produce over 420 acres of habitat

- features from borrow pits. USACE, MRRP, NE NRCS, MO NRCS, MDC, and many others begin ongoing borrow collaboration.
- Novel 3-party (USACE, NRCS and private landowners) policy waiver from NRCS HQ is sought to allow material excavation on EWPP-FPE land prior to easement enrollment process finalization. Waiver was agreed to and signed in November 2020

Permitting

• MDNR expedited dredge permit approval in October 2020

Construction

- Levee setback construction begins August 2020
- All in-line breaches closed by August 2020, work continues throughout the year
- Team learns previous assumptions about location of borrow material were largely incorrect, begin to prioritize conservation land in close coordination with USACE and NRCS
- USACE executes novel sand berm construction method by direct discharging sand dredged from the Missouri River into cells located on the landward side of the setback levee toe
- Eight heated winter enclosure structures (i.e., climate-controlled tents) are erected during very cold winter to dry and process clay borrow material

Continued project coordination (June-December 2021)

Project Management

• Project partners reflect on lessons learned to date (late 2022), documented in TNC's "Large-scale Levee Setback Playbook"

Real Estate

- Surveys conducted for NRCS EWPP-FPE lands
- Surveys conducted for mitigation acres required for NRCS EAA
- Appraisals and title work completed for TNC land purchases, some ongoing
- Closings for NRCS EWPP-FPE lands is ongoing

Permitting

• Permitting finalized

<u>Construction and coordination continue towards project completion (December 2020 – 2023)</u>

Funding

 MDNR and SEMA coordinated funding to replace the failed EDA grant application, MDC grant provided matching funds, finalized March 2021

Real Estate

- Efforts to process the EWPP-FPE applications and NRCS EAA remain ongoing, targeting early 2023 for closure on all pending easement
- Closing for parcel of land purchased by TNC in fee title occurred in September 2022

Construction

• Levee was "full height" in March, 2021. Levee setback fully closed and providing level of protection for 2021 spring flood season

- 24 hour construction operations began March 2021 to finish clay placement. Clay placement on levee face and crest 100% complete March 2021, on riverward seepage berm April 2021
- Borrow pit wetlands grading and seeding began May 2021, expected to be finished in Winter of 2022/ 2023
- Continued construction of drainage structures at Ditch 5 and 7 levee crossings
- Levee feature seeding
- Final construction contract anticipated to be closed out in late 2023

4 AFFECTED ENVIRONMENT

This chapter describes the existing conditions within the project area. In some cases, it was relevant to describe the natural resources in a "pre-2019 flood" conditions vs a "post-2019 flood" condition.

4.1 Terrestrial/ Wetland Habitat and Species

(*The 2020 PEA contains much useful, general information regarding species and habitat types that applies to this project area, that information should be considered incorporated by reference*) In summary, the 2020 PEA provides a list of common plant and animal species likely to be present along the Missouri River floodplain within the project area. This tiered EA provides a more specific list of species of observed on site.

For the purpose of describing habitat/ landcover, the project area can roughly be broken up into four vegetation "areas:" the Rock Creek area, the NRCS EWPP-FPE area, the Deroin Bend Conservation Area, and the Corning Conservation Area (see Figure 9 below).

4.1.1 Pre-flood condition

Rock Creek: The Rock Creek area is made up of the Rock Creek itself and the two L-550 and L-536 boarding tie-back levees that extend from the Missouri River northwest to I-29. The tie-back levees also contain berms which essentially form the banks of the Rock Creek and are made up of sediment that accreted between the levees over the past decades since levee construction. According to NWI data, the area between these levees contains approximately 37 acres of forested wetlands, 8 acres of scrub/shrub wetlands, and 4.4 acres of emergent wetlands.

NRCS EWPP-FPE area: The NRCS EWPP-FPE area was used for agricultural purposes prior to the 2019 flooding. NWI mapping does not indicate presence of wetlands within this area. Detailed areal imagery depicting how these areas were affected (i.e., scoured, filled with sand, etc.) by the 2019 flooding and levee breaches are indicate that the potential wetland conditions within this

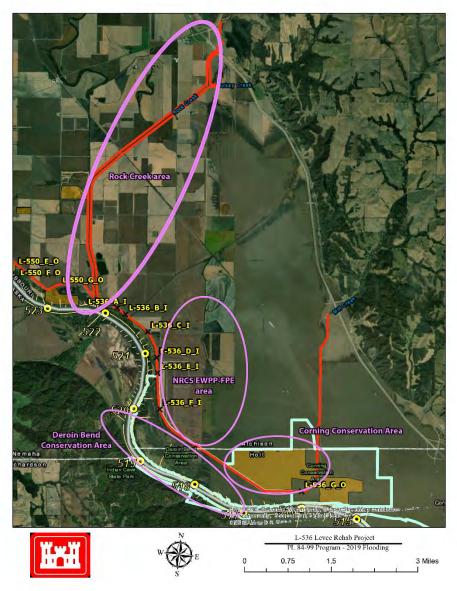


Figure 9. Project Area vegetation "areas"

farmland was directly impacted by the flood and resultant scouring/ sand deposition.

<u>Deroin Bend Conservation Area:</u> The Deron Bend CA is owned by the state of Missouri and managed by the MDC and USACE. The Deroin Bend chute was jointly planned and constructed at this site by the MDC and USACE. The Deroin Bend CA contains 183 acres of forested wetlands, 25 acres of scrub/shrub wetlands, and 910 acres of emergent wetlands. The Deroin Bend chute is approximately 3.3 miles long and 171 acres in size.

Corning Conservation Area (west of Mill Creek):

The Corning CA is owned in fee title by the USACE under the MRRP. Prior to USACE acquisition, the property had been enrolled by previous landowners in the NRCS' WRP

conservation easement program. The site contains a mosaic of upland forest (largely killed in the 2019 flood), scrub/shrub, and grassland habitat. Approximately 33 acres of borrow pits were converted into emergent wetlands by the USACE on the Corning CA in 2012 as part of the 2011 flood PL 84-99 levee rehab efforts. Additionally, small drainage ditches (Ditch 5 and Ditch 7) flow through the site, making up approximately 10.5 acres of open water habitat. See Table 6 below for a summary of the wetland types present on site prior to the 2019 flood.

Table 6. L-536 Project Area Wetland Inventory

Ducing Auga	Wetland Type (Acres)					
<u>Project Area</u>	Forested	Scrub/Shrub	Emergent	Open Water		
Rock Creek	37	8	4.4	0*		
NRCS EWPP-FPE	0	0	0	0		
Deroin Bend CA	183	25	910	171**		
Corning CA (west of Mill						
Creek)	0	0	33***	10.5 ‡		

^{*} not including the creek itself

Overall, the L-536 project area contains a diversity of vegetation and habitat types. During a site visit to the Corning Conservation Area (CA) on August 26, 2020, terrestrial habitat included timber that was dominated by dead woody vegetation such as willows (Salix spp.), green ash (Fraxinous americana), and cottonwoods (Populus deltoides) all affected by the 2019 flood. Herbaceous vegetation included annual sunflowers (Helianthus annuus), snow on the mountain (Euphorbia marginata), pigweed (Amaranthus sp.), velvet leaf (Abutilon theophrasti), witchgrass (Panicum capillare), green and yellow foxtail (Setaria viridis and Setaria pumila), late boneset (Eupatorium perfoliatum), giant ragweed (Ambrosia trifida), hedge bindweed (Calystegia sepium), cocklebur (Xanthium strumarium), barnyard grass (Echinochloa crus-galli), horse nettle (Solanum carolinense), dogbane (Apocynum cannabinum), little bluestem (Schizachyrium scoparium), common milkweed (Asclepias syriaca), side oats grama (Bouteloua curtipendula), prairie cordgrass (Spartina pectinate), partridge pea (Chamaecrista fasciculate), Indian grass (Sorghastrum nutans), and Illinois bundleflower (Desmanthus illinoensis).

Wetland vegetation species observed along the ditch in Corning CA included sedges, rushes (*Eleocharis* spp. and *Scheonoplectus* sp., *Scirpus* sp.), cat tails (*Typha* sp.), yellow nutsedge (*Cyperus rotundus*), valley redstem (*Ammannia coccinea*), pale smartweed (*Persicaria lapathifolia*) swamp milkweed (*Asclepias incarnata*), water plantain (*Alisma subcordatum*), false daisy (*Eclipta prostrata*), tapertip flat sedge (*Cyperus acuminatus*) and arrowhead (*Sagittaria latifolia*).

In 2016, the USACE conducted coarse-level land cover surveys on the sites associated with the MRRP. Table 7 summarizes land cover at Corning based on those 2016 surveys, which is also depicted in Figure 10 below. It should be noted that these were not exhaustive surveys and they

^{**} Deroin Bend chute

^{***}created in 2011 from borrow pits

[‡] consists of Ditches 5 and 7 only

make some assumptions that may not necessarily reflect detailed site conditions as of post-flood 2019. Considering how drastically the 2019 flood reworked much of the floodplain in this area, information from this 2016 land cover survey should be viewed as providing insight into high-level land characteristics, not necessarily exact locations of habitat types.

Table 7. 2016 Corning Conservation Area Land Cover Category

Land Cover Category	Acres	Percentage of Site
Missouri River	0.14	0.01%
Tributary Rivers and Streams	11.32	0.56%
Lakes, Ponds, & Scour Holes	36.08	1.79%
Developed	12.52	0.62%
Levee	19.12	0.95%
Barren	149.44	7.43%
Deciduous Trees	113.22	5.63%
Shrubland	203.16	10.11%
Grassland	177.50	8.83%
Cultivated	414.03	20.59%
Forested Wetlands	3.73	0.19%
Emergent Wetlands	828.35	41.20%
Scrub Shrub Wetlands	41.79	2.08%
Totals	2010.40	100.00%

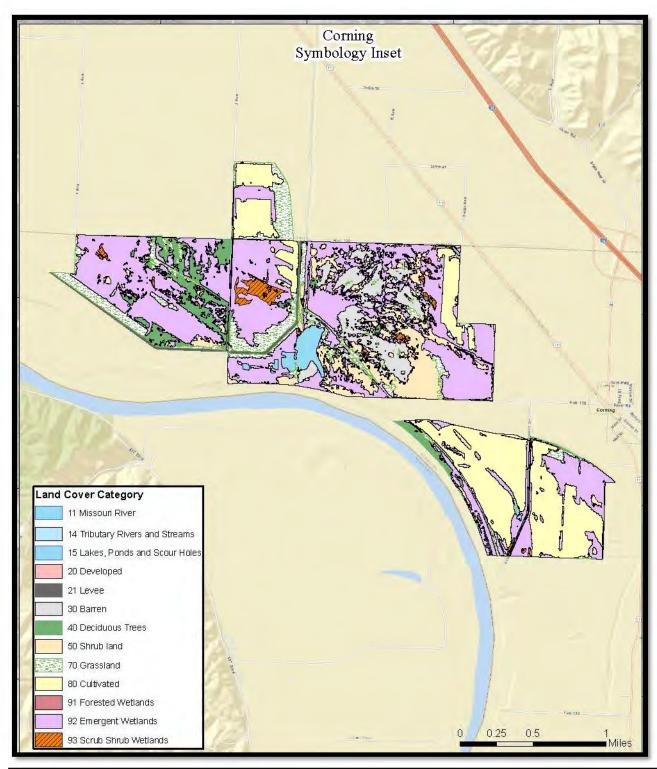


Figure 10. 2016 Corning Conservation Area Land Cover produced by Missouri River Recovery Project

4.1.2 Post-flood condition

As a result of the flooding and levee breaches, large scour holes have been created on the floodplain along the old levee alignment. Figure 11 and Figure 12 below depict the location of the breaches, their scour holes, and give a general idea of the magnitude of site disturbance caused by the 2019 flooding. The flooding killed essentially all of the young willow and cottonwood trees within the Corning CA. The live, mature trees within Derion Bend CA survived. The breaches resulted in massive sand deposits on the private agricultural land to the north of Corning CA (depicted as white areas on Figure 12). Breach E and F resulted in the most substantial open water scour areas, with Breach E measuring approximately 7.3 acres in size and Breach F measuring approximately 7.4 acres in size. Both of these open water areas were half on MDC land (Deroin Bend CA) and half on private agricultural land, with Breach F essentially connecting Deroin Bend chute to the floodplain landward of the original levee alignment.



Figure 11. Post-flood existing site conditions, October 2019

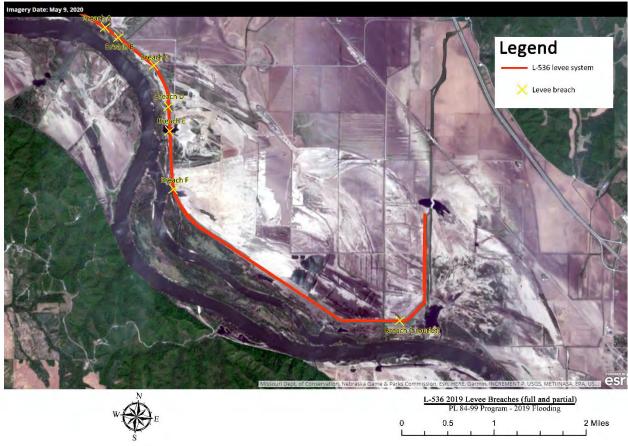


Figure 12. Post-flood existing site conditions, May 2020

4.2 Aquatic Habitat and Species

(*The 2020 PEA contains much useful, general information regarding species and habitat types that applies to this project area, that information should be considered incorporated by reference*) In summary, the 2020 PEA provides a list of common species likely to be present within the Missouri River in the project area.

Notable open water habitats throughout the project area include the Missouri River, Rock Creek, Mill Creek, Deroin Bend chute, and the Indian Cave backwater on the Nebraska side of the Missouri River. Ditches 5 and 7 also flow through the Corning CA, while they usually do not contain enough water to support fish, other aquatic macroinvertebrates and amphibious herpetofauna do utilize the ditches. Overall, these areas within the project area provide a wide variety of aquatic habitats for local fish and wildlife.

4.3 Species of Special Concern

4.3.1 Federally Listed Species

(*The 2020 PEA contains useful, specific information regarding species and habitat types that applies to this project area, including information provided by USFWS staff, that information should be considered incorporated by reference*) An Information for Planning

and Conservation (IPaC) report generated on August 12, 2021 indicated that the following listed species may be present in the project area: Indiana bat (endangered), northern long-eared bat (threatened), pallid sturgeon (endangered), and western prairie fringed orchid (threatened), all of which are covered in detail in the 2020 PEA as well as the Biological Assessment (Appendix B).

4.3.2 State Species of Special Concern

(*The 2020 PEA contains useful, specific information regarding species and habitat types that applies to this project area, including information provided by State wildlife management staff, that information should be considered incorporated by reference*) In summary, the following state-listed species may be present in or around the Missouri River in the state of Missouri, the lake sturgeon (Acipenser fulvescens), flathead chub (Platygobio gracilis), peregrine falcon (Falco peregrinus), and northern harrier (Circus cyaneus).

4.3.3 Migratory Birds and Raptors

(*This section of the 2020 PEA is incorporated by reference*) In summary, the main period of concern for impacting migratory birds is generally between April 1 and July 15. Raptors may also be laying eggs from February 1 to April 5 and some wetland birds, such as sedge wrens, may nest from July 15 to September 10. Bald eagles specifically have a wide timeframe for nesting behavior. Bald eagles may be building their nests between December 1 and March 1, laying eggs/incubating between February 1 and June 1, eggs may be hatching and being reared between March 1 and July 1, and the young may be fledging between June 1 and September 1.

The following are species of conservation concern in the project area: Kentucky warbler (*Geothlypis formosa*), eastern whip-poor-will (*Antrostomus vociferous*), prothonotary warbler (*Protonotaria citrea*), red-headed woodpecker (Melanerpes erythrocephalus), and wood thrush (Hylocichla mustelina). Specific data on these birds and their breeding season and probability of presence was obtained from the IPaC report (see Figure 13 below).



Figure 13. Migratory Bird Probability of Presence for the Project Area (IPaC)

4.4 Air Quality

In accordance with the Clean Air Act of 1963, the U.S. Environmental Protection Agency set National Ambient Air Quality Standards for pollutants considered harmful to the environment and public health. The six principal pollutants, also known as "criteria" pollutants, are: ozone, lead, particulate matter, carbon monoxide, nitrogen dioxide, and sulfur dioxide. Counties where the levels of a particular pollutant exceed Environmental Protection Agency (EPA) standards are deemed "non-attainment counties." Atchison and Holt Counties, MO and Nemaha County, NE are not listed as nonattainment counties for any criteria pollutants (EPA, 2021).

4.5 Water Quality

4.5.1 Nebraska

4.5.1.1 Missouri River

According to NDEQ, 2018 and 2021, the segment of the Missouri River adjacent to the project (NE1-10000) was listed in category 5 in 2018. The Recreation use was impaired for E. coli, and the Aquatic Life use was impaired due to a Fish Consumption Advisory for Mercury. Data submitted by the USACE determined that the Public Drinking Water Supply use is impaired for Arsenic. This waterbody will remain in category 5. NDEQ, 2021 also notes that in a 2019 revision of Nebraska's water quality standards, the drinking water standard for Arsenic was lowered from $10 \mu g/L$ to $0.18 \mu g/L$. Under the Safe Drinking Water Act, the EPA recommended drinking water standard for Arsenic remains at $10 \mu g/L$.).

4.5.2 Missouri

According to Missouri Department of Natural Resources (MDNR), 2018, the Missouri River in Atchison through Jackson Counting (WBID_0226) is on the state's Section 303(d) listed of impaired waters. MDNR, 2018 classified this Missouri River segment as impaired for Whole Body Contact Recreation B due to E. coli. See Table 8 below for details from the 2018 and 2020 303(d) list report. It should be noted that Mill Creek and Rock Creek are listed in the 303(d) report, but they are different creeks located in Jackson County near Kansas City, MO.

Table 8. Missouri State 2018 and 2020 section 303(d) listed waters in the project area*

Year	WBID	Waterbody	Class	Entire WB Imprd	WB Size	Units	IU	Pollutant	Source	County Up/Down	HUC 8	Comment	TMDL Priority	TMDL Schedule Year
2010	0226.00	Missouri R.	P	Y	184.50	Miles	wвс в	E. coli (W)	Municipal Point Source Discharges, Nonpoint Source	Atchison/J ackson	10240011	2	L	> 10 years

^{*}A key to the table codes is as follows: Year indicates when body of water was added to the 303(d) report, WBID represents unique waterbody ID, class P – refers to permanent flowing waters, Entire WB Imprd – asks if the entire waterbody is impaired, WB size is the waterbody size in this area (report does not indicate units), IU is the impaired use classification with WBC B indicating Whole Body Contact Recreation for activities other than swimming, Source is what is causing the pollutant, HUC 8 – hydrologic unit codes, Comment 2 – indicates the water supply is used for public drinking water supply, TMDL Priority – is total maximum daily load and L indicates a low priority.

4.6 Noise

(*The 2020 PEA contains useful, general information regarding noise in the environment that applies to this project area, that information should be considered incorporated by reference*) In summary, in rural areas, which are typically open, noise may carry for some distance. Noise sources in rural areas are predominantly natural and include: wind, weather, and wildlife sounds. Traffic from highways and other roadways are also a common source of background noise. Seasonally, noise produced from farming activities create levels of noise similar to the types of noises that might be produced by traffic or land moving activities associated with PL 84-99 construction.

4.7 Cultural Resources

In 2020, background research and field investigations for cultural resources were completed prior to and throughout construction as levee designs were refined, and as borrow areas were identified. No previously recorded sites were within the Area of Potential Effect. No archeological materials were observed during the field investigations within the project area, therefore, no new sites were recorded. See Appendix C for Tribal/agency coordination and field investigation details.

4.8 Farmland

(*The 2020 PEA contains useful information regarding farmland that generally applies to this project area, that information should be considered incorporated by reference*) In summary, the 2020 PEA briefly describes history of levee construction along the Missouri River and the types of agriculture that are typical in areas like the project area.

Figure 14 shows that prime farmland (approximately 365 acres) and land that would be prime farmland if it was drained (approximately 531 acres) exists within the project area. However, the vast majority of these prime farmland areas have been enrolled and/ or are in the process of being enrolled (as of 2021) in NRCS conservation easements. Other prime farmland in the project area has already been acquired in fee title by the USACE (under the Missouri River Recovery Program) or by the state of Missouri for habitat conservation purposes.

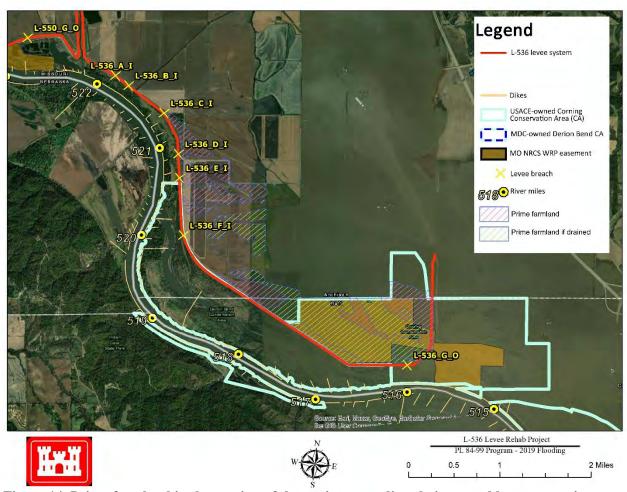


Figure 14. Prime farmland in the portion of the project area directly impacted by construction

4.9 NRCS easements

Approximately 700 acres of NRCS WRP easement exists within and adjacent to the project area (see Figure 14) in Holt County, MO, almost all of which overlaps with the MRRP's Corning CA. This WRP easement area was established by MO NRCS in 2001. Of these 700 acres, approximately 480 acres exists within the immediate project area, west of Mill Creek. Because this WRP easement area overlaps with MRRP Corning CA, it is jointly managed by the USACE Kansas City District, MO NRCS, and MDC. Other than the 33 acres of borrow pit wetlands constructed in 2011, minimal habitat restoration activities have occurred on this site since its establishment.

5 ENVIRONMENTAL CONSEQUENCES

Chapter organization:

This chapter presents the potential consequences (i.e., adverse and beneficial effects) of the no action alternative and all 4 actions alternatives on the resource categories described in Chapter 4 Affected Environment. An assessment of the environmental consequences provides the scientific and analytic basis for alternative comparison. The chapter is organized by resource category (identical to Chapter 4 layout), with the effects of all alternatives described under each resource category heading. In an attempt to streamline this document, where effects of one or more action alternative are nearly the same or identical, they will be described together under one "All Action Alternatives" sub-heading instead of described separately. It should be noted that the environmental effects of the preferred alternative may be described in much more detail than the other action alternatives due to details from actual construction of the preferred alternative being known while this tiered EA was being developed.

Each resource category is evaluated to determine effects associated with construction of the project as well as ongoing operation and maintenance of project features:

- **Construction effects** are those effects resulting from PL 84-99 activities while construction is underway.
- Operational effects are the resulting permanent effects that occur from the action alternative and/or effects from operation and maintenance after construction is complete. The no action alternative is also evaluated under the "operational effects" section as a means of comparing the long-term impacts of the preferred alternative to the operation and maintenance of L-536 in the absence of PL 84-99 assistance.
- Cumulative impacts result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place during the foreseeable future.
- Measures to avoid, minimize, and mitigate impacts provides more detail on actions taken to reduce or eliminate adverse environmental impacts.

Definition of effects:

This chapter describes the effects of alternatives on the resources evaluated. NEPA defines types of effects as follows (Sec. 1508.8 and 1508.7):

- **Direct/ short-term effects** are caused by the action and occur at the same time and place.
- Indirect/ long-term effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include other effects related to induced changes in the pattern of land use or effects on air and water and other natural systems including ecosystems.

For each resource category, the intensity of each alternatives' beneficial or harmful impact is described using the following terms:

• **No effect** – No discernable or measurable effect.

- **Negligible** Effects would be at the lowest levels of detection, barely measurable, with no perceptible consequences.
- **Minor** Impact could result in a change to a population or individuals of a species, habitat, or resource. The change would be measurable but small, localized, and of little consequence to the resource.
- **Moderate** Impact could result in some change to a population or individuals of a species or habitat. The change would be measurable and of consequence, but would be of larger than minor scale and/ or would occur over a limited area.
- **Major** Impact could result in a considerable change to a population or individuals of a species or resource or habitat. The change would be readily apparent, measurable, extensive, and/ or would occur over a wide geographic area.

5.1 Terrestrial/Wetland Habitat and Species

5.1.1 Construction Impacts

5.1.1.1 No Action Alternative

(*This section of the 2020 PEA is incorporated by reference*) In summary, it is expected that levee sponsors would attempt to repair the levee and restore some level of protection, whether the repairs are consistent with USACE design standards or not. Any habitat or species impacts would require mitigation and consultation with relevant resources agencies (state and federal). Opting to not repair the damaged levee is not expected to be likely, but this scenario could potentially result in ecological benefits if floodplains are allowed to be more naturally connected to the Missouri River.

5.1.1.2 All Action Alternatives

Construction impacts during borrow material excavation:

Geotechnical investigation along the Rock Creek area revealed largely unsuitable cohesive material. Therefore, very little material was excavated for borrow and wetland impacts were avoided. The vast majority of borrow material for levee construction was excavated from federal conservation land; the MRRP habitat sites (Corning CA and Brownville WMA) and the pending NRCS EWPP-FPE lands.

Some upland forested habitat areas within Corning CA were cleared and grubbed to be used as borrow excavation areas and were converted into depressional wetland habitat features. The trees in these forested areas were very young sparce, had been killed by the 2019 flooding, and the ground that was once understory had become revegetated by herbaceous vegetation following the flood. In total, approximately 27 acres of flooded and dead young willows and cottonwoods were cleared and grubbed within Corning CA (see Figure 18 below).

The remainder of the borrow excavation occurred on upland grassland and agricultural land within the project area. Under Alternatives 3 and 4, approximately 420 acres of depressional wetlands were/ would have been created from the grading and in some cases seeding of borrow excavation areas. Under Alternatives 1 and 2, it is uncertain if the same borrow areas within the EWPP-FPE and Corning CA areas would have been utilized. If under Alternatives 1 and 2 the MO NRCS would have selected the private land within the project area to enroll in the EWPP-

FPE easement program, then it is possible that hundreds of acres of wetland habitat could have been created from borrow material excavation, but not as many as under Alternatives 3 and 4. If NRCS had not enrolled these lands under Alternatives 1 and 2, some borrow may have been able come from Coring CA and Brownville WMA, with the remainder of borrow material being provided by the ACLD from a commercial borrow site or surrounding private ground that presumably wouldn't have been converted to habitat following construction. Brownville WMA borrow sites could have contributed the same amount as under Alternative 4, but Corning likely would not have been able to contribute a substantial amount due to close proximity to the levee.

5.1.1.3 Alternative 1. In-Line Repairs, Sheet Pile Cutoff for Permanent Breach Repair and Alternative 2. In-Line Repairs, Place Berms at Breach Repairs

The in-line levee repairs would be expected to result in little to no impacts to habitat. The in-line repairs completed within the existing levee right of way would completely avoid any habitat impacts. In the cases of slight levee widening or breach closure, some negligible habitat impacts would be expected to occur. Whether breach closures and repairs were completed with sheet pile or sand berms, the newly created scour holes associated with the breaches would be entirely or partially filled in, similar to pre-flood conditions. In-line repairs would have resulted in the filling of up to 22 acres of levee breach scour holes (4.2 acres in Breach A, 1.8 acres in Breach D, 7.3 acres in Breach E, and 7.4 acres in Breach F). Because these new floodplain aquatic features would be filled in as soon as possible as part of post-flood repairs, and potentially only partially filled in, the habitat impact is considered negligible and would not require mitigation. Form a permitting standpoint, these kind of fill activities would be considered exempt from Clean Water Act regulations as per 33 CFR 323.4 (a)(2). If scour holes were only partially filled, the remaining scour hole features landward and riverward of a breach repair would be expected to serve as isolated wetland or open water habitat in the floodplain. If wetland impacts outside of the breach scour holes were to occur, those construction activities would be conducted consistent with the conditions and requirements of an Individual Permit and 401 Water Quality Certification would need to be obtained from the state of Missouri. Depending on the actions that may have been taken under these alternatives, some of the work may have needed to be completed consistent with the requirements and conditions of Missouri General Permit 41 (GP-41), which contains water quality certification covering some post-flood repair activities. See Figure 15 for a map depicting breach scour areas.



Figure 15. Satalie imagery, dated, May 9, 2020, showing location and extent of breach scour holes

Detailed assumptions regarding borrow material availability and source location for in-line repairs were not developed during early rehab planning and alternative development. It is assumed that some of the borrow locations utilized within the MRRP's Corning CA and Brownville WMA may have been used, but without the setback it is assumed that the adjacent landowners would not have submitted applications for the NRCS's EWPP-FPE program and therefore may not have allowed their land to be used for borrow material excavation. Therefore, it is expected that the in-line repairs would have resulted in some of the wetland creation realized in Alternative 4, but not all of them.

5.1.1.4 Alternative 3. System Levee Setback and Alternative 4 Partial Levee Setback (Preferred Alternative)

The only substantive difference between Alternatives 3 and 4 is that Alternative 3 would have resulted in approximately 150 more acres of floodplain being reconnected to the riverward side of the levee and approximately 4.2 acres of levee breach scour hole (Breach A) would have remained unfilled. Aside from these differences, the environmental consequences for Alternative 3 are expected to be the same as for Alternative 4. The remainder of this section describes the environmental consequences of Alternative 4.

Alternative 4 results in substantial benefits to terrestrial and wetland species and habitat in the project area. The levee setback reconnects approximately 1,040 acres of floodplain to the riverward side of the levee and results in the creation of over 420 acres of wetlands or floodplain depressional habitat features. Table 9 and Figure 16 provide summaries and locations of the wetlands created and impacted by Alternative 4.

Table 9. Summary of wetlands created and impacted by setback construction

Wetlands Created						
Site Name	Acres	Previous land cover	Site Owner			
GB 11	98.1	Upland, scrub/shrub	MRRP/ MO NRCS WRP			
GB 12	65.9	Upland, scrub/shrub	MRRP/ MO NRCS WRP			
GB 13	10.9	Upland, grassland	MRRP			
GB 14	65.2	Agriculture	MO NRCS EWPP-FPE			
GB 14 ponding	13.9	Agriculture	MO NRCS EWPP-FPE			
GB 15	16.7	Agriculture	MO NRCS EWPP-FPE			
GB 16	54	Agriculture	MO NRCS EWPP-FPE			
GB 18	35.5	Upland, scrub/shrub	MRRP/ MO NRCS WRP			
GB 19 N	30.3	Upland, grassland, scrub/shrub	MRRP/ NE NRCS WRP			
GB 19 S	23.8	Upland, grassland, scrub/shrub	MRRP/ NE NRCS WRP			
Total	414.3					
		Wetlands Impacted				
Site Name	Impacts	Converted to	Site Owner			
Corning CA	8 acres*	levee footprint	MRRP/ MO NRCS WRP			
	500 linear					
Corning CA	feet**	levee footprint	MRRP/ MO NRCS WRP			

^{*} wetlands created from borrow pits following 2011 flood

^{**} portions of ditches rerouted underneath or landward of the realigned levee

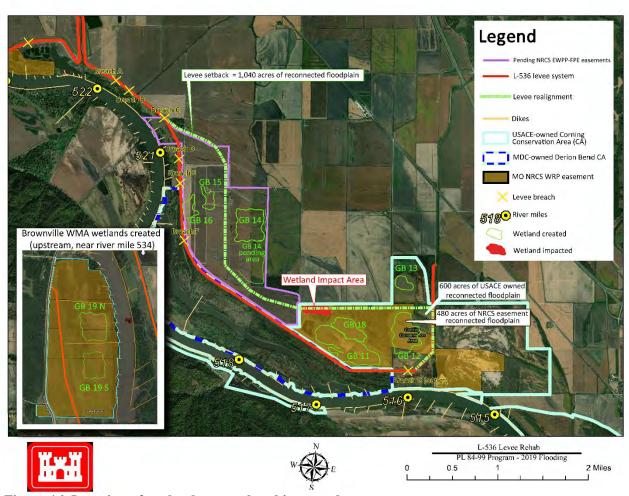


Figure 16. Location of wetlands created and impacted

The reconnected floodplain will benefit multiple federal conservation programs. Approximately 600 acres are within the MRRP's Corning CA, which also overlaps with 480 acres of MO NRCS's WRP easements. The other approximately 440 acres of reconnected floodplain are within areas that private landowners are in the process of enrolling in NRCS's EWPP-FPE program. Restoring hydrologic connectivity is expected to result in ecological improvements across multiple aspects of the floodplain, including, nutrient processing, primary and secondary productivity, habitat access and availability, etc. (Jacobson et al., 2015). Construction results in the conversion of 140 acres of agriculture into wetland and depressional habitat features and another 300 acres of agriculture converted to naturally revegetated riverward floodplain habitat. The conversion of approximately 270 acres of upland grassland, scrub/shrub/ and dead forest into wetland and depressional habitat features is a tradeoff that was considered by the Corning CA and Brownville WMA site managers as highly beneficial, and the newly constructed habitat features generally represent the types of emergent wetland habitat that were more disproportionally impacted by the BSNP (USACE, 2003).

Only the Brownville WMA borrow sites and Corning CA "GB 13" borrow site were seeded with native seed mixes. All other disturbed areas were left to naturally revegetate. MO NRCS

preferred to leave all of their EWPP-FPE lands to be naturally revegetated. USACE and MO NRCS agreed that the riverward portion of Corning CA could be allowed to naturally revegetate. NE NRCS and USACE agreed to plant native vegetation at Brownville WMA. USACE decided to plant native vegetation at the Corning CA GB 13. A wetland seed mix was applied within the depressional areas and an upland mix was planted everywhere else land had been cleared and grubbed. Table 10 and Table 11 below contain the seed mixes used. A total of 50 native seeds per square foot was targeted as the seed rate to be drill seeded, which was doubled if applied via broadcast method.

Table 10. Native Prairie Seed Mix (upland/mesic areas)

Botanical Name	Common Name	Pounds PLS/Acre
Rudbeckia subtomentosa	Sweet Coneflower	0.25
Pascopyrum smithii	Western Wheatgrass	0.5
Symphyotrichum novae-angliae	New England Aster	0.25
Schizachyrium scoparium	Little bluestem	1
Panicum virgatum var KANLOW	Kanlow Switchgrass	1
Eryngium yuccifolium	Rattlesnake master	1
Helenium autumnale	Common sneezeweed	0.25
Asclepias syriaca	common milkweed	1
Spartina pectinata	Prairie cordgrass	0.5
Andropogan gerardii	Big Bluestem	2.5
Euphorbia marginata	Snow on the mountain	3
Sorghastrum nutans	Indiangrass	0.5
Avena sativa (Nurse Crop) Common Oat	ts	30
	Total:	41.75

Table 11. Native Wetland Seed (within borrow pit side slopes-down to water line)

Botanical Name	Common Name	Pounds PLS/Acre
Leersia orysoides	Rice Cutgrass	1
Spartina pectinata	Prairie cordgrass	1
Glyceria striata	Fowl Manna Grass	0.1
Carex vulpinoidea	Fox Sedge	0.2
Eutrochium purpureum	Joe pye weed	0.25
Asclepias incarnata	Swamp Milkweed	2
Juncus effuses	Common rush	0.01
Lobelia siphilitica	Great Blue Lobelia	0.05
Euphorbia marginata	Snow on the mountain	3
Schoenoplectus tabernaemontani	Softstem bullrush	0.01
Juncus torreyi	Torry's rush	0.025

Avena sativa (Nurse Crop) Common Oats		
	Total:	37.645

As depicted in Figure 17 below, the majority of the created wetlands are within the previously active meander belt of the historic Missouri River as it existed decades before the river began to be channelized in the early twentieth century.

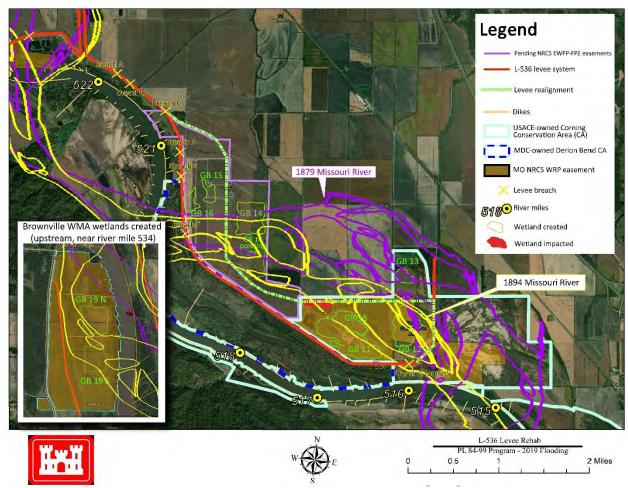


Figure 17. Location of Missouri River Paleochannels (1879 and 1894) in relation to wetlands created

The impacts to wetland habitat were minor and more than offset by the self-mitigating nature of the levee setback project. Construction of the new levee resulted in the permanent filling of approximately 8 acres of emergent and open water wetland habitat within the Corning CA. These wetland features were constructed by the USACE in 2012 from borrow excavation areas as part of the 2011 Missouri River flooding levee rehab efforts. Additionally, approximately 500 LF of open drainage ditch alignments in the project area were converted to culverted alignments to flow underneath the realigned levee. These impacts were evaluated in the attached 404(b)(1) Water Quality Analysis (Appendix C). Water quality certification was obtained by the MDNR on September 9, 2020 prior to construction. As a matter of policy, the USACE does not issue

itself 404 permits, but by coordinating with the MDNR, USACE ensured compliance with the CWA for this project.

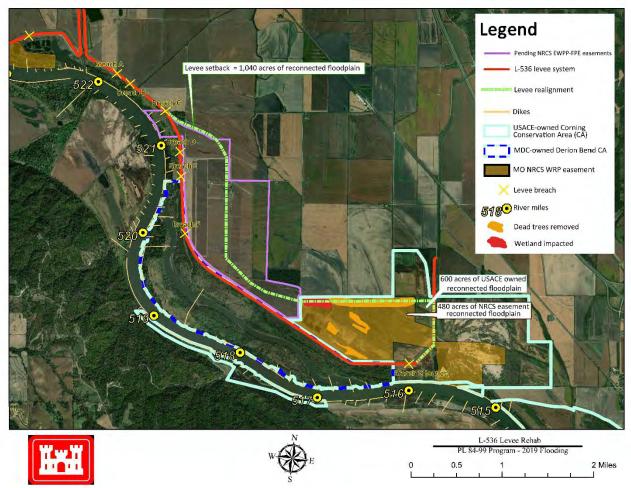


Figure 18. Location of wetland impacts and dead tree removal within previously forested area

5.1.2 Operational Impacts

5.1.2.1 No Action Alterative and All Action Alternatives

(*This section of the 2020 PEA is incorporated by reference*) In summary, one of the only potential impacts anticipated during levee O&M is the accidental mowing of ground nesting bird nests, though this has not been observed or reported by levee sponsors to the USACE Omaha District.

5.1.3 Cumulative Effects of Preferred Alternative

(*This 2020 PEA section related to "large-scale levee setbacks" is relevant to this project and is incorporated by reference*) In summary, the cumulative effects of continually constructing large-scale levee setbacks along the Missouri River could result in a significant amount of floodplain habitat restoration opportunities. Taking advantage of opportunities to partner with state, federal, and NGO conservation entities and programs would facilitate construction of projects like this.

The setback of the L-536 levee is expected to contribute to cumulative ecosystem benefits in the project area. The levee setback results in connections to multiple conservation lands in the project area. The State of Missouri-owned Deroin Bend CA is on the riverward side of the newly connected floodplain, is approximately 1,100 acres in size, and contains a long chute project constructed by the USACE. The levee setback was constructed within the 1,500 acre Corning CA, 600 acres of which were converted to the riverward side of the levee. Approximately 480 acres of NRCS WRP easements within the Corning CA were also converted to the riverward side of the levee. Approximately 440 acres of new NRCS easements are being established on the newly riverward side of the levee, with another approximately 290 acres of new NRCS easements on the landward side. Approximately 420 acre of wetland habitat was constructed from borrow material excavation area, not just in the immediate project area, but also on the USACE-owned Brownville WMA upstream in Nebraska. The project is located across the Missouri River from the USACE constructed Indian Cave State Park 50 acre backwater project, with the State Park itself being approximately 3,000 acres in size. The levee setback results in the creation of and connection to a habitat complex almost 6,000 acres in size in the immediate project area.

The approximately 640 acres of new NRCS easements being established in the project area were directly facilitated by the construction of the levee setback project. In 2019, when the MO NRCS office began accepting EWPP-FPE applications, the applications received additional priority if they were contributing to a levee setback (i.e., "flood resiliency"). USACE and ACLD pursuit of the setback worked in extraordinary synergy with the NRCS EWPP-FPE program, with the establishment of these new easements being absolutely critical for community support of the setback. In other words, the levee setback relied on the NRCS enrolling private land in new EWPP-FPE easements, while at the same time, selection of those private lands to enroll in easement relied upon the levee setback occurring. One likely couldn't have occurred without the other.

5.1.4 Measures to Avoid, Minimize, and Mitigate Impacts (*Most of the measures listed in this section of the 2020 PEA are relevant to this project and are incorporated by reference. The measures listed below represent additional project-specific measures taken that were not explicitly described in the 2020 PEA*)

The following actions would minimize overall vegetation impacts:

- During construction, large-scale levee setbacks like these can lead to full disturbance of
 the land to be converted to the riverward side of the levee due to various needs for
 equipment staging, haul roads, geotechnical investigation, clearing and grubbing, borrow
 excavation, etc. At L-536, efforts were made to intentionally avoid as many areas as
 possible within the Corning CA and the private land going through NRCS easement
 enrollment.
- Trees within the construction area that did not require removal were left to stand, even if the surrounding area was disturbed and/or the trees were dead.
- Optimum native vegetation seeding generally falls within the following timeframes, which would meet MO native planting guidelines:

- o Spring seeding: April 1 to May 15
- Late summer seeding (not ideal): may be planted between May 15 and August 1 if irrigation is provided
- o Dormant seeding (preferred method): after November 1 until ground freeze

The following actions would minimize effects on wetlands:

• Steps were taken to avoid and minimize impacts to wetlands. Landward levee berm design considerations were made in order to minimize the filling of wetlands created within the Corning CA in 2012.

The following actions would be taken to assure habitat impacts are mitigated:

- This project created almost 50 times the amount of wetlands than were impacted and reconnected over 1,000 acres to the riverward side of the levee. This project is considered self-mitigating.
- New native plantings will be monitored and managed by the MRRP in collaboration with the Missouri Department of Conservation and/ or the Missouri NRCS (depending on the specific area) to ensure successful vegetation establishment and maintenance.

5.2 Aquatic Habitat and Species

5.2.1 Construction Impacts

5.2.1.1 No Action Alternative

(*This section of the 2020 PEA is incorporated by reference*) In summary, it is expected that levee sponsors would attempt to repair the levee and restore some level of protection, whether the repairs are consistent with USACE design standards or not. Any habitat or species impacts may require mitigation and consultation with relevant resources agencies (state and federal). Opting to not repair the damaged levee is not expected to be likely, but this scenario could potentially result in ecological benefits if the floodplain is allowed to be more naturally connected to the Missouri River.

5.2.1.2 All Action Alternatives

(*The "Preferred Alternative" portion of this section of the 2020 PEA is incorporated by reference*) In summary, this section of PEA described potential effects of in-line repair, borrow activities, and large-scale levee setback. In-line repairs would not result in impacts to aquatic habitat, borrow activities many result in some negligible amount of fill into open water areas, for any actions requiring permits the permits would be obtained prior to the requiring construction activity, and overall, impacts to aquatic wildlife and available habitat would be considered negligible-to-minor and short-term.

In addition to the actions related to levee setbacks analyzed in the 2020 PEA, the L-536 levee rehabilitation efforts involved dredging sand material from the Missouri River in order to construct the downstream half of the landward seepage berm as part of Alternative 4. It was proven to be the most cost effective and efficient method of sand material excavation and placement, so it is assumed that it would have been implemented as a sand material production method for all action alternatives where construction of sand seepage berms could have warranted it.

Because the use of the sand dredge involved return flow discharge, the construction contractor had to apply for and obtain a State of Missouri General State Operating Permit MOG 698. The permit was received on October 1, 2020, prior to the initiation of dredging. This permit allowed for the dredge discharge return water to flow through the bermed placement area, enter the existing Ditch 5 and Ditch 7, and eventually flow back into the Missouri River. The contractor followed and conducted work consist with all applicable requirements and conditions contained within the permit.

Regardless of the time of year, wildlife residing in the sandy riverbed where dredging occurs (primarily macroinvertebrates) would likely not be able to escape, whereas most other wildlife would be expected to disperse from the construction area and avoid damage. Hydraulic dredging would be expected to result in minor, short-term disturbance.

5.2.1.3 Alternative 3. System Levee Setback and Alternative 4 Partial Levee Setback (Preferred Alternative)

Approximately 500 LF of small drainage ditches (Ditches 5 and 7) were rerouted underneath the realigned levee through culverts. As described in Section 5.1, water quality certification from the State of Missouri was obtained due to these impacts. Impact to aquatic habitat associated with drainage ditches on the floodplain within the project area was anticipated to be negligible and short term. Though the portions of the ditches that are culverted through the new levee would be considered permanently altered, the portion of these ditch alignments within the project area that are now on the riverward side of the levee may experience some negligible-to-minor ecological benefit simply by being more directly exposed to and connected with the Missouri River.

Large-scale levee setbacks have the potential to result in improvements to aquatic and floodplain habitat quantity and quality. Where landward floodplain acres are converted to riverward floodplain acres, the amount of shallow floodplain habitat accessible to aquatic wildlife during times of high water and floodplain inundation increases. By increasing the amount of floodplain acres riverward of a levee, large-scale levee setbacks would be expected to improve conditions for fish and other aquatic wildlife requiring floodplain access for spring foraging and spawning (Galat, 1998).

The actual site-specific effect or benefit to aquatic wildlife is dependent on a variety of factors, including hydraulic features of the setback area as well as the types of fish or other aquatic wildlife communities being considered. For example, data from Gosch et al., (2014) indicate that macroinvertebrate richness, evenness, diversity, density, and water quality (dissolved oxygen) can decrease if long-term inundation coincides with more lentic (lake-like) conditions. Such long-term lentic conditions were observed on portions of the floodplain during the 2011 Missouri River flooding, though no large-scale levee setbacks had been constructed prior to 2011 so they could not be studied directly. In 2019, however, one of the large-scale levee setbacks constructed after the 2011 flooding along the L-575 levee system at the M.U. Payne WMA was able to be surveyed by the Nebraska Game and Parks Commission (NGPC). Benthic trawling through the inundated floodplain revealed presence of an age-0 native fish hot spot. Survey

crews collected a record number (for the NGPC) of age-0 shovelnose sturgeon (a potential surrogate species for determining Pallid sturgeon recovery needs) in a single year and the size distribution of the samples indicated a higher rate of apparent survival or site retention compared to previous collections in the Missouri River main channel (Haas et al., 2020). Haas, et al. (2020) observed other notable catches of native fishes on the floodplain at M.U. Payne WMA including:

- 1 juvenile hatchery-origin Pallid Sturgeon
- Relatively high numbers of age-0 Blue Sucker, Blue Catfish, Channel Catfish, Sturgeon Chub, Sicklefin Chub, Shoal Chub, and Silver Chub
- 36 documented individual Flathead Chubs, which use to be one of the most common fish in the historic Missouri River, but are now endangered in the state of Missouri and rarely sampled in the modified river.

Gosch, et al., (2021) did not observe increased prey consumption by or condition of age-0 sturgeon on the floodplain found at M.U. Payne WMA by Haas et al. (2020), so while it is still inconclusive that levee setbacks provide direct benefits to pallid sturgeon population recovery, these findings still demonstrate the potential ecological restoration benefits that large-scale levee setback can result in and that levee setbacks may be important for many native species. Additionally, the degree of a levee setback alignment may greatly influence the kinds and magnitude of ecological benefit that can result from such a project. Additional research on the influence of new levee alignments is needed to clarify design criteria for optimizing or maximizing wildlife benefit.

Overall, these alternatives would be expected to result in long-term and short-term, direct and indirect, minor to major (depending on the species and habitat type being considered) benefits to aquatic habitat and species.

5.2.2 Operational Impacts

5.2.2.1 No Action Alterative and All Action Alternatives

Levee O&M activities are confined to the levee features only and therefore are expected to result in no impacts to aquatic habitat or wildlife.

5.2.3 Cumulative Effects of Preferred Alternative

Large-scale levee setbacks have the potential to result in cumulative effects on aquatic species and habitat, but this can be difficult to predict at a river system or reach scale. Floodplains are generally considered important nursery habitat for young fish and can be productive areas for macroinvertebrates and other prey sources. An increase in the number of large-scale levee setbacks along the Missouri River may eventually begin to have effects on a variety of river conditions and resources including (but not necessarily limited to) river flooding hydraulics, native aquatic species populations, or floodplain vegetation. River system or river reach-scale hydraulic modeling would need to be conducted in order to determine what kind of an affect multiple large-scale levee setback projects could result in. Floodplain topography/ sediment transport modeling would also be required to determine the effects of one or more levee setback on floodplain deposition/ scouring.

5.2.4 Measures to Avoid, Minimize, and Mitigate Impacts

- In consultation with USFWS, measures were taken to minimize and avoid potential impacts to pallid sturgeon during dredging operations (timeframes to avoid dredging, specific locations to avoid dredging).
- All contractors were required to inspect, clean and dry all machinery, equipment, materials and supplies to prevent spread of aquatic nuisance species.
- Aspects of water quality were monitored during construction as required by permits.

5.3 Species of Special Concern

Informal consultation with the USFWS that began during development of the 2020 PEA continued throughout planning and construction of the L-536 levee rehab efforts.

(*The 2020 PEA contains useful, specific information regarding species and habitat types that applies to this project area, including information provided by USFWS staff, that information should be considered incorporated by reference*) An Information for Planning and Conservation (IpaC; available online at https://ecos.fws.gov/ipac/) report generated on August 12, 2021 indicated that the following listed species may be present in the project area: pallid sturgeon (endangered), Indiana bat (endangered), northern long-eared bat (threatened), and western prairie fringed orchid (threatened), which are covered in detail in the 2020 PEA.

5.3.1 Federally Listed Species

5.3.1.1 Pallid Sturgeon

5.3.1.1.1 Construction Impacts

5.3.1.1.1.1 No Action Alternative

(*This section of the 2020 PEA is incorporated by reference*) In summary, if the sponsors decide to repair the levee, it is not anticipated that they would use hydraulic dredging to mine borrow material and so it is likely that the no action alternative would result in no effect to the pallid sturgeon. The area landward would experience flooding on a more frequent basis if levee breaches or other critical section losses go unrepaired, potentially benefitting a wide array of aquatic wildlife, including the pallid sturgeon being able to access foraging or nursery habitat in the floodplain while inundated.

5.3.1.1.1.2 All Action Alternatives

(*This section of the 2020 PEA is incorporated by reference*) In summary, in-line levee repairs, borrow excavations, and levee setbacks may affect, but are not likely to adversely affect the pallid sturgeon.

Dredging of sand material from the Missouri River was the action that posed the most significant risks to pallid sturgeon. Informal consultation with the USFWS Columbia, MO Ecological Services Office was conducted prior to Missouri River dredging. Because of the conservation measures developed between USACE and USFWS staff, it was determined that the L-536 levee rehab dredging activities may affect, but are not likely to adversely affect the pallid sturgeon. Dredging in the Missouri River mainstem was avoided during the spring spawning timeframe. Dredging was only conducted along the inside bends of the Missouri River mainstem and no dredging occurred between river miles 517 and 516, which corresponded with the outlet of the Indian Cave backwater and Deroin Bend chute projects. These conservation measures were

being taken in order to minimize or attempt to completely avoid any impacts to the pallid sturgeon. Concurrence by the USFWS on this effects determination was received via email on August 21, 2020.

5.3.1.1.2 Operational Impacts

5.3.1.1.2.1 No Action Alternative and All Action Alternatives

O&M of levee systems enrolled in the PL 84-99 program is the responsibility of the non-federal levee sponsor. O&M activities are confined to the levee features only and therefore are expected to result in no effect to the pallid sturgeon.

5.3.1.1.3 Cumulative Effects of Preferred Alternative

A large-scale levee setback has the potential to result in cumulative effects to pallid sturgeon and their habitat. Where landward floodplain acres are converted to riverward floodplain acres, the amount of shallow floodplain habitat accessible to pallid sturgeon and their prey base during times of high water and floodplain inundation increases. Although the preferred alternative could result in improvements (i.e., increases) to the amount floodplain habitat available to be inundated, it would be isolated and individual setbacks are not likely like to contribute a significant benefit to the pallid sturgeon populations in the Missouri River. Furthermore, investigation into sturgeon prey base and prey consumption Gosch et al. (2014 and 2021) indicate that while these reconnected floodplains likely benefit the aquatic ecosystem as a whole, they may not serve as critical forage, refuge, or recruitment areas for the recovery of pallid sturgeon populations. Opportunities to gather data on pallid sturgeon benefits from levee setbacks are rare, but if more are constructed, the ability to determine specific features that do benefit pallid sturgeon may improve.

5.3.1.1.4 Measures to Avoid, Minimize and Mitigate Impacts

As discussed above in section 5.3.1.1.1.2, USFWS was consulted with in development of conservation measures to minimize or completely avoid incidental take or other impacts to the pallid sturgeon.

5.3.1.2 Least Terns and Piping Plovers

Although they were not part of the IPaC report generated or this project, unique features in the project area could have attracted terns or plovers. Project-specific potential impacts are evaluated in this section due to the temporary presence of flood-related sand deposits in the floodplain.

5.3.1.2.1 Construction Impacts

5.3.1.2.1.1 No Action Alternative

(*This section of the 2020 PEA is incorporated by reference*) In summary, if the sponsors decide to repair the levee, it is expected that they would have to wait for the river levels on the floodplain to drop low enough to access flood sand deposits for sand borrow. This would likely put construction activities outside of the tern and plover nesting timeframe (i.e., fall or winter months) and so the no action alternative would be expected to result in no effect to the least tern and piping plover. A scenario where the levees are not repaired by levee sponsors is anticipated to be uncommon, but under this scenario it is expected that the no action alternative would result

in no effect to the least tern and piping plover, or may result in minor benefits to these birds by allowing the flood-related sand deposits to persist and perhaps provide nesting habitat, as has been observed on other Missouri River floodplain sand deposits in the past (USACE threatened and endangered species staff and IDNR Wildlife Biologist, personal communication in the summers following the 2011 and 2019 floods, author's personal observations on August 14, 2015 on sandbars deposited within the Deer Island WMA in Harrison County, IA).

5.3.1.2.1.2 All Actions Alternatives

(*This section of the 2020 PEA is incorporated by reference*) In summary, the section of the Missouri River below Ponca, Nebraska to the mouth with the Mississippi River (defined as the BSNP) does not typically support nesting of least terns and piping plovers. No piping plover nesting activity has been recorded on this reach of the Missouri River since the species was listed, but isolated least terns have been observed successfully nesting and fledging on USACE MRRP sites (e.g., Deer Island project) and on floodplain sand deposits following the 2011 and 2019 floods. Although the BSNP does not typically support nesting habitat, it is possible for least terns and piping plovers to nest on large sand deposits in, near, or adjacent to the river as a result of the 2019 flood event.

From April 15 to August 15 terns or plovers may be found nesting on sand deposits. Though levee repair activities occurred during timeframe, construction activities had been initiated prior to April 15, including removal of many of the larger, bare, and more consolidated sand deposits within the project area. The widespread disturbance activities on site were expected to prevent any tern or plover nesting within the project area. The Biological Assessment (Appendix B) contains relevant analysis for the tern and plover effects of the L-536 levee rehab and was provided to the USFWS during informal consultation of the L-536 project. Overall, it was anticipated that levee rehab activities at L-536 may affect, but were not likely to adversely affect least terns and piping plovers.

5.3.1.2.2 Operational Impacts

5.3.1.2.2.1 Preferred Alternative and No Action Alternative

All activity types:

O&M activities are confined to the levee features only and therefore are expected to result in no effect to the least tern and piping plover.

5.3.1.2.3 Cumulative Effects of Preferred Alternative

Overall, the long-term effects of any repaired or new levee features would not be expected to result in cumulative effects compared to the existing conditions and would not be expected to result in negative or positive impacts to the least tern and piping plover. The vast sand deposits that have the potential to provide nesting habitat are temporary in nature. They will either be removed and used as material for levee repairs or would become vegetated with shrubby and woody vegetation if left undisturbed, so their presence or absence in the years after the flood event are ultimately expected to be inconsequential to tern and plover populations.

5.3.1.2.4 Measures to Avoid, Minimize, and Mitigate Impacts

Through telephone communication with the USFWS staff in Columbia, MO, it was determined that the initiation of construction work throughout the project site prior nesting season (including the active removal of sand deposits) can be expected to preclude nesting activities. No further action was necessary in order to avoid, minimize, or mitigate impacts to terns or plovers. Had construction activity not been initiated prior to the nesting season, daily or weekly monitoring may have been required at the project area throughout all or a portion of the nesting season.

5.3.1.3 Indiana Bat and Northern Long-Eared Bat

5.3.1.3.1 Construction Impacts

5.3.1.3.1.1 No Action Alternative

Levee rehabilitation and construction activities under the no action alternative wherein tree removal is required have the potential to affect the bats. Assuming the levee sponsor coordinates activities with the USFWS and conducts informal consultation on effects to listed species, then the effects to these bat species would be the same as those described under the action alternatives below. Under the scenario that the levee sponsor chooses to not repair the levee damage, it would be expected that there would be no effect to the bats.

5.3.1.3.1.2 All Action Alternatives

(*This section of the 2020 PEA is incorporated by reference*) In summary, all action alternatives had the potential to result in tree removal, and therefore to impact Indiana or northern long-eared bats. It is possible that the bats would be present throughout the project area to roost, rear their young, and forage. Site-specific analyses were conducted prior to levee setback construction that required tree removal.

Informal consultation with the USFWS was initiated early on in the project to discuss potential impacts and potential conservation measures. An acoustic bat survey was conducted by a local consultant in early August 2020 to help determine the presence of any Myotis sp. bats in the project area. The results generated from the survey were inconclusive and were shared with USFWS bat experts to verify. Based on consultation conversations, the environmental conditions at the proposed tree removal areas, and the USFWS review of the acoustic bat survey results, it was determined that the project may affect, but was not likely to adversely affect the Indiana bat or the northern long-eared bat. The sparsely forested area within the Corning CA did not appear to contain suitable maternal roosting habitat prior to the acoustic survey and was likely to only contain marginal bat foraging habitat. The Corning CA contained only young, dead trees that were recently killed by the 2019 flooding. These trees did not contain sloughing bark, cavities, or other features generally conducive to bat roosting. USFWS staff out of the Columbia, MO Ecological Services Office reviewed the raw and processed data collected during the acoustic surveys and determined that no *Myotis* bat species were detected during the surveys. Trees were removed immediately following consultation in order to avoid impacts to bats that may enter the site after the surveys were conducted. It was determined that the project may affect, not is not likely to adversely affect the listed bats. USFWS concurrence on the effects determination was received via email on August 21, 2020.

5.3.1.3.2 Operational Impacts

5.3.1.3.2.1 No Action Alternative and All Action Preferred Alternatives

Overall, operational activities would be expected to result in no effect to the bats because they largely involve actions such as mowing and other minor activities that do not involve the removal of trees.

5.3.1.3.3 Cumulative Effects of Preferred Alternative

Tree removal during construction would be expected to result in isolated, negligible reduction in the amount of roosting and nursing habitat across the project area. In many cases where floodwaters and construction activities disturb floodplain land and that disturbed land is not reseeded, cottonwood and willow trees could begin to grow rapidly following construction. Where these trees are left to grow, they would eventually contribute to an increase in bat roosting habitat over the years. Similarly, large trees on the riverward side of a levee setback killed by future flooding could result in an overall increase in suitable roosting habitat overtime. Overall, the preferred alternative is not expected to contribute significantly to cumulative effects to the bats.

5.3.1.3.4 Measures to Avoid, Minimize, and Mitigate Impacts

As stated above, but habitat suitability and acoustic surveys were conducted prior to tree removal. With the USFWS's concurrence that the listed bats were likely not in the project area, trees were immediately removed in order to avoid impacts.

5.3.1.4 Western Prairie Fringed Orchid

5.3.1.4.1 Construction Impacts

5.3.1.4.1.1 No Action Alternative and All Action Alternatives

(*This section of the 2020 PEA is incorporated by reference*) In summary, consultation with the USFWS during in 2018 (USACE, 2018a) indicate that no records of the western prairie fringed orchid or habitat occur in the Missouri River floodplain within the project area. As a result, no direct or indirect effects were anticipated to occur to the western prairie fringed orchid from any levee rehab activities associated with L-536. It is assumed that the proposed action would have no effect on the western prairie fringed orchid.

5.3.1.4.2 Operational Impacts

5.3.1.4.2.1 No Action Alternative and All Action Alternatives

The western prairie fringed orchid is not expected to be present within the project area and therefore is not expected to be impacted during levee operation and maintenance activities. Levee operation and maintenance would be expected to have no effect on the western prairie fringed orchid.

5.3.1.4.3 Cumulative Effects of Preferred Alternative

Overall, the long-term effects of the new levee features would not be expected to result in cumulative effects compared to the existing conditions and would not be expected to result in negative or positive impacts to the western prairie fringed orchid populations.

5.3.1.4.4 Measures to Avoid, Minimize, and Mitigate Impacts

As a result of the proposed action, no direct or indirect negative effects on the western prairie fringed orchid are expected to occur, therefore no measures were taken to avoid, minimize, or mitigate potential impacts.

5.3.2 State Species of Special Concern

5.3.2.1 Construction and Operational Impacts

5.3.2.1.1 No Action Alternative and All Action Alternatives

The state species of special concern described above in the Affected Environment chapter and in the 2020 PEA could be present within the project area. The impact assessment and measures to minimize or avoid impacts described in Section 5.2 (for aquatic species) and Sections 5.1 and 5.3.3 (for birds and other terrestrial species) are applicable to the state species of special concern. Overall, the action and no action alternatives can be generally expected to result in negligible-to-minor, short-term impacts to state-listed species and other species of special concern within the study area during construction. Potential impacts that may result from repair, operation, or maintenance of levee features within the study would be communicated to the USFWS and/or the respective state natural resource agency and mitigation measures would be implemented, but would be expected to result in no or negligible impact to wildlife.

For one species, the flathead chub (state listed as endangered in Missouri), Alternative 4 of the L-536 project presents unique effects and potential benefits that warrant more detailed analysis in this tiered EA. Flathead chubs may directly benefit from construction of large-scale levee setbacks along the Missouri River. Though once one of the most common fish in the historic Missouri River, they are rarely sampled in the river today (Haas, et al., 2020), with their decline coinciding with the construction of the Missouri River dams that altered the natural flow regime and river turbidity (MDC, 2015a). Haas et al., (2020) collected 36 individuals during benthic trawl surveys at the M. U. Payne WMA in Fremont County, IA, at the site of one of the largescale levee setbacks constructed after the 2011 flooding. M.U. Payne WMA is located approximately 30 miles (40 river miles) upstream of the L-536 project area. The most significant difference between the M. U. Payne levee setback area and L-536 in regards to potential use by flathead chub is that the L-536 setback is at the downstream end of the levee system with a trailing levee feature that may prevent water flowing across the reconnected floodplain as freely as it can flow at M. U. Payne. Floodwater continually flowing across the M. U. Payne WMA in 2019 may have been a determining factor on flathead chub accessing and staying at the M. U. Payne site, a condition that the L-536 trailing levee portion of the setback might prevent from occurring across some of the levee setback site. Further research into native fish utilization and benefit from large-scale levee setbacks is needed, and specifically information is needed on what design attributes of setbacks are most beneficial to native fish communities.

5.3.2.1.2 Cumulative Effects of Preferred Alternative

The impacts of cumulative effects on any of the state species of special concern would be similar or the same as the impacts described under Sections 5.1.3, 5.2.3, and 5.3 for each of the species listed above. Regarding flathead chubs, further research has the potential to clarify if large-scale levee setbacks can help recover their populations in Missouri or elsewhere along the Missouri River.

5.3.2.1.3 Measures to Avoid, Minimize, and Mitigate Impacts

Measures would be taken to avoid, minimize, and mitigate potential impacts to state species of special concern. These measures would be similar or the same at the measures described under Sections 5.1.4, 5.2.4, and 5.3 for each of the species listed above.

5.3.3 Migratory Birds and Raptors

5.3.3.1 Construction Impacts

5.3.3.1.1 No Action Alternative and All Action Alternatives

All Activity types

Tree removal and disturbance near trees potentially containing nests have the potential to occur under all action alternatives. As a result, any construction during the potential nesting timeframes described in Section 4.3.3 (Migratory Birds and Raptors) was preceded by nest surveys conducted by USACE biologists and coordination with the USFWS. No active bald eagle's nests were found within the project area and if they had been found, then an appropriate equipment buffer distance would have been discussed with USFWS and established. According to the National Bald Eagle Management Guidelines (USFWS, 2007), the nature of levee repair work would most likely be considered a "Category B" temporary impact (construction with a project footprint larger than 0.5 acres) and if the work would be visible from the nest location, a 660-foot buffer would apply. Shorter buffers can be established along project areas like haul roads where construction equipment does not stop near nests and/ or where construction activities are not visible from nests.

5.3.3.2 Operational Impacts

5.3.3.2.1 No Action Alternative and All Action Alternatives

All Activity types

Operation and maintenance of the levee features under all alternatives is not expected to result in impacts to migratory birds or raptors. These activities will be confined to the levee feature footprint and no new tree removal or disturbance is anticipated.

5.3.3.3 Cumulative Effects of Preferred Alternative

The impacts of cumulative effects on migratory birds or raptors would be similar or the same as the impacts described for bird species under Sections 5.1.3, 5.2.3, and 5.3 above.

5.3.3.4 Measures to Avoid, Minimize, and Mitigate Impacts

Measures would be taken to avoid, minimize, and mitigate potential impacts to migratory birds or raptors. These measures would be similar or the same as the measures described under Sections 5.1.4, 5.2.4, and 5.3 above. Additionally, any construction during the potential nesting timeframes described in Section 4.3.3 (Migratory Birds and Raptors) was preceded by nest surveys conducted by USACE biologists and coordinated with USFWS. If nests were impacted or had the potential to be impacted by construction, the USACE would contact the USFWS to discuss mitigation actions and appropriate distance buffers between the observed active nest and construction equipment.

5.4 Air Quality

5.4.1 Construction and Operational Impacts

5.4.1.1 No Action Alternative and All Action Alternatives

Increases in dust and equipment exhaust would be expected during construction of the action alternatives, levee repairs made by the levee sponsor under the no action alternative, and during levee O&M. These increases would be temporary and would not be expected to be high enough to result in non-attainment areas for any National Ambient Air Quality Standards (NAAQS) parameters in Atchison or Holt Counties, MO or Nemaha County, NE. The types of construction equipment used for levee repairs include dozers, excavators, pan scrapers, dredges, dredge discharge pipe booster pumps. Types of equipment used for levee repair and levee O&M would include mowers and drill seeders. Watering trucks would be used to aid in fugitive dust control during construction activities. The construction-related air impacts would be similar to agricultural activities, road repair activities, and other traffic use in the project area. Therefore, the expected impacts to air quality in the project area from any levee rehabilitation, repair, or O&M construction would be negligible and short-term.

5.4.2 Cumulative Effects of Preferred Alternative

(*This section of the 2020 PEA is incorporated by reference*) In summary, air quality impacts of concern for the project area are primarily associated with construction and include the following:

- Fugitive dust emissions
- Exhaust from construction equipment
- Vehicle exhaust for work travel and movement of supplies

Construction along the levee system would not be expected to contribute to cumulative air quality effects. Project construction would not contribute to air quality impacts on a continued basis. Additionally, construction-related emissions would occur at ground level, limiting the dispersion of pollutants within the immediate project area during the temporary construction period.

5.4.3 Measures to Avoid, Minimize, and Mitigate Impacts

(*This section of the 2020 PEA is incorporated by reference*) In summary, multiple efforts would be made to minimize air pollution including minimizing the amount of land cleared and grubbed, maintaining equipment in proper working order, planning/ scheduling construction actions to minimize trips, and use of water truck to reduce the generation of fugitive dust.

5.5 Water Quality

5.5.1 Construction Impacts

5.5.1.1 No Action Alternative

(*This section of the 2020 PEA is incorporated by reference*) In summary, it is expected that levee sponsors would attempt to repair the levee and restore some level of protection, whether the repairs are consistent with USACE design standards or not. Actions that could impacts water quality (filling wetlands, construction in a river or ditch, etc.) would likely require coordination with the USACE and appropriate state agencies prior to construction. Some additional permitting may be required by the contractor as well. Opting to not repair the damaged levee is

not expected to be likely, but this scenario would be expected to result in no impacts to water quality in the project area.

5.5.1.2 All Action Alternatives

The sections 5.1.1 and 5.2.1 above in this Tiered EA (Terrestrial/ Wetland Habitat and Species and Aquatic Habitat and Species, respectively) provide a thorough analysis of potential water quality impacts to wetland or aquatic resources including coordination with state and federal agencies to ensure compliance with applicable environmental laws. In summary, the in-line alternatives would have resulted in some wetland creation, but also would have resulted in the filling of levee breach floodplain scours, an action which would have been exempt from the Clean Water Act. The levee setback alternatives involve much more wetland creation, floodplain restoration, but also involve permanent impacts to a small amount of wetlands and ditches in the project area. The necessary Clean Water Act permit and water quality certification were obtained from MDNR prior to construction. Construction of any of the action alternative would not be expected to have a positive or negative effect on the 303(d) water quality metrics described in the Water Quality section 4.5 above and overall impacts to water quality would be expected to be negligible and short-term.

5.5.2 Operational Impacts

5.5.2.1 No Action and All Action Alternatives

All activities conducted as part of routine levee operation and maintenance would be expected to result in little to no impacts to water quality. Activities would include, but are not necessarily limited to, gravel resurfacing, vegetation mowing and haying, and pump station repair and upkeep. Levee O&M would take place within the levee footprint and right of way and would not be expected to extend into adjacent habitat areas. Levee O&M activities may require BMPs such as silt fencing or other erosion controls but would not be expected to impact wetlands or streams. In cases where ditches need to be temporarily disturbed or worked in, coordination with USACE Regulatory office may be required (e.g., Nationwide Permit 3 – Maintenance). Overall, the no action alternative and all action alternatives would be expected to have short-term, negligible impacts to water quality.

5.5.3 Cumulative Effects of Preferred Alternative

Overall, the long-term effects of a large-scale levee setback would not be expected to result in significant cumulative impacts compared to the existing conditions and would not be expected to result in negative impacts to water quality in the study area, though may result in very minor water quality improvements in the project area. While floodplains and emergent wetland habitat features are generally known for water filtering characteristics which can result in water quality improvements, it is unknown to what extent one or multiple levee setback projects could have on the Missouri River water quality overall.

5.5.4 Measures to Avoid, Minimize, and Mitigate Impacts

Erosion and sediment control measures and other BMPs would be implemented to ensure water quality impacts during construction are avoided. Erosion and sediment controls may include, but are not necessarily limited to:

• Development of a Storm Water Pollution Prevention Plan (SWPPP)

- Acquisition of a NPDES Permit
- Employment of stabilization practices (e.g., mulching, erosion control blankets, preservation of mature vegetation where possible, etc.)
- Employment of temporary structural practices (e.g., silt fences, storm drain and culvert inlet protections, sediment traps, etc.
- State of Missouri General State Operating Permit MOG 698 was received on October 1, 2020, prior to the initiation of dredging.
- Water quality certification was obtained by the MDNR on September 9, 2020 prior to construction involving wetland impacts.

5.6 Noise

5.6.1 Construction Impacts

5.6.1.1 No Action Alternative

Under the no action alternative, no noise would be produced in the project area as a result of a Federal activity. However, under the scenario that the levee sponsors conduct levee repairs themselves, the noise impacts associated with the construction work would be expected to be similar to those described by land-based equipment under the action alternatives analysis below. This would result in the potential for minor, temporary construction-related noise. BMP's to reduce noise may or may not be implemented so an increase in noise and disturbance to human activity or wildlife could occur.

5.6.1.2 All Action Alternatives

Construction under any of the action alternatives would require the use of heavy equipment. The operation of heavy construction equipment would result in a discernible increase in noise immediately within the project area, which is almost exclusively rural. The noise and related construction activities may cause wildlife to leave or avoid the project area temporarily. Occasionally, construction equipment had to use local roads, highways, or Interstate-29 in transporting material and it is not assumed that the preferred alternative or any other action alternative resulted in or would have resulted in unacceptable increases in noise levels on roads. Large portions of the Coring CA, Deroin Bend CA, and Brownville WMA were temporarily closed to the public during construction of the preferred alternative, so it is assumed that noise made during construction did not impact recreational use of these sites. Fish and wildlife displaced from the area during construction would be expected to return once construction is completed. Occasionally, 24-hour construction operations were initiated, but due to the rural nature of the project area this was not anticipated to result in noise issues. Overall, the action alternatives were expected to result in minor-to-negligible, short-term, localized noise increases in the project area.

5.6.2 Operational Impacts

5.6.2.1 No Action Alternative and All Action Alternatives

Levee O&M activities conducted by the project sponsors would consist of little to no construction equipment operation. Levee mowing, seed application, and pump operation are examples of the types of activities requiring the use of heavy mechanical equipment that would generate relatively loud noise. Overall, levee O&M activities would be conducted infrequently

(few times a year) and would not contribute to significant noise impacts. Levee O&M noise impacts would be expected to be short-term and negligible.

5.6.3 Cumulative Effects of Preferred Alternative

It is anticipated that heavy machinery operation of various types would be underway within the project areas such as road or building construction or agricultural activities while the preferred alternative was being implemented. However, due to the short-term nature of PL 84-99 construction activities, it is anticipated that any cumulative effects on noise levels would be negligible and short-term.

5.6.4 Measures to Avoid, Minimize, and Mitigate Impacts

To reduce the noise impact from project construction in sensitive areas, mitigation measures include the following:

- As needed, equipment and trucks used for project construction will utilize the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically-attenuating shields or shrouds) wherever feasible.
- Heavy construction equipment operations could be limited to daytime weekday periods, but only in cases where flooding is not expected to be imminent (in which case, PL 84-99 construction may need to occur outside of daytime hours).
- Distance buffers may be implemented if sensitive wildlife is or could be present in the project areas during specific times of the year.

5.7 Cultural Resources

5.7.1 Construction Impacts

5.7.1.1 No Action Alternative and All Action Alternatives

It is anticipated that the procedure for evaluating potential impacts to Cultural Resources would be consistent across all alternatives. Therefore, this section describes the process followed prior to and during construction of the preferred alternative. Under the no action alternative, it is assumed that the sponsor would hire a consultant to complete the required SHPO and Tribal coordination described below, as needed.

Tribal and SHPO coordination occurred early and often. Tribal and SHPO coordination occurred at the programmatic level during the development of the 2020 PEA. No substantive comments were received from the MO SHPO, Tribes, or other interested parties associated with the project area during development of the 2020 PEA. Throughout construction of the L-536 levee rehabilitation, coordination occurred multiple times to ensure compliance with the NHPA, particularly for new borrow sites, but occurred for any and all ground-disturbing activities, including demolition of the old L-536 levee alignment. File searches conducted during the project did not indicate likely presence of cultural resources. Over 300 subsurface tests were conducted, including the original levee alignment, the proposed setback area, and potential borrow areas. No archeological materials were observed during the any of the field investigations within the project area, and no cultural resources were observed or impacted during construction. No issues were expressed by consulted entities during any of the coordination. Through

assessment of project construction activities during planning and design by USACE archaeologists, it was determined that the project would have No Adverse Effect on Historic Properties. The MO SHPO concurred with this determination.

A coordination record oversight unfortunately resulted in the Osage Nation not being included during initial project outreach. This was brought to the attention of the USACE during a Missouri River Recovery Implementation Committee meeting and discussions with the Osage Nation Tribal Historic Preservation Officer (THPO) regarding this project began in late 2021. This was after the vast majority of project construction had occurred. Coordination and consultation with the Osage Nation THPO and staff occurred between late 2021 and late 2022 through phone calls and emails. The Osage Nation expressed consternation regarding the lack of coordination and requested that cultural resources surveys be conducted on the project site and that material used to repair the levee be tested to ensure that material from burial mounds were not used. Throughout 2020 and 2021, the L-536 USACE team did conduct extensive geotechnical investigation that doubled as cultural resource and archaeological investigation. In addressing the Osage Nation comments, data logs, photos, and reports associated with the extensive L-536 geotechnical investigations were compiled and packaged into a report and provided to the Osage Nation for review in June 2022. On October 27, 2022, the Osage Nation THPO responded with concurrence with the USACE's "No Properties" determination and stated that that the project most likely will not adversely affect any sacred properties and/or properties of cultural significance to the Osage Nation. See Appendix C for full L-536 coordination record.

There is always potential for an unanticipated discovery of cultural resources during construction activities. In the event that historic resources would have been/ are uncovered, work would be halted immediately and a USACE archeologist would be notified, whom would in turn notify the appropriate SHPOs and/ or Tribes. The work would not be continued until the area is inspected by a USACE archeologist and other appropriate parties. If they determine that the resources require further consultation, USACE will notify the appropriate SHPO and/ or Tribes to determine next steps, including when construction could recommence.

5.7.2 Operational Impacts

5.7.2.1 No Action Alternative and All Action Alternatives

Because levee O&M activities are restricted to constructed levee and other flood risk management features, no new ground disturbance would be expected to occur. Therefore, O&M activities would not be expected to have adverse effect on cultural resources.

5.7.2.2 Cumulative effects of preferred alternative

Because the preferred alternative is not anticipated to result in impacts to cultural resources, it is also not anticipated that PL 84-99 construction activities would contribute to cumulative effects impacting cultural resources.

5.7.2.3 Measures to avoid, minimize, and mitigate impacts

USACE archaeologists evaluated the construction site prior to and concurrently with initiation of construction activities. These evaluations included file searches, review of historical records, as well as on-site surface and sub-surface investigations.

5.8 Farmland

5.8.1 Construction Impacts

5.8.1.1 No Action Alternative

Under the No Action Alternative, assuming the levee sponsor seeks to close the L-536 breaches and restore some level of flood protection, it is anticipated that farming would resume on floodplain land as it had been conducted prior to the flooding. A scenario where the levee is not repaired by levee sponsor is anticipated to be uncommon. Under this scenario, farming might be expected to be discontinued due to the threat of flooding and the reduction in Farm Bill program benefits and subsides.

5.8.1.2 Alternative 1. In-Line Repairs, Sheet Pile Cutoff for Permanent Breach Repair and Alternative 2. In-Line Repairs, Place Berms at Breach Repairs

If in-line repairs had been pursued, it is anticipated that NRCS EWPP-FPE easement applications in the project area would not have been as highly prioritized and therefore might not have been established, or at least not to the extent as under Alternatives 3 and 4. Therefore, it is anticipated that more private farm ground, including some of the Prime Farmland depicted in Figure 14 above intended for future use in agricultural production may have been utilized for levee repair borrow material. Such use of farmland for borrow excavation has the potential to permanently impact the ability to continue agricultural practices. For example, the use of land for topsoil or clay borrow mining, while still able to grow native vegetation, could render the land unusable for reliable farming practices. Borrow pits on private farmland could still be farmable if a suitable amount of top soils and/ or clay material was left following excavation, or those depressional areas could become too wet to farm. In the cases where borrow excavation rendered farmland unproductive, the impacts on farmland would be the same as the landowner enrolling the property in NRCS, just without the easement payout compensation from the NRCS. Without NRCS participation, it's likely that the landowner would receive compensation from the levee sponsors for borrow operations, either on a per cubic yard basis (e.g., \$3 per cubic yard) or as a fee title buyout to fully compensate the landowners.

In general, borrow excavation would be expected to have moderate to major long-term impacts on farmland. Additionally, some private farmland adjacent to the levee would be permanently impacted by the breach closure work and widening of landward seepage berms.

5.8.1.3 Alternative 3. System Levee Setback and Alternative 4 Partial Levee Setback (Preferred Alternative)

Alternatives 3 and 4 would both be associated with the enrollment of private farmland, including some Prime Farmland, into perpetual conservation easements. The establishment of these new NRCS EWPP-FPE conservation easements on private farmland represents a permanent impact to agricultural production. While enrollment of land in these easements isn't directly part of the USACE construction efforts, it is part of the levee sponsor's strategy to secure needed real estate for the levee setback. Under Alternative 4, approximately 782 acres of private farmland are to be enrolled in NRCS EWPP-FPE easements (this would be expected to be slightly higher under Alternative 3), which includes about 492 acres on the riverward side of the setback and 290 acres on the landward side. This includes the conversion of approximately 435 acres of Prime

Farmland (including if drained) total. The remainder of land within the immediate project area that is classified as Prime Farmland is already under federal ownership for habitat conservation purposes. This represents a long-term, major effect on farmland in the immediate project area, but landowners are able to take advantage of the 1031 Exchange tax-deferred swap program to purchase new farmland elsewhere in the region.

5.8.2 Operational Impacts

5.8.2.1 No Action Alternative and all Action Alternatives

Because levee O&M activities are restricted to constructed levee and other flood risk management features, no new ground disturbance would be expected to occur. Therefore, O&M activities would not be expected to result in any impacts to farmland.

5.8.3 Cumulative Effects of Preferred Alternative

This large-scale levee setback project has the potential to contribute to cumulative effects on farmland along the Missouri River, but such cumulative effects would wholly rely upon private landowners looking to sell their land. As willing sellers are actively seeking to enroll their land in federal conservation easement programs or sell in fee title to conservation programs, opportunities for large-scale levee setbacks like at L-536 will probably increase over time. NRCS programs aimed at acquiring Missouri River floodplain land, such as the annual Wetland Reserve Easement program or the flood-related EWPP-FPE, are expected to continue, resulting in more floodplain being taken out of agricultural production as landowners make the decision to get out of flood-prone areas. Other federal, state, and NGO conservation entities and programs will also likely continue to seek opportunities to purchase fee title lands along the Missouri River where willing sellers want to be bought out.

5.8.4 Measures to Avoid, Minimize, and Mitigate Impacts

(*This section of the 2020 PEA is incorporated by reference*) In summary, the levee sponsor is required to secure real estate need for the PL 84-99 levee rehabilitation construction. The private landowners impacted by levee rehab construction at L-536 will be compensated for their land and are able to take advantage of the 1031 Exchange tax-deferred swap program to purchase new farmland elsewhere in the region.

5.9 NRCS easements

5.9.1 Construction Impacts

5.9.1.1 Alternative 1. In-Line Repairs, Sheet Pile Cutoff for Permanent Breach Repair and Alternative 2. In-Line Repairs, Place Berms at Breach Repairs

Under Alternatives 1 and 2, some impacts to the existing NRCS WRP easement could be anticipated. None of the breach repair construction would overlap with the existing WRP easement area. However, if some of the in-line repairs needed along the portion of the levee that boarders the south side of Corning CA needed to extend the levee footprint landward, then the NRCS WRP easements would be impacted. If it is assumed that the landward seepage berm needed to be extended to match the L-536 seepage berm extension completed in 2011, the impact to existing NRCS WRP easements could be up to approximately 17 acres, and would occur along the southern boundary of the Coring CA. See Figure 19 below for depiction of possible impacts to WRP under Alternatives 1 and 2. This level of impact would trigger the NRCS's easement

administration action (EAA) process and the ACDL would be required to compensate NRCS for the loss of easement acres.

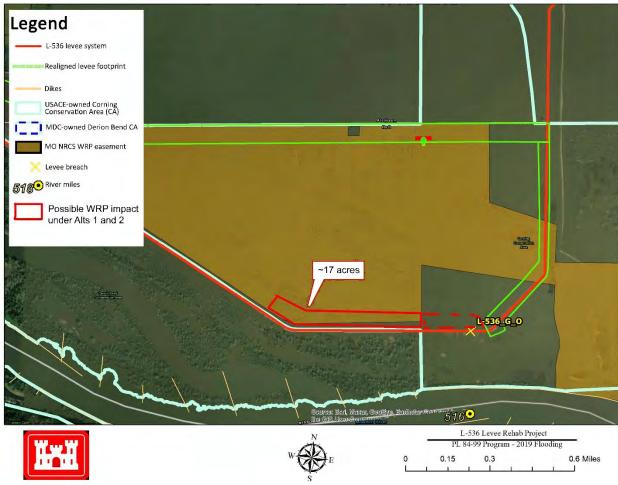


Figure 19. Possible WRP impacts under Alternatives 1 and 2 if seepage berm was expanded landward across NRCS easement land

5.9.1.2 Alternative 3. System Levee Setback and Alternative 4 Partial Levee Setback (Preferred Alternative)

While Alternatives 3 and 4 would result in significant ecological benefit to existing WRP easements and pending EWPP-FPE easements, construction of the levee setback would still result in the permanent impact to 46.41 acres of existing WRP easement. This includes the constructed levee footprint as well as the establishment of a levee sponsor operation and maintenance easement right of way. Construction of the Alternative 4 large-scale levee setback triggered the NRCS's EAA process and as a result the levee sponsor was responsible for compensating NRCS for the impacts by purchasing or providing replacement real estate. An ecological evaluation of the proposed replacement land, comparing it to the WRP acres impacted, was completed by MO NRCS staff indicating that a 1:1 replacement ratio would be appropriate for compensation. An economic analysis of the proposed replacement land also

indicated that a 1:1 replacement ratio would be appropriate. That analysis is provided in Appendix D.

As per a Regional MOU signed between the USACE Northwestern Division and the NRCS Central Region, the EAA process was able to be conducted concurrently with/after (as needed) levee rehab planning, design, and construction. The ACLD partnered with The Nature Conservancy, MDNR, MDC, and others throughout project construction to secure compensation land for the NRCS and complete the EAA process. Figure 20 below shows the location of the NRCS easement impacts as well as the location of the mitigation land.

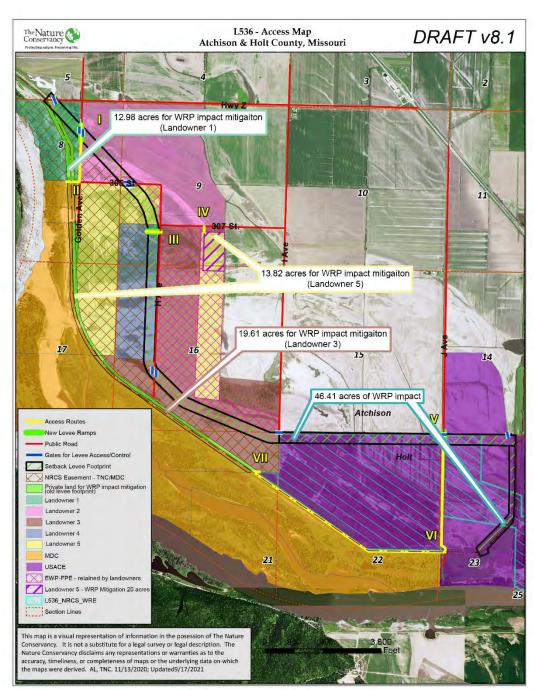


Figure 20. NRCS WRP Impact and Mitigation Locations.

The WRP impacts and EAA process notwithstanding, the quality and quantity of habitat at the existing WRP as well as the pending EWPP-FPE easement areas in general has been significantly increased as a result of the levee setback construction project. As discussed in Section 5.1 above, hundreds of acres of new wetland habitat was created on NRCS easement land and approximately 1,000 acres of NRCS easement land has been reconnected to the riverward side of the L-536 levee.

5.9.2 Operational Impacts

5.9.2.1 No Action Alternative and All Action Alternatives

Because levee O&M activities are restricted to constructed levee and other flood risk management features, no new ground disturbance would be expected to occur. Therefore, O&M activities would not be expected to have adverse effect on NRCS easements, trigger and easement administrative action, or require a compatible use authorization.

5.9.3 Cumulative Effects of Preferred Alternative

This large-scale levee setback project has the potential to contribute to cumulative effects to NRCS easements. As described previously in this TEA, it was only through the combined efforts of the NRCS EWPP-FPE program and the USACE's PL 84-99 program that this project was able to be constructed. The fact that the L-536 project serves as an example of successful collaboration between PL 84-99 and NRCS EWPP-FPE demonstrates that this type of synergistic levee setback project could be replicated immediately adjacent to the L-536 project area, elsewhere along the Missouri River, or elsewhere in the country. After future flood events that trigger both PL 84-99 and EWPP-FPE, the USACE, NRCS, levee sponsors, private landowners, and other partners may attempt to replicate this levee setback pursuit strategy, which has the potential to focus the types and location of NRCS EWNPP-FPE applications that are selected for funding.

5.9.4 Measures to Avoid, Minimize, and Mitigate Impacts

It was apparent to the multi-agency team immediately that the L-536 project would result in unavoidable impacts to NRCS WRP easement, and steps to complete the easement administrative action began at the beginning of the planning process. Where levee footprint on WRP easement parcels could not be adjusted or reduced in size, land to mitigate for the impacts was pursued. The ACLD and TNC, with funding assistance from the state of Missouri, jointly pursued negotiations with adjacent landowners to secure land needed to compensate NRCS. As of the writing of this TEA, the negotiations and closing steps are still ongoing, but are expected to be completed in early 2022. While the matter of real estate compensation is the most substantial part of the easement administrative action, the process involves other steps that have already been addressed or are also in the process of being addressed. The USACE, ACLD, TNC, and other project partners (to the extent that they have a role) have committed to and remain committed to fully satisfying the NRCS easement admirative action process as per NRCS statutory requirements, within the timeframe allowances provided in the 2019 Regional MOU.

6 AGENCY AND PUBLIC ENGAGEMENT

In general, the NWO was in constant contact with the project partners, sponsor, landowners (as needed) and other affected entities through project planning, design, and construction. See Appendix C for agency coordination and correspondence records.

On January 1, 2020, a public notice was sent out to relevant agencies, including adjacent landowners and levee sponsors, announcing the project and soliciting early feedback. The only substantive comment received was from the Corning Levee District (CLD) regarding concerns of potential hydraulic impacts to the Corning Levee on the east side of Mill Creek after L-536 was realigned. This scoping response resulted in an early phase of direct coordination with the CLD during levee setback planning and design. Hydraulic modeling and plans for constructed levee features designed to prevent Corning Levee issues induced by L-536 were shared with the CLD until concerns had been alleviated.

Close discussions with USACE Kansas City District also occurred during most of 2020 in order to coordinate levee rehabilitation planning, design, and construction activities between L-536 and the downstream Corning Levee. These internal discussions between levee rehabilitation project delivery teams and District PL 84-99 leadership helped ensure construction on both sides of Mill Creek would not conflict and that any modeling or design information needed by either team was flowing freely between Districts.

6.1.1 Agencies Coordinated With

Through the planning, design, and construction of the L-536 levee rehabilitation, the following entities have been coordinated with on a very frequent basis, or as needed as construction activities evolved:

Federal Agencies:

Natural Resources Conservation Service (MO, NE, and HQ)

U.S. Fish and Wildlife Service

U.S. Environmental Protection Agency

U.S. Economic Development Administration

State Agencies:

Missouri Department of Conservation

Missouri Department of Natural Resources

Northwest Missouri Regional Council of Governments

Missouri State Historic Preservation Office

Nebraska Game and Park Commission

Missouri Department of Economic Development

Levee Sponsors:

Atchison County LD #1

Corning Levee District

multiple local drainage districts were also coordinated with throughout construction

Non-governmental Organizations:

The Nature Conservancy

Adjacent Landowners:

Close coordination with the private landowners occurred while borrow material excavation and wetland grading was occurring on private land with pending EWPP-FPE easement applications. Close coordination occurred in order to ensure that construction within a pending NRCS easement application area did not result in impacts to that area that would result in the land becoming ineligible for the easement program.

Tribes:

Iowa Tribe of Nebraska and Kansas Otoe-Missouria Tribe Pawnee Nation of Oklahoma Ponca Tribe of Indians of Oklahoma Winnebago Tribe of Nebraska Osage Nation*

*A coordination record oversight unfortunately resulted in the Osage Nation not being included during initial project outreach. This was brought to the attention of the USACE during a Missouri River Recovery Implementation Committee meeting and discussions with the Osage Nation Tribal Historic Preservation Officer (THPO) regarding this project began in late 2021. Internal records have been updated to ensure this oversight does not occur again. Additionally, procedures for strengthening incorporation of SHPO/ Tribal were implemented in subsequent levee rehabilitation tasks in 2022 and onward.

6.1.2 Frequent Coordination

Regarding frequent agency coordination, a weekly multi-agency partnership conference call was held starting in October 2019 and were ongoing until mid 2022. As of the writing of this tiered EA, these calls have become real estate acquisition-focused and are held monthly as most construction work and real estate acquisition activities have concluded. The primary participants in these have been USACE (Omaha and Kansas City Districts), Atchison County Levee District, The Nature Conservancy, Missouri NRCS, MDC, MDNR, NWMOCOG, though others have periodically joined over the years (e.g., MOSEMA, MO Department of Economic Development, and U.S. Economic Development Administration, etc.). During these calls, the multiagency team worked with tireless transparency and dedication to identify and jointly resolve issues that arose during L-536 levee rehabilitation planning, design, and construction. They served as brainstorming sessions, issue resolution workshop sessions, task delegation discussions, and land acquisition coordination and funding discussions. These calls were a critical component of the agency coordination efforts and project success.

7 COMPLIANCE WITH ENVIRONMENTAL LAWS

Bald and Golden Eagle Protection Act, 16 U.S.C. Sec. 668, 668 note, 669a-668d. In compliance. This Act prohibits the taking or possession of and commerce in bald and golden eagles, with limited exceptions for scientific or exhibition purposes, for religious purposes of Indian Tribes, or for the protection of wildlife, agriculture, or preservation of the species. No active nests were observed within the project area, but some active nests are known to be within the general vicinity of the project area, (i.e., 1 mile away or further from where construction was occurring). None of these were close enough to construction activities to warrant coordination with the USFWS. Prior to construction and/ or tree clearing, bird surveys were performed by a USACE Environmental Resources Specialist and state GIS records of active or historic bald eagle nests were consulted to confirm that no bird or nest impacts would occur. The project is anticipated to have no adverse effects on the bald eagle or other protected raptors.

<u>Clean Air Act, as amended, 42 U.S.C. 185711-7. et seq.</u> In compliance. The construction-related air impacts would be similar to agricultural activities, road repair activities, and other traffic use in the project area. Therefore, the expected impacts to air quality in the project area from any levee rehabilitation, repair, or O&M construction would be negligible and short-term.

Clean Water Act, as amended. (Federal Water Pollution Control Act) 33 U.S.C. 1251. et seq. In compliance. The objective of this Act is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters (33 USC 1251). The USACE regulates discharges of dredge or fill material into waters of the United States pursuant to Section 404 of the Clean Water Act. This permitting authority applies to all waters of the United States including navigable waters and wetlands. The selection of disposal sites for dredged or fill material is conducted in accordance with the Section 404(b)(1) guidelines, which were developed by the EPA (40 CFR Part 230). While the NWO does not issue itself permits, NWO projects involving the discharge of dredged or fill material into the waters of the United States are to be developed in accordance with guidelines promulgated under the authority of Section 404(b)(1) of the CWA. Coordination with the NWK Regulatory Office in Kansas City, Missouri occurred early on in the planning process to inform them of the proposed project. Because the preferred alternative consisted of wetland fill and permanent impacts to drainage ditches, the process equivalent to securing an Individual Permit was followed by the USACE. Water Quality Certification was obtained by the State of Missouri on September 9, 2020 for filling of 8 acres of emergent/open water wetland lands and 500 LF of permanent drainage ditch impacts. Approximately 420 acres of new emergent wetland habitat was constructed as part of this project, so the project is considered to be self-mitigating. Additionally, on October 1, 2020 a permit was obtained by the construction contractor from the State of Missouri approving the dredge-discharge return flow as part of seepage berm construction. As described in the environmental consequences section and 404(b)(1) analysis, the preferred alternative is expected to have no adverse impacts to water quality.

Comprehensive Environmental Response Compensation and Liability Act (CERCLA). In compliance. Typically CERCLA is triggered by (1) the release or substantial threat of a release of a hazardous substance into the environment; or (2) the release or substantial threat of a release of any pollutant or contaminant into the environment which presents an imminent threat to the

public health and welfare. To the extent such knowledge is available, 40 CFR Part 373 requires notification of CERCLA hazardous substances in a land transfer. No CERCLA issues or hazardous substances are known to occur within the project area. Additionally, as part of the NRCS EAA, a Phase I Environmental Assessment was conducted by the levee sponsor on the land associated with NRCS WRP easements in the project area which also revealed no presence of HTRW within the project area.

<u>Endangered Species Act</u>, as amended. 16 U.S.C. 1531, et seq. In compliance. This project has been coordinated with the USFWS. Informal consultation was conducted through emails, letters, and phone conferences with the USFWS Columbia, MO Ecological Services Office throughout levee rehabilitation planning, design, and construction. The proposed project may affect, but is not anticipated to adversely affect federally listed species. Informal consultation with USFWS was brought to a close on August 21, 2020 with the USFWS communication of concurrence with the biological assessment and effects determination submitted by USACE staff.

Environmental Justice (E.O. 12898). In compliance. Federal agencies shall make achieving environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations in the United States. The project area is contiguous to federal and state conservation land, as well as private land that is predominantly used for agricultural production. No know minority or other communities that may be disproportionately negatively affected by the project exists around the project area. The project results in a restoration of flood protection in the surrounding area that will allow the majority of the community to continue their pre-flood lifestyle. The project also results in an increase of public conservation land that is freely accessible to anyone for hunting, education, or other recreational opportunities. The project does not disproportionately impact minority or low-income populations.

Farmland Protection Policy Act (Subtitle I of Title XV of the Agriculture and Food Act of 1981), effective August 6, 1984. In compliance. Compliance with this act also will satisfy the requirements set forth in Council on Environmental Quality (CEQ) Memorandum of August 11, 1980, Analysis of impacts on Prime or Unique Agricultural Lands in Implementing NEPA. Although some prime farmland is impacted by levee repair, the nature of this work ultimately helps manage the risk of future flooding on farmlands.

Federal Water Project Recreation Act, as amended, 16 U.S.C. 460-1(12), et seq. In compliance. With the increase in freely accessibly public conservation land in the immediate project area, the preferred alternative could result in a substantial increase in recreational opportunities for hunters, hikers, wildlife observers, and others interested in low-impact outdoor recreation.

<u>Fish and Wildlife Coordination Act. 16 U.S.C. 661 et seq.</u> In compliance. Appendix C contains records of agency written coordination. Emails, letters, and phone conferences have been conducted with the USFWS, NGPC, MDNR, MDC, and others throughout this flood response and rehabilitation effort. Phone call discussions with the USFWS and other resource agencies during early 2019 resulted in the decision to not transfer funding to the USFWS the develop

planning aid letters or coordination act reports. The abundant level of coordination, communication, collaboration, and consultation with these natural resource agencies conducted by USACE staff, the incorporation of ESA conservation measures submitted by USFWS staff, and the maximization of incorporation of natural and nature-based features into the construction project satisfies the intent of FWCA.

<u>Floodplain Management (E.O. 11988)</u>. In compliance. Hydraulic modeling demonstrates that the project will not result in flood stage rise. An E.O. 11988 compliance analysis was completed on May 1, 2019 and further steps to ensure EO compliance were completed during planning and design of the levee rehabilitation project.

Migratory Bird Treaty Act of 1918 as amended, 16 U.S.C. 703-711, et seq. In compliance. The Migratory Bird Treaty Act of 1918 (MBTA) is the domestic law that affirms, or implements, the United States' commitment to four international conventions with Canada, Japan, Mexico and Russia for the protection of shared migratory bird resources. The MBTA governs the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts and nests. The take of all migratory birds is governed by the MBTA's regulation of taking migratory birds for educational, scientific, and recreational purposes and requiring harvest to be limited to levels that prevent over utilization. Executive Order 13186 (2001) directs executive agencies to take certain actions to implement the act. Tree clearing was conducted multiple times during construction, in a phased approach and only on an as needed basis. Tree clearing was conducted in the winter to the maximum extent possible. Tree clearing was also necessary during timeframes that birds could be nesting in the project area. The dead, sparsely forested area within Corning CA provided excellent conditions to observe the tree limbs and possible nesting behaviors and no nests were found during nesting survey performed by USACE Environmental Resources Specialists. Coordination with USFWS regarding potential bat concerns also coincided with some of these bird nesting surveys. Tree clearance activities is not expected to have negatively impacted migratory birds in the project area.

National Environmental Policy Act (NEPA), as amended, 42 U.S.C. 4321, et seq. In compliance. This tiered environmental assessment has been prepared for the alternatives originally proposed during the design phase of the project and to satisfy the NEPA requirements. An extreme amount of unknowns regarding rising flood waters; imminent risks to property damage; continued risk to life, health and safety; ecological impacts; hydraulic issues; real estate availability; and construction methods necessitated following the emergency NEPA provisions in ER 200-2-2 for this project. A memo dated March 20, 2019 signed by the Omaha District Commander invoked this emergency NEPA provision. Additionally, this tiered EA and FONSI indicate that an Environmental Impact Statement is not required.

National Historic Preservation Act, as amended. 16 U.S.C. 470a, et seq. In compliance. Coordination with potentially affected Tribes and the MO SHPO occurred at the beginning of and throughout the planning, design, and construction of the project. In some cases, coordination occurred immediately before or concurrently with construction activities due to the rapid and emergency nature of the PL 84-99 activities. Cultural resource inventories and field surveys were conducted as needed prior to construction. The project did not result in adverse effects to

cultural resources, with concurrence being expressed in the only comments received from MO SHPO and the Osage Nation.

Natural and Nature-Based Features in Rehabilitation Assistance, PL 114-322, 33 U.S.C S. 2289a and PL 115-270, 33 U.S.C. S. 2282. In compliance. Sections 1176 and 1184 of the 2016 Water Infrastructure Improvements for the Nation (WIIN) Act and Section 1149 of the 2018 Water Resources Development Act (WRDA) provide definitions for "natural and nature-based features" (NNBF) and directs the USACE to consider implementation of NNBFs in structural and nonstructural post-flood levee rehabilitation repairs. The ecological benefits that result from a large-scale levee setback and from the conversion of borrow pits into wetlands on conversation land equate to meaningful NNBF's having been incorporated into this project.

Noise Control Act of 1972, 42 U.S.C. 4901 et seq. In compliance. While there was an initial noise disturbance during construction, there would be no long-term noise disturbances associated with this project. Upon project completion, the area would take on a more natural setting.

<u>Protection of Wetlands (EO 11990)</u>. In compliance. All construction activities were conducted in compliance with applicable permits/ water quality certifications and all of the minor, unavoidable wetland impacts were more than mitigated for during construction of a significant amount of new emergent wetland and reconnected floodplain habitat.

<u>Rivers and Harbors Act, 33 U.S.C. 401, et seq.</u> In compliance. A Section 10 permit is not required for USACE projects.

Watershed Protection and Flood Prevention Act, 16 U.S.C. 1101, et seq. In compliance. Each contractor is required to provide the NWO with an erosion and sedimentation control plan prior to the start of construction. Best Management Practices were implemented to minimize erosion and sedimentation potential.

8 PREPARER

This Tiered EA and the associated Finding of No Significant Impact (FONSI) were developed by Mr. Dave Crane, Environmental Resources Specialist. The address of the preparer is: U.S. Army Corps of Engineers, Omaha District; PMA-C, 1616 Capitol Avenue, Omaha, Nebraska 68102.

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APPENDIX A – MAY 2020 PROGRAMMATIC ENVIRONMENTAL ASSESSMENT (PEA) FOR ALL NWO PL 84-99 ACTIVITIES ASSOCIATED WITH THE 2019 FLOOD



FINAL PROGRAMMATIC ENVIRONMENTAL ASSESSMENT & FINDING OF NO SIGNIFICANT IMPACT

PUBLIC LAW 84-99 EMERGENCY LEVEE REHABILITATION PROGRAM & ADVANCED MEASURES CIVIL EMERGENCY MANAGEMENT PROGRAM FOR 2019 FLOODING IN THE OMAHA DISTRICT

April 2020

Prepared by:

U.S. Army Corps of Engineers, Omaha District Environmental and Cultural Resources Section Planning Branch, CENWO-PMA-C 1616 Capitol Avenue Omaha, Nebraska 68102-4901

FINAL PROGRAMMATIC ENVIRONMENTAL ASSESSMENT & FINDING OF NO SIGNIFICANT IMPACT PUBLIC LAW 8499

EMERGENCY LEVEE REHABILITATION PROGRAM

ADVANCED MEASURES CIVIL EMERGENCY MANAGEMENT PROGRAM FOR 2019 FLOODING IN THE OMAHA DISTRICT April 2020

In accordance with the National Environmental Policy Act (NEPA) and implementing regulations, a Programmatic Environmental Assessment (PEA) has been prepared for the PL 84-99 Emergency Levee Rehabilitation Program & Advanced Measures Civil Emergency Management Program for the 2019 Flooding in the Omaha District (NWO). The purpose of the PL 84-99 Emergency Levee Rehabilitation Program is to provide emergency assistance to levee districts and communities (project Sponsors) in the form of levee repair and/or flood damage reduction as directed by Congress (33 U.S.C. 701n)

Two alternatives were considered the Preferred Alternative and the No Action Alternative. The No Action Alternative would result in no levee repair assistance from NWO's PL 84-99 levee rehabilitation program. Selection of the "No Action" alternative is expected to result in a "predictable action by others" as discussed in the Council on Environmental Quality Regulations (1981). This "predicable action" would consist of the public sponsor repairing the levee without assistance through the PL 84-99 program. The preferred alternative consists of repairing the levees to their pre-flood conditions with potential in-line repairs, minor levee setbacks, or major levee set-backs, depending on the severity of scour hole and backfilling required and as outlined in PL 84-99. This action is meant to restore the same level of flood risk management to a damaged area that existed prior to any flood damage.

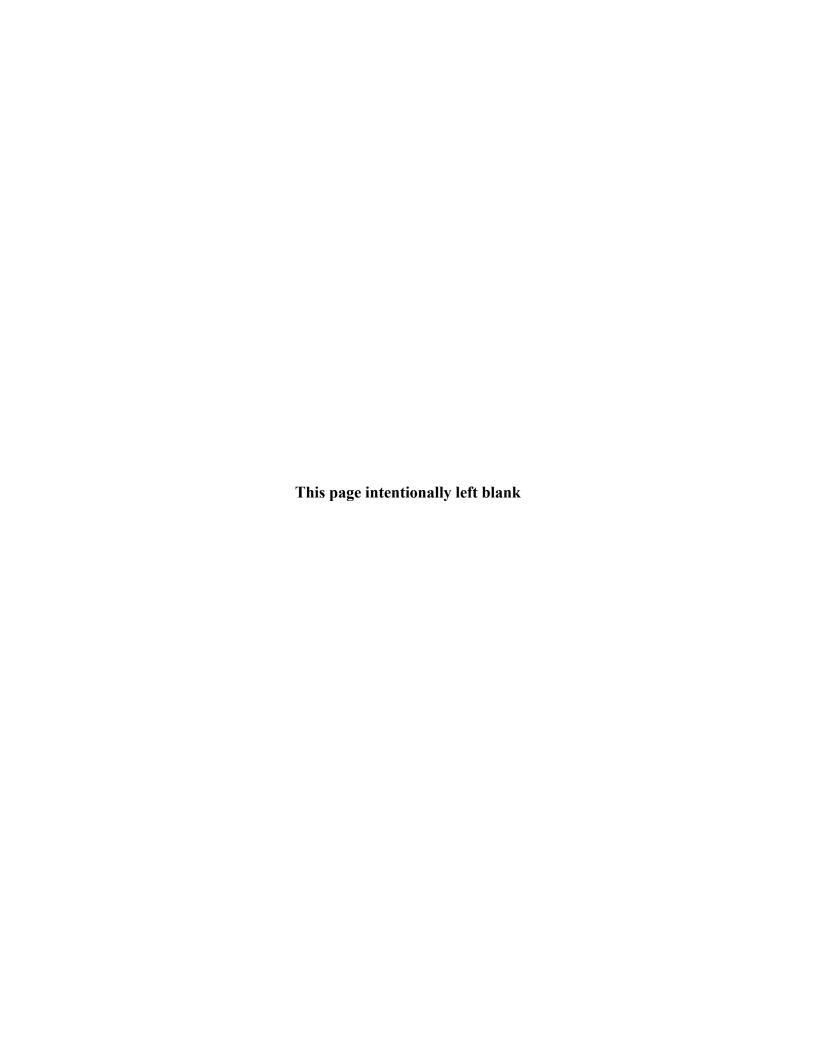
The PEA and comments received from the resource agencies and the public were used to determine whether the proposed action would require the preparation of an Environmental Impact Statement (EIS). All environmental, social, and economic factors relevant to the proposal were considered in the PEA. No significant adverse impacts to these resources are expected to occur. The proposed project would repair flood-damaged levees and alleviate the flood risk management concern. The proposed action would be in compliance with applicable environmental laws and regulations.

It is my finding, based on the PEA that the proposed federal activity would not have any significant adverse impacts on the environment and would not constitute a major federal action significantly affecting the quality of the human environment. Therefore, an EIS will not be prepared.

Date: 14 May 2020

Digitally signed by HUDSONJOHNLAIRD.1010664329 Date: 2020.05.14 11:28:02 -05:00*

John L. Hudson, P.E. Colonel, Corps of Engineers District Commander



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List of Acronyms

BiOp Biological Opinion

BSNP Bank Stabilization and Navigation Project

CERCLA Comprehensive Environmental Response Compensation and Liability Act

CEQ Council on Environmental Quality
CFR Code of Federal Regulations

CWA Clean Water Act

EA Environmental Assessment

EIS Environmental Impact Statement

EO Executive Order

EPA Environmental Protection Agency

ER Engineer Regulation
ESA Endangered Species Act

EWP-FPE Emergency Watershed Protection – Floodplain Easement Program

FONSI Finding of No Significant Impact

GP General Permit

IDNRIowa Department of Natural ResourcesIPACInformation for Planning and ConsultationMDCMissouri Department of ConservationMDNRMissouri Department of Natural Resources

MRRP Missouri River Recovery Program

NAAQS National Ambient Air Quality Standards

NDEQ Nebraska Department of Environmental Quality

NEPA National Environmental Policy Act NGO Non-governmental Organization

NGPC Nebraska Game and Parks Commission NHPA National Historic Preservation Act

NPDES National Pollutant Discharge Elimination System

NRCS Natural Resources Conservation Service NWK Kansas City District, Corps of Engineers NWO Omaha District, Corps of Engineers

NWP Nationwide Permit

O&M Operation and Maintenance

PEA Programmatic Environmental Assessment

PIR Project Information Report

REC Record of Environmental Consideration

RGP Regional General Permit

SDGFP South Dakota Game Fish and Parks SHPO State Historic Preservation Office SOP Standard Operating Procedure

SWE Soil Water Equivalent

SWPPP Soil and Water Pollution Prevention Plan

TNC The Nature Conservancy
USACE U.S. Army Corps of Engineers

USC United States Code

USFWS U.S. Fish and Wildlife Service

WGFD Wyoming Game and Fish Department WINOFI Water in Need of Further Investigation

WMA Wildlife Management Area

WRDA Water Resources Development Act

FINAL PROGRAMMATIC ENVIRONMENTAL ASSESSMENT & FINDING OF NO SIGNIFICANT IMPACT PUBLIC LAW 84-99 EMERGENCY LEVEE REHABILITATION PROGRAM

&
ADVANCED MEASURES
CIVIL EMERGENCY MANAGEMENT PROGRAM
FOR 2019 FLOODING IN THE OMAHA DISTRICT

April 2020

1 INTRODUCTION

1.1 Background

During the fall months of 2018, the lower Missouri River Basin saw very wet conditions with several weather systems resulting in saturated soil conditions heading into the winter season. Below normal winter temperatures resulted in a deep frost depth. The extreme cold temperatures persisted into early spring which combined with an active storm pattern across the plains. Typically gradual warming temperatures in late February and March would allow for a slow snowmelt along with ground thaw. 2019 did not follow this pattern which resulted in a record snowpack with 2-4 inches of snow water equivalent (SWE) still covering much of the lower Missouri River Basin as late as March 12, 2019. The extreme cold temperatures also allowed for the development of thick ice on area streams and rivers.

Temperatures over the lower Missouri River Basin quickly warmed in conjunction with a heavy precipitation event from March 12 -14, 2019 across much of the Lower Basin. Rain totals of 1 to 3 inches across the region with pockets greater than 3 inches reported across eastern Nebraska. The precipitation was in the form of snow across the western and northern plains, while warmer temperatures resulted in rain across the eastern plains. The warm temperatures also produced significant snowmelt which combined with the heavy rainfall to produce high runoff due to the frozen ground. The extreme runoff resulted in high to record flows along the unregulated streams and rivers in eastern Nebraska and western Iowa. Numerous records at river gages in eastern Nebraska were exceeded by 1 to 4 feet with a few along the Elkhorn River nearing stages 6 feet higher than previous long standing records. Several ice jams were also reported during this event.

Flooding conditions remained throughout the spring and summer. In late May and mid-September, additional large rounds of flooding pulsed through the project area, exacerbating levee flood damage, driving some construction crews to focus on flood fighting instead of levee repairs, and resulted in some new river stage records surpassing records from earlier that spring.

As a result of the 2019 flooding, the mainstem Missouri River saw high flows downstream of Gavins Point Dam, especially south of the confluence of the unregulated Little Sioux River basin. Record flows were observed on the Missouri River downstream of the confluence of the unregulated Platte River.

In the U.S. Army Corps of Engineers Omaha District (NWO), widespread damage to levees along the Missouri River and its tributaries occurred as a result of this flood event, resulting in damage to over 30 levee systems and 32 full levee breaches.

A Programmatic Environmental Assessment (PEA) is being prepared in order to evaluate and document the potential impacts of implementing PL 84-99 activities in response to the 2019 flooding. A programmatic approach is appropriate because levee rehabilitation projects typically share a strong similarity in terms of construction methods and environmental impacts. Experience from past projects provide extensive knowledge of damages sustained during flood events, and environmental impacts that may result through levee rehabilitation activities.

1.2 Project Authority and PL 84-99 Eligibility

One of the missions of the U.S. Army Corps of Engineers (USACE) is the Emergency Levee Rehabilitation Program and the Advanced Measures Civil Emergency Management Program under the authorities of 33 U.S.C. 701n (commonly referred to as Public Law 84-99 or PL 84-99); Army Regulation 500-60, Disaster Relief; and Engineer Regulation 1130-2-530, Flood Control Operations and Maintenance Policies. These laws and authorities allow the USACE to provide a levee rehabilitation program for repairing levees after flood events and perform Advanced Measures prior to flooding or flood fighting to protect against loss of life and significant damages to urban and/or public facilities.

To be included in the PL 84-99 program, levees must be routinely inspected and meet construction, operation and maintenance standards set by the USACE. There are two main categories of levees included in the program; non-Federal and Federal levees, based on the entity that originally constructed them. Both of these categories of levees can include agricultural and urban levees. Most of the levees enrolled in the NWO's PL 84-99 program are Federal levees designed to protect urban areas. All levee rehabilitation under PL 84-99 is limited to restoring the same level of flood risk management to a damaged area that existed prior to any flood damage. All Advanced Measure responses are temporary in nature; to be removed by the public sponsor after the flood threat has passed and the area returned to pre-flood preparedness conditions (ER 500-1-1; 7-1 a. (2) h).

This PEA provides the necessary information to fully address the potential environmental impacts of NWO's PL 84-99 levee rehabilitation program and Advanced Measure responses to the 2019 flooding as required under the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S. Code [USC] 4321 et seq.); the President's Council of Environmental Quality (CEQ) Regulations (40 Code of Federal Regulations [CFR] 1500 – 1508) (CEQ, 1992); the US Army Corps of Engineers (USACE) Procedures for Implementing NEPA Engineer Regulation (ER) 200-2-2 (33 CFR 230); the Army Regulation 500-60, Disaster Relief; and Engineer Regulation 1130-2-530, Flood Control Operations and Maintenance Policies.

To be eligible for rehabilitation assistance under the PL 84-99 program, the following conditions must be met (USACE, 2001):

• Must be a primary levee or a Federally-constructed flood risk management levee.

- Non-Federal levees must provide a minimum level of protection (5-year for agricultural levees, 10-year for urban levees).
- The levee unit must have a public sponsor (levee or drainage district, city, county, or other taxing district).
- Must be damaged by flooding and the damages must exceed \$15,000.
- Must be properly maintained in accordance with USACE standards.
- The rehabilitation project must have a favorable benefit-to-cost ratio, meaning that the annual benefit must exceed the total annualized cost of rehabilitation, including maintenance.

Federal Levee rehabilitation is performed at 100% Federal cost, and non-Federal levee rehabilitation is performed at 80% Federal cost, and 20% public sponsor cost.

Advance Measures assistance may be technical and/or direct assistance. Direct Assistance may only be provided after the State has determined the effort to be beyond its capability and the Governor submits a request to USACE.

1.2.1 Technical Assistance

Technical assistance consists of providing technical review, advice, and/or recommendations to state and local agencies before an anticipated flood event. The following are examples of technical assistance support:

- (1) Providing personnel to inspect existing flood risk management structures to identify potential problems and solutions, to evaluate conditions to determine the requirements for additional flood control protection, and to recommend the most expedient construction methods.
 - (2) Providing hydraulic, hydrologic, and/or geotechnical analysis.
- (3) Providing information readily available at USACE districts to local entities for use in the preparation of local evacuation and/or contingency flood plans, and providing assistance in the preparation of flood fight plans.

1.2.2 Direct Assistance

USACE can provide direct assistance to supplement state and local resources, as part of an approved Advance Measures project. Direct Assistance may include supplies, equipment, and/or contracting for the construction of temporary and/or permanent flood control projects. Examples of emergency contracting work include the construction of temporary levees; the repair, strengthening, or temporary raising of levees, closure of levee breaches, or other flood risk management works; shore protection projects; or removal of stream obstructions, to include channel dredging of Federal projects to restore the design flow. Direct Assistance may also be provided to levee systems that are currently under "inactive status" in the PL 84-99 Program if levee damage or breaches are contributing to flooding of critical infrastructure (e.g., water/wastewater plants, power plants, fire stations, police stations, interstates).

1.2.3 Contingency Planning Efforts for Potential Advance Measures Activities

Occasionally weather phenomena occur which produce a much higher than normal probability or threat of flooding which may be predicted several months in advance of occurrence or significant

impact, but which may not reach the defined level of "imminent threat" or "unusual flooding." Impacts on specific locations may be unpredictable, but regional impacts may have a high likelihood of occurrence. In such situations, the USACE may provide technical and contingency planning assistance to tribal and state agencies, commensurate with the predicted weather phenomenon, based on requests for assistance from such tribal and state agencies. Based on a state-level request, assistance may also be provided to local agencies. A Governor's request is not required for contingency planning efforts. Potential Advance Measures projects that may emanate from such contingency planning assistance must be addressed as otherwise specified in ER 500-1-1, Chapter 7.

In addition to this PEA for PL 84-99 activities as a result of the 2019 flooding, tiered Environmental Assessment (EAs) may be completed for individual projects that fall under this PEA and will be made available for public and resource agency review at: https://www.nwo.usace.army.mil/Missions/Civil-Works/Planning/Project-Reports/. The potential effects of repairs to existing Missouri River Recovery Program projects, such as shallow water habitat or chute projects, have already been assessed in previous EAs developed for each of those projects. If repairs are pursued on such projects, the original NEPA coverage would likely apply. However, existing conditions and potential impacts would be assessed and any new information would be covered in a supplemental NEPA document, as required.

1.3 PL 84-99 Project Planning Process

Under PL 84-99, the project planning process typically occurs prior to or concurrently with completion of the NEPA process. ER 200-2-2, paragraph 8 allows for the NWO to proceed without the specific documentation and procedural requirements of NEPA in responding to emergency situations to prevent or reduce imminent risk of life, health, and property, or severe economic losses. The PL 84-99 planning process begins with development of a Project Information Report (PIR) wherein engineering, economic, and if possible environmental evaluations are rapidly conducted in order to determine that damages meet the requirements for repair under PL 84-99 and that rehabilitation is economically justified. Following approval of the PIR, more detailed damage assessments are conducted and the engineering and design phase begins. In the case of breached levees where emergency construction activities were initiated during flooding conditions, an additional repair alternative analysis (e.g., in-line repairs vs levee setbacks, etc.) may also be performed before final levee repairs are constructed. Following development of plans and specs, construction contracts are awarded to complete the approved repairs. Environmental and cultural resource reviews are conducted throughout the entire process, beginning during the PIR phase, on a project by project basis. This PEA provides the programmatic NEPA evaluation for the implementation of the PL 84-99 Program in the Omaha District following the 2019 flooding.

1.4 NEPA Approach

The purpose of this PEA is to describe the environmental impacts of the PL 84-99 levee rehabilitation program and to comply with the procedural requirements of NEPA. Development of this PEA was used to determine whether to prepare a Finding of No Significant Impact (FONSI) or prepare an EIS. The PEA concludes that the levee repair projects do not have a

significant impact on the human environment, and so it is expected that a FONSI would be prepared following public comment on the draft document.

These projects can be characterized in a general (or programmatic) nature based on the observed environmental impacts associated with PL 84-99 efforts in previous high water years (e.g., 2010, 2011, 2018, etc.). Individual projects would be evaluated to determine if their scope and impacts are within the scope and impact analysis of this programmatic document. If it is determined that repair efforts at individual levee systems require a separate NEPA analysis, that effort would be tiered off of this programmatic document.

It is the primary intent of this PEA to provide programmatic NEPA coverage for all NWO PL 84-99 efforts initiated in response to the 2019 flood event, construction of which may last for multiple years. Additionally, flooding in 2020 and 2021 may exacerbate damages caused in 2019 that have not been fully rehabilitated. For example, many of the Missouri River levee outlet breaches may not be fully repaired by March 2020. It is assumed that this programmatic NEPA coverage would apply to any future flood damage on levees that 2019 rehabilitation is still ongoing. This PEA does not provide coverage for project-specific agency coordination requirements or other project-specific activities required to ensure compliance with other environmental and cultural resource laws.

1.5 Other Relevant Documents

1.5.1 USACE Kansas City District Programmatic Environmental Assessment

The USACE Kansas City District (NWK) developed a PEA for the entire District's PL 84-99 efforts in 1993. It was updated in 2011 following the 2011 flooding. The PL 84-99 activities conducted by NWK are outside the geographic scope of the NWO's PEA evaluation, but is mentioned here to provide an example of this type of document for PL 84-99 activities.

1.5.2 Final Missouri River Recovery Management Plan and Environmental Impact Statement

In 2018, the NWO and NWK completed an EIS to establish implementation priorities for the Missouri River Recovery Program (MRRP). This effort also result in an updated Biological Opinion (BiOp) for the USACE's habitat restoration efforts along the Missouri River. Much of this BiOp contains relevant Endangered Species Act (ESA) compliance direction and recommendations for the PL 84-99 actions along the Missouri River and tributaries. These documents were referenced when the 2019 PL 84-99 U.S. Fish and Wildlife Service (USFWS) coordination was being initiated.

1.6 Project Actions and Geographic Scope

This PEA will evaluate a wide range of potential structural construction activities implemented under the PL 84-99 program. The types of potential PL 84-99 activities covered in this evaluation generally include repairs to existing levee features as well as construction of new features or levee segments. Details on the types of activities potentially implemented under PL 84-99 are located in Chapter 3 DESCRIPTION OF ALTERNATIVES

The geographic scope of this PEA covers the entire Omaha District Civil Works Boundaries. Following the 2019 flooding, requests for PL 84-99 assistance were submitted to the NWO for levees along the Missouri, Platte, and Elkhorn rivers in eastern Nebraska; the Missouri River and Odebolt Creek in Western Iowa; the Missouri River and Nishnabotna River in northern Missouri; Goose Creek in Sheridan, Wyoming; and the Big Sioux River in Sioux Falls, South Dakota (Figure 1). The full list of sites to undergo PL 84-99 assistance within the NWO following the 2019 flood comprise the "study area," while each individual levee system is referred to as a "project area."

Table 1 below includes a complete list of project sites and the river or tributary where PL 84-99 rehabilitation assistance was requested. These project areas are specifically evaluated in the PEA, but because the types of activities and impacts evaluated in this PEA are representative of PL 84-99 in general, this PEA may be utilized as providing programmatic NEPA coverage for new locations within the Omaha District that request PL 84-99 assistance after this PEA has been finalized.

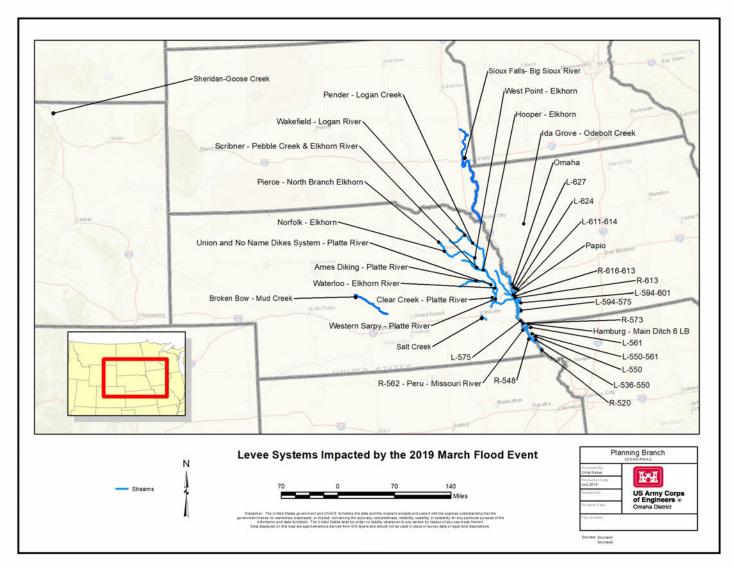


Figure 1. Geographic scope of 2019 flood PL 84-99 study area in the NWO, individual project areas are listed

Table 1. Individual levee system project areas within the study area

Major Streams	Project Sites	Damage Eligible
(Tributaries)	110ject Sites	for PL 84-99
(17 ibiitaries)		Assistance
		following 2019
		spring flooding
Missouri River	L-536-550	Yes
	L-550-561-Missouri River LB	Yes
	L-601 Watkins Ditch RB	No
	L-611-614-MoRiv LB & Upper Pony Creek LB &	Yes
Pony Creek	Lateral 1B LB	Yes
	L-627 CB	Yes
	R-548 Little Nemaha LB/Happy Hollow RB	Yes
	R-616-613 - MO Riv RB & Papillion Cr LB	Yes
	Lake Waconda-Missouri River RB	Yes
	Missouri River RB-Omaha	Yes
Nishnabotna River	L-561 Nishnabota LB & High Creek RB	Yes
High Creek		
Rock Creek	L-550-Rock-LB-Turk-RB	Yes
Turkey Creek		
Mill Creek	L-536-550 Turkey Crk LB, Rock Crk LB, Mo Riv LB,	No
Turkey Creek	& Mill Crk RB	
Rock Creek		
Plumb Creek	L-575	Yes
Papillion Creek	Little Papio RB & Big Papio LB (Fed)	Yes
	Little Papio RB & Big Papio LB (Non-Fed)	Yes
	West Papio RB-96th-Big Papio	Yes
	West Papio LB & Big Papio RB	Yes
	Big Papio LB/RB W. Center to L. St.	Yes
	Big Papio LB-Betz Ditch to Capehart	Yes
	36th St. to Willow Lakes GC	Yes
	Big Papio LB-Mud Creek to Betz Ditch	Yes
	Big Papio RB-L St to Thomson Cr.	Yes
	Big Papio LB-Little Papio to Copper Cr.	Yes
	Big Papio LB-Copper Cr. to Big Elk Cr.	Yes
	Big Papio LB-Big Elk Cr to Mud Cr.	Yes
Winnebago Creek	R-520-Missouri River RB	Yes
Little Nemaha River	R-548-Missouri River & Little Nemaha	Yes
South Branch Camp	R-562-Peru-Missouri River RB	Yes
Creek		
Fourmile Creek	R-573-Missouri River RB	Yes
Waubonsie Creek	L-594-575 (BW-PV-Waubonsie)	Yes
Big Sioux River	Sioux Falls – Big Sioux RB and Skunk Creek RB	Yes
Platte River	R-613-Platte LB & Papillion RB & Mo River RB	Yes

	Valley-Platte-LB	Yes
	Western Sarp -Platte River LB	Yes
	Ames Diking-Platte River LB	Yes
	YMCA Camp Kitaki	No
Salt Creek	Salt Creek RB	Yes
	Salt Creek LB and Oak Creek LB	Yes
	Salt Creek RB to Deadmans Run	Yes
Cedar Creek	Cedar Creek Omaha (F&W)	Yes
Elkhorn River	West Point-Elkhorn LB	Yes
	Waterloo-Elkhorn River RB	Yes
	Hooper-Elkhorn River-Bloomendahl Ditch	No
North Fork Elkhorn	Pierce-North Branch Elkhorn RB	Yes
River	Norfolk-Elkhorn River RB and LB	Yes
Pebble Creek	Scribner-Elkhorn River RB & Pebble Creek LB	Yes
Logan Creek	Pender-Logan Creek RB	Yes
	Wakefield-Logan River RB	Yes
Antelope Creek	Antelope Creek (Lincoln)	No
Odebolt Creek	Ida Grove-Odebolt Creek LB	Yes
Mud Creek	Broken Bow - Mud Creek LB/RB;	Yes
Loup River	Columbus-Loup River LB	Yes
Goose Creek	Sheridan – Goose Creek RB	Yes

2 PURPOSE AND NEED

2.1 Purpose

The purpose of the PL 84-99 Emergency Levee Rehabilitation Program is to provide emergency assistance to levee districts, communities, and levee sponsors in the form of levee repair and/or flood damage reduction as directed by Congress (33 U.S.C. 701n). This program is described in detail in ER 500-1-1. The specific purpose of the Federal action documented in this PEA is to rehabilitate levees and related infrastructure that were damaged in the 2019 flooding. Rehabilitation aims to restore the flood risk management infrastructure to the same level of protection compared to pre-flood conditions.

2.2 Need

Record flooding occurred throughout eastern Nebraska, western Iowa, and northern Missouri during the 2019 flooding. The NWO estimates the damages to levees and associated flood risk management infrastructure are between \$1 billion and \$2 billion. Many levees breached, resulting in fully unprotected levee systems. Overall, widespread levee damage occurred across the Omaha District leaving communities, agricultural land, power plants, and critical transportation infrastructure vulnerable to future flood events. There is substantial risk of continued degradation of the levee system and additional flooding without the implementation of final rehabilitation repairs.

3 DESCRIPTION OF ALTERNATIVES

The alternative actions evaluated in this PEA reflect the most common structural repairs based on past experience and anticipated activities in response to the 2019 flooding. Two alternatives for the PL 84-99 levee rehabilitation program were evaluated in terms of individual and cumulative effects and are addressed below. They include the no action alternative and the structural levee repair alternative.

3.1 Alternative 1: No Action Alternative

The "no action" alternative would result in no levee repair assistance from NWO's PL 84-99 program. Selection of the "no action" alternative is expected to result in a "predictable action by others" as discussed in CEQ (1981). This "predicable action" would most likely consist of the public sponsor repairing the levee without assistance through the PL 84-99 program. It is almost always in the sponsors' best economic interest to repair levees, with or without assistance through the PL 84-99 program because of the value of the farmland and/or infrastructure that the levees protect. However, in some cases, levees may not be repaired due to lack of funds, or other reasons, which would result in increased flood risk. As of the development of this PEA, some of the levees in the PL 84-99 program that are under "inactive" status within the PL 84-99 program have not yet been repaired by the sponsors. Some of these levee sponsors have also not communicated to the USACE that they intend to conduct repairs. Therefore, it may be reasonable to assume that some levees will not be repaired, at least not in the years immediately following the flood.

3.2 Alternative 2: Structural Levee Repairs (Preferred Alternative)

The structural levee repair alternative would result in rehabilitation assistance provided to levee sponsors through the PL 84-99 program. Levees in the NWO provide flood risk management by containing flood waters and controlling seepage up to specifically designed flood events. This alternative would repair both non-Federal and Federal levees after damaging floods provided those levee are "active" in the PL 84-99 Program. Rehabilitation would typically involve restoring the same level of flood risk management to the area that existed prior to any high flow damage. Section 1176 of the Water Resources Development Act (WRDA) of 2016 allows for sponsor preferred modifications to the flood control structure that can be made by the government at the expense and request of the project sponsor. The following sections describe the types of activities typically implemented under PL 84-99.

3.2.1 In-line Repairs

Structural, in-line repair activities take place within the existing levee or flood risk management feature footprint. Because the environmental impacts would be expected to be similar, advance measures are included here in the description of in-line repairs. In general, the less damaged a levee received from a flood, the more likely it is to be repaired in-line. Examples of damages that are typically repaired in-line include the following:

3.2.1.1 Levee Repair Actions

• Placing underwater material to fill scour holes and then placing confining material primarily consisting of riprap and geotextile fabrics.

- Filling levee scour holes with sand, and filling erosional areas with cohesive material (clay).
- Placing new riprap along eroded levee sections for protection.
- Regrading levee slopes and adding sod or lost protective vegetative cover and/or riprap.
- Reseeding of all slopes that had vegetation damage, which may involve application of herbicide to first remove all undesirable vegetation.
- Replacing levee rock surfacing following levee crest reconstruction.
- Mechanically placed fill breach repair, which consists of degrading the severely damaged levee sections upstream and downstream of the breach, filling the scour hole with pervious fill to the dimensions necessary to provide a base for levee construction using dredging or mechanical means, berm construction along the pre-flood alignment, and reconstruction of the levee and berm with mechanically placed fill.
- Repairing levee ramp damage.
- Rebuilding a levee at the site of a breach. This can include filling the scour with pervious material and rebuilding the levee to match the specifications of the surrounding levee cross section. Extended seepage or drainage features may also be required at the site of breach closures. If permanent breach closure repairs are conducted using sheet piling as a means of controlling under seepage, new or extended seepage or drainage features are usually not necessary.
- Constructing new levee seepage berms or other drainage features. While not considered an exact "in-line" repair, construction of new or extended seepage or drainage features is a common PL 84-99 activity. These are typically constructed in areas where flood water seepage through a levee or its foundation have contributed to incrementally degraded geotechnical conditions. These also have the ability to result in more habitat impacts than the other in-line repairs.
- Rehabilitating in-stream bank stabilization features associated with the flood risk management levee project covered under the PL 84-99 Program.
- Installing temporary channel crossings (e.g., temporary culverts and placed riprap to provide equipment access to a construction site and must result in a no-rise hydraulic condition).

3.2.1.2 Seepage Control And Drainage Structures

- Construction of new interior drainage structures (culverts, pipes, flapgates, gatewells, etc.)
- Replacement of interior drainage structures
- Abandonment of interior drainage structures (e.g., filling pipe and gatewell structure with grout)
- Modification of existing drainage structures
- Installation of pump stations
- Removal of interior drainage structures
- Installation of new relief wells
- Abandonment of existing relief wells

3.2.1.3 Other Minor Activities

- Geotechnical explorations (e.g., pot holing with mechanical equipment, cone penetration tests, multi-electrode resistivity tests, etc.)
- Temporary staging areas and working pads for material and equipment (within project right of way; may also include levee crests or berms acting as haul roads, impacted areas would be restored to pre-disturbance conditions)
- Fencing
- Modifications to existing utility poles or lines (as needed to complete PL 84-99 activities)
- Removal of existing utility poles and backfilling with compacted materials
- Street paving/ repair (any damage to public roads caused by construction activities would be repaired to pre-flood condition)
- Placement of monitoring monuments (e.g., carsonite posts, brass caps, etc.)

3.2.1.4 Advanced Measures/ Flood Fighting Activities

- Placement of sandbags or other types of barriers to prevent the spread of flood waters or levee overtopping
- Use of pumps to assist with interior drainage as flood waters rise riverward of a levee

3.2.2 Small-Scale Levee Setback/ Levee Breach Closure

Small-scale levee setbacks, or reconstructing a small portion of the levee landward on a new alignment, are typically used in locations that have been subject to a levee breach or severe erosion of the levee, and typically are associated with large landward or riverward scour holes. Small-scale setback typically occur as part of emergency flood response efforts in order to close off levee breaches and might only be temporary in nature. Repairs that are outside of the original levee alignment, such as these small-scale setbacks, would be conducted when they are more technically feasible or less expensive than in-line repairs. Large scour holes can develop when a levee is breached or overtopped. Levee breaches from the 2019 flood were between 10 and 70 feet in depth and dozens of acres in size. Rebuilding the levee in-line at a large breach can require more earthen material than it would to realign the levee in a new location. Structural repair in the form of a small-scale setback would likely use mechanically placed fill, but may use hydraulically placed fill and would consist of a setback levee of various lengths landward of the pre-flood alignment.

Heavy equipment would be used to obtain, move, shape, and compact earthen materials. Small-scale setback activities involve filling a portion of the scour hole with pervious material to cut off river flow through the levee, placing additional pervious material to create an expanded "sand pad" through the scour hole, building up the elevation of the sand pad to above the current river stage elevation, and constructing a berm on top of the sand pad to tie into the adjacent levee segments. The sand pad width would be determined by the need for seepage control and likely does not completely fill the scour hole.

In cases where the breach closure measures (as described above) will be incorporated into the permanent levee repairs, cohesive material would be placed on the riverward slope, levee crest, and possibly on the landward slope. The NWO would then install sheet piling or construct

seepage berms/ relief wells to control seepage. The levee would then typically be reseeded following construction to minimize soil erosion.

3.2.3 Large-Scale Levee Setback

Large-scale levee setbacks are considered where significant foundational and/ or levee section damage precludes in-line repairs across one or more miles of a levee. These setbacks are typically miles long, reconnect hundreds or thousands of acres of landward floodplain to the riverward side of the levee, and have only been conducted along the Missouri River in NWO to date and only sparingly. Such setbacks are likely to only take place along the Missouri River. Typically, construction of these kinds of setbacks under PL 84-99 in the NWO has been conducted where public lands were available, but setbacks could be conducted on or around private lands as well. The USACE may also coordinate PL 84-99 large-scale levee setbacks with other programs (e.g., Missouri River Recovery Program, Natural Resources Conservation Service (NRCS) easements, state-owned lands, partnerships with The Nature Conservancy (TNC), etc.) to help reduce the impacts to private land if possible. Habitat restoration is recognized as being a significant ancillary benefit that can be achieved with large-scale levee setbacks.

3.2.4 Borrow

All borrow material is required to be provided to the USACE by the public sponsor as part of the rehabilitation agreement.

3.2.4.1 Routine, In-Line Repairs and Non-Missouri River Small-Scale Levee SetbacksFor more routine in-line repairs as well as the small-scale levee setbacks along streams other than the Missouri River, earthen materials may be obtained from previously used borrow sites, new borrow sites, commercial sites, or floodplain areas adjacent to the project area. Sand deposits transported onto the floodplain by flood waters could be scraped up and used as material for levee repairs. Additionally, material within levee tie-back streams (e.g., Rock Creek and High Creek along L-550 levee system in Atchison County, MO) that have deposited over time on top of the originally designed grade may be excavated and used for levee repairs.

3.2.4.2 Missouri River Small-Scale Setbacks:

Regarding flood response efforts for closing Missouri River flowing inlet breaches, breach closure activities may have to be performed in standing water. Fill material may be sourced from dredging along the inside bends of the Missouri River channel or adjacent floodplain near the site, or silted-in Missouri River Bank Stabilization and Navigation Project (BSNP) fish and wildlife mitigation sites such as side channels, backwaters, or wetlands. Mechanical excavations from the floodplain would be conducted where the floodplain is not inundated or only very shallowly inundated.

3.2.4.3 Missouri River Large-Scale Setbacks:

The same methods associated with borrow mining for routine, in-line repairs described above are expected to be used for large-scale levee setbacks as well. One exception is that the levee being replaced would also eventually be used as a source of borrow material, but not until the setback levee has been built to an elevation with approximately a 25 year level of protection.

3.2.5 Construction Associated With MRRP Wildlife Management Areas (WMAs) or Other Federal, State, or Private Habitat Conservation Land

Portions of the MRRP sites can be designated for use as potential borrow areas for adjacent levee rehabilitation. 33 CFR, Part 203 outlines requirements of local cooperation under the PL 84-99 program and Section 203.82a states that, "If more advantageous to the Federal Government, borrow and disposal areas may be assumed as a Federal responsibility." Other Federal, state, or privately owned habitat conservation property could also be identified as a borrow site, such as state recreation areas or private NRCS easement areas. Portions of these sites that are considered as being put to optimal use would be avoided for use as borrow pits. Portions of these sites that would benefit from being converted to wetland (and that contain usable material) would be selected for use as a borrow site. Mechanical excavations would result in wetlands while hydraulic excavations would result in floodplain pools or restoration of previously constructed sand-filled aquatic habitat features (e.g., chutes or backwaters). The excavations are expected to result in ecological improvements to the WMAs. Fine grading and seeding plans to ensure proper site restoration would be developed for borrow pits on habitat conservation property.

3.3 Preferred Alternative

Alternative 2 was selected as the Preferred Alternative because it would best meet the technical, economic, and environmental objectives of the PL 84-99 Program and provides flexibility to utilize the most appropriate method on a case-by-case basis.

4 EXISTING CONDITIONS

4.1 Terrestrial/Wetland Habitat and Species

The majority of the study area lies in the Western Corn Belt Plains ecoregion, once predominantly tallgrass prairie, now dominated by cropland agriculture. Consisting of mostly rolling glaciated till plains and/or hilly loess plains (wind deposited soil) (Chapman et al, 2001).

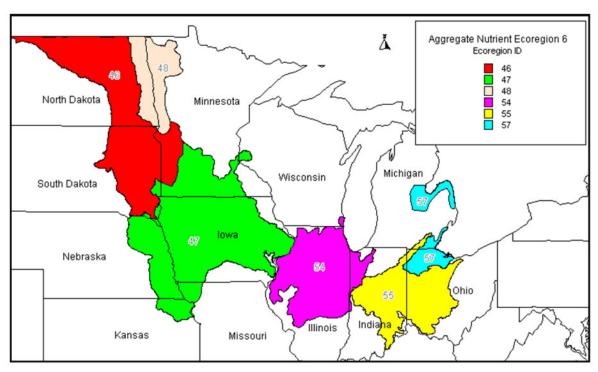


Figure 2 EPA's Aggregate Ecoregion Map Depicting the Western Corn Belt Plains (#47)

The Missouri Alluvial Plain ecoregion (a subset within the Western Corn Belt Plains specifically along the Missouri River mainstem) is part of the alluvial valley found in Nebraska, Iowa and Missouri along the Missouri River floodplain. The generally level alluvial plain soils are deep, silty, clayey, and sandy alluvium. Supporting extensive cropland, this area was the historical meander scar of the once free flowing river. Dams, levees, and stream channelization have altered the structure and characteristics of the river valley (Chapman et al, 2001).

The Elkhorn River project areas sit mostly in the Northeastern Nebraska Loess Hills ecoregion (a subset within the Western Corn Belt Plains specifically containing much of the Elkhorn River basin) and have predominantly coarser loess substrate, with slightly less precipitation and thus more irrigated cropland and pasturelands. The Platte River sits mostly in the Lower Platte Alluvial Plain ecoregion and contains sandier soils, though less so than the Platte River Valley proper. Land use in mainly cropland with tallgrass prairie, wet meadows, and scattered riparian forests as potential nature vegetation. The North Fork Elkhorn River lies in the Transitional Sandy Plain ecoregion, typified by the fine sandy loams to fine sands with soils coarser and sandier than other regions in the Western Corn Belt Plains (Chapman et al, 2001).

The Salt Creek lies in the Loess and Glacial Drift Hills ecoregion (a subset within the Western Corn Belt Plains specifically containing the Little, North Fork, and South Fork Nemaha River basins) where the flat loess hills have a silty, clay loam soil that supports cropland, and where rangelands are more common in the clay loams in the glacial till regions. The greater relief of the Nebraska Kansan Loess Hills ecoregion (a subset within the Western Corn Belt Plains located along the Missouri River, primarily downstream of the Platte River) contains the Papillion Creek, where deep silty well drained soils and ample precipitation produce tallgrass prairie and scattered oak hickory forests on stream valleys. Cropland agriculture is predominant and few areas need irrigation (Chapman et al, 2001).

Common natural vegetation along the Missouri River, its tributaries, and other streams in the study area includes northern floodplain forest species such as cottonwood (*Populus deltoides*), green ash (*Fraxinus pennsylvanica*), box elder (*Acer negundo*), and elm (*Ulmus* spp.). Lowland tallgrass prairie species include big bluestem (*Andropogon gerardii*), prairie cordgrass (*Spartina pectinata*), Indian grass (*Sorghastrum nutans*), switch grass (*Panicum virgatum*), and sedges (*Carex* spp).

Wetlands in the study area primarily consist of freshwater forested/shrub wetlands and freshwater emergent wetlands located in the floodplains of rivers and streams or along the riverside and landside toes of levees where hydrology is favorable. In many cases, as a result of the flooding, water features, such as new channels, have been created on the floodplains where no such features previously occurred. In other cases, scour holes may have developed at levee breach sites. Over time, it is likely that these features would develop plants and soil conditions and, in turn, would be considered jurisdictional wetlands.

For each site-specific project, the National Wetlands Inventory database and other desktop mapping tools would be consulted to determine the type of wetlands that occur on-site and where they are located. It should be noted; however, that these maps may no longer be accurate due to the habitat-shaping process associated with high water events. As such, database reviews would be supplemented with post-flood aerial photo interpretations and on-site inspections in order to identify any waters of the U.S. or wetland sites. These steps would provide the information needed to accurately identify wetlands and waters of the United States that occur in the study area.

The increases in agriculture, along with the effects of bank stabilization and channelization, have reduced the wildlife habitat in the floodplain. However, remnant riparian areas and agricultural fields provide habitat for wildlife adapted to human presence and disturbance. Common mammals that would be expected to inhabit the study area include gray squirrels, fox squirrels, white-tailed deer, raccoons, opossums, cottontail rabbits, skunks, mink, red foxes, otter, beavers, muskrats, and many other small mammals. Common reptiles and amphibians found in the study area include turtles, and several species of toads, frogs, newts, and salamanders.

Common natural vegetation in floodplain forests and riparian area can have bur oak (*Quercus macrocarpa*), basswood (*Tilia americana*), black walnut (*Juglans nigra*), green ash, plains

cottonwoods, and willows (*Salix* spp). Marshes are dominated by emergent hydrophytes such as sedges, rushes (*Eleocharis* spp and *Scheonoplectus* spp, *Scirpus* spp), cat tails (*Typha* spp), and grasses.

Some common birds that would likely be found in the study area include waterfowl, wading birds, shorebirds, passerines, and raptors. Waterfowl use the Missouri River, its tributaries, and other streams in the study area for resting, feeding, and nesting. Numbers of waterfowl are greatest during the spring and fall migration seasons. Common dabbling duck species include mallard (Anas platyrhynchos), northern shoveler (Anas clypeata), northern pintail (Anas acuta), gadwall (Mareca strepera), blue-winged teal (Anas discors), green-winged teal (Anas carolinensis), and American widgeon (Anas americana). Wood ducks (Aix sponsa) are probably the most common nesting species in the study area. Common species of diving ducks are ringnecked (Aythya collaris), lesser scaup (Aythya affinis), ruddy (Oxyura jamaicensis), redhead (Aythya americana), common golden-eye (Bucephala clangula), and bufflehead (Bucephala albeola). Other waterfowl in the study area include hooded merganser (Lophodytes cucullatus), common merganser (Mergus merganser), Canada geese (Branta canadensis), snow geese (Chen caerulescens), and white-fronted geese (Anser albifrons). During migration stops, dabbling ducks and geese rest on islands and sandbars and forage in grain fields, whereas diving ducks use large open water areas for loafing and foraging. Wading birds such as the great blue heron (Ardea herodias), black-crowned (Nycticorax nycticorax) and yellow-crowned (Nyctanassa violacea) night herons, and green heron (Butorides virescens) use river corridors to forage for fish, amphibians, and invertebrates. Shorebirds that are regular breeders in the area include killdeer (Charadrius vociferus) and American woodcock (Scolopax minor). Passerines are the largest group of migratory bird species within the study area and include thrushes, warblers, flycatchers, vireos, hummingbirds, swallows, wrens, tanagers, orioles, sparrows, robins, eastern kingbirds, American goldfinches, blue jays, and cardinals as well as others. Floodplain forests and wetlands are important breeding and migratory habitats for passerines. Hawks, falcons, eagles, vultures, and owls are also found in floodplain habitats.

4.2 Aquatic Habitat and Species

Open water habitats throughout the Missouri River, its tributaries, and other streams in the study area include main channels, secondary channels, chutes, open water sloughs, backwaters, oxbows, and pools. These provide a wide variety of aquatic habitats for large river fishes, macroinvertebrates, spawning and juvenile fish, turtles, shorebirds, migratory birds, and aquatic mammals.

Numerous native and non-native fish are known to exist within the study area. Impoundment, channelization, degradation, and unnatural hydrologic conditions have changed the fish species composition in many rivers. The Missouri River in the Nebraska, Iowa, and Northern Missouri region can produce channel (*Ictalurus punctatus*) and flathead (*Pylodictis olivaris*) catfish, shovelnose sturgeon (*Scaphirhynchus platorynchus*), sauger (*Sander canadensis*), walleye (*Sander vitreus*), and largemouth bass (*Micropterus salmoides*), with backwater areas producing panfish such as bluegill (*Lepomis macrochirus*) and crappie (*Pomoxis spp*). Construction of dikes and revetments along the Missouri River has narrowed and deepened the channel into a

fixed location and dams have effected floodplain connectivity. The ecological impact of these river changes has negatively impacted native riverine fishes.

The Platte River can produce channel catfish, white bass (*Morone chrysops*), largemouth bass, and sunfish (*Lepomis cyanellus*). Several cyprinidae species are found in the Platte River such as common carp (*Cyprinus carpio*), red shiners (*Cyprinella lutrensis*), emerald shiner (*Notropis atherinoides*), bigmouth shiner (*Notropis dorsalis*), fathead minnow (*Pimephales promelas*), and creek chub (*Semotilus atromaculatus*) (Chadwick et al, 1997). Species including the western silvery minnows (*Hybognathus argyritis*), plains minnow, flathead chub, and speckled chub are showing decline in the central plains region. The most common fish found in the Elkhorn River are channel catfish and common carp.

4.3 Species of Special Concern

4.3.1 Federally Listed Species

Species discussed in this section are those that were reported from the Information for Planning and Coordination (IPAC) system and then verified through literature review, records search, and coordination with USFWS to be present in the study area. These species include the Least Tern (Sternula antillarum) -Endangered, Piping Plover (Charadrius melodus)- Threatened, Whooping Crane (Grus americana) -Endangered, Pallid Sturgeon (Scaphirhynchus albus)- Endangered, Topeka Shiner (Notropis topeka tristis)-Endangered, Indiana Bat (Myotis sodalis)- Endangered, Northern Long-eared Bat (Myotis septentrionalis)-Threatened, Salt Creek Tiger Beetle (Cicindela nevadica lincolniana)-Endangered, Western Prairie Fringed Orchid (Platanthera praeclara)-Threatened, and American Burying Beetle (Nicrophorus americanus)- Endangered.

Determinations of species presences specifically in the Missouri River floodplain were previously coordinated with USFWS during Section 7 consultation for the Biological Opinion (BiOp) for the Operation of the Missouri River Mainstem Reservoir System, the Operation and Maintenance of the Bank Stabilization and Navigation Project, the Operation of Kansas River Reservoir System, and the Implementation of the Missouri River Recovery Management Plan (USFWS 2018a). Please see Biological Assessment (Appendix A) for complete description of the status, distribution, life history, and threats to each of the federally-listed species.

4.3.2 State Species of Special Concern

4.3.2.1 Nebraska

The Nebraska Game and Parks Commission provided information on a list of state-listed endangered or threatened species in a scoping response letter to the NWO dated June 26, 2019. This letter provides information on the species that may be found along the river systems as part of the study area in Nebraska: interior least tern, piping plover, pallid sturgeon, lake sturgeon (*Acipenser fulvescens*), sturgeon chub (*Macrhybopsis gelida*), northern long-eared bat, river otter (*Lontra canadensis*), southern flying squirrel (*Glaucomys volans*), Salt Creek tiger beetle (*Cicindela nevadica lincolniana*), saltwort (*Salicornia rubra*), American ginseng (*Panax quinquefolius*), small white lady's slipper (*Cypripedium candidum*), and the western prairie fringed orchid (*Platanthera praeclara*).

The lake sturgeon is a state-listed threatened species. It occupies similar habitats as the pallid sturgeon, but spends a greater proportion of its time in the Missouri than the Platte River. Lake sturgeon feed on invertebrates and small fish and can be found at the downstream margins of island and river confluences. This fish spawns between February 1 and July 31, depending on river conditions. The range for the lake sturgeon includes the Missouri River, the Lower Platte River, and the Lower Elkhorn River.

The sturgeon chub is a state-listed endangered species associated with fast flowing, turbid water and gravel substrate. The species has been collected in side chutes and backwaters and it is thought that these kinds of areas provide spawning habitat to the fish. Sturgeon chub feed on invertebrates. This fish spawns between February 1 and July 31, dependent on river conditions. The range for the sturgeon chub includes the Missouri River, the Lower Platte River, and the Lower Elkhorn River.

The northern long-eared bat is a state-listed threatened species that typically roosts singly or in colonies underneath bark or in cavities, crevices or hollows of live and dead trees and/or snags. Males and non-reproductive females may also roost in cooler places, like caves and mines. This species of bat seems opportunistic in selecting roosts, using trees based on the presence of cavities, crevices or peeling bark. They have also occasionally been found roosting in structures like barns and sheds, particularly when other roosting habitat is not available. They forage on insects in upland and lowland woodlots and tree lined corridors, and typically overwinter in hibernacula that include caves and abandoned mines, but may also use other structures resembling caves or mines, such as abandoned railroad tunnels, storm sewer entrances, dry wells, aqueducts and other similar structures.

River otter is a state-listed threatened species that requires a large amount of space to meet their annual requirements. During a year, an otter may occupy 50 or more miles of stream course and will often move from one area to another. They may be found along many of the major rivers in eastern Nebraska. River otters are most often active from early evening through early morning, but may also be active during the day. This is a highly mobile species, and if present, is likely to leave during disturbance. However, otters are susceptible when they have young pups in the natal den. In Nebraska, female otters enter the natal den beginning in late February through April. The pups are helpless until about seven weeks of age. River otters use dens that were dug by other species such as beaver and utilize upland dens that can be up to ½ mile from the nearest water body.

The southern flying squirrel is a state-listed threatened species found in remnant tracts of eastern deciduous forest along the Missouri River in the southeastern corner of the state. They require mast-producing trees such as oaks, hickories and walnuts for food, and utilize cavities in dead or live trees for shelter. Southern flying squirrels are nocturnal and can be found in Nebraska year-round. They have two periods of breeding activity, one is from February to March and the other is late May through July. Young are weaned at six to eight weeks after birth, and are capable of gliding soon after. They typically stay with the female until the birth of the next litter.

The Salt Creek tiger beetle is a state-listed endangered species that measures about ½ inch in length, and is metallic brown to dark olive green above, with a metallic dark green underside. It is a predatory insect and lives in permanent burrows. Adults emerge for approximately six weeks from about mid-June through July, but they can emerge as early as late May. This species occurs in exposed mud flats of saline wetlands and along mud banks of streams and seeps. The Salt Creek tiger beetle is only found in saline wetlands and associated streams and tributaries of Salt Creek in the northern third of Lancaster County and southern Saunders County in Nebraska.

Saltwort is a state-listed endangered species that grows in a narrow range of habitat within the saline wetlands in Lancaster County. It is found growing primarily on moist, saturated, clay mudflats. Saltwort generally grows in heavy soils with high salinity levels that inhibit other plants from growing in their wetland habitat.

American ginseng is a state-listed threatened herbaceous perennial that is long-lived that is very similar in appearance to several closely related and much more abundant species. In Nebraska, ginseng grows only in deep woods in shady ravines of the easternmost counties along the Missouri River.

Small white lady's slipper is a state-listed threatened species. The small white lady's slipper grows in clumps with one flower at the tip of a flowering stem consisting of a white, pouch-shaped "slipper." This insect pollinated plant is found in moist to wet prairies, fens and sedge meadows. This orchid flowers from mid-May to June in Nebraska.

Western prairie fringed orchid is a state-listed threatened species that occurs in native tall or mixed-grass prairies that are associated with wet meadows. Although the plant can be a colonizer species and grow on disturbed areas, it is found in greatest abundance on high quality prairie. This plant blooms in late June to July.

4.3.2.2 Missouri

The following state-listed species may be present in or around the Missouri River in the state of Missouri, the lake sturgeon (described above), flathead chub (*Platygobio gracilis*), peregrine falcon (*Falco peregrinus*), and northern harrier (*Circus cyaneus*).

The historical range of the flathead chub includes the entire length of the Missouri River and the Mississippi River from the mouth of the Missouri southward to the Arkansas state line. In northwestern Missouri they also occurred in small tributaries of the Missouri River. Flathead chubs inhabited a diverse range of habitats. In large rivers, they were found in continuously turbid waters with swift current and substrates composed of sand and fine gravel. In northwestern Missouri, they were also found in pools of small creeks with clear water, little current, and substrates composed of coarse gravel and bedrock. Flathead chubs are likely generalists in their dietary needs and use external taste buds to find food. Main food items are terrestrial insects that fall into the water, as well as small aquatic insects. Spawning occurs in July and August (MDC, 2015a).

During the winter, North American peregrine falcons migrate from breeding grounds in the north to as far south as the tip of South America. Peregrine falcons inhabit open areas usually associated with high cliffs and bluffs over rivers and coasts. In Missouri, these falcons are observed most often during spring and fall migration, especially in areas with high concentrations of shorebirds and waterfowl. Currently, the only known nesting pairs are using buildings, bridges or power plants near Kansas City and St. Louis. Adults lay two to six eggs per clutch. Eggs are incubated for 30-32 days, and young fly from the nest after about five to six weeks. Peregrine falcons mostly prey on birds, but they will also eat amphibians, insects and mammals (MDC, 2015b).

In Missouri, northern harriers are a rare breeding species, arriving in March-April. They nest (often in loose colonies) fairly late in the season on dry ground in undisturbed marshes, prairies, and pastures, or on elevated ground in low shrubby vegetation, tall weeds, or reeds. Incubation lasts from 30-32 days, and young are fledged about 5 weeks later. Northern harriers are also a common migrant in Missouri from February to May and again from September to November frequenting open fields, prairies, native grass plantings, and shallow marshes. They perch on the ground or on stumps or posts, and forage for small mammals, birds, large insects (especially grasshoppers), snakes, lizards, toads, frogs, and carrion (in winter) over open terrain where there is good ground cover (MDC, 2015c).

4.3.2.3 Iowa

The Iowa Department of Natural Resources (IDNR) has records of several state-listed species that may be impacted by this project depending on the nature of the PL 84-99 activities in the Iowa portion of the study area. This includes the pallid sturgeon (*Scaphirhynchus albus*), the least tern (*Sternula antillarum*), the piping plover (*Charadrius melodus*), and the northern long-eared bat (*Myotis septentrionalis*). Northern long-eared bats spend winter hibernating in caves and mines, called hibernacula. During the summer, northern long-eared bats roost singly or in colonies underneath bark, in cavities or in crevices of both live trees and snags (dead trees) and may roost in structures such as old buildings, culverts, and bridges.

4.3.2.4 South Dakota

The South Dakota Department of Game, Fish, and Parks (SDGFP) provided information on a list of state-listed endangered or threatened species in a scoping response letter to the NWO dated August 21, 2019. This letter provides information on the species that may be found along the Big Sioux River in Sioux Falls, SD. According to the SDGFP, there have been multiple occurrences of the state-threatened northern river otter (*Lutra canadensis*) along the Big Sioux River throughout the project area. Federally-threatened Topeka shiners (*Notropis topeka*) are known to occupy numerous small streams within eastern South Dakota in the Big Sioux Watershed. One historic Topeka shiner record was located in the Big Sioux River near Flandreau. Records of Topeka shiners were also found in two tributaries of the Big Sioux River (Beaver Creek and Willow Creek), adjacent to the project area.

The state-threatened northern redbelly dace (*Chrosomus eos*) was recorded in 9 Mile Creek (a tributary to the Big Sioux River) downstream of Lake Alvin. Finally, the Lined snake (*Tropidoclonion lineatum*) was recorded in Good Earth State Park, south of Sioux Falls, SD.

4.3.2.5 Wyoming

A Corps planning study was recently completed for an ecosystem restoration and flood risk management project along the Goose Creek project area in Sheridan, WY. Coordination with the Wyoming Game and Fish Department (WGFD) yielded a list of species that may be present along the Goose Creek project area. Among that list were multiple species determined to be species of greatest conservation need by the WGFD and those include the following species: bald eagle (*Haliaeetus leucocephalus*), burrowing owl (*Athene cunicularia*), common loon (*Gavia immer*), ferruginous hawk (*Buteo regalis*), greater sage-grouse (*Centrocercus urophasianus*), northern goshawk (*Accipiter gentilis*), and the Canada lynx (*Lynx canadensis*) (also federally threatened) (USACE, 2018b).

4.3.3 Migratory Birds and Raptors

All Federal agencies are subject to the provisions of the Migratory Bird Treaty Act (16 U.S.C. 703-711) which regulates the take of any migratory bird species. If a NWO project is expected to impact any migratory bird species, coordination with the USFWS is typically initiated in order to minimize any impacts to these species. Throughout the study area, the main period of concern for impacting migratory birds is generally between April 1 and July 15. Raptors may also be laying eggs from February 1 to April 5 and some wetland birds, such as sedge wrens, may nest from July 15 to September 10. Bald eagles specifically have a wide timeframe for nesting behavior. They may be building their nests between December 1 and March 1. They may be laying eggs/ incubating between February 1 and June 1. The eggs may be hatching and being reared between March 1 and July 1. The young may be fledging between June 1 and September 1.

4.4 Air Quality

In accordance with the Clean Air Act of 1963, the U.S. Environmental Protection Agency set National Ambient Air Quality Standards for pollutants considered harmful to the environment and public health. The six principal pollutants, also known as "criteria" pollutants, are: ozone, lead, particulate matter, carbon monoxide, nitrogen dioxide, and sulfur dioxide. Counties where the levels of a particular pollutant exceed Environmental Protection Agency (EPA) standards are deemed "non-attainment counties."

The states of Iowa, Nebraska, North Dakota, and South Dakota have no non-attainment counties, meaning that air quality is good throughout each state. The state of Missouri has four non-attainment counties where proposed projects may occur: St. Charles County is in non-attainment for Particulate Matter – 2.5 micrometers in size and Ozone (8-hour); Jefferson County is in non-attainment for Particulate Matter – 2.5 micrometers in size, Ozone (8 hour), and lead; Franklin County and St. Louis County are in non-attainment for Ozone (8 hour).

4.5 Water Quality

4.5.1 Nebraska

4.5.1.1 Missouri River

The state of Nebraska Department of Environmental Quality (2018) has designated the following uses to the entire length of the Missouri River in Nebraska: Primary Contact

Recreation, Warm Water Aquatic Life Class A, Agricultural Water Supply, and Aesthetics. It has designated the use of public drinking water supply to the river downstream of the confluence of the Niobrara River, and industrial water supply to the river downstream of the confluence of the Big Sioux River. The following segments and tributaries of the Missouri River are included in this analysis: 1) Papillion Creek (MT1-10200), is a category 4A stream, impaired for Recreational due to E. coli, 2) Big Papillion Creek (MT1-10110) is a category 4a stream, impaired for Recreation due to E. coli, and 3) the Missouri River from the Platte River to Kansas State Line (NE1-10000), has been placed on the state's 303(d) list of impaired waters as a category 5, impaired for Recreation due to E. coli and impaired aquatic life due to mercury (Fish Consumption Advisory) (NDEQ 2018).

Nebraska has not identified the Missouri River in the vicinity of the proposed project as a National or State Resource Water. As appropriate, Nebraska's antidegradation policy provides Tier 2 protection (existing water quality) to the Missouri River. Tier 1 protection (existing uses) also applies and the state-designated beneficial uses must be protected and associated numeric and narrative water quality criteria to protect these beneficial uses are not to be violated.

4.5.1.2 Elkhorn River

The state of Nebraska Department of Environmental Quality (NDEQ) (2018) has designated the following uses to the 135 total segments of the Elkhorn River in Nebraska: Primary Contact Recreation (23), Warm Water Aquatic Life Class A (38) and B (96), Agricultural Water Supply (135), and Aesthetics (135). The following segments and tributaries of the Elkhorn River are included in this analysis. Category 5 stream segments have been placed on the state's 303(d) list of impaired waters by NDEQ (2018).

- North Fork Elkhorn River at Pierce, NE (River ID: EL3-200000) Category 4a, impaired for recreation due to E. coli.
- Elkhorn River at Norfolk, NE (River ID: EL3-10000) Category 5, impaired for recreation due to E. coli.
- Elkhorn River at West Point and Hooper, NE (River ID: EL1-20000) Category 4a, impaired for recreation due to E. coli.
- Logan Creek at Pender and Wakefield, NE (River ID: EL2-40000) Category 2.
- Pebble Creek at Scribner (River ID: EL1-20100) Category 4a/c, impaired for Aquatic Life and Recreation due to E. coli and natural selenium, respectively.
- Elkhorn River at Waterloo (EL1- 10000) Category 4a, impaired for Recreation due to E. coli.

4.5.1.3 Platte River

The state of Nebraska NDEQ (2018) has designated the following uses of 126 segments of the Lower Platte River in Nebraska: Primary Contact Recreation (16), Warm Water Aquatic Life Class A (13) and B (112), Water supply –public drinking (2), Agricultural Water Supply (126), Industrial Water Supply (1) and Aesthetics (126). The following segments and tributaries of the Platte River are included in this analysis. Category 5 stream segments have been placed on the state's 303(d) list of impaired waters by NDEQ (2018).

- Platte River at Clear Creek, Western Sarpy, and R-613 (River ID LP1-10000) Category 5, impaired for Recreation (E. coli) and Aquatic Life (Fish Consumption Advisory)
- Platte River at North Bend and Valley, NE (River ID LP1-20000) Category 1.

4.5.1.4 Loup River

NDEQ (2018) has designated the following uses of 107 segments of the Loup River in Nebraska: Primary Contact Recreation (37), Cold Water Aquatic Life Class B (36), Warm Water Class A (26) and B (45), Agricultural Water Supply (107), and Aesthetics (107). The following segments and tributaries of the Platte River are included in this analysis.

• Loup River at Columbus (River ID LO1-10000), impaired for Recreation due to E. coli, Category 4a.

4.5.2 **Iowa**

The IDNR has designated the following uses to Missouri River Segments 1708 (Council Bluffs water intake to Platte River confluence) and 1707 (Platte River confluence to the Missouri/Iowa state line): Primary Contact Recreation, Aquatic Life warm Water type 1, Class HH (Human Health). Category 5 stream segments have been placed on the state's 303(d) list of impaired waters by IDNR (2016). The Missouri River segments (06 WEM-1707) and (06-WEM-1708) were listed as Class 5a, partially supporting Recreation and Human Health due to E. coli impairment and Class 4c, partially supporting Aquatic Life-Warm Water type 1 due to flow and habitat alteration.

Other Iowa streams in the study area include Odebolt Creek which was not assessed in 2016; Mosquito Creek (02-CED-6489), assessed in 2012 and listed as Class 5p for not supporting Recreation due to E. coli; and Indian Creek (02-CED-504) listed as Class 5p for not supporting Recreation due to E. coli and Class 5v not supporting Aquatic Life due to low aquatic macroinvertebrate Index of Biotic Integrity (IBI). Pony Creek was classified as Class 3b-u, Biological: low fish IBI WINOFI (Water in Need of Further Investigation).

4.5.3 Missouri

The Missouri Department of Natural Resources 2018 Section 303(d) Listed Waters includes the Nishnabotna River (WBID 0227) Category 5 for Secondary Contact Recreation and Whole Body Contact Recreation impairment due to E. coli; and the Missouri River (WBID 0226) Category 5 for Whole Body Contact Recreation impairment due to E. coli (MDNR, 2018).

4.5.4 Wyoming

Goose Creek, and its tributaries. Little Goose and Big Goose Creek which join in the City of Sheridan, are classified as 2AB which indicates designated use for drinking water, cold and warm game fish, nongame fish, fish consumption, aquatic life other than fish, recreation, wildlife, agriculture, industry and scenic value. The Wyoming Department of Environmental Quality 2018 303(d) listed waters included Little Goose Creek from Woodland Park Road to a point 5.3 miles upstream as a category 5 for Recreation due to E. coli (WDEQ, 2018).

4.5.5 South Dakota

The Big Sioux River uses include fish and wildlife, recreation, stock, immersion recreation, irrigation, limited contact recreation and warm water semipermanent fish life. Four segments of the Big Sioux River including: 1) I-90 to the diversion return, 2) diversion return to the Sioux Falls Waste Water Treatment Facility (SF WWTF), 3) SF WWTF to above Brandon, and 4) above Brandon to Nine Mile Creek are listed Category 4a not supporting immersion recreation due to E. coli, and not supporting warm water semipermanent fish life due to total suspended solids (SD DENR, 2018).

Skunk Creek uses include fish and wildlife, recreation, stock, limited contact recreation, and warm water marginal fish life. Skunk Creek from Brandt Lake to the Big Sioux River is listed at Category 5 not supporting limited contact recreation due to E. coli (SD DENR, 2018).

4.6 Noise

Across the study area, the magnitude and frequency of ambient noise varies considerably depending on the amount of development in a given area. In rural areas, which are typically open, noise may carry for some distance. Noise sources in rural areas are predominantly natural and include: wind, weather, and wildlife sounds. Traffic from highways and other roadways also are a common source of background noise. Seasonally, noise produced from farming activities create levels of noise similar to the types of noises that might be produced by land moving activities associated with PL 84-99 construction.

In urban areas, most noise comes from transportation, construction, industrial, and other human sources. Road traffic is a major source of noise. The most noise sensitive areas associated with levee repairs would likely include parks, recreational areas, and business associated with streams in the study area. Other areas with a high sensitivity to noise such as residences, schools, day care facilities, hospitals, places of worship, libraries, etc. are not usually directly adjacent to levee areas, but they do occasionally occur adjacent to one another. Construction noise in urban areas is not atypical.

4.7 Cultural Resources

Cultural resources consist of a broad array of material and non-material sites or objects that represent contemporary, historic, and pre-historic human lifeways or practices. River floodplains in the Great Plains can contain a variety of cultural resource types that span from the earliest Native American inhabitants of North America to the present. Prior to the channelization of the Missouri River, the floodplain existed as a mosaic of ephemeral sandbars, side channels, and other formations that changed decade to decade, even year to year. This shifting landscape allowed cultural resources to wash away or become embedded within the floodplain. When the river was channelized, and massive dike fields were constructed to allow for land accretion, any cultural resources outside of the new Missouri River mainstem became further buried. Cultural resource sites that may exist within the project area(s) include prehistoric Native American archeological sites, historic archeological sites, and shipwrecks, as well as old urban structures such as bridges and buildings.

The exact locations of known cultural resources are considered sensitive information and are not publicly disclosed in this PEA. Many known sites exist throughout the floodplain of the Missouri River and its tributaries. Records indicate that historic shipwrecks and other sites may exist in close proximity to the location of PL 84-99 repairs and/or borrow sites. Over the past several decades, areas containing Native American cultural resources have not been encountered between Omaha and Rulo, NE along the Missouri River in Nebraska, Iowa, and Missouri during PL 84-99 activities or other USACE activities in the Missouri River floodplain (e.g., MRRP habitat construction projects). In 2013, the USACE did encounter a shipwreck while dredging additional habitat features for the Tobacco Island chute project as part of the MRRP efforts. This indicates the possibility of encountering deeply buried shipwreck sites if a PL 84-99 activity involves the use of a dredge to mine material. Historically, accidental encounter of shipwrecks or other cultural resources is an extremely uncommon occurrence along the Missouri River and its tributaries.

Projects involving Federal land, funds, or permitting are subject to compliance with the National Historic Preservation Act (NHPA). Due to the expansive size and scope of this PEA, compliance with the NHPA and other related laws for each PL 84-99 project site will be assessed on a case-by-case basis in a Record of Environmental Consideration (REC); a document tiered off this PEA. The REC will document cultural resource coordination including the results of archeological background reviews conducted by the District Archeologist, archeological field investigations (if required), and coordination with the appropriate State Historic Preservation Office (SHPO) and potentially affected Tribes as needed. The REC will pay particular attention to the potential for cultural resources in borrow sites considered for top soil, sand, and cohesive material, as well as any place where new grading or excavation will take place.

4.8 Floodplains

Floodplains along the Missouri River, its tributaries, and other streams within the study area have been significantly altered over the past century. In many areas, flood control, bank stabilization, and channelization of rivers have either completely or partially removed the connectivity of rivers with the floodplain. The majority of the floodplains are now used for either agriculture or urban development. It is expected that over time, more agricultural areas will be converted to urban/suburban uses, as urban populations continue to grow. However, floodplains along the Missouri and Platte Rivers in particular are also areas where aquatic and terrestrial habitat restoration is taking place by multiple federal, state, Tribal, and local governments, as well as other non-governmental organizations (NGOs). Land being enrolled in conservation easements or acquired and managed for habitat restoration purposes is expected to continue into the future.

4.9 Farmland

The geographic scope of this PEA is almost entirely within the Missouri and Platte River corridors in Nebraska, Iowa, and Missouri (though other farmland exists within the study area outside of these streams). Levees along the Missouri River primarily protect farmland, while the remaining levees in Nebraska, Iowa, Wyoming, and South Dakota within the study area generally protect urban communities. Agriculture is a prevalent activity in the Missouri River floodplain. Along the Missouri River in its entirety, 48% of the floodplain is used for agriculture. Corn and soybeans are the most common crops in the study area. For the states of Nebraska,

Iowa, and Missouri, the percent of prime farmland to total farmland in the floodplain ranges from 47% to 62%. Prime farmland is defined as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber and oilseed crops. It has the soil quality, growing season and moisture supply needed to produce economically sustained high yields of crops (NRCS 2017). Much of the floodplain farmland along the Missouri River was created through the USACE's construction of the BSNP, when suspended river sediment filled expansive dike fields designed to channelize and immobilize the wide, shifting river channel. Throughout the 1940s and 1950s, levees were constructed on top of these newly accreted dike fields to protect farmland, sometimes very close to the river banks or directly on top of old river meander scars in order to optimize farmable landward acres.

5 ENVIRONMENTAL CONSEQUENCES

Chapter organization:

This chapter presents the potential consequences (i.e., adverse and beneficial effects) of the No Action Alternative and preferred alternative (alternative 2) on the resource categories described in Chapter 4 EXISTING CONDITIONS. An assessment of the environmental consequences provides for the scientific and analytic basis for alternative comparison. The chapter is organized by resource category (identical to Chapter 4 layout), with the effects of both alternatives described under each resource category heading. The analyses of alternative 2 (structural levee repairs) below may be further broken up into the activity types because they can have varying degrees of impacts within one resource category. In an attempt to streamline this document, where effects of the activity types are nearly the same or identical they will be described together under the alterative 2 evaluation instead of described separately.

The evaluation of each resource addresses the following:

- Construction impacts
- Operational impacts
- Cumulative effects of preferred alternative
- Measures to avoid, minimize, and mitigate impacts

Definition of effects:

This chapter describes the effects of alternatives on the resources evaluated. NEPA defines types of effects as follows (Sec. 1508.8 and 1508.7):

- **Direct/short-term effects** are caused by the action and occur at the same time and place.
- Indirect/long-term effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include other effects related to induced changes in the pattern of land use, population density or growth rate, or effects on air and water and other natural systems including ecosystems.
- Cumulative impacts result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place during the foreseeable future.

For each resource category, the intensity of each alternatives' beneficial or harmful impact is described using the following terms:

- **No effect** No discernable or measurable effect.
- **Negligible** Effects would be at the lowest levels of detection, barely measurable, with no perceptible consequences.
- **Minor** Impact could result in a change to a population or individuals of a species, habitat, or resource. The change would be measurable but small, localized, and of little consequence to the resource.
- **Moderate** Impact could result in some change to a population or individuals of a species or habitat. The change would be measurable and of consequence, but would be of larger than minor scale and would occur over a limited area.

• **Major** – Impact could result in a considerable change to a population or individuals of a species or resource or habitat. The change would be readily apparent, measurable, extensive, and would occur over a wide geographic area.

Each resource category is also evaluated to determine effects associated with construction of the project as well as ongoing operation and maintenance of project features:

- Construction effects are those effects resulting from PL 84-99 activities while construction is underway.
- Operational effects are the resulting permanent effects that occur from the action alternative and effects from operation and maintenance after construction is complete. The No Action Alternative is also evaluated under the "operational effects" section as a means of comparing the long-term impacts of the Preferred Alternative to the operation and maintenance of levees in the absence of PL 84-99 assistance.

5.1 Terrestrial/Wetland Habitat and Species

5.1.1 Construction Impacts

5.1.1.1 Preferred Alternative

All activity types:

Overall, some terrestrial wildlife such as birds or mammals may be temporarily disturbed or displaced during construction. It is likely that the construction equipment would cause wildlife in the area to disperse until the construction is complete. Prior to construction (depending on the time of year), bird surveys would be conducted to ensure that no nesting birds (migratory, raptors, wetland/tallgrass birds, etc.) would be disturbed by the construction activities. If active nests or nesting activity is observed, the trees or other areas containing nesting birds would be avoided with a suitable buffer distance until the nesting is completed. If incidental nest damage or bird mortality occurs, the USFWS would be notified immediately to consult on depredation actions. The disturbed habitat areas would be reseeded with native vegetation following construction, while levee features would likely be reseeded with brome or other grass types conducive to safe levee performance (e.g., sod forming species). Impacts to wildlife and terrestrial/wetland habitat during construction would be considered negligible to minor and short-term. Borrow pits that are converted to wetland or floodplain pool habitat would be expected to result in minor to moderate long-term benefits to wildlife within the project area. Borrow pits would be sought for use as part of any required compensatory mitigation where possible. Otherwise, the levee sponsor would be responsible for identifying and securing other land needed for compensatory wetland mitigation.

The levee tie-back streams, particularly along the Missouri River levee systems (e.g. Rock Creek and High Creek along the L-550 levee system in Atchison County, MO), may be utilized as borrow sites. These types of streams were channelized when the Missouri River levee systems were constructed and have been subject to sedimentation over the course of decades. Removal of the deposited material down to the original design elevation within the streams would be considered part of operation and maintenance of the creeks and would not constitute an environmental impact. In fact, wetland or other native vegetation could be planted following material excavation, potentially allowing these sites to become habitat restoration areas following borrow material removal.

<u>In-line repairs:</u>

In-line repairs to levees are expected to result in little to no habitat impacts. Most of the levees within the study area are located within and adjacent to urban or agricultural areas; though some portions of the levees, particularly along the Missouri River, are located within federal or state wildlife management areas. Overall, negligible to minor, short-term impacts are expected to occur to habitat areas adjacent to levees during in-line repairs. Such impacts would include temporary disturbance of wetlands, grassland, or shrub lands and negligible amounts of incidental fill in wetlands during construction. The vast majority of the in-line repairs would be covered under a Nationwide Permit (NWP) #3, a Regional General Permit (RGP) 11-02 (in Nebraska or Iowa), or a General Permit - 41 (GP-41) in Missouri. Work would be conducted in compliance with a NWP 3 when the work involves strictly in-line repairs and some fill, which in some cases may involve new riprap placement in streams where levee sections tied into river banks have eroded into pre-flood levee features. Work would be conducted in compliance with a RGP 11-02/GP-41 when the work involves minor deviations from the original pre-flood levee alignment and some fill. In areas where levee system repair involves impacts not covered under a nationwide or regional general permit, construction activities would be conducted pursuant to the requirements of an individual permit, a 404(b)(1) evaluation would be conducted, and water quality certification would be sought. The NWO does not issue itself 404 permits when wetland impacts are a part of a proposed Civil Works project (such as construction under the PL 84-99 program), but the NWO does follow the steps and procedures required for obtaining a permit from the NWO Regulatory office. This includes obtaining water quality certification from the applicable state, as needed.

Tree removal, wetland fill, and other habitat impacts with slightly more impacts than "minor" would likely occur as a result of new berm construction or berm extensions. Such new features are generally constructed along levee segments with moderate to major erosion or under-seepage issues that have permanently impacted the levee's ability to provide the designed level of protection, but do not require a setback.

Small-scale levee setbacks/levee breach closures:

Small-scale levee setbacks are conducted where levee breaches have produced large scour holes which (for financial and/or technical reasons) effectively preclude construction of an in-line levee repair. Small-scale levee setbacks are generally considered to be those less than one mile long. Because the levee breach scour holes convert terrestrial and wetland land cover into wide, deep aquatic habitat, it is difficult to ascribe terrestrial or wetland impacts to small-scale levee setback construction. Construction of these small-scale levee setbacks is also usually conducted during flood response and flood fighting activities while flood waters are still on the floodplain, making identification of exact land cover types within and around the scour holes difficult or impossible. However, is it expected that both terrestrial and wetland habitat is obliterated by the formation of the scour hole and typically the surrounding land is covered in a mosaic of scour holes and vast sand deposits (see Figure 3 below).



Figure 3. Levee breach closure and landward scour holes/sand dunes at L-575 "B" inlet breach (Sept. 2019)

Scour holes can be dozens of feet deep and dozens of acres in size. Near the levee breaches this scour hole aquatic habitat is extremely temporary in nature and would immediately be converted to terrestrial land (i.e., filled with sand) whereupon the new levee alignment is located. Some permanent aquatic features, like small backwaters on the riverward side of the repaired levee or small floodplain pools on the landward side of the levee, may remain following construction where levee engineering standards did not require the entire scour hole to be filled (see Figure 4 below). The act of filling in a

levee breach scour hole is therefore considered as having no measurable impact on terrestrial or wetland habitat. The act of filling in new scour holes during or shortly after flooding would reduce the amount of open water habitat on the floodplain, but would not be considered a habitat impact. However, a small-scale levee setback built on the landward side of a levee breach may result in some minor habitat impacts, though these typically occur during flooding conditions making exact habitat type impacts difficult to discern. For the purposes of habitat impact mitigation, assumptions regarding vegetation cover and habitat type would be made based on pre-flood aerial imagery or other mapping products. Mitigation would occur based on documented assumptions of vegetation cover and habitat type that would have existed following the flood.

Due to their small size and generally close proximity to the original levee alignment, small-scale levee setbacks would not be considered as the type of setback that provides floodplain habitat benefits. Conducting small-scale levee setbacks around breaches is an activity that would be conducted consistent with the RGP 11-02. Additionally, construction activities requiring the temporary installation of berms or small stream impoundments during construction of levee breach repairs (e.g., temporarily damming a drainage ditch, temporary raising of a riverbank revetment) would be conducted consistent with the RGP 11-02.



Figure 4. Small-scale levee setback along the Missouri River levee system L-550, near Watson, MO, river mile 539. Some landward and riverward scour holes remained following closure of this levee breach in 2012.

One significant difference between small-scale levee setbacks constructed along the Missouri River and other streams in the study area is the means of borrow production; material may be hydraulically dredged for Missouri River small-scale setbacks, but for the other streams the material would be sourced from commercial quarries or mechanically mined on site. The dredging of material for Missouri River small-scale levee setbacks could be sourced from either the Missouri River channel or the floodplain. Floodplain dredging can either occur on USACE-owned MRRP lands or private agricultural lands. When dredging occurs on MRRP lands, specific considerations would be taken to ensure the borrow area is converted into a floodplain pool habitat feature with graded side slopes to facilitate establishment of wetland vegetation. When dredging occurs on MRRP lands, the floodplain pools are expected to result in minor to moderate long-term wildlife habitat benefits in the project areas. These floodplain pools could provide a multitude of wildlife benefits such as stopover habitat for migrating waterfowl, wetland fringe habitat for foraging wildlife, etc.

Large-scale levee setbacks:

Large-scale levee setbacks occur where extensive levee damage has occurred along a levee and they are typically multiple miles in length. These are expected to occur only along the Missouri River. Though they may encompass one or more breaches, it is primarily their length that differentiate them from the small-scale setbacks (multiple miles vs less than 1 mile). Unlike small-scale levee setbacks around levee breaches which may occur while flooding is still ongoing, large-scale levee setbacks would be expected to be constructed following the flooding event.

Although some habitat impacts could occur, overall, large-scale levee setbacks are seen as having a positive environmental effect. Unlike small-scale levee setbacks, individual large-scale levee setbacks would be expected to have moderate, long-term beneficial effects to floodplain habitat by reconnecting hundreds or thousands of landward floodplain acres to the riverward side of the levee. However, because potential large-scale levee setback alignments can span many miles across the Missouri River floodplain, they can result in impacts to many different kinds of terrestrial and wetland habitats including forest, grasslands, emergent wetlands, and small creeks or ditches. It is expected that the NWO would seek water quality certification consistent with an individual permit in situations with the potential for many acres of wetland impacts.

5.1.1.2 No Action Alternative

Under the No Action Alternative, it is expected that most, if not all, of the levee sponsors would seek to restore their levees back to the extent that they would provide equivalent protection as the pre-flood condition. In this scenario, newly created aquatic scour features would likely be converted back to agriculture or filled in by an expanded levee footprint, similar to the action alternative described above. Any wetland fill activities associated with fixing the levees would require a Federal 404 permit. If wetland impacts were a possibility under the no action alternative then they should be avoided where possible and mitigated if impacts were unavoidable. Construction-related disturbance would likely impact wildlife species to the same degree as under the action alternative. These impacts would be considered temporary and the species would likely return upon project completion. Mitigation for environmental impacts would be expected to take place to the same degree as it would under the action alternative.

A scenario where the levees are not repaired by levee sponsors is anticipated to be uncommon. Under this scenario, it is still likely that much of the land would continue to be used for its preflood purposes. As such, many of the floodplain scour areas created by the high flow event would either be left as is on public land or filled to the extent possible so that agricultural practices could resume. The area landward of an unrepaired levee would experience flooding on a more frequent basis, possibly resulting in a greater amount of wetlands and wildlife use within the floodplain.

5.1.2 Operational Impacts

5.1.2.1 Preferred Alternative and No Action Alterative

All activity types:

Operation and maintenance (O&M) of levee systems enrolled in the PL 84-99 program is the responsibility of the non-federal levee sponsor, regardless if the levee system's status in the program is active (i.e., eligible for receiving PL 84-99 rehab assistance) or inactive (i.e., generally not eligible for receiving rehab assistance). O&M activities are confined to the levee features only and therefore are expected to result in little to no impacts to terrestrial or wetland habitat and wildlife. One potential, negligible impact that may occur during levee O&M is the incidental impact to birds nesting on the levee. For example, levee sponsors along the Missouri River typically sell the hay mowed from the levees to help fund the levee O&M activities and this often occurs between May and July. Nesting birds and/ or nests in the brome grass along a levee may be destroyed during haying operations. Through personal communications with levee

sponsors over the years, bird nest damage has not been observed or reported to the NWO, but it is a possibility.

5.1.3 Cumulative Effects of Preferred Alternative

The intent of the PL 84-99 program is to rehabilitate levee damage to pre-flood conditions. Very little of the potential repair work within the study area is expected to occur outside of the pre-existing levee footprint. The primary examples of work not completed "in-line" would be the small-scale levee setbacks/levee breach closures, the large-scale levee setbacks, and creation of on-site borrow pit wetlands on the MRRP tracts and other public lands. As noted above, the small-scale levee setbacks do not produce an appreciable floodplain habitat benefit, so they would not be expected to have little to no cumulative effect on terrestrial and wetlands habitat.

Two large-scale levee setbacks were completed in response to the 2011 flood (along Missouri River L-575) and the concept of constructing large-scale levee setbacks following the 2019 flooding is being discussed across multiple Missouri River levee systems. The cumulative effects of continually constructing large-scale levee setbacks in response to historic flooding could result in a significant amount of floodplain habitat restoration opportunities. These large-scale levee setbacks cannot occur without proper real estate in place for construction of the new levee. Typically, real estate needed for any PL 84-99 actions must be provided by the levee sponsor, but levees can be setback on property already owned for the purpose of habitat restoration, as they were following the 2011 flood. Entities interested in floodplain restoration (the USACE's MRRP program, NRCS's easement programs, state agencies, TNC, etc.) will likely continue to purchase easements/fee title land along the Missouri River, which may help enable construction of large-scale levee setbacks where they are deemed necessary.

While not exclusively associated with large-scale levee setbacks, the development of borrow pit wetlands are highly concentrated within the project area of these setback types. The setback alignment generally must be built to a specific level of flood protection before the old levee can be degraded and that material used to build the setback. So as a result, hundreds of acres of borrow pit wetlands may be created along a large-scale levee setback in order to source the material. Large-scale levee setbacks can result in the creation of hundreds of acres of floodplain wetland habitat construction and each new levee setback site could become a popular spot for migrating birds and other wildlife, as the 2011 Missouri River levee setback areas have become.

5.1.4 Measures to Avoid, Minimize, and Mitigate Impacts

The following actions would minimize overall vegetation impacts for the action alternative:

- All areas temporarily impacted during construction, including staging areas, will be replanted with native vegetation (or turf grass, as appropriate depending on staging area location) immediately after construction.
- All seeded areas will be monitored for successful establishment. Where plants do not become adequately established, areas will be reseeded with appropriate species.
- Disturbance of vegetation will be minimized through construction site management (e.g., using previously disturbed areas and existing access routes when feasible and designating limited equipment/materials storage yards and staging areas). It will be limited to that which is absolutely necessary for construction of the project.

- Areas outside of the project footprint will be fenced or flagged for protection from disturbance.
- Erosion control measures will be employed where necessary to reduce wind and water erosion. Erosion and sediment controls will be monitored daily during construction for needed repairs/adjustments.
- Optimum native vegetation seeding will generally use the following timeframes, which would be adjusted as needed for specific project locations throughout WY, SD, NE, IA and MO:
 - o Spring seeding: April 1 to May 15
 - Late summer seeding (not ideal): may be planted between May 15 and August 1 if irrigation is provided
 - o Dormant seeding: after November 1 until ground freeze

The following actions would minimize effects on wetlands for all alternatives:

- Discharges of fill material associated with unavoidable crossings of wetlands or intermittent streams will be minimized to the maximum extent practicable.
- Borrow materials will come from approved upland sites whenever possible.
- Measures to avoid, minimize, and mitigate impacts to wetlands would be implemented as required. Use of NWP 3, RGP 11-02, other NWP's, or individual permits for repair of flood damaged structures would be used, their associated water quality certification complied with, and any special conditions as part of those permits would be implemented.
- By applying NWO's Standard Operating Procedures (SOP) for the selection and treatment of borrow sites on MRRP lands (Appendix C), the action alternative would have no adverse impacts on terrestrial or wetland habitat and species. Overall it is expected to result in habitat improvement along the Missouri River where borrow pits are converted to wetlands, floodplain pools, or other desirable habitat types.

The following actions would be taken to assure habitat impacts are mitigated on a project-by-project basis:

- Habitat impacts will be quantified to determine adequate habitat mitigation on a project-by-project basis. Method of quantifying habitat impacts and determining mitigation may include, but are not necessarily limited to:
 - o Application of USACE-certified habitat suitability index models
 - o Implementation of local tree mitigation ordinances
 - O Application of floristic quality assessment vegetation value quantification to ensure higher habitat quality of mitigated area compared to impacted area. This may involve making assumptions of the pre-construction habitat condition if construction was initiated while flooding was still occurring within project area.
- On-site habitat impact mitigation would be prioritized over off-site mitigation on impacts occurring to federally or state-owned WMA land.
- Under most circumstances, the levee sponsor would be responsible for providing real estate for compensatory mitigation. However, compensatory mitigation could occur on

- other federally or state-owned land so long as the land is also not enrolled in a federal conservation easement (e.g., NRCS easement).
- Levee sponsor would seek wetland mitigation credits on an as needed basis.

5.2 Aquatic Habitat and Species

5.2.1 Construction Impacts

5.2.1.1 Preferred Alternative

All activity types:

Some aquatic wildlife may be impacted by the placement of rock and soil as part of levee rehabilitation in streams or new scour holes. However, it is likely that the construction equipment would cause some wildlife in the area to disperse until the construction is complete. Otherwise, depositing rock or other material may kill organisms such as mussels, macroinvertebrates, or overwintering fauna (depending on the time of year). The potential impacts to fishery resources are primarily related to possible site runoff or turbidity increases on smaller streams (i.e., not the Platte and Missouri Rivers), which could smother eggs and nests during the spawning season, and make it more difficult for sight-predators to obtain prey in and immediately downstream of the project areas. Overall, impacts to aquatic wildlife and available habitat (including deep water habitat) would be considered negligible-to-minor and short-term.

In-line repairs:

For the most part, in-line repairs would not result in impacts to aquatic habitat. Some in-line repairs do, however, involve levee feature erosion along a stream bank that must be armored and backfilled. Construction of permanent in-stream PL 84-99 features would pose minor risk to harming aquatic wildlife, but the construction footprint of this kind of work tends to be small (less than 1,000 linear feet). If these kinds of rehab activities are conducted within the original design dimensions of the original project, they would be covered under NWP 3. If this kind of in-stream work involved a slight deviation from the original levee design it would be covered under a RGP 11-02 or GP-41.

Borrow activities:

In some cases, borrow material for use in levee repairs (typically cohesive or topsoil material) is mechanically mined from engineered flood control channels/creeks where sediment has deposited over time. When these sources for borrow are utilized, material is excavated so as to stay within the originally designed dimensions of the channel. The material excavated consists of alluvial deposits that build up in the channel over decades. Sometimes this material is removed by drainage districts as part of their routine O&M of the associated levee systems. This type of work generally occurs outside of the open water channel where the accreted channel banks are excavated. The method of excavation within the channels involves removal of material to leave at least a 3:1 slope and to leave at least 1 foot of material above the bottom elevation of the designed channel. If any minor grading is required in excavating the material to ensure the 3:1 slopes, some negligible amount of fill within the open water channel may occur. This type of activity would be covered under NWP 3.

Hydraulically dredging borrow material from the Missouri River channel for breach closures has the potential to impact aquatic wildlife. Impacts to listed species and other species of special concern are evaluated in Section 5.3 Species of Special Concern below. For aquatic wildlife in general, dredging may result in the exposure, disturbance, or death of overwintering wildlife or wildlife present among the sandy riverbed or deeper holes along the river. Regardless of the time of year, wildlife residing in the sandy river bed where dredging occurs (primarily macroinvertebrates) would likely not be able to escape, whereas all other wildlife would be expected to disperse from the construction area and avoid damage. Hydraulic dredging for borrow within the Missouri River channel would not be expected to last longer than 5 weeks. Hydraulic dredging would be expected to result in minor, short-term disturbance.

Hydraulically dredging borrow material associated with constructing small-scale levee setbacks also allows for opportunities to create new floodplain aquatic habitat in the form of floodplain pools or backwater features. The dredged borrow pits on USACE-owned MRRP land would be expected to serve as floodplain aquatic habitat as described above in Section 5.1 Terrestrial/Wetland Habitat and Species.

Small-scale levee setbacks:

The only aquatic habitat impacts associated with small-scale levee setbacks and initial levee breach repairs involve the filling of recently created scour holes that resulted from levee breaches. Construction of these small-scale levee setbacks may be conducted during flood response and flood fighting activities while flood waters are still on the floodplain. These newly created scour holes can be dozens of feet deep and dozens of acres in size. Near the levee breaches this scour hole aquatic habitat is extremely temporary in nature and would immediately be converted to terrestrial land (i.e., filled with sand) whereupon the new levee alignment is located. Some permanent aquatic features, like small backwaters on the riverward side of the repaired levee or small floodplain pools on the landward side of the levee, may remain following construction where levee engineering standards do not require the entire scour hole to be filled (see Figure 4). The act of filling in a levee breach scour hole is considered as having no measurable impact on aquatic habitat and is covered under RGP 11-02.

When construction of small-scale levee setbacks/ breach closures leaves deep scour areas on the landward side of the levee, this can result in isolation of fish, crawdads, or other aquatic wildlife in the floodplain. If the remnant scour holes are large and deep enough, some communities of fish and other aquatic wildlife may be able to survive in these areas during and following construction.

Small-scale levee setbacks and Large-scale levee setbacks:

In addition to potentially involving the types of aquatic habitat impacts described above in this section, large-scale levee setbacks and small-scale levee setbacks may involve permanent impacts to small creeks and ditches where the new levee alignment must cross and reroute one or more stream. These activities may involve wetland and stream impacts and would require coverage under a nationwide, general, or individual permit.

5.2.1.2 No Action Alternative

Under the No Action Alternative, it is expected that most, if not all, of the levee sponsors would seek to restore their levees back to the extent that they would provide equivalent protection as the

pre-flood condition. In this scenario, newly created aquatic features would likely be converted back to agriculture or partially filled in by the levee footprint, similarly to the action alternative described above. Any impacts to aquatic wildlife would be considered temporary. Mitigation for aquatic habitat impacts would be expected to take place to the same degree as it would under the action alternative.

A scenario where the levees are not repaired by levee sponsors is anticipated to be uncommon. Under this scenario, it is still likely that much of the land would continue to be used for its preflood purposes. As such, many of the floodplain scour areas created by the high flow event would either be left as is on public land or filled and to the extent possible so that agricultural practices could resume. The area landward of an unrepaired levee would experience flooding on a more frequent basis if levee breaches or other critical section losses go unrepaired, potentially benefitting a wide array of aquatic wildlife being able to access new portions of the floodplain while inundated. This scenario could possibly also result in a greater amount of wetlands developing within the floodplain if agricultural land use is discontinued.

5.2.2 Operational Impacts

5.2.2.1 Preferred Alternative and No Action Alterative

<u>All activity types</u>: Levee O&M activities are confined to the levee features only and therefore are expected to result in no impacts to aquatic habitat or wildlife.

5.2.3 Cumulative Effects of Preferred Alternative

Overall, the long-term effect of any repaired or new levee features would not be expected to result in cumulative impacts compared to the existing conditions. Large-scale levee setbacks would likely be the only action with the potential to result in cumulative impacts to aquatic habitat. Where landward floodplain acres are converted to riverward floodplain acres, the amount of shallow floodplain habitat accessible to aquatic wildlife during times of high water and floodplain inundation increases. By increasing the amount of floodplain acres riverward of a levee, large-scale levee setbacks would be expected to improve conditions for fish and other aquatic wildlife requiring floodplain access for spring foraging and spawning (Galat, 1998).

5.2.4 Measures to Avoid, Minimize, and Mitigate Impacts General:

- All work that occurs in streams would be performed in a manner to minimize increased suspended solids and turbidity, which may degrade water quality and damage aquatic life outside the immediate area of operation.
- All areas along streambanks disturbed by construction will be seeded with vegetation (native, where possible) to minimize erosion.
- All contractors will be required to inspect, clean and dry all machinery, equipment, materials and supplies to prevent spread of aquatic nuisance species.
- Aspects of water quality, including turbidity, will be monitored during construction as required by permits. If construction results in violation of water quality thresholds, appropriate action would be taken to reverse the impacts including a temporary shutdown of in-water work if required.

• If bank stabilization is conducted under RGP 11-02, the riprap would be covered in at least 6 inches of top soil and seeded with native species.

If coffer dams and dewatering are utilized:

- To avoid potential impacts, cofferdam construction and in-stream heavy equipment activity would be coordinated with fishery experts from USFWS, state natural resource agencies, and the NWO biologists to avoid and/or minimize potential impacts.
- All pumps will have intakes screened with the appropriate diameter of mesh when
 dewatering cofferdam areas in the stream channels, as required by permits. Pumping will
 continue until water levels within the contained areas are suitable for salvage of juvenile
 or adult fish occupying these areas. Efforts to remove all fish prior to dewatering would
 be made and, if necessary, by methods approved by USFWS and state natural resource
 agencies.

5.3 Species of Special Concern

It should be noted that emergency and informal consultation with the USFWS under Section 7 of the ESA has been ongoing while the NWO continues flood response and recovery activities.

5.3.1 Federally Listed Species

5.3.1.1 Pallid Sturgeon

5.3.1.1.1 Construction Impacts

5.3.1.1.1.1 Preferred Alternative

In-line activities

Activities for in-line repairs that include mechanical fill would generally be expected to have no direct or indirect effects on pallid sturgeon as these activities would occur outside of the river channel. Some in-line rehab activities along the Missouri River and/or Platte River could involve work along the river banks or within the channel itself. These activities could include placement of riprap, backfilling of scour holes, or installation of sheet piling. Such activities may affect, but are not likely to adversely affect pallid sturgeon due to the isolated, limited scale of such in-stream/river bank construction.

Borrow Activities

The vast majority of the borrow activities would be expected to occur in floodplains or uplands, away from streams. The notable exception here is with the hydraulic dredging associated with the emergency breach closure and/or small-scale levee setbacks along the Missouri River. Hydraulic dredging in the Missouri River for the use of emergency levee breach closure work has the potential to temporarily impact pallid sturgeon. When hydraulic dredging in the Missouri River is conducted during emergency breach closures it would only occur within the inside bends inbetween the dike fields. No dredging activities would occur in the thalweg of the main channel or the outside bends. During spawning season, adult pallid sturgeon are expected to be along steep sloping banks and outside bends. Pallid sturgeon eggs are expected to be flowing through the thalweg or along the outside bend (USFWS, 2014) and are therefore unlikely to be adversely affected by hydraulic dredging or the placement of hydraulic fill on levee breaches. Nearby dredging could result in localized increases in turbidity, however, the increases generated from this activity are likely to be well within pre-regulation turbidity levels of the Missouri River.

Due to the isolated areas where in-stream dredging would occur, staying to inside bends, and keeping in mind pallid spawning timeframes, borrow mining via hydraulic dredge may affect, but is unlikely to adversely affect pallid sturgeon in the Missouri River.

Small-scale setback

Impacts associated with small-scale levee setbacks involve the filling of recently created scour holes that resulted from levee breaches. Aside from the potential impacts associated with hydraulic borrow mining for some small-scale levee setbacks described above, actual construction of the small-scale levee setbacks is expected to have no effect on the pallid sturgeon.

Large-scale setback

Large-scale levee setbacks along the Missouri River may involve permanent impacts to small floodplain creeks and ditches which are not expected to contain pallid sturgeon adult or larvae. Large-scale levee setbacks would be expected to have no effect on pallid sturgeons. Conversion of levee protected lands to riverward floodplain habitats may increase localized in-river primary and secondary productivity, which could provide a negligible-to-minor, long-term benefits for foraging pallid sturgeon during times of floodplain inundation.

5.3.1.1.1.2 No Action Alternative

Similarly to the no action alternative impacts described for aquatic habitat above (Section 5.2.1.2) it is expected that most, if not all, of the levee sponsors would seek to restore their levees back to pre-flood conditions. It is not anticipated that the levee sponsors would use hydraulic dredging to mine borrow material and so it is likely that the no action alternative would result in no effect to the pallid sturgeon.

A scenario where the levees are not repaired by levee sponsors is anticipated to be uncommon. The area landward of an unrepaired levee would experience flooding on a more frequent basis if levee breaches or other critical section losses go unrepaired, potentially benefitting a wide array of aquatic wildlife, including the pallid sturgeon being able to access new portions of the floodplain while inundated. This scenario would also have no effect on the pallid sturgeon.

5.3.1.1.2 Operational Impacts

5.3.1.1.2.1 Preferred Alternative and No Action Alternative

All activity types:

O&M of levee systems enrolled in the PL 84-99 program is the responsibility of the non-federal levee sponsor. O&M activities are confined to the levee features only and therefore are expected to result in no effect to the pallid sturgeon.

5.3.1.1.3 Cumulative Effects of Preferred Alternative

Overall, the long-term effects of any repaired or new levee features would not be expected to result in cumulative impacts compared to the existing conditions and would not be expected to result in negative impacts to the pallid sturgeon. Large-scale levee setbacks would likely be the only action with the potential to result in cumulative impacts to pallid sturgeon and their habitat. Where landward floodplain acres are converted to riverward floodplain acres, the amount of

shallow floodplain habitat accessible to pallid sturgeon and their prey base during times of high water and floodplain inundation increases. Although the preferred alternative could result in improvements (i.e., increases) to the amount floodplain habitat available to be inundated, it would be isolated and individual setbacks are not likely like to contribute a significant benefit to the pallid sturgeon.

5.3.1.1.4 Measures to Avoid, Minimize and Mitigate Impacts

Although not part of the PL 84-99 program efforts, the USACE would use the results of ongoing monitoring of pallid sturgeon spawning behavior on the lower Missouri River and Platte River to evaluate if seasonal restrictions on the proposed activities are warranted. The USACE would implement seasonal restrictions on proposed activities where appropriate. Rock placement could be restricted (along portions of the Missouri River, Platte River, Elkhorn River, or Niobrara River) during the period from March 1 to June 30 for the portion of an outside revetted bend that comprises a documented spawning site. If in-channel dredging is required for borrow material, borrow mining operations would take place on the inside bend of the river to avoid those swiftermoving outside bends that pallid sturgeon would be more likely to be present; not only to avoid potential pallid impacts, but also for dredging efficiency and safety. The USFWS would be coordinated with immediately if these timeframe or location restrictions could not be observed during emergency construction.

5.3.1.2 Least Terns and Piping Plovers

5.3.1.2.1 Construction Impacts

5.3.1.2.1.1 Preferred Alternative

All Activities

The reach of the Missouri River below Ponca, Nebraska defined as the BSNP does not typically support nesting of least terns and piping plovers. No piping plover nesting activity has been recorded on this reach of the Missouri River since the species was listed, but isolated least terns have been observed successfully nesting and fledging on USACE MRRP sites (e.g., Deer Island project) and on floodplain sand deposits following the 2011 flood. Although the BSNP does not typically support nesting habitat, it is possible for least terns and piping plovers to nest on large sand deposits in, near, or adjacent to the river as a result of the 2019 flood event.

During the nesting season, it is likely that interior least terns and piping plovers would be present in the portion of the study area along the Missouri River, lower Platte River, and Elkhorn River. From April 15 to August 15 terns or plovers may be found nesting on river sandbars, lakeshore housing developments, reservoirs, and sand and gravel mines located along these river reaches. If levee repair activities were to occur during this timeframe, nesting surveys would be conducted and a buffer of 0.25-mile would be established around the nest. Overall, PL 84-99 activities may affect, but are not likely to adversely affect least terns and piping plovers.

The 2019 flood resulted in thousands of acres of deep sand deposits across over 100 miles of the Missouri River, especially landward of levee breaches, and to a lesser extent along the Platte River. These vast sand deposits would be targeted for use as borrow material for levee repairs to the maximum extent practicable. Initiation of sand deposit borrow mining could occur throughout the year at any time. Construction crews would be informed of the nesting timeframe

prior to construction, instructed to conduct nesting surveys between April 15 and July 15 (if no nests are found) or August 15 (if nests are found), and instructed to cease construction operations within a 0.25-mile radius of identified nests if nesting behavior is discovered on site. Once construction is initiated, the ongoing construction activities would be expected to serve as suitable deterrent if adults entered the construction zones with the intention of building a nest, but surveys within the timeframe described above would be conducted nonetheless. Although it is seen as highly unlikely that sand borrow mining activities would result in negative impacts to terns or plovers, it is still a remote possibility that nesting adults could be encountered during construction on a site, so it is expected that the preferred alternative my affect, but is not likely to adversely affect terns and plovers.

5.3.1.2.1.2 No Action Alternative

Under the no action alternative, it is expected that most, if not all, of the levee sponsors would seek to restore their levees back to pre-flood conditions. In this scenario, sand deposits created by the flood would likely be used as major source of sand borrow for levee repairs. Because levee sponsors and drainage districts would not have the same resources as USACE, it is not expected that they would be able to repair levee breaches by dredging material from the river or floodplain, so they would have to wait for the river levels on the floodplain to drop low enough to access and begin mining the sand deposits. This would likely put construction activities outside of the tern and plover nesting timeframe (i.e., fall or winter months) and so the no action alternative would be expected to result in no effect to the least tern and piping plover.

A scenario where the levees are not repaired by levee sponsors is anticipated to be uncommon. Under this scenario, since a levee or levees would not be repaired, it is expected that the no action alternative would result in no effect to the least tern and piping plover.

5.3.1.2.2 Operational Impacts

5.3.1.2.2.1 Preferred Alternative and No Action Alternative

All activity types:

O&M activities are confined to the levee features only and therefore are expected to result in no effect to the least tern and piping plover.

5.3.1.2.3 Cumulative Effects of Preferred Alternative

Overall, the long-term effects of any repaired or new levee features would not be expected to result in cumulative impacts compared to the existing conditions and would not be expected to result in negative or positive impacts to the least tern and piping plover. The vast sand deposits that have the potential to provide nesting habitat are temporary in nature. They will either be removed and used as material for levee repairs or would become vegetated with shrubby and woody vegetation if left undisturbed, so their presence or absence in the years after the flood event are ultimately expected to be inconsequential to tern and plover populations or individuals.

5.3.1.2.4 Measures to Avoid, Minimize, and Mitigate Impacts

Surveys would be conducted across all levee systems with the potential to encounter a least tern or piping plover. Surveys would be conducted 3 times a week between April 15 – and July 15 if no nests are discovered, or until August 15 if nests are discovered on site. If active nests are

observed, the USFWS would be contacted to discuss construction buffers and other means of minimizing/avoiding disturbance. At a minimum, a 0.25-mile wide buffer would be established between construction activities and the identified nest. If at any time, a nest, nesting behavior, and/or chicks are observed within 0.25 miles of where construction activities are already occurring, work would cease and the USFWS will be contacted immediately.

5.3.1.3 Whooping Cranes5.3.1.3.1 Construction Impacts5.3.1.3.1.1 Preferred Alternative

All Activities

Overall, it is not anticipated that whooping cranes would be negatively impacted by the proposed action as it is not likely they would be found in the project area. The USFWS has designated Central Nebraska as the primary occurrence area of the whooping crane (NGPC, 2017). However, while this migration route does overlap with the Broken Bow project area along Mud Creek, suitable habitat is not expected to occur near this PL 84-99 construction area in Central Nebraska. Specifically regarding the Missouri River in Nebraska, the USFWS's Environmental Conservation Online System notes that whooping cranes may be migrating closer to the Missouri River than in the past (USFWS, 2019). Namely in Johnson County, which is directly west of Nemaha County wherein the USACE owns WMA lands that border the Missouri River. While whooping cranes are still not expected to be negatively impacted by the PL 84-99 activities along the Missouri River in Nebraska, there may be opportunities to create or enhance wetland habitat in Nemaha County to attract and benefit whooping cranes as part of borrow pit wetland construction. Overall the preferred alternative would result in no effect to the whooping crane.

In-line activities

In-line levee repairs are expected to have no effect on the whooping crane or its habitat. Most of the levees within the geographic scope of this PEA are located outside of the Central Flyway and outside of the areas where confirmed whooping crane sightings have been recorded (USFWS, 2007 and 2019). The only PL 84-99 project within the Central Flyway/whooping crane migration route is Broken Bow along the Mud Creek. The Brown Bow levee exists along developed urban areas and agricultural areas where the Mud Creek is very narrow and highly channelized. The floodplain surrounding the Broken Bow levee is devoid of wetlands or other habitat suitable for the whooping crane.

Borrow Activities

On-site and commercial borrow mining activities would be expected to have no effect on the whooping crane. The only PL 84-99 site within the Central Flyway is Broken Bow and for this borrow is being taken from an upland area within city limits.

Minor and Large-scale setbacks

Similarly to the in-line repairs, the construction of small-scale levee setbacks along the Missouri River and some tributaries would result in no effect to the whooping crane. The work to be conducted under PL 84-99 is outside of the migratory range of the whooping crane and the one project area that is within the Central Flyway (Broken Bow) is not expected to implement a levee setback.

5.3.1.3.1.2 No Action Alternative

Because the PL 84-99 project areas either take place outside of the whooping cranes' migratory path or do not contain habitat suitable for the whooping crane, the no action alternative is expected to result in no effect.

5.3.1.3.2 Operational Impacts

5.3.1.3.2.1 Preferred Alternative and No Action Alternative

All activity types:

Overall, operational activities would be expected to result in no effect to the whooping crane. The only exception to this would be the creation of borrow pit wetlands along the Missouri River in Nemaha County, Nebraska. As described above, the USFWS has recorded observation of whooping cranes in Johnson County, NE, which is directly west of Nemaha County, a county where the USACE owns Brownville and Langdon WMAs along the Missouri River. If whooping cranes continue to seek out resting areas east of the Central Flyway during migration, these WMAs may be utilized as whooping crane resting habitat. As part of the borrow pit wetland construction efforts, the USACE could begin to incorporate features that make these borrow pit wetlands more attractive and suitable for whooping cranes and, under the MRRP, the USACE could manage existing wetlands to benefit the cranes as well. Wetland features that could provide benefit to whooping cranes would include standing water depths of approximately one foot and mowing down tall vegetation around the wetland perimeter, especially in the fall. Wetlands containing these features that are also located near agricultural fields would serve as particularly attractive stopover habitat for whooping cranes straying from the more typical migratory pathway (McConnell, 2018).

5.3.1.3.3 Cumulative Effects of Preferred Alternative

Overall, the long-term result of any repaired or new levee features would not be expected to result in cumulative impacts compared to the existing conditions and would not be expected to result in negative or positive impacts to the whooping crane population. The construction of borrow pit wetlands and/or the targeted management of existing wetlands to benefit the cranes along the Brownville and Langdon Bend WMAs under the MRRP are not expected to result in a population-wide whooping crane benefit. Any whooping cranes using these WMA in the future would represent extreme statistical outliers across the migratory pathway and therefore would only be expected to benefit fringe individual whooping cranes deviating far away from the Central Flyway.

5.3.1.3.4 Measures to Avoid, Minimize, and Mitigate Impacts

As a result of the proposed action, no direct or indirect negative effects are anticipated to occur to the whooping crane therefore no measures are expected to be taken to avoid, minimize, or mitigate potential impacts.

5.3.1.4 Topeka Shiner5.3.1.4.1 Construction Impacts5.3.1.4.1.1 Preferred AlternativeAll Activities

In Nebraska only three streams are identified as potentially still harboring the Topeka shiner. Two streams, Taylor Creek and Union Creek are located within the Elkhorn River watershed in Madison County, Nebraska, and the other, Big Creek, is located within the North Loup River watershed in Cherry County, Nebraska. All three streams are located outside of the PL 84-99 project areas. Proposed work in Madison County will be located in northeastern Madison County on the North Fork Elkhorn River near Norfolk, Nebraska. Therefore, the proposed action would be expected to result in no effect to the Topeka shiner.

5.3.1.4.1.2 No Action Alternative

Similarly to the preferred alternative, levee rehabilitation and construction activities conducted by the levee sponsor under the NAA would not be expected to result in any impacts to the Topeka shiner. The NAA would have no effect.

5.3.1.4.2 Operational Impacts

5.3.1.4.2.1 Preferred Alternative and No Action Alternative

All activity types

Overall, operational activities would be expected to result in no effect to the Topeka shiner because they are not present in the PL 84-99 project areas.

5.3.1.4.3 Cumulative Effects of Preferred Alternative

Overall, the long-term effect of any repaired or new levee features would not be expected to result in cumulative impacts compared to the existing conditions and would not be expected to result in negative or positive impacts to the Topeka shiner.

5.3.1.4.4 Measures to Avoid, Minimize, and Mitigate Impacts

As a result of the proposed action, no direct or indirect negative effects are anticipated to occur to the Topeka shiner therefore no measures are expected to be taken to avoid, minimize, or mitigate potential impacts.

5.3.1.5 Indiana Bat and Northern Long-Eared Bat

5.3.1.5.1 Construction Impacts

5.3.1.5.1.1 Preferred Alternative

All Activities

All potential construction activities could require the removal of standing trees within the project area, which is the type of activity that is most likely to have effects on the Indiana bat and Northern long-eared bat (bats). In order to avoid potential impacts to the bats, any required tree removal would be conducted during timeframes when the bats are not expected to be present.

During the summer months, it is possible that Indiana bats would be present in the portion of the project area along the lower Missouri River in Missouri. There are known maternity colonies in Missouri counties that are adjacent to the river. During the summer months, it is possible that northern long-eared bats would be present throughout some of the project areas in forested areas along rivers to roost, rear their young, and forage. The bats roost in large colonies underneath bark, in cavities, or in crevices of trees in areas along the river. This roosting habitat is essential for birthing and rearing young. Any clearing of trees and vegetation in the project areas while

these bats are roosting and rearing young has the potential to disturb the females and their young. Clearing of vegetation or trees also has the potential to reduce the amount of foraging and roosting habitat available to bats present at the time or in the future. Noise and other physical disturbance would be temporary and localized and would not affect the availability of roosting areas or foraging opportunities for these bats.

Site-specific analysis would occur prior to levee rehab construction and especially tree clearing to avoid effects to the bats. On a site by site basis and when possible, clearing large trees with sluffing bark and snags will be avoided, even outside of clearing restriction timeframes. When necessary, bat surveys will be conducted to ensure effects are avoided to the extent possible. Both species occupy hibernacula between November 1 and March 31, the inactive season. Suitable forested areas are utilized during the active season (April 1 through October 31) and can function as summer maternity habitat, staging and swarming habitat, migration or foraging habitat.

To avoid impacts to Indiana bats, clearing of trees greater than or equal to 5 inches in diameter will be restricted from October 31 to March 31 unless it is determined that no hibernaculum exists within a 5-mile radius of the project site. If no hibernaculum exists within a 5-mile radius of the project area, then clearing of trees greater than or equal to 5 inches in diameter will be restricted from November 15 to March 31.

Projects requiring tree clearing in the range of the northern long-eared bat will need to comply with the 4 (d) rule, and consultation with the appropriate USFWS office on each individual project will occur. Through consultation, each project location will be evaluated for its proximity to known hibernaculum, proximity to maternity roosting trees, and whether the project is in the white nose syndrome zone or not. To avoid impacts to northern long-eared bats, cutting or removal of known roosting trees or clear cut and other tree clearing methods would be avoided between June 1 and July 31.

The proposed action may affect but is not likely to adversely affect these bat species in the case of clearing and vegetation removal in roosting and foraging habitat areas. The implementation of conservation measures specifically to avoid disruption or removal of trees during the roosting season will be required to avoid effects to these species.

5.3.1.5.1.2 No Action Alternative

Similarly to the preferred alternative, levee rehabilitation and construction activities under the no action alternative wherein tree removal is required have the potential to affect the bats. Assuming the levee sponsor coordinates activities with the USFWS and conducts informal consultation on effects to listed species, then the effects to these bat species would be the same as those described under the preferred alternative. If the levee sponsor or the consultants hired to design and construct the levee repairs do not conduct consultation with the USFWS or obtain incidental take permits, it is possible that the no action alternative results in actions that directly impact roosting or nursing bats negatively.

Under the scenario that the levee sponsor chooses to not repair the levee damage, it would be expected that roosting and nursing habitat would not be impacted.

5.3.1.5.2 Operational Impacts

5.3.1.5.2.1 Preferred Alternative and No Action Alternative

All activities

Overall, operational activities would be expected to result in no effect to the bats because they largely involve actions such as mowing, cleaning out relief wells, and other minor activities that do not involve the removal of trees suitable for these bat species.

5.3.1.5.3 Cumulative Effects of Preferred Alternative

Overall, the long-term result of any repaired or new levee features would not be expected to result in cumulative impacts compared to the existing conditions. Tree removal during construction would be expected to result in isolated, negligible reduction in the amount of roosting and nursing habitat across the project area. In many cases where floodwaters deposited sand bars, regardless of the level of levee repair needed, cottonwood and willow trees would begin to grow rapidly. Where these trees are left to grow they would eventually contribute to an increase in bat roosting habitat over the years. Overall, the preferred alternative is not expected to contribute significantly to cumulative effects to the bats.

5.3.1.5.4 Measures to Avoid, Minimize, and Mitigate Impacts

As stated above, to avoid impacts to Indiana bats, clearing of trees greater than or equal to 5 inches in diameter will be restricted from October 31 to March 31 unless it is determined that no hibernaculum exists within a 5-mile radius of the project site. If no hibernaculum exists within a 5-mile radius of the project area, then clearing of trees greater than or equal to 5 inches in diameter will be restricted from November 15 to March 31. Projects requiring clearing in the range of the northern long-eared bat will need to comply with the 4 (d) rule, and consultation with the appropriate USFWS office on each individual project will occur. Through consultation, each project location will be evaluated for its proximity to known hibernaculum, proximity to maternity roosting trees, and whether the project is in the white nose syndrome zone or not. To avoid impacts to northern long-eared bats, cutting or removal of potential roosting trees or clear cut and other tree clearing methods would be avoided between June 1 and July 31.

5.3.1.6 Salt Creek Tiger Beetle

5.3.1.6.1 Construction Impacts

5.3.1.6.1.1 Preferred Alternative and No Action Alternative

All Activities

The Salt Creek tiger beetle is currently limited to segments of Little Salt Creek and adjacent remnant saline wetlands in northern Lancaster County, Nebraska (USFWS 2016d). No saline wetlands are present within the proposed project area along the Salt Creek, which includes the levee along Salt Creek from approximately Van Dorn Street to Superior Street in Lincoln, Nebraska. Most levees are manmade structures and are devoid of trees, shrubs, and bushy vegetation. No project activities are expected to occur within the vicinity of suitable habitat. In addition, no designated critical habitat is present within the project area. As a result of the proposed action, no direct or indirect effects are anticipated to occur to the endangered Salt

Creek tiger beetle. The proposed action is anticipated to have no effect on the Salt Creek tiger beetle or critical habitat.

5.3.1.6.2 Operational Impacts

5.3.1.6.2.1 Preferred Alternative and No Action Alternative

All activity types

Overall, operational activities would be expected to result in no effect to the Salt Creek tiger beetle because they are not present in the PL 84-99 project areas.

5.3.1.6.3 Cumulative Effects of Preferred Alternative

Overall, the long-term result of any repaired or new levee features would not be expected to result in cumulative impacts compared to the existing conditions and would not be expected to result in negative or positive impacts to the Salt Creek tiger beetle.

5.3.1.6.4 Measures to Avoid, Minimize, and Mitigate Impacts

As a result of the proposed action, no direct or indirect negative effects are anticipated to occur to the Salt Creek tiger beetle therefore no measures are expected to be taken to avoid, minimize, or mitigate potential impacts. However, the USACE would coordinate with USFWS during site-specific project implementation to ensure any potential impacts are avoided or minimized. Avoidance, minimization, and mitigation measures would be developed and implemented at the site-specific level when individual projects are implemented.

5.3.1.7 Western Prairie Fringed Orchid

5.3.1.7.1 Construction Impacts

5.3.1.7.1.1 Preferred Alternative

All Activity types

Many of the levees undergoing rehabilitation occur within urban areas and not in western prairie fringed orchid habitat of wet prairies and meadows. The disturbance caused by urbanization has likely minimized this species' ability to thrive within much of the study area. It is not expected that the western prairie fringed orchid would be found within the individual project areas, therefore it is not expected there would be direct effects as a result of the proposed action.

Regarding the levees along the Missouri River, as per coordination with the USFWS during the 2018 BiOp consultation (USACE, 2018a), no records of the western prairie fringed orchid or habitat occur in the Missouri River floodplain. As a result, no direct or indirect effects are anticipated to occur to the western prairie fringed orchid from any levee rehab activities around the Missouri River levees, including, but not necessarily limited to hydraulic dredging in the Missouri River floodplain or obtaining borrow from MRRP lands, levee setbacks, or in-line repairs. After evaluating the potential effects of the proposed action, the USACE concludes that the proposed action would have no effect on the western prairie fringed orchid.

5.3.1.7.1.2 No Action Alternative

The western prairie fringed orchid is not expected to be present within the individual project areas and therefore is not expected to be impacted under the no action alternative. The no action alternative would have no effect on the western prairie fringed orchid.

5.3.1.7.2 Operational Impacts

5.3.1.7.2.1 Preferred Alternative and No Action Alternative

All activity types

The western prairie fringed orchid is not expected to be present within the individual project areas and therefore is not expected to be impacted during levee operation and maintenance activities. Levee operation and maintenance would be expected to have no effect on the western prairie fringed orchid.

5.3.1.7.3 Cumulative Effects of Preferred Alternative

Overall, the long-term effects of any repaired or new levee features would not be expected to result in cumulative impacts compared to the existing conditions and would not be expected to result in negative or positive impacts to the western prairie fringed orchid.

5.3.1.7.4 Measures to Avoid, Minimize, and Mitigate Impacts

As a result of the proposed action, no direct or indirect negative effects are anticipated to occur to the western prairie fringed orchid therefore no measures are expected to be taken to avoid, minimize, or mitigate potential impacts. However, the USACE would coordinate with USFWS during site-specific project implementation to ensure any potential impacts are avoided or minimized. Avoidance, minimization, and mitigation measures would be developed and implemented at the site-specific level when individual projects are implemented.

5.3.1.8 American Burying Beetle

5.3.1.8.1 Construction Impacts

5.3.1.8.1.1 Preferred Alternative and No Action Alternative

All Activities

Within the study area, the American burying beetle's range only overlaps with the Broken Bow project area. Because the Broken Bow levee is fully within an urbanized, developed portion of Broken Bow, NE, along a channelized portion of Mud Creek, it is not expected that suitable habitat exists and therefore the preferred alternative and any other actions taken under the no action alternative would be expected to have no effect.

5.3.1.8.2 Operational Impacts

5.3.1.8.2.1 Preferred Alternative and No Action Alternative

All activity types

The American burying beetle is not expected to be present within the project and therefore is not expected to be impacted during levee operation and maintenance activities. Levee operation and maintenance would be expected to have no effect on the American burying beetle.

5.3.1.8.3 Cumulative Effects of Preferred Alternative

Overall, the long-term effects of any repaired or new levee features would not be expected to result in cumulative impacts compared to the existing conditions and would not be expected to result in negative or positive impacts to the American burying beetle.

5.3.1.8.4 Measures to Avoid, Minimize, and Mitigate Impacts

As a result of the proposed action, no direct or indirect negative effects are anticipated to occur to the American burying beetle therefore no measures are expected to be taken to avoid, minimize, or mitigate potential impacts. However, the USACE would coordinate with USFWS during site-specific project implementation to ensure any potential impacts are avoided or minimized. Avoidance, minimization, and mitigation measures would be developed and implemented at the site-specific level when individual projects are implemented.

5.3.2 State Species of Special Concern

5.3.2.1 Construction and Operational Impacts

5.3.2.1.1 Preferred and No Action Alternatives

All Activity types

There are a multitude of state species of special concern described above in the Affected Environment chapter that could be present across the study area. This PEA does not attempt to develop an impact analysis on each one specifically. Site-specific environmental evaluations will consider impacts to all federal and state species of concern and will be conducted on a project-by-project basis. Overall, the preferred and no action alternatives can be generally expected to result in negligible-to-minor, short-term impacts to state-listed species and other species of special concern within the study area. Potential impacts that may result from repair, operation, or maintenance of levee features within the study would be communicated to the USFWS and/or the respective state natural resource agency and mitigation measures would be implemented.

5.3.2.1.2 Cumulative Effects of Preferred Alternative

The impacts of cumulative effects on any of the state species of special concern would be similar or the same as the impacts described under Sections 5.1.3, 5.2.3, and 5.3 (Species of Special Concern) (for each of the federally listed species) above.

5.3.2.1.3 Measures to Avoid, Minimize, and Mitigate Impacts

Measures would be taken to avoid, minimize, and mitigate potential impacts to state species of special concern. These measures would be similar or the same as the measures described under Sections 5.1.4, 5.2.4, and 5.3 (Species of Special Concern) (for each of the federally-listed species) above. In Nebraska, the Corps would seek to avoid rock placement in streams where the state-listed lake sturgeon may be present between February 1 and July 15.

5.3.3 Migratory Birds and Raptors

5.3.3.1 Construction Impacts

5.3.3.1.1 Preferred and No Action Alternatives

All Activity types

Tree removal and disturbance near trees potentially containing nests has the potential to occur under either alternative. As a result, any construction during the potential nesting timeframes described in Section 4.3.3 (Migratory Birds and Raptors) would need to be preceded by nest surveys conducted by NWO biologists or other qualified personnel. If construction is scheduled to take place near an active bald eagle's nest, an appropriate equipment buffer distance would be established. According to the National Bald Eagle Management Guidelines, the nature of levee

repair work would most likely fall under "Category A" and since the work would be visible from the nest location, a 660-foot buffer would apply.

5.3.3.2 Operational Impacts

5.3.3.2.1 Preferred and No Action Alternatives

All Activity types

Operation and maintenance of the levee features under either alternative is not expected to result in impacts to migratory birds or raptors. These activities will be confined to the levee feature footprint and no new tree removal or disturbance is anticipated.

5.3.3.3 Cumulative Effects of Preferred Alternative

The impacts of cumulative effects on migratory birds or raptors would be similar or the same as the impacts described for bird species under Sections 5.1.3, 5.2.3, and 5.3 (Species of Special Concern) (for each of the federally-listed species) above.

5.3.3.4 Measures to Avoid, Minimize, and Mitigate Impacts

Measures would be taken to avoid, minimize, and mitigate potential impacts to migratory birds or raptors. These measures would be similar or the same as the measures described under Sections 5.1.4, 5.2.4, and 5.3 Species of Special Concern (for each of the federally-listed species) above. Additionally, any construction during the potential nesting timeframes described in Section 4.3.3 Migratory Birds and Raptors would need to be preceded by nest surveys conducted by NWO biologists or other qualified personnel. If nests are impacted or have the potential to be impacted by construction, the NWO would contact the USFWS to discuss mitigation actions and appropriate distance buffers between the observed active nest and construction equipment.

5.4 Air Quality

5.4.1 Construction and Operational Impacts

5.4.1.1 Preferred and No Action Alternatives

All Activity types

Minor increases in dust and equipment exhaust are expected during construction of the preferred alternative and under the no action alternative. These increases would be temporary and would not be expected to be high enough to result in non-attainment areas for any National Ambient Air Quality Standards (NAAQS) parameters. The construction-related air impacts would be similar to agricultural activities, construction activities, and other traffic use in the project areas. Therefore, the expected impacts to air quality in the project area from any levee rehabilitation, repair, or O&M construction would be negligible and short-term.

5.4.2 Cumulative Effects of Preferred Alternative

Air quality impacts of concern for the project area are primarily associated with construction and include the following:

- Fugitive dust emissions
- Exhaust from construction equipment
- Vehicle exhaust for work travel and movement of supplies

When considering the incremental impact of the project air emissions added to other air emissions from past, present, and reasonably foreseeable future actions, construction along any of the levee systems would not be expected to contribute to cumulative air quality impacts. The past, present, and reasonably foreseeable future actions potentially contributing to air quality impacts are expected to be similar to the proposed project in that air emissions associated with these actions would also be primarily from construction or minor stationary sources and would have effects similar to those listed above. None of the identified activity types involve long-term operations with notable major air emission sources. Construction air emissions from the present and reasonably foreseeable future actions would be cumulative with those of the proposed project if they were to occur at the same time and in the same general area. However, most of the actions would involve air emissions which are characterized as intermittent and short-term, with negligible temporary impacts on air quality in the vicinity of the construction. Therefore, while the combination of the project and other actions would generate cumulative impacts on air quality near the study area, the proposed project itself would have a negligible contribution that would be temporary, localized to the construction areas, and would not occur in one area on a steady basis for more than a one or two-year construction timeframe. Project construction would not contribute to air quality impacts on a continued basis. Additionally, construction-related emissions would occur at ground level, limiting the dispersion of pollutants within the expansive study area.

5.4.3 Measures to Avoid, Minimize, and Mitigate Impacts

The following general actions would help to avoid or minimize impacts on air quality for the preferred alternative during construction:

- Minimize clearing vegetation within the construction work areas, access areas, and staging areas.
- Conduct construction activities to minimize the creation of dust. This may include measures such as limitations on equipment, speed, and/or travel routes. Water, dust palliative, gravel, combinations of these, or similar control measures may be used.
- Maintain construction equipment in good working order. Equipment and vehicles with
 excessive emissions due to poor engine adjustments or other inefficient operating
 conditions would be repaired or adjusted.
- In active construction areas, including access roads, limit speeds of non-earth moving equipment.
- Limit idling of heavy equipment and turn off idling equipment when not in use.
- Implement a fugitive particulate emission control plan that specifies steps to minimize fugitive dust generation.
- Stabilize spoil piles and sources of fugitive dust by implementing control measures, such as covering and/or applying water or chemical/organic dust palliative where appropriate at active and inactive sites during workdays, weekends, holidays, and windy conditions.
- Install wind fencing and phase grading operations where appropriate, and operate water trucks for stabilization of surfaces under windy conditions.
- Prevent spillage when hauling spoil material.
- Plan construction scheduling to minimize vehicle trips.
- Implement measures to clean up or minimize the transfer of mud onto public roads.

5.5 Water Quality

5.5.1 Construction Impacts

5.5.1.1 Preferred Alternative

All Activity types

This alternative may result in negligible, temporary, construction-related adverse impacts to water quality resulting from site runoff and increased turbidity during levee repair activities. However, these impacts would be avoided and/or minimized to the greatest extent possible by the implementation of best management practices and measures required under the National Pollutant Discharge Elimination System (NPDES) permit. Best management practices would minimize placement of incidental fill; potential adverse sedimentation into aquatic resources during construction; and would minimize the introduction of fuel, petroleum products, or other deleterious material from entering the waterway. Such practices may consist of erosion control fences; storing equipment, solid waste, and petroleum products above the ordinary high water mark and away from areas prone to runoff; and requiring that all construction equipment be clean, free of leaks, and refueled in designated areas with containment berms. To prevent incidental fill from reaching water sources by wind or runoff, bare ground exposed by construction would be covered, stabilized or mulched, and silt fences would be used as required. The on-site contractors would be responsible for obtaining the NPDES permits. Additionally, prior to construction, the USACE would conduct the appropriate coordination to ensure compliance with Clean Water Act (CWA) Sections 404 permit and 401 water quality certification if repairing the levee would impact any jurisdictional waters of the United States. Activities conducted under the preferred alternative may require compliance with a RGP 11-02/ GP-4, an applicable Nationwide Permit, or an individual permit. All appropriate measures would be taken to minimize erosion and storm water discharges during and after construction. As such, the expected impacts to water quality in the project area from construction would be negligible and short-term.

5.5.1.2 No Action Alternative

The no action alternative would result in the public sponsor not receiving assistance through the PL 84-99 Emergency Levee Rehabilitation Program and the public sponsor repairing the levee. Most levee repairs have the potential for negligible, short-term construction-related impacts to water quality due to storm water runoff. This could result in increased turbidity to adjacent water bodies. Any construction-related increases in turbidity would be unlikely to negatively impact water quality appreciably, especially along the Missouri River. As shown by Blevins (2006), the turbidity levels in the Missouri River are far below what they were historically as a result of reservoirs and the Bank Stabilization and Navigation Project. Even without assistance through the PL 84-99 program, the sponsor or their construction contractors would still be expected to obtain NPDES permits for compliance with Section 402 of the Clean Water Act if the size of any land disturbance were to exceed one acre. Furthermore, the sponsor may be required to obtain an individual CWA Section 404 permit and 401 water quality certification if repairing the levee would impact any jurisdictional waters of the United States and was not covered by RGP 11-02/ GP-41 or an applicable Nationwide Permit. However, there may be greater risk of adverse impacts to the environment if levee repairs were completed without Federal assistance. For example, if the sponsor were to undertake the work themselves, they may unknowingly violate

environmental regulations, or they may have less experience implementing Best Management Practices to protect water quality.

5.5.2 Operational Impacts

5.5.2.1 Preferred Alternative and No Action Alternative

All Activity types

All activities conducted as part of routine levee operation and maintenance would not be expected to result in impacts to water quality. Activities would include, but are not necessarily limited to, gravel resurfacing, vegetation mowing and haying, and drainage feature repair and upkeep. Levee O&M would take place within the levee footprint and right of way and would not be expected to extend into adjacent habitat areas. Levee O&M activities may require BMPs such as silt fencing or other erosion controls, but would not be expected to impact wetlands or streams. Overall, the preferred and no action alternative would be expected to have short-term, negligible impacts to water quality.

5.5.3 Cumulative Effects of Preferred Alternative

Overall, the long-term effects of any repaired or new levee features would not be expected to result in cumulative impacts compared to the existing conditions and would not be expected to result in negative or positive impacts to water quality in the study area. For the most part, levees would be rehabilitated to the pre-flood dimensions and level of protection. Aside from isolated wetland and stream impacts and isolated wetland creation/mitigation, the preferred alternative would not be expected to result in any impacts to water quality.

5.5.4 Measures to Avoid, Minimize, and Mitigate Impacts

As stated above, erosion and sediment control measures and other BMPs would be implemented to ensure water quality impacts during construction are avoided. Erosion and sediment controls may include, but are not necessarily limited to:

- Development of a Storm Water Pollution Prevention Plan (SWPPP)
- Acquisition of a NPDES Permit
- Employment of stabilization practices (e.g., mulching, erosion control blankets, preservation of mature vegetation where possible, etc.)
- Employment of temporary structural practices (e.g., silt fences, storm drain and culvert inlet protections, sediment traps, etc.
- In-channel or wetland construction is required to comply with Sections 404 and 401 of the Clean Water Act and as such the appropriate permits and water quality certifications would be obtained and/or coordinated prior to construction.

5.6 Noise

5.6.1 Construction Impacts

5.6.1.1 Preferred Alternative

All Activity types:

Construction of any preferred alternative actions would require the use of heavy construction equipment. The operation of heavy construction equipment would result in a discernible increase in noise at the project sites. The noise and related construction activities may cause wildlife to

leave or avoid the project areas. To avoid or minimize construction-related noise impacts on sensitive wildlife species, preconstruction surveys may be required to determine if sensitive species are located in the vicinity of the proposed alteration, at staging areas, or within borrow areas. Coordination with the USFWS would be implemented if sensitive species are identified and a determination is made that construction-related noise could affect the sensitive species. Measures recommended by the USFWS to minimize noise impacts to or construction operation proximity near sensitive species may then be required, and could include establishing an appropriate buffer area around the identified species' location, enforcing temporal restrictions on construction activities, and/or establishing access restrictions on construction personnel and vehicles.

Additionally, PL 84-99 construction will occur in urban areas and noise from the operation of construction equipment could create a disturbance that disrupts individuals engaged in recreational activities or those participating in day-to-day activities in noise-sensitive areas (hospitals, churches, residences, etc.). Construction-related noise could reduce the recreational enjoyment of individuals by diminishing the peaceful atmosphere that nature provides or by scaring fish and wildlife away from the area where the recreationalist might be fishing, hunting, or wildlife viewing. To reduce construction-related noise, BMPs would be implemented. BMPs could include avoiding idling heavy construction equipment when not immediately needed to reduce noise during the daylight hours and to set heavy construction equipment operation timeframe limits when in an urban area to limit noise when most individuals are sleeping. It is expected that some emergency breach closure construction, which is expected to occur primarily along the Missouri River in rural areas, may need to occur on a 24-hour basis for a period of days or weeks. Upon completion of the construction, noise would cease and thus no long-term impacts are anticipated.

Construction-related activities would typically be conducted only during daylight hours when other noise-generating activities regularly occur (traffic, agricultural practices, airplanes, etc.). In general, PL 84-99 activities are expected to blend into other normal daytime sounds. Not idling construction equipment and implementing measures recommended by the USFWS would help minimize noise impacts on the surrounding environment. Fish and wildlife displaced from the area during construction would be expected to return to the area once construction is completed as no long-term noise is anticipated. Noise generated during the proposed in-line levee repairs would be short-term and minor-to-negligible.

5.6.1.2 No Action Alternative

Under the No Action Alternative, no noise would be produced in the project area as a result of a Federal activity. However, under the scenario that the levee sponsors conducted levee repairs themselves, the noise impacts associated with the construction work would be expected to be similar to those described above under the preferred alternative. This would result in the potential for minor, temporary construction-related noise. Best management practices to reduce noise may or may not be implemented so an increase in noise and disturbance to human activity or wildlife could occur.

5.6.2 Operational Impacts

5.6.2.1 Preferred and No Action Alternatives

All Activity types:

Levee O&M activities conducted by the project sponsors would consist of little to no construction equipment operation. Levee mowing and seed application are examples of the types of activities requiring the use of heavy mechanical equipment that would generate relatively loud noise. Overall, levee O&M activities would be conducted infrequently (few times a year) and would not contribute to significant noise impacts. Levee O&M noise impacts would be expected to be short-term and negligible.

5.6.3 Cumulative Effects of Preferred Alternative

It is very likely that heavy machinery operation of various types would be underway within the project areas such as road or building construction, or agricultural activities while the preferred alternative is being implemented. However, due to the short-term nature of PL 84-99 construction activities, it is anticipated that any cumulative effects on noise levels would be negligible and short-term.

5.6.4 Measures to Avoid, Minimize, and Mitigate Impacts

To reduce the noise impact from project construction in sensitive areas, mitigation measures may be implemented. The mitigation measures would include the following:

- As needed, equipment and trucks used for project construction will utilize the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically-attenuating shields or shrouds) wherever feasible.
- As needed, stationary noise sources will be located as far from adjacent receptors as possible and will be muffled and enclosed within temporary sheds, incorporate insulation barriers or other measures to the extent feasible.
- Heavy construction equipment operations could be limited to daytime weekday periods, but only in cases where flooding is not expected to be imminent (in which case, PL 84-99 construction may need to occur outside of daytime hours).
- Distance buffers may be implemented if sensitive wildlife is or could be present in the project areas during specific times of the year.

5.7 Cultural Resources

5.7.1 Construction Impacts

5.7.1.1 Preferred Alternative

All Activity types:

For the most part, PL 84-99 activities involve in-line repairs and generally do not subject the land surrounding levees to new ground disturbance. However, after historic flooding like that seen in 2019, new ground disturbance becomes much more common. Any new ground disturbance, especially where new, non-commercial borrow pits are located, requires coordination with the appropriate state and Tribal entities. Coordination with the Iowa, Nebraska, Missouri, South Dakota, and Wyoming State Historic Preservation Offices and Tribes is and will continue to be ongoing as new construction areas are identified. Typically,

coordination with these entities would occur prior to construction, which generally was the case along many of the tributary levee systems following the March 2019 flooding. But in the cases of quick flood response activities, such as the ongoing breach closure work along the Missouri River and some tributaries, coordination was initiated concurrently with construction activities. SHPO and Tribal coordination has been conducted on a project-by-project basis and will continue to be conducted as such. Project-specific coordination is documented in the levee system-specific RECs.

To the extent possible, USACE archaeologists did and/or will evaluate all construction sites prior to and/or concurrently with initiation of construction activities. These evaluations include, but are not necessarily limited to, file searches, review of historical records, as well as on-site surface and sub-surface investigations.

Where USACE archaeological evaluations and coordination with the SHPOs and Tribes have revealed a high likelihood of cultural resource impacts, additional site investigations have been or would be conducted. In some cases, sites have been avoided altogether due to the potential for exposing cultural resources (e.g., previously documented sites along the Missouri River).

There is always potential for an unanticipated discovery of cultural resources during construction activities. In the event that historic resources are uncovered, work would be halted immediately and a USACE archeologist would be notified, whom would in turn notify the appropriate SHPOs and/or Tribes. The work would not be continued until the area is inspected by a USACE archeologist and other appropriate parties. If he or she determines that the resources require further consultation, he or she will notify the appropriate SHPO and/or Tribes to determine next steps, including when construction could recommence. While the preferred alternative in each case has the potential to disturb unknown cultural resources, it is expected that the preferred alternative will not result in impacts to these resources.

5.7.1.2 No Action Alternative

Under the No Action Alternative, the same risk of potentially exposing or impacting cultural resources under the Preferred Alternative would still exist. If levee rehabilitation were to occur without PL 84-99 assistance, the levee sponsors and their hired construction crews would be responsible for assessing cultural resource impacts and reporting any unintended impacts to the appropriate parties. Because cultural resource inventory reviews and site surveys might not conducted by the levee sponsor, there is a higher risk of potential impacts under the No Action Alternative than under the Preferred Alternative.

5.7.2 Operational Impacts

5.7.2.1 Preferred and No Action Alternatives

All Activity types:

Because levee O&M activities are restricted to constructed levee and other flood risk management features, no new ground disturbance would be expected to occur. Therefore, O&M activities would not be expected to result in any impacts to cultural resources.

5.7.2.2 Cumulative effects of Preferred Alternative

Because the Preferred Alternative is not anticipated to result in impacts to cultural resources, it is also not anticipated that PL 84-99 construction activities would contribute to cumulative effects impacting cultural resources.

5.7.2.3 Measures to avoid, minimize, and mitigate impacts

To the extent possible, USACE archaeologists did and/or will evaluate all construction sites prior to and/or concurrently with initiation of construction activities. These evaluations include, but are not necessarily limited to, file searches, review of historical records, as well as on-site surface and sub-surface investigations.

Where USACE archaeological evaluations and coordination with the SHPOs and Tribes have revealed a high likelihood of cultural resource impacts, additional site investigations have been or would be conducted. In some cases sites have been avoided all together due to the potential for exposing cultural resources (e.g., previously documented sites along the Missouri River).

There is always potential for an unanticipated discovery of cultural resources during construction activities. In the event that historic resources are uncovered, work would be halted immediately and a USACE archeologist would be notified, whom would in turn notify the appropriate SHPOs and/or Tribes. The work would not be continued until the area is inspected by a USACE archeologist and other appropriate parties. If he or she determines that the resources require further consultation, he or she will notify the appropriate SHPO and/or Tribes to determine next steps, including when construction could recommence. While the Preferred Alternative in each case has the potential to disturb unknown cultural resources, it is expected that the Preferred Alternative will not result in impacts to these resources.

5.8 Floodplains

5.8.1 Construction Impacts

Overall, the NWO is required to ensure compliance with Executive Order (EO) 11988 and document that construction at each individual project area would not result in a flood stage rise. The EO 11988 evaluation and hydraulic modeling at each project location (as needed) would ensure that no adverse impacts to levee systems upstream, downstream, or across the river would occur as a result of any PL 84-99 activity, from an in-line repair to a large-scale levee setback. Individual EO 1988 compliance documentation would be prepared on a project-by-project basis and not for the overall PL 84-99 efforts following the 2019 flood.

5.8.1.1 Preferred Alternative

In-line repairs, borrow activities, and small-scale levee setbacks:

Overall, these activities would not result in appreciable changes to the floodplain within the PL 84-99 project area. In-line repairs result in no change in the floodplain compared to pre-flood conditions and small-scale levee setbacks around breaches do not result in measureable hydraulic changes in the floodplain as shown through hydraulic modeling. While borrow pits located in the floodplain are ultimately graded to provide wildlife habitat benefits, these borrow pits are not expected to have a significant impact on floodplain hydraulics. Because the PL 84-99 Program

provides disaster-related rehabilitation to flood damaged levees, modification of the floodplain generally does not occur as a result of construction.

Large-scale levee setbacks:

Large-scale levee setbacks do have the potential to change hydraulic conditions within the floodplain by reducing flood water velocities and flood stage elevation at and upstream of the setback (Krause et al., 2015). These types of setbacks can also have hydraulic implications on upstream and downstream levee systems, so hydraulic modeling is required to ensure negative effects on adjacent levee systems in the surrounding floodplain are not induced. Construction of large-scale levee setbacks under the PL 84-99 program also result in an increase in the amount of riverward floodplain land.

5.8.1.2 No Action Alternative

Under the No Action Alternative, it is expected that most, if not all, of the levee sponsors would seek to restore their levees back to the extent that they would provide equivalent protection as previously provided. In this scenario, no new impacts to floodplain hydraulic conditions would be expected. It is not anticipated that levee sponsors would construct large-scale levee setbacks.

A scenario where the levees are not repaired by levee sponsors is anticipated to be uncommon. Under this scenario, hydraulic conditions on the floodplain would remain the same as pre-flood conditions on levee systems that did not breach and are not near levee systems that did breach. For levees that did breach, floodplain hydraulic alterations on a levee-system – wide scale would be expected to occur. These hydraulic changes would be expected to occur across the breached levee system's floodplain as well as directly across the river from the breach, as the breached levee could serve to reduce flood velocities and flood stage elevations in the immediate and upstream areas.

5.8.2 Operational Impacts

5.8.2.1 Preferred and No Action Alternatives

All Activity types:

Because levee O&M activities are restricted to constructed levee and other flood risk management features, no new ground disturbance would be expected to occur. Therefore, O&M activities would not be expected to result in any impacts to floodplain hydraulic conditions or land use.

5.8.3 Cumulative Effects of Preferred Alternative

In-line repairs and small-scale levee setbacks are generally seen as the types of activities that do not contribute to cumulative impacts under the PL 84-99 program. Large-scale levee setbacks and, to a lesser degree, on-site borrow pit operations are expected to contribute to cumulative impacts within the surrounding floodplain.

Devastating floods have the potential to damage levees so severely that implementation of a large-scale setback across all or part of a levee is the least cost alternative for levee repairs. As large-scale levee setbacks continue to be considered and implemented along the Missouri River (and possibly other levee systems), the NWO will need to continue to consider how each setback

affects the hydraulics of the surrounding levee systems. Each large-scale levee setback could contribute to cumulative effects on floodplain hydrology of the affected levee system or surrounding levee systems that will need to be modeled and understood so they do not result in negative impacts.

The creation of on-site borrow pits that are later converted to wetlands or other floodplain habitat types are expected to slowly accumulate following large flood events. Over 500 acres of borrow pit wetlands were created along the Missouri River floodplain after the 2011 flood and additional acres are expected to be created following the 2019 flooding. Large flood events requiring significant amounts of material (e.g., tens of millions of cubic yards) to be mined on-site can contribute to the development of hundreds of acres of floodplain habitat each time they occur. Future large flood events that require significant amounts of material to be mined on-site will result in additional opportunities to develop floodplain habitat features.

5.8.4 Measures to Avoid, Minimize, and Mitigate Impacts

Hydraulic modeling and reviews for compliance with EO 11988 could be conducted for all proposed PL 84-99 activities to ensure construction does not result in a negative impact to floodplain hydraulics.

5.9 Farmland

5.9.1 Construction Impacts

5.9.1.1 Preferred Alternative

<u>In-line repairs</u>, borrow activities, and small-scale levee setbacks:

Many of the levees within the study area were constructed directly adjacent to floodplain farmland which inherently involves the risk that levee repair efforts may require the construction of new landward levee features on land being used for agricultural production. This may include impacts to prime farmland as well. In-line repairs, borrow activities, and small-scale levee setbacks all have the potential to permanently impact private farmland. In-line repairs may convert acres in agricultural production to features such as widened seepage berms, expanded levees, and groins on the riverward side to help reduce flood velocities. Borrow activities may convert farmland into protected wetlands or deep floodplain pools. Small-scale setbacks could convert farmland into new levee segments and put land formerly landward of a levee to the riverward side. All of these potential actions could also have impacts on eligibility or participation in several Farm Bill programs such as flood insurance rates and farming subsidies. However, the magnitude of these effects is not expected to be significant, with new levee feature footprints likely being in the range of tens of acres per levee system over the span of thousands – tens of thousands of acres of agricultural land. However, by repairing flood damaged levees, the farmland in the individual project areas would be protected once again, allowing agricultural producers to continue utilizing farmland as they did under pre-flood conditions. The impacts these PL 84-99 activities would have on farmland are expected to be negligible-to-minor and long term.

Large-scale levee setbacks:

Large-scale levee setbacks have the potential to result in greater impacts to farmland than other PL 84-99 activities (e.g., in-line repairs, borrow pit excavation, and small-scale setbacks).

Large-scale levee setbacks result in the conversion of hundreds or thousands of acres of previously protected farmland to riverward floodplain. Large-scale levee setbacks are only implemented where real estate is available for the new construction. Because a significant amount of land is required to construct a levee setback, these typically occur in areas where extreme levee damage and government-owned wildlife management area land overlap, but not always. Otherwise, land would need to be purchased from willing sellers by the levee sponsor in order to set a levee back under PL 84-99. Other federal or state governmental agencies/programs or NGOs may also seek to purchase land from willing sellers seeking buyouts, which would inadvertently help reduce the real estate acquisition burden of the levee sponsor. It is assumed that these lands where willing sellers are bought out would be converted to wildlife habitat areas following levee setback construction.

Although, some farmland may be converted to riverward habitat conservation land, construction of large-scale levee setbacks have the potential to incidentally result in improved protection to the agricultural land that remains landward. When construction of a large-scale levee setback is warranted, that typically means that there has been significant damage to the levee or its foundation. Large-scale levee setbacks can make the entire levee system more sustainable over the long-term and more resilient to failure during an extreme flood event (Smith, et al., 2017).

Overall, large-scale levee setbacks would result in minor, long-term reductions in farmland acres within the floodplain of an individual levee system, but could also result in some incidental, long-term improvements to farmland flood protection.

5.9.1.2 No Action Alternative

Under the No Action Alternative, it is expected that most, if not all, of the levee sponsors would seek to restore their levees back to pre-flood conditions. In this scenario, it is anticipated that farming would resume on floodplain land as it had been conducted prior to the flooding.

A scenario where the levees are not repaired by levee sponsors is anticipated to be uncommon. Under this scenario, farming is likely to resume in areas where levees did not breach. In areas where levees did breach, farming would be expected to be discontinued due to the threat of flooding and the reduction in Farm Bill program benefits and subsides.

Overall, the No Action Alternative could result in negligible (if breached levees are repaired)-to-major (if breached levee are not repaired), long-term impacts to the ability to farm on floodplain land.

5.9.2 Operational Impacts

5.9.2.1 Preferred and No Action Alternatives

All Activity types:

Because levee O&M activities are restricted to constructed levee and other flood risk management features, no new ground disturbance would be expected to occur. Therefore, O&M activities would not be expected to result in any impacts to farmland.

5.9.3 Cumulative Effects of Preferred Alternative

At the scale of individual levee systems or for individual land owners, some PL 84-99 activities could result in minor cumulative effects to floodplain farmland. At the same individual landowner scale, the continued implementation of large-scale levee setbacks could result in major cumulative effects to floodplain farmland in cases where willing sellers are seeking buyouts. But at the landscape-scale within the study area, these impacts would be negligible. Continued implementation of the multiple federal and state land acquisition programs, such as the NRCS Emergency Watershed Protection – Floodplain Easement Program (EWP-FPE), may coincide with implementation of a large-scale levee setback. Implementation of PL 84-99 activities with large footprints, such as large-scale setbacks, in conjunction with federal and state land acquisition programs would be expected to have cumulative effects on the amount of floodplain land under agricultural production, some of which may be considered prime farmland. Both PL 84-99 and the various federal and state land acquisition programs operate with willing sellers only, so any loss of farmland would be the result of landowners voluntarily selling their land in fee title or enrolling property in permanent conservation easements.

5.9.4 Measures to Avoid, Minimize, and Mitigate Impacts

Removal of land from agricultural production would only be expected to occur when PL 84-99 construction requires additional real estate beyond the existing levee footprint and right of way. When additional real estate is needed, it is the responsibility of the levee sponsor to provide compensation to that land owner. In some cases, the landowner may choose to sell their property to the state or federal government to manage as habitat conversation areas, or they may seek to enroll the property in federal conservation easement programs. Regardless, the landowner is compensated for land that becomes incorporated into a new levee feature.

Selecting a preferred levee rehabilitation alternative must take into account cost and practicability. Typically the least cost alternative would be selected and constructed unless there were extenuating circumstances that made the least cost alternative unable to be implemented (e.g., real estate could not be secured). It is expected overall that repairing a levee benefits the protected farmland so it is more advantageous to impact a small amount of farmland near a levee in order to maintain the level of flood protection afforded to the entire protected area.

6 AGENCY AND PUBLIC ENGAGEMENT

The NWO is in constant contact with the various levee sponsors and landowners adjacent to levee repair areas. Additionally, as described above, agency engagement has been occurring throughout the entire duration of the levee rehab efforts and will continue with ongoing construction activities. Agency and Tribal engagement occurred as part of the development of this PEA in May 2019, but has also been occurring on a project-by-project basis since then. See Appendix A for agency coordination and scope correspondence records. On May 10, 2019 letters and emails were sent to the following entities informing them of the NWO's intent to develop a PEA for the 2019 flooding PL 84-99 efforts:

Federal Agencies:

U.S. Environmental Protection Agency Natural Resources Conservation Service U.S. Fish and Wildlife Service Advisory Council for Historic Preservation Bureau of Indian Affairs

State Agencies:

Iowa State Historic Preservation Office
Iowa Department of Natural Resources
Nebraska State Historic Preservation Office
Nebraska Department of Environmental Quality
Missouri State Historic Preservation Office
Montana State Historic Preservation Office
National Trust for Historic Preservation
Nebraska State Historical Society
North Dakota Historical Society
South Dakota Department of Game, Fish and Parks
South Dakota State Historical Society

Tribes:

Assiniboine and Sioux Pawnee Nation of Fort Belknap Indian Tribes of Fort Peck Community Gros Ventre Oklahoma Blackfeet Tribe and Assiniboine Tribes Ponca Tribe of Indians of Cheyenne River Sioux Iowa Tribe of Nebraska Oklahoma Tribe And Kansas Ponca Tribe of Nebraska Lower Brule Sioux Tribe Ponca Tribe of Nebraska Chippewa Cree Tribe of the Rocky Boys' Mandan, Hidatsa & Rosebud Sioux Tribe Reservation Arikara Nation Sac and Fox Nation of Crow Creek Sioux Tribe Missouri in Kansas and Northern Arapaho Tribe **Crow Nation** Northern Cheyenne Tribe Nebraska Oglala Sioux Tribe Eastern Shoshone Tribe Sac and Fox Nation of Omaha Tribe of Nebraska Flandreau Santee Sioux Oklahoma Otoe-Missouria Tribe Santee Sioux Nation Tribe

Sisseton-Wahpeton Sioux

Spirit Lake Sioux Tribe

Standing Rock Sioux Tribe Turtle Mountain Band of

Chippewa

Winnebago Tribe of Nebraska Yankton Sioux Tribe

Levee Sponsors:

Ames Diking District Atchison County LD #1

Bennet/McDonald/ Smithland DD

Benton-Washington LD

Brownville-Nemaha LD#2

Buchanan Levee & Drainage District #1 Cass Co Emergency

Management

Central Platte NRD City of Broken Bow City of Clarkson City of Columbus

City of Council Bluffs

City of Denison City of Hamburg

City of Hawarden

City of Hooper

City of Howells City of Ida Grove

City of Madison

City of Norfolk

City of Omaha

City of Pierce City of Red Oak City of Schuyler

City of Scribner

City of Sidney City of Sioux City

City of Wakefield

City of West Point

Fremont County Board of

Supervisors

Little Nemaha Valley

Levee Dist. No. 3

Intercounty Drainage

District

Lower Platte North NRD

Lower Platte South NRD

M&P Missouri River

Levee District

McKissock Island DD Miller-Sturgeon LD

Nagel DD

Northwest Atchison Co.

LD

Omaha Fish & Wildlife Omaha Tribe of Nebraska

Otoe County SID #1 Papio-MR NRD Peru Dike District #1 Platte Valley DD Pleasant Valley LD

Richardson County DD#8 Scottsbluff Co. Board of

Super

SID 1, Cass County

Village of Meadow Grove

Village of Pender Village of Waterloo

Watkins DD

Waubonsie Drainage

District

Final Programmatic Environmental Assessment PL 84-99 Levee Rehabilitation Program April 2020

In the summer of 2019, three additional levee systems submitted applications for PL 84-99 in West Point, NE, Sheridan, WY, and Sioux Falls, SD. Coordination with the following agencies was initiated once these PL 84-99 requests had been received:
USFWS South Dakota Ecological Services Office
USFWS Wyoming Ecological Services Office
South Dakota Game, Fish and Parks
Wyoming Game and Fish Department
South Dakota State Historic Preservation Office

Wyoming State Historic Preservation Office

7 CUMULATIVE EFFECTS

The combined incremental effects of human activity are referred to as cumulative impacts (40 CFR 1508.7). While these incremental effects may be insignificant on their own, accumulated over time and from various sources, they can result in serious degradation to the environment. The cumulative impact analysis must consider past, present, and reasonably foreseeable actions in the study area. The analysis also must include consideration of the actions of other state and federal agencies. As required by NEPA, the NWO has prepared the following assessment of cumulative impacts related to the alternative being considered in this PEA.

In general, the majority of PL 84-99 activities are not expected to significantly contribute to or be affected by cumulative effects. Chapter 5 ENVIRONMENTAL CONSEQUENCES contains a description of the cumulative effects of the Preferred Alternative specific to each resource category evaluated in this PEA. Where levee damage isn't significant and largely repaired inline, PL 84-99 construction activities represent a maintenance of the status quo condition. The implementation of large-scale levee setbacks and conversion of on-site borrow pits to floodplain wetland habitat are two types of PL 84-99 activities that would be expected to contribute to cumulative effects. Because these two activities would primarily occur along the Missouri River, this chapter of the PEA focuses on the cumulative impacts of PL 84-99 activities along the Missouri River levee systems.

Missouri River BSNP and Dam System Operation and Maintenance:

Past actions have had a dramatic and lasting effect on the nature of the Missouri River's features, ecosystem, and flow dynamics. Flooding has been controlled by the installation of dams, levees and dikes, and sections of the river have been channelized for navigation. The human alteration of the river hydrographs and dynamic processes from damming of the river along with habitat modifications has resulted in dramatic changes and the loss of properly functioning terrestrial and aquatic habitats. However, these operations along the Missouri River system generate an estimated \$1.8 billion in average annual benefits to stakeholders along the river and within the basin. The USACE will continue to operate and maintain the Missouri River dam system in a manner consistent with the authorized purposes as laid out in the Missouri River Mainstem Reservoir System Master Water Control Manual (Master Manual). It is anticipated that BSNP structures damaged in the 2019 flooding would undergo repair while PL 84-99 levee rehabilitation is occurring. In some cases the BSNP structure and levee breach repair work may occur in the same location (e.g., L-575 B inlet breach), requiring close coordination between the two separate construction activities.

Missouri River Habitat Development:

Presently, efforts to restore some of the natural features and ecosystem dynamics of the historic Missouri River are underway. The USACE initiated an effort to acquire land and develop habitat in 1986 in order to mitigate for the wildlife and habitat impacts imposed by the BSNP. The NWO is currently involved in efforts to construct new and maintain existing habitat restoration projects along the Missouri River within and outside of the PEA study area. Projects are designed and maintained to achieve compatibility with the other Missouri River authorized purposes laid out in the Master Manual. These aquatic and terrestrial habitat restoration projects exist on the riverward and landward side of the Missouri River levees, in some cases in close

proximity to a federal levee. The USACE and its planning partners will continue to maximize habitat and species diversity on the MRRP sites, but will seek to avoid actions that may result in impacts to nearby levee systems.

Future habitat restoration projects along the Missouri River will likely continue to be developed by the USACE and other agencies. Other entities, such as the NRCS, will likely continue to acquire easements/purchase land along the Missouri River as part of other floodplain habitat restoration programs. Following the 2019 flooding, many federal and state governmental entities and politicians have expressed interest in supporting large-scale levee setbacks along the Missouri River. Continued implementation of the multiple federal and state land acquisition programs, such as the NRCS Emergency Watershed Protection – Floodplain Easement Program (EWP-FPE), may coincide with implementation of future large-scale levee setbacks. When the option to consider a large-scale levee setback arises, willing sellers and levee sponsors pursue private land buyouts, and government programs have available funding to acquire real estate, such "win-win" opportunities can help facilitate implementation of large-scale levee setbacks.

Climate Change and Levee Resiliency:

The river systems in the study area are expected to experience some effects of climate change into the future, which will include future changes in precipitation patterns, warmer temperatures, and the potential for more extreme rainfall events (Conant et al., 2018). Summer temperatures in the Northern Great Plains are projected to increase from 2.3°-6.7°F (1.3°-3.7°C) to more than 5.4°-11.0°F (3.0°-6.1°C) by the end of the 21st century (Hayhoe et al., 2018). Northern areas of the Great Plains are projected to experience a wetter climate by the end of this century as precipitation increases of up to 20% are projected in winter and spring for the north central United States (Hayhoe et al., 2018). Although, summer precipitation shows a potential decline in future years, the magnitude of variability is a more meaningful factor. The shift in temperature and moisture could have potential effects to levee systems and flood control structures. Climate models project an increase in the number of heavy precipitation events, and these extreme precipitation events may lead to more severe floods and greater risk of infrastructure failure. Original design, construction, and operation and maintenance of the levee systems within the study area during the mid-20th century did not necessarily consider a changing climate with more frequent extreme flooding events (Lall et al., 2018). PL 84-99 is an emergency response authority and accounting for the potential to reduce future flooding damages or increasing levee resiliency is not the purpose of the levee rehabilitation program. Other USACE study authorities (e.g., General Investigation, Continuing Authorities Program, etc.) provide avenues for nonfederal communities and entities to consider changes to levee design and location. It is anticipated that federal and state governmental entities will engage the USACE to study the possibility of large-scale levee setbacks and other levee modifications to help increase levee resiliency and flood protection within the study area, but especially along the Missouri River.

When added to these actions, the PL 84-99 activities conducted within the study area generally have a negligible, short-term impact on natural resources and provide short and long-term benefits to the socioeconomic conditions to individual project areas.

8 COMPLIANCE WITH ENVIRONMENTAL LAWS

Bald and Golden Eagle Protection Act, 16 U.S.C. Sec. 668, 668 note, 669a-668d. In compliance. This Act prohibits the taking or possession of and commerce in bald and golden eagles, with limited exceptions for scientific or exhibition purposes, for religious purposes of Indian Tribes, or for the protection of wildlife, agriculture or preservation of the species. Some nests were identified during initial site visits during the PIR phase of each individual project area. Where inactive or active nests have been or will be identified, they will be monitored throughout construction to ensure the project does not result in impacts. Additionally, prior to construction bird surveys would be performed by a USACE Environmental Resources Specialist or other qualified professional to confirm that no bird or nest impacts would occur. Consultation with the Nebraska Natural Heritage Program occurred during July 2019 and GIS data on potential bald eagle nests were obtained and referenced to help inventory if any known bald eagles nests were in close proximity to a project area. The proposed project is anticipated to have no adverse effects on the bald eagle or other protected raptors.

<u>Clean Air Act, as amended, 42 U.S.C. 185711-7. et seq.</u> In compliance. Air quality is not expected to be significantly impacted to any measurable degree by the Preferred Alternative.

Clean Water Act, as amended. (Federal Water Pollution Control Act) 33 U.S.C. 1251. et seq. In compliance. The objective of this Act is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters (33 USC 1251). The USACE regulates discharges of dredge or fill material into waters of the United States pursuant to Section 404 of the Clean Water Act. This permitting authority applies to all waters of the United States including navigable waters and wetlands. The selection of disposal sites for dredged or fill material is done in accordance with the Section 404(b)(1) guidelines, which were developed by the EPA (see 40 CFR Part 230). While the NWO does not permit itself, NWO projects involving the discharge of dredged or fill material into the waters of the United States would be developed in accordance with guidelines promulgated under the authority of Section 404(b)(1) of the CWA (40 C.F.R. 230). Coordination with the NWO Regulatory Office in Omaha, Nebraska, Rock Island, Iowa, and Kansas City, Missouri occurred early on in the planning process to inform them of the proposed project. Because the proposed alternative consists of various emergency levee rehabilitation and flood fighting activities, the permits required vary depending on the nature of the work at each project area. The NWP3, RGP 11-02, GP-41, or individual permits are expected to be the Section 404 permits required for PL 84-99 activities. Section 401 Water Quality Certification is "built into" NWP 3, RGP 11-02, and GP-41 and authorized by the NGPC, IDNR, MDNR, and the EPA. Additional coordination would occur if work conducted would be consistent with the requirements of an individual permit. As described in the environmental consequences section, the proposed project would have no adverse impacts to water quality.

Comprehensive Environmental Response Compensation and Liability Act (CERCLA). In compliance. Typically CERCLA is triggered by (1) the release or substantial threat of a release of a hazardous substance into the environment; or (2) the release or substantial threat of a release of any pollutant or contaminant into the environment which presents an imminent threat to the public health and welfare. To the extent such knowledge is available, 40 CFR Part 373 requires

notification of CERCLA hazardous substances in a land transfer. No CERCLA issues or hazardous substances are known to occur at the individual project areas.

<u>Endangered Species Act</u>, as amended. 16 U.S.C. 1531, et seq. In compliance. This project has been coordinated with the United States Fish and Wildlife Service (USFWS). Emails, letters, and phone conferences have been conducted with the USFWS throughout this flood response and rehabilitation effort and will continue during ongoing levee construction. Informal and/or emergency consultation with the appropriate USFWS offices will occur on an individual project basis. The proposed project is not anticipated to adversely affect federally listed species. Some species may be affected, but are not likely to be adversely affected by the proposed project.

Environmental Justice (E.O. 12898). In compliance. Federal agencies shall make achieving environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations in the United States. The project does not disproportionately impact minority or low-income populations.

<u>Farmland Protection Policy Act (Subtitle I of Title XV of the Agriculture and Food Act of 1981)</u>, <u>effective August 6, 1984</u>. In compliance. Compliance with this act also will satisfy the requirements set forth in Council on Environmental Quality (CEQ) Memorandum of August 11, 1980, Analysis of impacts on Prime or Unique Agricultural Lands in Implementing NEPA. Although, some prime farmland may be impacted by levee repair, the nature of this work ultimately helps protect farmland from future flooding.

<u>Federal Water Project Recreation Act, as amended, 16 U.S.C. 460-1(12), et seq.</u> In compliance. The proposed construction would likely not increase or decrease recreational opportunities in the project area.

<u>Fish and Wildlife Coordination Act. 16 U.S.C. 661 et seq.</u> In compliance. Appendix B contains records of the PEA agency written coordination. Emails, letters, and phone conferences have been conducted with the USFWS, IDNR, Nebraska Game and Parks Commission (NGPC), Missouri Department of Natural Resources (MDNR), Missouri Department of Conservation (MDC), Wyoming Game and Fish Department (WGFD), and South Dakota Game, Fish, and Parks (SDGFP), and others throughout this flood response and rehabilitation effort and will continue during ongoing levee construction.

<u>Floodplain Management (E.O. 11988)</u>. In compliance. None of the individual projects will result in a flood stage rise. As needed, floodplain permits or other related documentation would be acquired prior to construction.

Migratory Bird Treaty Act of 1918 as amended, 16 U.S.C. 703-711, et seq. In compliance. The Migratory Bird Treaty Act of 1918 (MBTA) is the domestic law that affirms, or implements, the United States' commitment to four international conventions with Canada, Japan, Mexico and Russia for the protection of shared migratory bird resources. The MBTA governs the taking,

killing, possession, transportation, and importation of migratory birds, their eggs, parts and nests. The take of all migratory birds is governed by the MBTA's regulation of taking migratory birds for educational, scientific, and recreational purposes and requiring harvest to be limited to levels that prevent over utilization. Executive Order 13186 (2001) directs executive agencies to take certain actions to implement the act. If construction of the Preferred Alternative is proposed to occur within the primary nesting season for neo-tropical migrants in Nebraska, Iowa, or Missouri, a qualified biologist would conduct a field survey of the affected habitats prior to construction to determine the presence or absence of nesting migratory birds. If nesting migratory birds are identified within the proposed project area, the USFWS would be contacted immediately for guidance and assistance on how to proceed prior to any construction taking place.

<u>National Environmental Policy Act (NEPA)</u>, as amended, 42 U.S.C. 4321, et seq. In compliance. This Programmatic Environmental Assessment has been prepared for the proposed action and to satisfy the NEPA requirement. An Environmental Impact Statement is not required.

National Historic Preservation Act, as amended. 16 U.S.C. 470a, et seq. In compliance. Coordination with the NE, MO, and IA SHPOs has and will continue to occur on a project-by-project basis. In some cases, coordination with the SHPOs occurred immediately before or concurrently with construction activities due to the rapid and emergency nature of the PL 84-99 activities. In places where repair work is confined to the footprint of the previous levee, the projects are generally expected to have no potential to affect historic properties. Cultural resource surveys and coordination would be conducted on a project-by-project basis.

There is always potential for an unanticipated discovery of cultural resources during construction activities. In the event that historic resources are uncovered, work would be halted immediately and a District archeologist would be notified. The work would not be continued until the area is inspected by a staff archeologist. If he or she determines that the resources require further consultation, he or she will notify the corresponding State Historic Preservation Office.

Noise Control Act of 1972, 42 U.S.C. 4901 et seq. In compliance. While there would be an initial noise disturbance during construction, there would be no long-term noise disturbances associated with this project. Upon project completion, the area would take on a more natural setting.

<u>Protection of Wetlands (EO 11990)</u>. In compliance. All construction activities would be conducted in compliance with applicable permits and all unavoidable wetland impacts would be mitigated.

<u>Rivers and Harbors Act, 33 U.S.C. 401, et seq.</u> In compliance. A Section 10 permit is not required for USACE projects.

<u>Watershed Protection and Flood Prevention Act, 16 U.S.C. 1101, et seq.</u> In compliance. Each contractor is required to provide the NWO with an erosion and sedimentation control plan prior

to the start of construction. Best Management Practices will be implemented to minimize erosion and sedimentation potential.	

9 PREPARER

This Programmatic EA and the associated Finding of No Significant Impact (FONSI) were developed by Mr. Dave Crane, and Mr. Chris Weber, Environmental Resource Specialists. The PEA Biological Assessment was developed by Ms. Shelly McPherron and Mr. Dave Crane, Environmental Resources Specialists. The address of the preparer is: U.S. Army Corps of Engineers, Omaha District; PMA-C, 1616 Capitol Avenue, Omaha, Nebraska 68102.

Prepared By:	Date: 2020-04-20
Dave Crane Environmental Resources Specialists	
Reviewed By:	Date:
Aaron Quinn Environmental Resources Specialist	
Approved By: Organity signed by CUNNAMENT.11867289686 Octobe 2020.004.20 15:335-6	Date:
Eric Laux Chief, Environmental and Cultural Resources	Section

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APPENDIX A PROGRAMMATIC AGENCY COORDINATION



DEPARTMENT OF THE ARMY

CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Ms. Jennifer Ousley U.S. Environmental Protection Agency 90 North 5th Streeet Kansas City, Kansas 66108

Dear Ms. Ousley:

The U.S. Army Corps of Engineers Omaha District (Omaha District) is preparing a Programmatic Environmental Assessment (PEA) for the 2019 spring flooding emergency levee rehabilitation efforts. This letter is being sent to inform you that the Omaha District is initiating a 30-day public comment scoping period as development of the PEA begins. The emergency provision of USACE National Environmental Policy Act (NEPA) regulations (ER 200-2-2) allows NEPA documentation to be accomplished concurrently with or after completion of emergency work.

SCOPING:

The purpose of this scoping effort is generally to inform the public that the Omaha District is developing a PEA as part of the Public Law (PL) 84-99 activities. Although the PL 84-99 authority establishes the scope and purpose of repairs, the Omaha District is soliciting comments from you and your constituents during this scoping period regarding concerns, potential impacts, relevant effects of past actions, and possible alternative actions. As part of this NEPA public scoping effort, the Omaha District is requesting that comments be submitted between now and 14 June 2019. Scoping comments should focus on the areas where levee rehabilitation will occur. The enclosed map is meant to depict the majority of the levee systems included in this PL 84-99 effort, but may not depict all as requests for assistance are still being received by the Omaha District.

Many agencies, Tribes, and surrounding land owners have already been working with the Omaha District during flood response and rehabilitation efforts. This NEPA effort <u>is not</u> meant to duplicate or serve as an alternative for coordination with the Omaha District on levee flood fighting or repair work.

BACKGROUND:

During the fall months of 2018, the lower Missouri River Basin saw very wet conditions with several weather systems resulting in saturated soil conditions heading into the winter season. Below normal winter temperatures resulted in a deep frost depth. The extreme cold temperatures persisted into early spring which combined with an active storm pattern across the plains. Typically, gradual warming temperatures in late February and March would allow for a slow snowmelt along with the ground beginning to thaw. 2019 did not follow this pattern which resulted in a record snowpack with 2-4 inches of snow water equivalent (SWE) still covering much of the lower Missouri River Basin as late as 12 March 2019. The extreme cold temperatures also allowed for the development of thick ice on area streams and rivers.

Temperatures over the lower Missouri River Basin quickly warmed in conjunction with a heavy rain event from 12 March to 14 March 2019. Precipitation totals of 1 to 3 inches across the region with pockets greater than 3 inches were reported across eastern Nebraska. The precipitation was in the form of snow across the western and northern plains, while warmer temperatures resulted in rain across the eastern plains. The warm temperatures also produced significant snowmelt which combined with the heavy rainfall to produce high runoff due to the frozen ground. The extreme runoff resulted in high to record flows along the unregulated streams and rivers in eastern Nebraska and western Iowa. Numerous records at river gages in eastern Nebraska were exceeded by 1 to 4 feet with a few along the Elkhorn River nearing flows 6 feet higher than previous long standing records. Several ice jams were also reported during this event.

As a result of this event, the mainstem Missouri River saw high flows downstream of Gavins Point Dam, especially south of the confluence of the unregulated Little Sioux River basin. Record flows were observed on the Missouri River downstream of the confluence of the unregulated Platte River. In the Omaha District, widespread damage to levees along the Missouri River and its tributaries occurred during this flooding event, resulting in damage to over 30 levee systems and dozens of levee breaches.

PROGRAMMATIC ENVIRONMENTAL ASSESSMENT:

The Omaha District has already began conducting flood response and levee rehabilitation activities under the PL 84-99 program. This PEA is intended to provide NEPA coverage for the wide range of activities where advanced measures, direct assistance, and levee system repairs will be conducted. Anticipated PL 84-99 activities include, but are not necessarily limited to, repairs to levee scours, levee crests, levee berms, levee breaches, partial breaches, partially eroded levees, sand boils, relief wells, drainage structures, and pump stations. Levee setbacks may also be implemented as part of this PL 84-99 effort. The Omaha District plans to have a draft PEA ready for public review in the summer of 2019.

CONTACT:

If you have any questions or require additional information, please contact Mr. Dave Crane at (402) 995-2676 or at david.j.crane@usace.army.mil.

Sincerely,

Eric A. Laux, PMP

Chief, Environmental & Cultural Resources



DEPARTMENT OF THE ARMY

CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 ZUIS

Planning, Programs, and Project Management Division

Sindra Jensen Natural Resources Conservation Service 210 Walnut Street Room 693 Des Moines, Iowa 50309

Dear Sindra Jensen:

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CONTACT:

If you have any questions or require additional information, please contact Mr. Dave Crane at (402) 995-2676 or at david.j.crane@usace.army.mil.

Sincerely.

Eric A. Laux, PMP

Chief, Environmental & Cultural Resources

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DEPARTMENT OF THE ARMY

CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Brad Soncksen Natural Resources Conservation Service 100 Centennial Mall N, Rm 152 Lincoln, Nebraska 68508

Dear Mr. Soncksen:

The U.S. Army Corps of Engineers Omaha District (Omaha District) is preparing a Programmatic Environmental Assessment (PEA) for the 2019 spring flooding emergency levee rehabilitation efforts. This letter is being sent to inform you that the Omaha District is initiating a 30-day public comment scoping period as development of the PEA begins. The emergency provision of USACE National Environmental Policy Act (NEPA) regulations (ER 200-2-2) allows NEPA documentation to be accomplished concurrently with or after completion of emergency work.

SCOPING:

The purpose of this scoping effort is generally to inform the public that the Omaha District is developing a PEA as part of the Public Law (PL) 84-99 activities. Although the PL 84-99 authority establishes the scope and purpose of repairs, the Omaha District is soliciting comments from you and your constituents during this scoping period regarding concerns, potential impacts, relevant effects of past actions, and possible alternative actions. As part of this NEPA public scoping effort, the Omaha District is requesting that comments be submitted between now and 14 June 2019. Scoping comments should focus on the areas where levee rehabilitation will occur. The enclosed map is meant to depict the majority of the levee systems included in this PL 84-99 effort, but may not depict all as requests for assistance are still being received by the Omaha District.

Many agencies, Tribes, and surrounding land owners have already been working with the Omaha District during flood response and rehabilitation efforts. This NEPA effort <u>is not</u> meant to duplicate or serve as an alternative for coordination with the Omaha District on levee flood fighting or repair work.

BACKGROUND:

During the fall months of 2018, the lower Missouri River Basin saw very wet conditions with several weather systems resulting in saturated soil conditions heading into the winter season. Below normal winter temperatures resulted in a deep frost depth. The extreme cold temperatures persisted into early spring which combined with an active storm pattern across the plains. Typically, gradual warming temperatures in late February and March would allow for a slow snowmelt along with the ground beginning to thaw. 2019 did not follow this pattern which resulted in a record snowpack with 2-4 inches of snow water equivalent (SWE) still covering much of the lower Missouri River Basin as late as 12 March 2019. The extreme cold temperatures also allowed for the development of thick ice on area streams and rivers.

As a result of this event, the mainstem Missouri River saw high flows downstream of Gavins Point Dam, especially south of the confluence of the unregulated Little Sioux River basin. Record flows were observed on the Missouri River downstream of the confluence of the unregulated Platte River. In the Omaha District, widespread damage to levees along the Missouri River and its tributaries occurred during this flooding event, resulting in damage to over 30 levee systems and dozens of levee breaches.

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Eric A. Laux, PMP

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Ms. Christina Rader Natural Resources Conservation Service Rock Port Service Center 302 E US Highway 136 Rock port, Missouri 64482

Dear Ms. Rader:

The U.S. Army Corps of Engineers Omaha District (Omaha District) is preparing a Programmatic Environmental Assessment (PEA) for the 2019 spring flooding emergency levee rehabilitation efforts. This letter is being sent to inform you that the Omaha District is initiating a 30-day public comment scoping period as development of the PEA begins. The emergency provision of USACE National Environmental Policy Act (NEPA) regulations (ER 200-2-2) allows NEPA documentation to be accomplished concurrently with or after completion of emergency work.

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

Planning, Programs, and Project Management Division

Ms. Jane Ledwin U.S. Fish and Wildlife Service 101 Park DeVille Drive, Suite A Columbia, Missouri 65203

Dear Ms. Ledwin:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Ms. Eliza Hines U.S. Fish and Wildlife Service 203 W. 2nd Street Grand Island, Nebraska 68801

Dear Ms. Hines:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Steve King Iowa State Historic Preservation Office State Historical Society of Iowa Capitol Complex 600 East Locust Street Des Moines, Iowa 50519

Dear Mr. King:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Inga Foster Iowa Department of Natural Resources Wallacce State Office Building 502 East 9th Street Des Moines, Iowa 50309

Dear Inga Foster:

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Eric A. Laux, PMP

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Floodplain Development Program lowa Department of Natural Resources Field Office #4 1401 Sunnyside Lane Atlantic, Iowa 50022

Dear Iowa Department of Natural Resources:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Matt Dollison lowa Department of Natural Resources 503 West Street Sidney, Iowa 51652

Dear Mr. Dollison:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Ms. Christine Schwake lowa Department of Natural Resources Wallacce State Office Building 502 East 9th Street Des Moines, Iowa 50319

Dear Ms. Schwake:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Ms. Jill Dolberg Nebraska State Historic Preservation Office 1500 R Street Lincoln, Nebraska 68508

Dear Ms. Dolberg:

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Eric A. Laux, PMP

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Rex Amack Nebraska Game and Parks Commision 2200 N. 33rd Street Lincoln, Nebraska 68503

Dear Mr. Amack:

The U.S. Army Corps of Engineers Omaha District (Omaha District) is preparing a Programmatic Environmental Assessment (PEA) for the 2019 spring flooding emergency levee rehabilitation efforts. This letter is being sent to inform you that the Omaha District is initiating a 30-day public comment scoping period as development of the PEA begins. The emergency provision of USACE National Environmental Policy Act (NEPA) regulations (ER 200-2-2) allows NEPA documentation to be accomplished concurrently with or after completion of emergency work.

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BACKGROUND:

As a result of this event, the mainstem Missouri River saw high flows downstream of Gavins Point Dam, especially south of the confluence of the unregulated Little Sioux River basin. Record flows were observed on the Missouri River downstream of the confluence of the unregulated Platte River. In the Omaha District, widespread damage to levees along the Missouri River and its tributaries occurred during this flooding event, resulting in damage to over 30 levee systems and dozens of levee breaches.

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CONTACT:

If you have any questions or require additional information, please contact Mr. Dave Crane at (402) 995-2676 or at david.j.crane@usace.army.mil.

Sincerely,

Eric A. Laux, PMP



CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Jason Garber Nebraska Department Of Environmental Quality 1200 N Street Lincoln, Nebraska 68509

Dear Mr. Garber:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

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Planning, Programs, and Project Management Division

Dr. Toni M. Prawl, Missouri State Historic Preservation Office State Historic Preservation Office P.O. Box 176 Jefferson City, Missouri 65102

Dear Dr. Prawl:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Craig Crisler Missouri Department of Conservation Nodaway Valley Conservation Area 2199 Highway B Maitland, Missouri 64466

Dear Mr. Crisler:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

EIUS O L YAM,

Planning, Programs, and Project Management Division

Quinn Kellner Missouri Department of Natural Resources Confluence Point 1000 Riverlands Way West Alton, Missouri 63386

Dear Quinn Kellner:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Reid Nelson, Director, Office of Federal Agency Programs Advisory Council for Historic Preservation 401 F Street, Suite 308 Washington, DC 20001-2637

Dear Mr. Nelson:

The U.S. Army Corps of Engineers Omaha District (Omaha District) is preparing a Programmatic Environmental Assessment (PEA) for the 2019 spring flooding emergency levee rehabilitation efforts. This letter is being sent to inform you that the Omaha District is initiating a 30-day public comment scoping period as development of the PEA begins. The emergency provision of USACE National Environmental Policy Act (NEPA) regulations (ER 200-2-2) allows NEPA documentation to be accomplished concurrently with or after completion of emergency work.

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Planning, Programs, and Project Management Division

Mr. Chris Daniel, Civil Works Case Officer Advisory Council for Historic Preservation 401 F Street, Suite 308 Washington, DC 20001-2637

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Floyd Azure, Chairman Assiniboine and Sioux Tribes of Fort Peck P.O. Box 1027 Poplar, Montana 59255

Dear Chairman Azure:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Ms. Dyan Youpee, Tribal Historic Preservation Officer Assiniboine and Sioux Tribes of Fort Peck P.O. Box 1027 Poplar, Montana 59255

Dear Ms. Youpee:

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Chief, Environmental & Cultural Resources

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

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Planning, Programs, and Project Management Division

Mr. Harry Barnes, Chairman Blackfeet Tribe P.O. Box 850 Browning, Montana 59417

Dear Chairman Barnes:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

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Mr. John Murray, Tribal Historic Preservation Officer Blackfeet Tribe P.O. Box 2809 Browning, Montana 59417

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CONTACT:

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Sincerely,

Eric A. Laux, PMP



CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Timothy LaPointe, Regional Director Bureau of Indian Affairs 115 Fourth Avenue South East, Suite 400 MC 301 Aberdeen, South Dakota 57401

Dear Mr. LaPointe:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Sebastian "Bronco" LeBeau, Regional Archaeologist Bureau of Indian Affairs 115 Fourth Avenue South East, Suite 400 MC208 Aberdeen, South Dakota 57401

Dear Mr. LeBeau:

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Chief, Environmental & Cultural Resources

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Steven Vance, Tribal Historic Preservation Officer Cheyenne River Sioux Tribe 98 South Willow Road Eagle Butte, South Dakota 57625

Dear Mr. Vance:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Ms. Donna Rae Petersen, Cultural Preservation Office Cheyenne River Sioux Tribe 98 South Willow Road Eagle Butte, South Dakota 57625

Dear Ms. Petersen:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

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Planning, Programs, and Project Management Division

Mr. Bryce In The Woods, Tribal Council Cheyenne River Sioux Tribe PO Box 590 Eagle Butte, South Dakota 57625

Dear Mr. In The Woods:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Harold Frazier, Chairman Cheyenne River Sioux Tribe P.O. Box 590 Eagle Butte. South Dakota 57625

Dear Chairman Frazier:

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Chief, Environmental & Cultural Resources

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Harlan Baker, Chairman Chippewa Cree Tribe of the Rocky Boys' Reservation 96 Clininc Rd. N. Box Elder, Montana 59521-8849

Dear Chairman Baker:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

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Planning, Programs, and Project Management Division

Ms. Merle Marks, Tribal Historic Preservation Officer Crow Creek Sioux Tribe P.O. Box 50 Fort Thompson, South Dakota 57339-0050

Dear Ms. Marks:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

Planning, Programs, and Project Management Division

Mr. Lester Thompson, Chairman Crow Creek Sioux Tribe P.O. Box 50 Fort Thompson, South Dakota 57339-0050

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Planning, Programs, and Project Management Division

Mr. Barry Thompson Jr., Vice Chairman Crow Creek Sioux Tribe P.O. Box 50 Fort Thompson, South Dakota 57339-0050

Dear Chairman Thompson Jr.:

The U.S. Army Corps of Engineers Omaha District (Omaha District) is preparing a Programmatic Environmental Assessment (PEA) for the 2019 spring flooding emergency levee rehabilitation efforts. This letter is being sent to inform you that the Omaha District is initiating a 30-day public comment scoping period as development of the PEA begins. The emergency provision of USACE National Environmental Policy Act (NEPA) regulations (ER 200-2-2) allows NEPA documentation to be accomplished concurrently with or after completion of emergency work.

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The purpose of this scoping effort is generally to inform the public that the Omaha District is developing a PEA as part of the Public Law (PL) 84-99 activities. Although the PL 84-99 authority establishes the scope and purpose of repairs, the Omaha District is soliciting comments from you and your constituents during this scoping period regarding concerns, potential impacts, relevant effects of past actions, and possible alternative actions. As part of this NEPA public scoping effort, the Omaha District is requesting that comments be submitted between now and 14 June 2019. Scoping comments should focus on the areas where levee rehabilitation will occur. The enclosed map is meant to depict the majority of the levee systems included in this PL 84-99 effort, but may not depict all as requests for assistance are still being received by the Omaha District.

Many agencies, Tribes, and surrounding land owners have already been working with the Omaha District during flood response and rehabilitation efforts. This NEPA effort <u>is not</u> meant to duplicate or serve as an alternative for coordination with the Omaha District on levee flood fighting or repair work.

BACKGROUND:

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CONTACT:

If you have any questions or require additional information, please contact Mr. Dave Crane at (402) 995-2676 or at david.j.crane@usace.army.mil or Ms. Cathi Warren at (402) 995-2684 or at Catherine.J.Warren@usace.army.mil.

Sincerely,

Eric A. Laux, PMP

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Alvin Not Afraid, Chairman Crow Nation P.O. Box 159 Crow Agency, Montana 59022

Dear Chairman Not Afraid:

The U.S. Army Corps of Engineers Omaha District (Omaha District) is preparing a Programmatic Environmental Assessment (PEA) for the 2019 spring flooding emergency levee rehabilitation efforts. This letter is being sent to inform you that the Omaha District is initiating a 30-day public comment scoping period as development of the PEA begins. The emergency provision of USACE National Environmental Policy Act (NEPA) regulations (ER 200-2-2) allows NEPA documentation to be accomplished concurrently with or after completion of emergency work.

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. William Big Day, Tribal Historic Preservation Officer Crow Nation P.O. Box 159 Crow Agency, Montana 59022

Dear Mr. Big Day:

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Eric A. Laux, PMP

Chief, Environmental & Cultural Resources

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE .68102-4901

Planning, Programs, and Project Management Division

Mr. Clint Wagon, Chairman Eastern Shoshone Tribe P.O. Box 538 Fort Washakie, Wyoming 82514

Dear Chairman Wagon:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Anthony Reider, President Flandreau Santee Sioux Tribe P.O. Box 283 Flandreau, South Dakota 57028

Dear Mr. Reider:

The U.S. Army Corps of Engineers Omaha District (Omaha District) is preparing a Programmatic Environmental Assessment (PEA) for the 2019 spring flooding emergency levee rehabilitation efforts. This letter is being sent to inform you that the Omaha District is initiating a 30-day public comment scoping period as development of the PEA begins. The emergency provision of USACE National Environmental Policy Act (NEPA) regulations (ER 200-2-2) allows NEPA documentation to be accomplished concurrently with or after completion of emergency work.

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Garrie Kills A Hundred, Tribal Historic Preservation Officer Flandreau Santee Sioux Tribe P.O. Box 283 Flandreau, South Dakota 57028

Dear Mr. Kills A Hundred:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Andrew Werk Jr., President Fort Belknap Indian Community Gros Ventre and Assiniboine Tribes 656 Agency Main Street Harlem, Montana 59526-9705

Dear Mr. Werk Jr.:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Boyd Gourneau, Chairman Lower Brule Sioux Tribe 187 Oyate Circle Lower Brule, South Dakota 57548-0187

Dear Chairman Gourneau:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Ms. Clair S. Green, Public Relations/Cultural Preservatation Office Lower Brule Sioux Tribe 187 Oyate Circle Lower Brule, South Dakota 57548-0187

Dear Ms. Green:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Pete Coffey, Acting Tribal Historic Preservation Officer Mandan, Hidatsa & Arikara Nation Tribal Administration Building 404 Frontage Road New Town, North Dakota 58763

Dear Mr. Coffey:

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Eric A. Laux, PMP

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Mark Fox, Chairman Mandan, Hidatsa & Arikara Nation Tribal Administration Building 404 Frontage Road New Town, North Dakota 58763

Dear Chairman Fox:

The U.S. Army Corps of Engineers Omaha District (Omaha District) is preparing a Programmatic Environmental Assessment (PEA) for the 2019 spring flooding emergency levee rehabilitation efforts. This letter is being sent to inform you that the Omaha District is initiating a 30-day public comment scoping period as development of the PEA begins. The emergency provision of USACE National Environmental Policy Act (NEPA) regulations (ER 200-2-2) allows NEPA documentation to be accomplished concurrently with or after completion of emergency work.

SCOPING:

The purpose of this scoping effort is generally to inform the public that the Omaha District is developing a PEA as part of the Public Law (PL) 84-99 activities. Although the PL 84-99 authority establishes the scope and purpose of repairs, the Omaha District is soliciting comments from you and your constituents during this scoping period regarding concerns, potential impacts, relevant effects of past actions, and possible alternative actions. As part of this NEPA public scoping effort, the Omaha District is requesting that comments be submitted between now and 14 June 2019. Scoping comments should focus on the areas where levee rehabilitation will occur. The enclosed map is meant to depict the majority of the levee systems included in this PL 84-99 effort, but may not depict all as requests for assistance are still being received by the Omaha District.

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BACKGROUND:

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CONTACT:

If you have any questions or require additional information, please contact Mr. Dave Crane at (402) 995-2676 or at david.j.crane@usace.army.mil or Ms. Cathi Warren at (402) 995-2684 or at Catherine.J.Warren@usace.army.mil.

Sincerely,

Eric A. Laux, PMP



CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Dr. Stan Wilmoth, State Archeologist Montana State Historic Preservation Office P.O. Box 201202 Helena, Montana 59620-1202

Dear Dr. Wilmoth:

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Chief, Environmental & Cultural Resources

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Dr. Mark F. Baumler, State Historic Preservation Officer Montana State Historic Preservation Office P.O. Box 201202 Helena, Montana 59620-1202

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

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Planning, Programs, and Project Management Division

Ms. Barbara Pahl, Director, Mountains/Plains Office National Trust for Historic Preservation 1420 Ogden St. #203 Denver, Colorado 80218

Dear Ms. Pahl:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

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Planning, Programs, and Project Management Division

Mr. Rob Bozell, State Archeologist Nebraska State Historical Society, 1500 R Street Lincoln, NE 68508

Dear Mr. Bozell:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Michael J. Smith, State Historic Preservation Officer Nebraska State Historical Society, 1500 R Street Lincoln, NE 68508

Dear Mr. Smith:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Ms. Fern Swenson, Deputy State Historic Preservation Officer North Dakota Historical Society Heritage Center 612 East Boulevard Avenue Bismarck, North Dakota 58505-0830

Dear Ms. Swenson:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Ms. Claudia Berg, State Historic Preservation Officer North Dakota Historical Society Heritage Center 612 East Boulevard Avenue Bismarck, North Dakota 58505-0830

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

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Planning, Programs, and Project Management Division

Mr. Lee Spoonhunter, Chairman Northern Arapaho Tribe P.O. Box 396 Fort Washakie, Wyoming 82514

Dear Chairman Spoonhunter:

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Mr. Devin Oldman, Tribal Historic Preservation Officer Northern Arapaho Tribe P.O. Box 396 Fort Washakie, Wyoming 82514

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Sincerely,

Eric A. Laux, PMP

Sia Le



CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Ms. Teanna Limpy, Tribal Historic Preservation Officer Northern Cheyenne Tribe P.O. Box 128 Lame Deer, Montana 59043

Dear Ms. Limpy:

The U.S. Army Corps of Engineers Omaha District (Omaha District) is preparing a Programmatic Environmental Assessment (PEA) for the 2019 spring flooding emergency levee rehabilitation efforts. This letter is being sent to inform you that the Omaha District is initiating a 30-day public comment scoping period as development of the PEA begins. The emergency provision of USACE National Environmental Policy Act (NEPA) regulations (ER 200-2-2) allows NEPA documentation to be accomplished concurrently with or after completion of emergency work.

SCOPING:

The purpose of this scoping effort is generally to inform the public that the Omaha District is developing a PEA as part of the Public Law (PL) 84-99 activities. Although the PL 84-99 authority establishes the scope and purpose of repairs, the Omaha District is soliciting comments from you and your constituents during this scoping period regarding concerns, potential impacts, relevant effects of past actions, and possible alternative actions. As part of this NEPA public scoping effort, the Omaha District is requesting that comments be submitted between now and 14 June 2019. Scoping comments should focus on the areas where levee rehabilitation will occur. The enclosed map is meant to depict the majority of the levee systems included in this PL 84-99 effort, but may not depict all as requests for assistance are still being received by the Omaha District.

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BACKGROUND:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Ms. Rynalea Whiteman-Pena, President Northern Cheyenne Tribe P.O. Box 128 Lame Deer. Montana 59043

Dear Ms. Whiteman-Pena:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Julian Bear Runner, President Oglala Sioux Tribe P.O. Box 2070 Pine Ridge, South Dakota 57770

Dear Mr. Bear Runner:

The U.S. Army Corps of Engineers Omaha District (Omaha District) is preparing a Programmatic Environmental Assessment (PEA) for the 2019 spring flooding emergency levee rehabilitation efforts. This letter is being sent to inform you that the Omaha District is initiating a 30-day public comment scoping period as development of the PEA begins. The emergency provision of USACE National Environmental Policy Act (NEPA) regulations (ER 200-2-2) allows NEPA documentation to be accomplished concurrently with or after completion of emergency work.

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

IMAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Thomas Brings, Tribal Historic Preservation Officer Oglala Sioux Tribe P.O. Box 320 Pine Ridge, South Dakota 57770

Dear Mr. Brings:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Thomas Parker, Tribal Historic Preservation Officer Omaha Tribe of Nebraska P.O. Box 368 Macy, Nebraska 68039-0368

Dear Mr. Parker:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Isaac Sherman, Chairman Omaha Tribe of Nebraska P.O. Box 368 Macy, Nebraska 68039-0368

Dear Chairman Sherman:

The U.S. Army Corps of Engineers Omaha District (Omaha District) is preparing a Programmatic Environmental Assessment (PEA) for the 2019 spring flooding emergency levee rehabilitation efforts. This letter is being sent to inform you that the Omaha District is initiating a 30-day public comment scoping period as development of the PEA begins. The emergency provision of USACE National Environmental Policy Act (NEPA) regulations (ER 200-2-2) allows NEPA documentation to be accomplished concurrently with or after completion of emergency work.

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Eric A. Laux, PMP

Chief, Environmental & Cultural Resources

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Nick Mouro, Cultural Resource Director/Tribal Historic Preservation Officer Ponca Tribe of Nebraska P.O. Box 288 Niobrara, Nebraska 68760

Dear Mr. Mouro:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Larry Wright Jr., Chairman Ponca Tribe of Nebraska P.O. Box 288 Niobrara, Nebraska 68760

Dear Chairman Wright Jr.:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Rodney M. Bordeaux, President Rosebud Sioux Tribe P.O. Box 430 Rosebud, South Dakota 57570-0430

Dear Mr. Bordeaux:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Russell Eagle Bear, Councilman Rosebud Sioux Tribe P.O. Box 430 Rosebud, South Dakota 57570-0430

Dear Mr. Eagle Bear:

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CONTACT:

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Sincerely,

Eric A. Laux, PMP



CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Ben Rhodd, Tribal Historic Preservation Officer Rosebud Sioux Tribe P.O. Box 430 Rosebud, South Dakota 57570-0430

Dear Mr. Rhodd:

The U.S. Army Corps of Engineers Omaha District (Omaha District) is preparing a Programmatic Environmental Assessment (PEA) for the 2019 spring flooding emergency levee rehabilitation efforts. This letter is being sent to inform you that the Omaha District is initiating a 30-day public comment scoping period as development of the PEA begins. The emergency provision of USACE National Environmental Policy Act (NEPA) regulations (ER 200-2-2) allows NEPA documentation to be accomplished concurrently with or after completion of emergency work.

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Ms. Tiauna Carnes, Chairperson Sac and Fox Nation of Missouri in Kansas and Nebraska 305 North Main Street Reserve, Kansas 66434

Dear Chairperson Carnes:

The U.S. Army Corps of Engineers Omaha District (Omaha District) is preparing a Programmatic Environmental Assessment (PEA) for the 2019 spring flooding emergency levee rehabilitation efforts. This letter is being sent to inform you that the Omaha District is initiating a 30-day public comment scoping period as development of the PEA begins. The emergency provision of USACE National Environmental Policy Act (NEPA) regulations (ER 200-2-2) allows NEPA documentation to be accomplished concurrently with or after completion of emergency work.

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Ms. Sandra Massey, Historic Preservation Officer Sac and Fox Nation of Oklahoma Route 2, Box 246 Stroud, Oklahoma 74079

Dear Ms. Massey:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Duane Whipple, Tribal Historic Preservation Officer Santee Sioux Nation 108 West Spirit Lake Avenue Niobrara, Nebraska 68760

Dear Mr. Whipple:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Roger Trudell, Chairman Santee Sioux Nation, 108 West Spirit Lake Avenue Niobrara, Nebraska 68760

Dear Chairman Trudell:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Ms. Ella Robertson, Chairman Sisseton-Wahpeton Sioux Tribe P.O. Box 509 Agency Village, South Dakota 57262-0509

Dear Chairman Robertson:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Ms. Dianne Desrosiers, Tribal Historic Preservation Officer Sisseton-Wahpeton Sioux Tribe P.O. Box 907 Sisseton, South Dakota 57262-0509

Dear Ms. Desrosiers:

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Chief, Environmental & Cultural Resources

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Paul Coughlin, Habitat Management Program Administrator, Wildlife Division South Dakota Department of Game, Fish and Parks 523 East Capital Avenue Pierre. South Dakota 57501-3182

Dear Mr. Coughlin:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Dennis Williams, Environmental and Cultural Resources Specialist South Dakota Department of Game, Fish and Parks 523 East Capitol Avenue Pierre. South Dakota 57501-3182

Dear Mr. Williams:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

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Planning, Programs, and Project Management Division

Mr. Kelly Hepler, Secretary South Dakota Department of Game, Fish and Parks 523 East Capitol Avenue Pierre, South Dakota 57501-3182

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Sincerely,

Eric A. Laux, PMP

Sale



CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Ms. Paige Olson, Historical Archaeologist Review and Compliance Coordinator South Dakota State Historical Society Cultural Heritage Center 900 Governors Drive Pierre, South Dakota 57501-2217

Dear Ms. Olson:

The U.S. Army Corps of Engineers Omaha District (Omaha District) is preparing a Programmatic Environmental Assessment (PEA) for the 2019 spring flooding emergency levee rehabilitation efforts. This letter is being sent to inform you that the Omaha District is initiating a 30-day public comment scoping period as development of the PEA begins. The emergency provision of USACE National Environmental Policy Act (NEPA) regulations (ER 200-2-2) allows NEPA documentation to be accomplished concurrently with or after completion of emergency work.

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Jay D. Vogt, State Historic Preservation Officer South Dakota State Historical Society Cultural Heritage Center 900 Governors Drive Pierre, South Dakota 57501-2217

Dear Mr. Vogt:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Ms. Myra Pearson, Chairperson Spirit Lake Sioux Tribe P.O. Box 359, Tribal Office Fort Totten, North Dakota 58335

Dear Chairperson Pearson:

The U.S. Army Corps of Engineers Omaha District (Omaha District) is preparing a Programmatic Environmental Assessment (PEA) for the 2019 spring flooding emergency levee rehabilitation efforts. This letter is being sent to inform you that the Omaha District is initiating a 30-day public comment scoping period as development of the PEA begins. The emergency provision of USACE National Environmental Policy Act (NEPA) regulations (ER 200-2-2) allows NEPA documentation to be accomplished concurrently with or after completion of emergency work.

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

Planning, Programs, and Project Management Division

Mr. Mike Faith, Chairman Standing Rock Sioux Tribe P.O. Box D Fort Yates, North Dakota 58538

Dear Chairman Faith:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Jon Eagle, Tribal Historic Preservation Officer Standing Rock Sioux Tribe Building #1 North Standing Rock Ave P.O. Box D Fort Yates, North Dakota 58538

Dear Mr. Eagle:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Jamie Azure, Chairman Turtle Mountain Band of Chippewa P.O. Box 900 Belcourt, North Dakota 58316

Dear Chairman Azure:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Jeff Defjarlais Jr., Tribal Historic Preservation Officer Turtle Mountain Band of Chippewa P.O. Box 900 Belcourt, North Dakota 58316

Dear Mr. Defjarlais Jr:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Frank White, Chairperson Winnebago Tribe of Nebraska P.O. Box 687 Winnebago, Nebraska 68071-0687

Dear Chairperson White:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Randy Teboe, Tribal Historic Preservation Officer Winnebago Tribe of Nebraska P.O. Box 687 Winnebago, Nebraska 68071-0687

Dear Mr. Teboe:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Robert Flying Hawk, Chairman Yankton Sioux Tribe P.O. Box 1153 Wagner, South Dakota 57380

Dear Chairman Flying Hawk:

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Sincerely,

Eric A. Laux, PMP

Chief, Environmental & Cultural Resources

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Kip Spotted Eagle, Tribal Historic Preservation Officer Yankton Sioux Tribe P.O. Box 1153 Wagner, South Dakota 57380

Dear Mr. Spotted Eagle:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Larry Wright, Chairman Ponca Tribe of Nebraska 252-1 Spruce Niobrara, NE 68760

Dear Chairman Wright:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Nicholas Mauro, THPO/Cultural Director Ponca Tribe of Nebraska P.O. Box 288 Niobrara, NE 68760

Dear Mr. Mauro:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Tim Grant, Environmental Director Omaha Tribe of Nebraska 101 Main St Macy, NE 68039

Dear Mr. Grant:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Nilah Griffin, THPO Deputy Omaha Tribe of Nebraska 101 Main Street Macy, NE 68039

Dear Nilah Griffin:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. John Shotton, Chairman Otoe-Missouria Tribe 8151 Hwy 77 Red Rock, OK 74651

Dear Chairman Shotton:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Ms. Elsie Whithorn, THPO Otoe-Missouria Tribe 8151 Hwy 77 Red Rock, OK 74651

Dear Ms. Whithorn:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Douglas Rhodd, Chairman Ponca Tribe of Indians of Oklahoma 20 White Eagle Drive Ponca City, OK 74601

Dear Chairman Rhodd:

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Halona Cabe, THPO Ponca Tribe of Indians of Oklahoma 20 White Eagle Drive Ponca City, OK 74601

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

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Planning, Programs, and Project Management Division

Mr. W. Bruce Pratt, President Pawnee Nation of Oklahoma P.O. Box 470 Pawnee, OK 74058

Dear Mr. Pratt:

The U.S. Army Corps of Engineers Omaha District (Omaha District) is preparing a Programmatic Environmental Assessment (PEA) for the 2019 spring flooding emergency levee rehabilitation efforts. This letter is being sent to inform you that the Omaha District is initiating a 30-day public comment scoping period as development of the PEA begins. The emergency provision of USACE National Environmental Policy Act (NEPA) regulations (ER 200-2-2) allows NEPA documentation to be accomplished concurrently with or after completion of emergency work.

SCOPING:

The purpose of this scoping effort is generally to inform the public that the Omaha District is developing a PEA as part of the Public Law (PL) 84-99 activities. Although the PL 84-99 authority establishes the scope and purpose of repairs, the Omaha District is soliciting comments from you and your constituents during this scoping period regarding concerns, potential impacts, relevant effects of past actions, and possible alternative actions. As part of this NEPA public scoping effort, the Omaha District is requesting that comments be submitted between now and 14 June 2019. Scoping comments should focus on the areas where levee rehabilitation will occur. The enclosed map is meant to depict the majority of the levee systems included in this PL 84-99 effort, but may not depict all as requests for assistance are still being received by the Omaha District.

Many agencies, Tribes, and surrounding land owners have already been working with the Omaha District during flood response and rehabilitation efforts. This NEPA effort <u>is not</u> meant to duplicate or serve as an alternative for coordination with the Omaha District on levee flood fighting or repair work.

BACKGROUND:

As a result of this event, the mainstem Missouri River saw high flows downstream of Gavins Point Dam, especially south of the confluence of the unregulated Little Sioux River basin. Record flows were observed on the Missouri River downstream of the confluence of the unregulated Platte River. In the Omaha District, widespread damage to levees along the Missouri River and its tributaries occurred during this flooding event, resulting in damage to over 30 levee systems and dozens of levee breaches.

PROGRAMMATIC ENVIRONMENTAL ASSESSMENT:

The Omaha District has already began conducting flood response and levee rehabilitation activities under the PL 84-99 program. This PEA is intended to provide NEPA coverage for the wide range of activities where advanced measures, direct assistance, and levee system repairs will be conducted. Anticipated PL 84-99 activities include, but are not necessarily limited to, repairs to levee scours, levee crests, levee berms, levee breaches, partial breaches, partially eroded levees, sand boils, relief wells, drainage structures, and pump stations. Levee setbacks may also be implemented as part of this PL 84-99 effort. The Omaha District plans to have a draft PEA ready for public review in the summer of 2019.

CONTACT:

If you have any questions or require additional information, please contact Mr. Dave Crane at (402) 995-2676 or at david.j.crane@usace.army.mil or Ms. Cathi Warren at (402) 995-2684 or at Catherine.J.Warren@usace.army.mil.

Sincerely,

Eric A. Laux, PMP

Chief, Environmental & Cultural Resources

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

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Planning, Programs, and Project Management Division

Mr. Matt Reed, THPO
Pawnee Nation of Oklahoma
P.O. Box 470
Pawnee, OK 74058

Dear Mr. Reed:

The U.S. Army Corps of Engineers Omaha District (Omaha District) is preparing a Programmatic Environmental Assessment (PEA) for the 2019 spring flooding emergency levee rehabilitation efforts. This letter is being sent to inform you that the Omaha District is initiating a 30-day public comment scoping period as development of the PEA begins. The emergency provision of USACE National Environmental Policy Act (NEPA) regulations (ER 200-2-2) allows NEPA documentation to be accomplished concurrently with or after completion of emergency work.

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BACKGROUND:

Temperatures over the lower Missouri River Basin quickly warmed in conjunction with a heavy rain event from 12 March to 14 March 2019. Precipitation totals of 1 to 3 inches across the region with pockets greater than 3 inches were reported across eastern Nebraska. The precipitation was in the form of snow across the western and northern plains, while warmer temperatures resulted in rain across the eastern plains. The warm temperatures also produced significant snowmelt which combined with the heavy rainfall to produce high runoff due to the frozen ground. The extreme runoff resulted in high to record flows along the unregulated streams and rivers in eastern Nebraska and western lowa. Numerous records at river gages in eastern Nebraska were exceeded by 1 to 4 feet with a few along the Elkhorn River nearing flows 6 feet higher than previous long standing records. Several ice jams were also reported during this event.

As a result of this event, the mainstem Missouri River saw high flows downstream of Gavins Point Dam, especially south of the confluence of the unregulated Little Sioux River basin. Record flows were observed on the Missouri River downstream of the confluence of the unregulated Platte River. In the Omaha District, widespread damage to levees along the Missouri River and its tributaries occurred during this flooding event, resulting in damage to over 30 levee systems and dozens of levee breaches.

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CONTACT:

If you have any questions or require additional information, please contact Mr. Dave Crane at (402) 995-2676 or at david.j.crane@usace.army.mil or Ms. Cathi Warren at (402) 995-2684 or at Catherine.J.Warren@usace.army.mil.

Sincerely.

Eric A. Laux, PMP

Chief, Environmental & Cultural Resources

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DEPARTMENT OF THE ARMY

CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Timothy Rhodd, Chairman lowa Tribe of Nebraska And Kansas 3345 B Thrasher Rd. White Cloud, KS 66094

Dear Chairman Rhodd:

The U.S. Army Corps of Engineers Omaha District (Omaha District) is preparing a Programmatic Environmental Assessment (PEA) for the 2019 spring flooding emergency levee rehabilitation efforts. This letter is being sent to inform you that the Omaha District is initiating a 30-day public comment scoping period as development of the PEA begins. The emergency provision of USACE National Environmental Policy Act (NEPA) regulations (ER 200-2-2) allows NEPA documentation to be accomplished concurrently with or after completion of emergency work.

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BACKGROUND:

During the fall months of 2018, the lower Missouri River Basin saw very wet conditions with several weather systems resulting in saturated soil conditions heading into the winter season. Below normal winter temperatures resulted in a deep frost depth. The extreme cold temperatures persisted into early spring which combined with an active storm pattern across the plains. Typically, gradual warming temperatures in late February and March would allow for a slow snowmelt along with the ground beginning to thaw. 2019 did not follow this pattern which resulted in a record snowpack with 2-4 inches of snow water equivalent (SWE) still covering much of the lower Missouri River Basin as late as 12 March 2019. The extreme cold temperatures also allowed for the development of thick ice on area streams and rivers.

Temperatures over the lower Missouri River Basin quickly warmed in conjunction with a heavy rain event from 12 March to 14 March 2019. Precipitation totals of 1 to 3 inches across the region with pockets greater than 3 inches were reported across eastern Nebraska. The precipitation was in the form of snow across the western and northern plains, while warmer temperatures resulted in rain across the eastern plains. The warm temperatures also produced significant snowmelt which combined with the heavy rainfall to produce high runoff due to the frozen ground. The extreme runoff resulted in high to record flows along the unregulated streams and rivers in eastern Nebraska and western lowa. Numerous records at river gages in eastern Nebraska were exceeded by 1 to 4 feet with a few along the Elkhorn River nearing flows 6 feet higher than previous long standing records. Several ice jams were also reported during this event.

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Sincerely,

Eric A. Laux, PMP

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Chief, Environmental & Cultural Resources



DEPARTMENT OF THE ARMY

CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE: 68102-4901

MAY 1 0 2019

Planning, Programs, and Project Management Division

Mr. Lance Foster, THPO lowa Tribe of Nebraska And Kansas 3345 B Thrasher Rd. White Cloud, KS 66094

Dear Mr. Foster:

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Sincerely,

Eric A. Laux, PMP

Chief, Environmental & Cultural Resources

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CHRIS KRAMER, ACTING DIRECTOR

Your request for comment by the State Historic Preservation Officer has been received.

Date Received: **7/29/2019** End of Review Period: **8/28/2019** Agency: **COE** SHPO R&C #: **190500056**

OMAHA DISTRICT - PL 84-90 PROGRAM - PROGRAMMATIC ENVIRONMENTAL ASSESSMENT FOR 2019 SPRING FLOODING EMERGENCY LEVEE REHABILITATION EFFORTS - MISSOURI RIVER AND TRIBUTARIES - NEW BORROW LOCATIONS

In accord with federal regulations, our office will respond **ONLY** when:

- The SHPO has received incomplete information or inadequate documentation under 36CFR800 11(a), (d), and (e) **OR**
- The SHPO objects to your definition of the Area of Potential Effect (APE) for the undertaking **OR**
- The SHPO objects to your finding of whether a property is or is not eligible for listing on the National Register of Historic Places **OR**
- The SHPO objects to your finding of the project's effect on a historic property **OR**
- The project is proposed to have a "No Adverse Effect," with or without conditions, and where the SHPO disagrees with the finding **OR**
- The project is determined to have an "Adverse Effect" on a historic property and the federal agency is consulting with SHPO on how to resolve such "Adverse Effects"

Otherwise, at the end of the 30-day period, you may either proceed to the next step in the process based on the finding or determination, or consult with the Advisory Council on Historic Preservation in lieu of the SHPO. In order to determine the next step in the process, please review the appropriate section of the federal regulations [36CFR800.4(d)(1) or the Programmatic Agreement under which your project is being reviewed.

Be advised that the successful conclusion of consultation with the SHPO does not fulfill the agency's responsibility to consult with other parties who may have an interest in properties that may be affected by this project. Nor does it override the sovereign status of federally recognized American Indian Tribes in the Section 106 consultation process.

We have made these comments and recommendations according to our responsibility defined by Federal law pertaining to the Section 106 process. The responsible federal agency does not have to follow our comments and recommendations to comply with the Section 106 process. It also remains the responsible federal agency's decision on how you will proceed from this point for this project.

Should you have any questions please contact me at the number or email below, **referencing the R&C** # **above.**

SHPO Review & Compliance Coordinator (515) 281-8743



ACTING DIRECTOR BRUCE TRAUTMAN

Fax: 515-725-8202

June 13, 2019

MR DAVE CRANE CORPS OF ENGINEERS OMAHA DISTRICT 1616 CAPITOL AVE OMAHA NE 68102-4901

Subject: Public Law (PL) 84-99 Programmatic Environmental Assessment

Rustine MI Schwake

Dear Mr. Crane,

This letter is in response to your May 10, 2019 letter concerning the preparation of the Public Law (PL) 84-99 Programmatic Environmental Assessment and request for comments. Thank you for inviting my comments.

The Iowa Department of Natural Resources has issued Section 401 Water Quality Certifications for both the Regional Permit 11-02 and the Nationwide Permits on March 3, 2017. If a project needs an individual Section 401 Water Quality Certification, please contact me.

If you have any questions or comments, please contact me at the address shown below or call (515) 725-8399.

Sincerely,

Christine M. Schwake

Environmental Specialist

Phone: 515-725-8200

Section 401 Water Quality Certification

Crane, David J CIV USARMY CENWO (USA)

Subject:

RE: Nishnabotna levee breach closures (UNCLASSIFIED)

----Original Message-----

From: Rubingh, Amy [mailto:Amy.Rubingh@dnr.mo.gov]

Sent: Thursday, June 13, 2019 1:01 PM

To: Dinubilo, Shaun P CIV USARMY CENWO (USA) <Shaun.P.Dinubilo@usace.army.mil> Subject: [Non-DoD Source] RE: Nishnabotna levee breach closures (UNCLASSIFIED)

Hi Shaun,

Since this is an emergency situation I have checked my GIS database and did not see any recorded sites in the areas indicated on your map. Therefore I have no concerns with the emergency projects. Let me know fi you have any other questions.

Thanks,
Amy Rubingh
Archaeologist/Records Management
Missouri SHPO
PO Box 176
Jefferson City, MO 65102
(573)751-4589

We'd like your feedback on the service you received from the Missouri Department of Natural Resources. Please consider taking a few minutes to complete the department's Customer Satisfaction Survey at Blockedhttps://www.surveymonkey.com/r/MoDNRsurvey. Thank you.

----Original Message-----

From: Dinubilo, Shaun P CIV USARMY CENWO (USA) <Shaun.P.Dinubilo@usace.army.mil>

Sent: Thursday, June 13, 2019 12:17 PM

To: Rubingh, Amy < Amy. Rubingh@dnr.mo.gov>

Cc: Crane, David J CIV USARMY CENWO (USA) < David.J.Crane@usace.army.mil>

Subject: FW: Nishnabotna levee breach closures (UNCLASSIFIED)

Importance: High

CLASSIFICATION: UNCLASSIFIED

Hi Amy,

I am Shaun Dinubilo with the United States Army Corps of Engineers Omaha District. I just found out that we awarded a contract for emergency levee breach repair along Levee 550-Missouri River & Rock Creek Right Bank Segment. Due to the National Emergency declared on May 28th in response to the excessive flooding occurring in Missouri, please review the contract and map and provide comments in 7 days (36CFR800.12)(b)(2). The emergency levee breach repair will require filling two breaches with sediment adjacent to the levee. This repair work will require dredging of the Missouri Floodplain, dredging the Missouri River, and the use of a barrow area. This repair will also require the use of truck haul

roads. All of these dredge and barrow areas are currently inundated by flood water. I have attached a word document/map with the approximate locations of the dredge and barrow areas. I have also attached the contract solicitations for the levee repairs and a map of known sites/surveys that have been conducted within the general area. Please feel free to call me in regards to this project.

Thank you for your time,

Shaun Dinubilo (CENWO-PM-AC) Archeologist US Army Corps of Engineers, Omaha District 1616 Capitol Avenue, Omaha, NE 68102

Phone: (402) 995-2044

Email: shaun.dinubilo@usace.army.mil

----Original Message-----

From: Crane, David J CIV USARMY CENWO (USA)

Sent: Thursday, June 13, 2019 10:05 AM

To: Dinubilo, Shaun P CIV USARMY CENWO (USA) <Shaun.P.Dinubilo@usace.army.mil>

Subject: Nishnabotna levee breach closures (UNCLASSIFIED)

Importance: High

CLASSIFICATION: UNCLASSIFIED

Shaun,

This contract was awarded yesterday. The plan is to start dredging on MRRP land in the floodplain to fill the upstream breach. Once the flow is cut off there they'll move to the downstream breach which will involve scraping sand deposits from the 2019 flood to fill the breach and potentially dredge from the MoR channel. The reason they are dredging in the floodplain is because everything is underwater. They expect the sand deposit area near the downstream breach will dry out enough with the upstream breach closed to scrape that sand. Please let me know if you have any questions or want to jump on the line with the MO SHPO.

Thanks, Dave

CLASSIFICATION: UNCLASSIFIED CLASSIFICATION: UNCLASSIFIED CLASSIFICATION: UNCLASSIFIED

CLASSIFICATION: UNCLASSIFIED



2200 N. 33rd St. • P.O. Box 30370 • Lincoln, NE 68503-0370 • Phone: 402-471-0641

June 26, 2019

David Crane U.S. Army Corps of Engineers 1616 Capitol Avenue Omaha, NE 68102

RE: Scoping Comments, Programmatic Environmental Assessment, 2019 Missouri River Flooding Levee Rehabilitation

Dear Mr. Crane:

Nebraska Game and Parks Commission (NGPC) staff members have reviewed the information for the proposal identified above. This review was requested pursuant to the National Environmental Policy Act (NEPA). The proposed efforts for levee rehabilitation following the 2019 flooding along the Missouri River, Lower Platte River, Elkhorn River, Papillion Creek basin, Logan Creek and Salt Creek are planned to be evaluated by a Programmatic Environmental Assessment (PEA) as part of PL 84-99 activities. Anticipated PL 84-99 activities include, but are not necessarily limited to, repairs to levee scours, levee crests, levee berms, levee breaches, partial breaches, partially eroded levees, sand boils, relief wells, drainage structures, and pump stations. Levee setbacks may also be implemented as part of this PL 84-99 effort.

Based on our review of the general broad-scale map provided that shows the extent of the potential levee repairs along several different river systems in eastern Nebraska, we offer the following list of state-listed endangered or threatened species that may be found along these river systems in Nebraska.

Interior Least Tern and Piping Plover

The least tern (*Sternula antillarum athalassos*) is a state-listed endangered species. The piping plover (*Charadrius melodus*) is a state-listed threatened species. Both species nest on unvegetated or sparsely vegetated sandbars in river channels, and can also utilize sandpits. The nesting season for the least tern and piping plover is from April 15 through August 15. Channel constrictions and obstructions that disrupt natural flows in the river and influence sandbar complexes in the river limit potential habitat for these birds. Depletions of instream flows from the Platte River may also have negative impacts. Human activity in the vicinity of feeding and nesting habitats can disturb least terns and piping plovers. The range for least tern and piping plover includes the Lower Platte River, and portions of the Elkhorn River in the project area.

Pallid Sturgeon

The pallid sturgeon (*Scaphirhynchus albus*) is a state-listed endangered species. Pallid sturgeon feed on small fish and invertebrates and is known to use sites with sharp slopes associated with downstream edges of submerged riverine sandbars. Most occurrence records of the fish are near confluences, islands, and at the downstream margins of sandbars. This species could potentially be impacted by

disturbance in the channel during spawning, depletions of instream flows from the Platte River, and by impacts to natural riverine functions. This fish spawns between March 1 and June 30, dependent on river conditions. The range for the pallid sturgeon includes the Missouri River, the Lower Platte River, and the Lower Elkhorn River.

Lake Sturgeon

The lake sturgeon (*Acipenser fulvescens*) is a state-listed threatened species. It is believed that the lake sturgeon occupies similar habitats as the pallid sturgeon, but spends a greater proportion of its time in the Missouri than the Platte River. Lake sturgeon feed on invertebrates and small fish and can be found at the downstream margins of island and river confluences. This species could potentially be impacted by disturbance in the channel during spawning, depletions of instream flows from the Platte River, and by impacts to natural riverine functions. This fish spawns between February 1 and July 31, depending on river conditions. The range for the lake sturgeon includes the Missouri River, the Lower Platte River, and the Lower Elkhorn River.

Sturgeon Chub

The sturgeon chub (*Macrhybopsis gelida*) is a state-listed endangered species. Sturgeon chub are associated with fast flowing, turbid water and gravel substrate. The species has been collected in side chutes and backwaters and it is thought that these kinds of areas provide spawning habitat to the fish. Sturgeon chub feed on invertebrates. This species could potentially be impacted by disturbance in the channel during spawning, depletions of instream flows from the Platte River, and by impacts to natural riverine functions. This fish spawns between February 1 and July 31, dependent on river conditions. The range for the sturgeon chub includes the Missouri River, the Lower Platte River, and the Lower Elkhorn River.

Northern Long-eared Bat

The northern long-eared bat (*Myotis septentrionalis*) is a state-listed threatened species. During the summer, northern long-eared bats (NLEBs) typically roost singly or in colonies underneath bark or in cavities, crevices or hollows of live and dead trees and/or snags (typically ≥ 3 inches dbh). Males and non-reproductive females may also roost in cooler places, like caves and mines. This species of bat seems opportunistic in selecting roosts, using trees based on the presence of cavities, crevices or peeling bark. They have also occasionally been found roosting in structures like barns and sheds, particularly when other roosting habitat is not available. They forage on insects in upland and lowland woodlots and tree lined corridors. NLEBs typically overwinter in hibernacula that include caves and abandoned mines, but may also use other structures resembling caves or mines, such as abandoned railroad tunnels, storm sewer entrances, dry wells, aqueducts and other similar structures. They may be found along all the drainages within the project area. This species could potentially be impacted by loss of/or disturbance around hibernacula, and loss of maternity roost trees.

River Otter

River otter (*Lontra canadensis*) is a state-listed threatened species. River otters require a large amount of space to meet their annual requirements. During a year, an otter may occupy 50 or more miles of stream course and will often move from one area to another. They may be found along many of the major rivers in eastern Nebraska. River otters are most often active from early evening through early morning, but may also be active during the day. This is a highly mobile species, and if present, is likely to leave during disturbance. However, otters are susceptible when they have young pups in the natal den. In Nebraska, female otters enter the natal den beginning in late February through April. The pups are helpless until about seven weeks of age. River otters use dens that were dug by other species such as

beaver and utilize upland dens that can be up to ½ mile from the nearest water body (i.e. river, stream, wetland, lake, pond, sandpit, etc.).

Southern Flying Squirrel

The southern flying squirrel is a state-listed threatened species. In Nebraska, this species is found in remnant tracts of eastern deciduous forest along the Missouri River in the southeastern corner of the state. They require mast-producing trees such as oaks, hickories and walnuts for food, and utilize cavities in dead or live trees for shelter. Southern flying squirrels are nocturnal and can be found in Nebraska year-round. They have two periods of breeding activity, one is from February to March and the other is late May through July. Young are weaned at six to eight weeks after birth, and are capable of gliding soon after. They typically stay with the female until the birth of the next litter. The amount and quality of habitat are probably the most important factors limiting populations in Nebraska.

Salt Creek Tiger Beetle

The Salt Creek tiger beetle (*Cicindela nevadica lincolniana*) is a state-listed endangered species. The Salt Creek tiger beetle measures about ½ inch in length, and is metallic brown to dark olive green above, with a metallic dark green underside. It is a predatory insect and lives in permanent burrows. Adults emerge for approximately six weeks from about mid-June through July, but they can emerge as early as late May. This species occurs in exposed mud flats of saline wetlands and along mud banks of streams and seeps. The Salt Creek tiger beetle is only found in saline wetlands and associated streams and tributaries of Salt Creek in the northern third of Lancaster County and southern Saunders County in Nebraska.

Saltwort

Saltwort (*Salicornia rubra*) is a state-listed endangered species. This plant that grows in a narrow range of habitat within the saline wetlands in Lancaster County. It is found growing primarily on moist, saturated, clay mudflats. Saltwort generally grows in heavy soils with high salinity levels that inhibit other plants from growing in their wetland habitat. Saltgrass (*Distichlis spicata*) and sea blite (*Suaeda depressa*) are generally the only two species that grow in association with saltwort.

American Ginseng

American ginseng (*Panax quinquefolium*) is a state-listed threatened plant. It is a long-lived herbaceous perennial that is very similar in appearance to several closely related and much more abundant species. In Nebraska, ginseng grows only in deep woods in shady ravines of the easternmost counties along the Missouri River. The medicinal qualities of ginseng have aided in its decline due to unregulated collecting. This plant could potentially be impacted by ground disturbance in woodland habitats.

Small White Lady's Slipper

Small white lady's slipper (*Cypripedium candidum*) is a state-listed threatened species. The small white lady's slipper grows in clumps with one flower at the tip of a flowering stem consisting of a white, pouch-shaped "slipper." This insect pollinated plant is found in moist to wet prairies, fens and sedge meadows. This orchid flowers from mid-May to June in Nebraska. The proposed scope of this project intersects with the range of this species along the Elkhorn River valley in the Norfolk area, and also along the North Fork of the Elkhorn River valley. This plant could potentially be impacted by ground disturbance in suitable habitat.

Western Prairie Fringed Orchid

Western prairie fringed orchid (*Platanthera praeclara*) is a state-listed threatened species. Western prairie fringed orchid occurs in native tall or mixed-grass prairies that are associated with wet meadows. Although the plant can be a colonizer species and grow on disturbed areas, it is found in greatest abundance on high quality prairie. This plant blooms in late June to July. This plant could potentially be impacted by ground disturbance in suitable habitat.

We recognize that the proposed rehabilitation efforts are focused on existing levee structures. However, the proposed activities that will fall under the PEA should be evaluated for potential impacts to the above-mentioned state-listed endangered and threatened species in the PEA. If more information is needed to assist with determining potential impacts to listed species, please let me know.

Lastly, we would be supportive of efforts to implement levee setbacks as part of this PL 84-99 effort. Recognizing that the PL 84-99 authority establishes the scope and purpose of the repairs, this could also be an opportunity to consider larger Missouri River recovery goals, if possible. We would also encourage that consideration of land acquisition from willing sellers be evaluated as part of this effort. We are aware that there is strong interest by landowners for easement and acquisition options, particularly around the hard hit areas along the Missouri River downstream from Nebraska City. This becomes a valid consideration when thinking about the high flood frequency on that lower stretch of the Missouri and thinking into the future about Missouri River recovery and improving long term sustainability and resiliency of Corps projects.

Thank you for opportunity to review this proposal. We look forward to reviewing the Draft PEA when it is available. Please contact me if you have any questions regarding these comments at 402-471-5423 or carey.grell@nebraska.gov.

Sincerely,

Carey Grell

Environmental Analyst Supervisor Planning and Programming Division

ec: Scott Luedtke, NGPC

Michelle Koch, NGPC



Northern Cheyenne Tribal Historic Preservation

14 C. Medicine Lodge Prive | P.O Box 128 | Lame Peer, MT. 59043 Ph: (406) 477- 4838/ 4839/ 8113/ 8114

CONSULTATION REQUEST

CONSULTING AGENCY	PROJECT TYPE	2019 Spring Flooding Emergency Levee Rehabilitation Efforts			
Omaha District	FEDERAL AGENCY	Department of the Army			
	STATE / COUNTY	Nebraska Lower Missouri River Basin			
ADDRESS	COUNTY				
		CORRESPONDENCE			
1616 Capital Avenue	DATE RECEIVED	5/10/2019			
CITY/STATE/ZIP	REVIEW PERIOD	30-DAY			
Omaha, NE. 68102	DEADLINE	6/14/2019			
PHONE					
(402) 995-2676		DOCUMENTATION RECEIVED			
FAX	MAPS	YES			
	SURVEY	N/A			
E-MAIL	TRIBAL SURVEY	N/A			
david i crane@usace army n					
david.j.crane@usace.army.r DETERMINATION					
AGENCY CONTACT	FINDING	NO EFFECT			
David J. Crane	COMMENT	Your undertaking may proceed as planned			
David J. Crane			'		
PROJECT CONTACT	ADDITIONAL	COMMENTS			
	Please keep Nort	hern Cheyenne THPO informed.			
PREPARED BY:					
Gary LaFranier			Teanna Qimpy		
		Tribal Historic Prese	ervation Officer		
			6/7/2019		

LITTLEWOLF AND MORNING STAR- Out of Defeat and exile they led us back to Montana and won our Cheyenne Homeland that we will keep forever

DATE

Crane, David J CIV USARMY CENWO (USA)

Subject:

RE: Nishnabotna levee breach closures (UNCLASSIFIED)

----Original Message----

From: John Fox [mailto:jfox@osagenation-nsn.gov]

Sent: Thursday, June 13, 2019 4:34 PM

To: Dinubilo, Shaun P CIV USARMY CENWO (USA) <Shaun.P.Dinubilo@usace.army.mil> Subject: [Non-DoD Source] RE: Nishnabotna levee breach closures (UNCLASSIFIED)

Dear Mr. Dinubilo,

The Osage Nation Historic Preservation Office has reviewed the information for this project. We have no known cultural resources within the APE. However, if any human remains are located during construction, please contact us within 24 hours

Thank you for consulting with the Osage Nation Historic Preservation Office,

John Fox

Archaeologist, MS, RPA

627 Grandview Avenue, Pawhuska, OK 74056

Phone: 918-287-5274 jfox@osagenation-nsn.gov

IMPORTANT: This email message may contain confidential or legally privileged information and is intended only for the use of the intended recipient(s). Any unauthorized disclosure, dissemination, distribution, copying or the taking of any action in reliance on the information herein is prohibited. Emails are not secure and cannot be guaranteed to be errorfree. They can be intercepted, amended, or contain viruses. Anyone who communicates with us by email is deemed to have accepted these risks. Osage Nation is not responsible for errors or omissions in this message and denies any responsibility for any damage arising from the use of email. Any opinion and other statement contained in this message and any attachment are solely those of the author and do not necessarily represent those of the Osage Nation.

----Original Message-----

From: Dinubilo, Shaun P CIV USARMY CENWO (USA) <Shaun.P.Dinubilo@usace.army.mil>

Sent: Thursday, June 13, 2019 3:50 PM

To: Andrea Hunter <ahunter@osagenation-nsn.gov>

Cc: Crane, David J CIV USARMY CENWO (USA) < David.J.Crane@usace.army.mil>

Subject: FW: Nishnabotna levee breach closures (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Hi Dr. Andrea Hunter,

I am Shaun Dinubilo with the United States Army Corps of Engineers Omaha District. I just found out that we awarded a contract for emergency levee breach repair along Levee 550-Missouri River & Rock Creek Right Bank Segment. Due to the National Emergency declared on May 28th in response to the excessive flooding occurring in Missouri, please review the contract and map provided. Please provide comments in 7 days (36CFR800.12)(b)(2). The emergency levee breach repair will require filling two breaches with sediment adjacent to the levee. This repair work will require dredging of the Missouri Floodplain, dredging the Missouri River, and the use of a barrow area. This repair will also require the use of truck haul roads. All of these dredge and barrow areas are currently inundated by flood water. I have attached a word document/map with the approximate locations of the dredge and barrow areas. I have also attached the contract

solicitations for the levee repairs and a map of known sites/surveys that have been conducted within the general area. Please feel free to call me in regards to this project.

Thank you for your time,

Shaun Dinubilo (CENWO-PM-AC) Archeologist US Army Corps of Engineers, Omaha District 1616 Capitol Avenue, Omaha, NE 68102 Phone: (402) 995-2044

Email: shaun.dinubilo@usace.army.mil

----Original Message-----

From: Crane, David J CIV USARMY CENWO (USA)

Sent: Thursday, June 13, 2019 10:05 AM

To: Dinubilo, Shaun P CIV USARMY CENWO (USA) <Shaun.P.Dinubilo@usace.army.mil>

Subject: Nishnabotna levee breach closures (UNCLASSIFIED)

Importance: High

CLASSIFICATION: UNCLASSIFIED

Shaun,

This contract was awarded yesterday. The plan is to start dredging on MRRP land in the floodplain to fill the upstream breach. Once the flow is cut off there they'll move to the downstream breach which will involve scraping sand deposits from the 2019 flood to fill the breach and potentially dredge from the MoR channel. The reason they are dredging in the floodplain is because everything is underwater. They expect the sand deposit area near the downstream breach will dry out enough with the upstream breach closed to scrape that sand. Please let me know if you have any questions or want to jump on the line with the MO SHPO.

Thanks, Dave

CLASSIFICATION: UNCLASSIFIED CLASSIFICATION: UNCLASSIFIED CLASSIFICATION: UNCLASSIFIED CLASSIFICATION: UNCLASSIFIED CLASSIFICATION: UNCLASSIFIED CLASSIFICATION: UNCLASSIFIED



SOUTH DAKOTA DEPARTMENT OF GAME, FISH AND PARKS

523 EAST CAPITOL AVENUE | PIERRE, SD 57501

August 21, 2019

Christopher Weber **Environmental Resources Specialist US Army Corps of Engineers Omaha District** 1616 Capitol Avenue Omaha, NE 68102

RE: USACE PL8449 Emergency Levee Repair Programmatic EA Scoping

Dear Christopher,

The Department of Game, Fish and Parks has reviewed the above project involving the emergency levee repair following the 2019 flood events along the Big Sioux River in South Dakota.

As requested, we have conducted a search of the SD Natural Heritage Database for the above referenced project. This database monitors species at risk, specifically those species that are rare or legally designated as threatened or endangered. Rare species are those that are declining and restricted to limited habitat or a jurisdiction, may be isolated or disjunct due to geographic or climatic factors that are classified as such due to lack of survey data. A list of monitored species can be found at http://gfp.sd.gov/natural-heritage-program. We found multiple occurrences of endangered and threatened species along the Big Sioux River within the approximate project area indicated in the map that was provided (approximately from the Big Sioux River in Flandreau, SD to the SD/IA border).

Northern River Otter (Lontra canadensis), state threatened:

- multiple occurrences along the Big Sioux River throughout the project area Topeka Shiner (Notropis topeka), federally threatened:
 - Topeka shiners are known to occupy numerous small streams within eastern South Dakota in the Big Sioux Watershed. One historic Topeka shiner record was located in the Big Sioux River near Flandreau. We also found records of Topeka shiners in two tributaries of the Big Sioux River (Beaver Creek and Willow Creek), adjacent to the project area.

Northern Redbelly Dace (Chrosomus eos), state threatened:

- Recorded in 9 Mile Creek (a tributary to the Big Sioux River) downstream of Lake Alvin Lined snake (Tropidoclonion lineatum)
 - Recorded in Good Earth State Park, south of Sioux Falls, SD

Please note many places in South Dakota have not been surveyed for rare or protected species and the absence of a species from the database does not preclude its presence from your project area. If you have any questions, please feel free to contact me at 605-773-6208.











Sincerely,

Hilary Meyer

Environmental Review Senior Biologist

523 East Capitol Avenue

Pierre, SD 57501

hilary.meyer@state.sd.us

Crane, David J CIV USARMY CENWO (USA)

From: Weber, Christopher R CIV USARMY CENWO (USA)

Sent: Monday, December 09, 2019 10:01 AM **To:** Crane, David J CIV USARMY CENWO (USA)

Subject: FW: [Non-DoD Source] Re: [EXTERNAL] USACE PL8499 Emergency Levee Repair

Programmatic EA Scoping

----Original Message----

From: nathan_darnall@fws.gov [mailto:nathan_darnall@fws.gov] On Behalf Of WyomingES, FW6

Sent: Friday, October 4, 2019 3:00 PM

To: Nathan Darnall <nathan_darnall@fws.gov>

Cc: Weber, Christopher R CIV USARMY CENWO (USA) < Christopher.R. Weber@usace.army.mil>; Crane, David J CIV

USARMY CENWO (USA) < David.J.Crane@usace.army.mil>

Subject: [Non-DoD Source] Re: [EXTERNAL] USACE PL8499 Emergency Levee Repair Programmatic EA Scoping

Dear Mr. Weber,

Sorry for the delay in responding. Other than a recommendation to visit IPaC (Blockedhttps://ecos.fws.gov/ipac/) for a current species list, our office has no other scoping comments at this time for the 2019 spring flooding emergency levee rehabilitation efforts along Goose Creek, in Sheridan, Wyoming. Thank you,

Nathan Darnall, Deputy Field Supervisor Wyoming Field Office, U.S. Fish and Wildlife Service 334 Parsley Boulevard, Cheyenne, Wyoming 82007

Office: 307.757.3708 Cell: 307.286.1334

Email: nathan_darnall@fws.gov <mailto:nathan_darnall@fws.gov> Office mailbox: WyomingES@fws.gov <mailto:WyomingES@fws.gov>

On Thu, Aug 15, 2019 at 8:57 AM Nathan Darnall <nathan_darnall@fws.gov <mailto:nathan_darnall@fws.gov >> wrote:

Mr. Weber,

Thank for your request. It will be assigned to staff next Tuesday. We generally allow 30 days for our office to respond, which would be by September 14. Let us know if you need an expedited response. Also, in the future please cc our general mailbox at WyomingES@fws.gov <mailto:WyomingES@fws.gov>. This mailbox is check regularly by multiple individuals, which should ensure a timely review, especially if I am out of the office. Thanks,

Nathan Darnall, Deputy Field Supervisor Wyoming Field Office, U.S. Fish and Wildlife Service 334 Parsley Boulevard, Cheyenne, Wyoming 82007

Office: 307.757.3708 Cell: 307.286.1334

Email: nathan_darnall@fws.gov <mailto:nathan_darnall@fws.gov> Office mailbox: WyomingES@fws.gov <mailto:WyomingES@fws.gov>

----Original Message----

From: Weber, Christopher R CIV USARMY CENWO (USA)

<Christopher.R.Weber@usace.army.mil <mailto:Christopher.R.Weber@usace.army.mil> >

Sent: Thursday, August 15, 2019 7:28 AM

To: nathan darnall@fws.gov < mailto:nathan darnall@fws.gov >

Cc: Crane, David J CIV USARMY CENWO (USA) < David.J.Crane@usace.army.mil

<mailto:David.J.Crane@usace.army.mil>>

Subject: [EXTERNAL] USACE PL8499 Emergency Levee Repair Programmatic EA

Scoping

Dear Mr. Darnall,

The U.S. Army Corps of Engineers Omaha District (Omaha District) is preparing a Programmatic Environmental Assessment (PEA) for the 2019 spring flooding emergency levee rehabilitation efforts. Our 30-day public comment scoping period has expired, but your state's project (Goose Creek, Sheridan, WY) was added later to our study area, but we still would like your input. The emergency provision of USACE National Environmental Policy Act (NEPA) regulations (ER 200-2-2) allows NEPA documentation to be accomplished concurrently with or after completion of emergency work.

SCOPING:

The purpose of this scoping effort is generally to inform the public that the Omaha District is developing a PEA as part of the Public Law (PL) 84-99 activities. Although the PL 84-99 authority establishes the scope and purpose of repairs, the Omaha District is soliciting comments from you and your constituents during this scoping period regarding concerns, potential impacts, relevant effects of past actions, and possible alternative actions. Scoping comments should focus on the areas where levee rehabilitation will occur. The attached map is meant to depict the majority of the levee systems included in this PL 84-99 effort, but may not depict all as requests for assistance are still being received by the Omaha District.

BACKGROUND:

During the fall months of 2018, the lower Missouri River Basin saw very wet conditions with several weather systems resulting in saturated soil conditions heading into the winter season. Below normal winter temperatures resulted in a deep frost depth. The extreme cold temperatures persisted into early spring which combined with an active storm pattern across the plains. Typically, gradual warming temperatures in late February and March would allow for a slow snowmelt along with the ground beginning to thaw. 2019 did not follow this pattern which resulted in a record snowpack with 2-4 inches of snow water equivalent (SWE) still

covering much of the lower Missouri River Basin as late as 12 March 2019. The extreme cold temperatures also allowed for the development of thick ice on area streams and rivers.

Temperatures over the lower Missouri River Basin quickly warmed in conjunction with a heavy rain event from 12 March to 14 March 2019. Precipitation totals of 1 to 3 inches across the region with pockets greater than 3 inches were reported across eastern Nebraska. The precipitation was in the form of snow across the western and northern plains, while warmer temperatures resulted in rain across the eastern plains. The warm temperatures also produced significant snowmelt which combined with the heavy rainfall to produce high runoff due to the frozen ground. The extreme runoff resulted in high to record flows along the unregulated streams and rivers in eastern Nebraska and western lowa. Numerous records at river gages in eastern Nebraska were exceeded by 1 to 4 feet with a few along the Elkhorn River nearing flows 6 feet higher than previous long standing records. Several ice jams were also reported during this event.

As a result of this event, the mainstem Missouri River saw high flows downstream of Gavins Point Dam, especially south of the confluence of the unregulated Little Sioux River basin. Record flows were observed on the Missouri River downstream of the confluence of the unregulated Platte River. In the Omaha District, widespread damage to levees along the Missouri River and its tributaries occurred during this flooding event, resulting in damage to over 30 levee systems and dozens of levee breaches.

PROGRAMMATIC ENVIRONMENTAL ASSESSMENT:

The Omaha District has already began conducting flood response and levee rehabilitation activities under the PL 84-99 program. This PEA is intended to provide NEPA coverage for the wide range of activities where advanced measures, direct assistance, and levee system repairs will be conducted. Anticipated PL 84-99 activities include, but are not necessarily limited to, repairs to levee scours, levee crests, levee berms, levee breaches, partial breaches, partially eroded levees, sand boils, relief wells, drainage structures, and pump stations. Levee setbacks may also be implemented as part of this PL 84-99 effort. The Omaha District plans to have a draft PEA ready for public review in the Fall of 2019.

CONTACT:

If you have any questions or require additional information, please contact me at (402) 995-2694 or at Christopher.r.weber@usace.army.mil <mailto:Christopher.r.weber@usace.army.mil>

Please also consider this a request for information from your agency regarding the state-listed species potentially in the project area that we should consider impacts to. We would incorporate this information directly into our Programmatic EA.

Thanks,

Chris

Christopher Weber
Environmental Resources Specialist
US Army Corps of Engineers, Omaha District
1616 Capitol Avenue
Omaha, NE 68102
Office: 402-995-2694
Christopher Weber
Environmental Resources Specialist
US Army Corps of Engineers, Omaha District
1616 Capitol Avenue
Omaha, NE 68102

Office: 402-995-2694

Crane, David J CIV USARMY CENWO (USA)

From: Kelly, Kaitlyn <kaitlyn_kelly@fws.gov>
Sent: Thursday, August 15, 2019 12:55 PM
To: Crane, David J CIV USARMY CENWO (USA)

Cc: Herrington, Karen; Trisha Crabill

Subject: [Non-DoD Source] Re: [EXTERNAL] 2019 flood programmatic EA and emergency

consultation request (UNCLASSIFIED)

Follow Up Flag: Follow up Flag Status: Flagged

Good afternoon Mr. Crane,

This email is in regards to the levee rehabilitation necessary due to the 2019 flooding. The emergency actions include breach closures within Missouri. Full damage assessment and damage repairs of other levees will be completed after flood waters recede and will be consulted on through the programmatic environmental assessment.

The U.S. Fish and Wildlife Service (Service) considers breach closures an emergency response action and as such, has determined that emergency consultation procedures may be implemented. Emergency consultation procedures allow action agencies to complete administrative procedures required by section 7 of the Endangered Species Act after implementation of emergency response actions. In this way, the consultation process does not delay emergency response actions.

As part of emergency consultation procedures, the service may offer recommendations to minimize effects of the emergency response actions on federally listed species or critical habitat. For the proposed levee breach closures, we offer the following recommendations in order to minimize effects to federally listed species. Please note that implementation of these recommendations should be to the extent practicable and to which human safety is not compromised.

The Endangered Species Act

For the 2019 Missouri River flood clean-up and repair, species of concern would be the federally endangered pallid sturgeon (Scaphirhynchus albus), the federally endangered Indiana bat (Myotis sodalis), the federally endangered Northern long-eared bat (Myotis septentrionalis), the federally endangered Interior least tern (Sternula antillarum), and the federally endangered Piping plover (Charadrius melodus).

Pallid Sturgeon

The pallid sturgeon is a fish that occurs throughout the undammed stretches of the Missouri River from Ft. Peck Dam, Montana to the mouth near St. Louis, Missouri. Pallid sturgeon spawn during the spring and early summer and construction activities within the channel have the potential to adversely affect the pallid sturgeon if they are present at the same time as construction. Because of this, if possible, work in the channel should be avoided during the spawning period and should be restricted to the inside bend of the river. Revetment rock placement should be restricted to occur

outside of May 1 to June 15. However, the pallid sturgeon also benefit from sediment in the river, and work that puts clean sediment and alluvial soils back into the river is encouraged.

Indiana Bat & Northern Long-eared Bat

The Indiana bat and the northern long-eared bat occur throughout much of the eastern U.S. Both species occupy hibernacula between November 1 – March 31, the inactive season. Suitable forested areas are utilized during the active season (April 1 – October 31) and can function as summer maternity habitat, staging and swarming habitat, migration or foraging habitat. Because of this, minimal use of timbered areas for borrow, with the exception being youngest trees (less than 3-inches DBH) should be used and removed during the inactive season. Trees can help protect levees from breaching during high floods. We recommend fallow lands, old borrow sites, farmed wetlands, and prior converted croplands should be used before clearing timber.

Interior Least Tern & Piping Plover

The interior least tern and the piping plover are migratory birds that nest on and forage near bare sandbars in the Missouri River. Individuals arrive in mid-April and begin migration south by mid to late August. Work around or on sandbars should be done before April 15 or after August 15 to avoid the nesting and raising young. Since flooding occurred prior to mid-April likely reducing the nesting likelihood, sandbars can be monitored to determine if individuals are present.

The Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (FWCA) provides a basic framework for the consideration of fish and wildlife conservation measures and enhancement of these resources to be incorporated into Federal water development projects. Repair activities that are necessary due to the damage from the 2019 Missouri River flood may modify the river in some way. Impacts to fish and wildlife and their habitats not covered under the previously mentioned acts should be considered and minimized as much as possible. These minimization measures can include erosion control during construction and repair, avoiding tree removal when possible, using pesticides sparingly for vegetation control, and completing construction activities to avoid primary nesting period of birds.

Other Recommendations

The Service highly encourages the Corps to look for opportunities to create habitat and enlarge floodplain connectivity when possible which can help reduce long-term flood damages.

Per the Service's emergency consultation procedures, USACE should initiate consultation with the Service following completion of project activities if a likely to adversely affect determination has been made for any listed species. At that time, effects from project activities to applicable listed species will be evaluated.

We appreciate the USACE efforts to conserve federally listed species. Should you like to discuss the measures identified above or any other aspects pertaining to the levee breach closures, please feel free to call the number listed below.

Kaitlyn Kelly

Fish and Wildlife Biologist U.S. Fish & Wildlife Service Columbia Ecological Services Field Office Office phone: (573) 234-5012

On Tue, Aug 6, 2019 at 11:51 AM Crane, David J CIV USARMY CENWO (USA) < David.J.Crane@usace.army.mil < mailto:David.J.Crane@usace.army.mil > wrote:

CLASSIFICATION: UNCLASSIFIED

Kaitlyn,

Thanks for getting back to me and please let me know if you have any questions about this 2019 flood event, the 2018 BiOp, or USACE Missouri River projects in general. The current title of the Programmatic EA I'm writing for the overall 2019 levee rehabilitation effort is:

Programmatic Environmental Assessment & Finding of no Significant Impact; Public Law 84-99 Emergency Levee Rehabilitation Program & Advanced Measures Civil Emergency Management Program for 2019 Flooding in the Omaha District.

PL 84-99 is the name of the Corps authority/ program that offers levee rehabilitation for levee systems enrolled in the PL 84-99 program.

Also, as discussed, attached are some files from the 2018 BiOp on for the Operation of the Missouri River Mainstem Reservoir System, the Operation and Maintenance of the Bank Stabilization and Navigation Project, the Operation of Kansas River Reservoir System, and the Implementation of the Missouri River Recovery Management Plan. The Append C file contains presence determinations for the Missouri River floodplain which were made with technical input from USFWS staff during Section 7 consultation for the 2018 BiOp-- I think this might be most useful in generating your response. The other two files are from the BiOp and you may find some useful content in there as well. Please note that the 2018 BiOp was prepared for the operation of the dams, O&M of the river channelization structures, and implementation of the Corps' habitat restoration program along the river. The Programmatic EA for the flood work is a separate action, but the geographic scope is essentially identical to that covered in the 2018 BiOp for the portion of the river between Council Bluffs, IA and Holt County, MO. Hopefully providing you these document helps and doesn't just make things more confusing!

I couldn't find that name from IA USFWS that Jane mentioned, but I'll keep looking.

Thanks, Dave Dave Crane (CENWO-PM-AC) Environmental Resources Specialist U.S. Army Corps of Engineers 1616 Capitol Ave. Omaha, NE 68102

T: (402) 995-2676 F: (402) 995-2758

david.j.crane@usace.army.mil <mailto:david.j.crane@usace.army.mil>

CLASSIFICATION: UNCLASSIFIED

Crane, David J CIV USARMY CENWO (USA)

From: Moore, Seth <seth.moore@dnr.iowa.gov>
Sent: Wednesday, July 17, 2019 3:08 PM
To: Crane, David J CIV USARMY CENWO (USA)

Cc: Kristen Lundh

Subject: [Non-DoD Source] Environmental Review for Natural Resources 17054

Attachments: IBat Guidelines 2013.pdf

Follow Up Flag: Follow up Flag Status: Flagged

Programmatic Environmental Assessment (PEA) for 2019 Spring Flooding Emergency Levee Rehabilitation Efforts

U.S. Army Corps of Engineers

Omaha District

Thank you for inviting Department comment on the impact of this project. The Department has records of several state-Endangered species that may be impacted by this project depending on the nature of the renovations in the area. This includes the Pallid Sturgeon (Scaphirhynchus albus), the least tern (Sterna antillarum) and the piping plover (Charadrius melodus). These species are also federally protected.

Department records and data are not the result of thorough field surveys. If listed species or rare communities are found during the planning or construction phases, additional studies and/or mitigation may be required.

The Northern Long-Eared Bat (Myotis septentrionalis), a federally threatened species, has the potential to inhabit this area of the state and may occur in the area of this project. Northern long-eared bats spend winter hibernating in caves and mines, called hibernacula. During the summer, northern long-eared bats roost singly or in colonies underneath bark, in cavities or in crevices of both live trees and snags (dead trees) and may roost in structures such as old buildings, culverts, and bridges.

The enclosed guidelines provide information about the habitat requirements and survey methods for Indiana bat summer habitat. These guidelines may also be used for the northern long-eared bat. If it appears that you will disturb potential Indiana bat and/or northern long-eared bat summer habitat, and seasonal tree removal guidelines cannot be met, we suggest that you contact the US Fish and Wildlife Service regarding this project. The Rock Island Field Office may be reached at (309) 757-5800 or 1511 47th Ave, Moline IL 61265-7022.

This letter is a record of review for protected species, rare natural communities, state lands and waters in the project area, including review by personnel representing state parks, preserves, recreation areas, fisheries and wildlife but does not include any comment from the Environmental Services Division of this Department. This letter does not constitute a permit. Other permits may be required from the Department or other state or federal agencies before work begins on this project.

Please reference the following DNR Environmental Review/Sovereign Land Program tracking number assigned to this project in all future correspondence related to this project: 17054.

If you have questions about this letter or require further information, please contact me at (515) 725-8464.

Sincerely,

<Blockedhttps://lh3.googleusercontent.com/clNml9Dd11ZnuRCvocaNZN2LQyBwmHlVvCXEzxfFxwaA6VXV9Fpm_a0H6V7BV05fPDKnc58ZijV0f7IQXpplWKbs42MOinZ7I050QR3y43ttZrCAOzkmdJMVTVKi6ByQ4897OwFd>

Seth Moore | Environmental Specialist

Iowa Department of Natural Resources

P 515-725-8464 | F 515-725-8201 | 502 E. 9th St., Des Moines, IA 50319

Blockedwww.iowadnr.gov < Blockedhttp://www.iowadnr.gov/>



The Iowa Department of Natural Resources is available to identify qualified professionals who conduct habitat surveys and bat surveys.

Please contact the US Fish and Wildlife Service for information about the most current federal guidelines for the Indiana bat.

These guidelines may be revised based on the availability of new research or management information or to clarify particular points in the guidelines.

US Fish and Wildlife Service

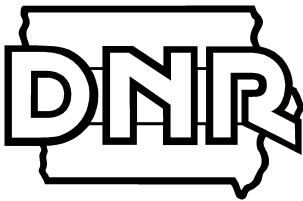
Rock Island Field Office 1511 47th Ave Moline IL 61265-7022

Phone: (309) 757-5800

Iowa Department of Natural Resources

Endangered Species Coordinator Wallace State Office Building 502 E 9th St Des Moines IA 50319-0034

Phone: (515) 281-5918 Fax: (515) 281-6794



Counties Affected:

Adair, Appanoose, Boone, Cedar, Clarke, Dallas, Davis, Decatur, Des Moines, Guthrie, Henry, Iowa, Jasper, Jefferson, Johnson, Keokuk, Lee, Louisa, Lucas, Madison, Mahaska, Marion, Marshall, Monroe, Muscatine, Polk, Poweshiek, Ringgold, Scott, Story, Tama, Taylor, Union, Van Buren, Wapello, Warren, Washington, and Wayne

These guidelines were prepared to provide information about the Indiana bat and its summer habitat requirements in Iowa and to prevent inadvertent harm to the species through various human activities. This update of the guidelines is in response to changes in the US Fish and Wildlife Service requirements for protecting this endangered species. The changes include:

- No cut dates changed to April 1through September 30
- Updated US Fish and Wildlife Service guidelines for mist net surveys

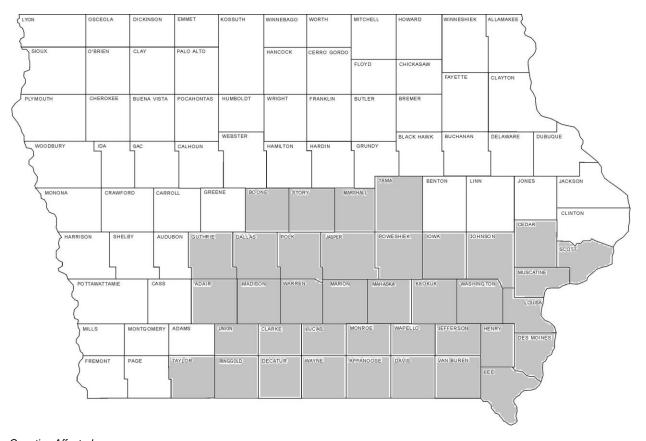
The Indiana bat is a federal (50 CFR Part 17) and state (Code of Iowa, Chapter 481B) endangered species that occurs in southern Iowa from April through September.

Female Indiana bats (Myotis sodalis) have their young beneath loose or peeling tree bark. Most nursery colonies have been found on the trunk or large branches beneath the bark of standing dead trees. The nursery colonies are located along streams and rivers or in upland forest areas.

Trees that retain sheets or plates of bark that provide space beneath the bark when dead, such as red oak, post oak, and cottonwood, are potential roost trees. Live trees such as shagbark and shellbark hickory are also occasionally used as roosts.

Indiana bats have also been captured on the edge of urban areas. It is likely that the bats would use areas on the edge of urban areas only if there is suitable habitat such as a greenbelt or a large park with a natural forest component. This would exclude city parks that are maintained as mowed areas.

Indiana Bat Summer Habitat in Iowa



Counties Affected

Adair, Appanoose, Boone, Cedar, Clarke, Dallas, Davis, Decatur, Des Moines, Guthrie, Henry, Iowa, Jasper, Jefferson, Johnson, Keokuk, Lee, Louisa, Lucas, Madison, Mahaska, Marion, Marshall, Monroe, Muscatine, Polk, Poweshiek, Ringgold, Scott, Story, Tama, Taylor, Union, Van Buren, Wapello, Warren, Washington, and Wayne

The US Fish and Wildlife Service considers these counties, as being within the potential range of the species in Iowa.

Summer Habitat Requirements

In lowa, records for the Indiana bat have occurred in areas of 10% or greater forest cover and near permanent water. Trees with slabs or plates of loose bark are considered suitable as summer roosts.

Suitable summer habitat in lowa is considered to have the following within a one-half or one mile radius of a location:

- Forest cover of 10% or greater within one-half mile.
- Permanent water within one-half mile.
- The potential roost trees ranked as moderate or high for peeling or loose bark within one mile.

Survey Methods for Indiana Bat Summer Habitat

Step 1:

Determine if there is 10% or greater forest cover or if a 10 acre block of forest that is connected to another forest area and permanent water is within ½ mile of the project site go to Step 2.

If forest area is less than 10 acres and isolated by ¼ mile or more from other forest, then there is no need to continue survey efforts.

Step 2:

Conduct a survey of the project area that will be cleared or cut to determine if standing trees that have 10% or greater loose or peeling bark on the trunks and main limbs are present. The amount of loose or peeling bark is based on visual estimation. This will include both upland and floodplain forests. Areas that are too large for complete counts may be sampled using techniques such as point-quarter, tenth-hectare quadrats or other acceptable forest sampling techniques.

If clearing and grubbing activities will not begin until after April 1, the survey should extend 50 yards beyond the area to be cleared. This buffer will reduce the potential for harm to roosting bats near the edge of the area to be disturbed.

If a survey of the habitat within the project area finds that suitable summer habitat for the Indiana Bat, as defined above, is present then there are two options available:

Option 1:

Conduct a mist net survey of the project area for the presence Indiana bats. The US Fish and Wildlife Service has guidelines for conducting mist net surveys. You may request a copy of the survey guidelines from the Rock Island Field office at the address listed on the back of this document. Submit results to the Rock Island Field Office and the Iowa Department of Natural Resources.

If Indiana bats are found during the survey then no removal of trees will be allowed between April 1 and September 30.

Option 2:

If the proposed project will disturb or remove less than 2-acres of forest, tree clearing and cutting may be done after September 30 and before April 1.

APPENDIX B BIOLOGICAL ASSESSMENT

Biological Assessment for PL 84-99 Emergency Levee Rehabilitation Program and Advanced Measures Civil Emergency Management Program

Draft January 2020

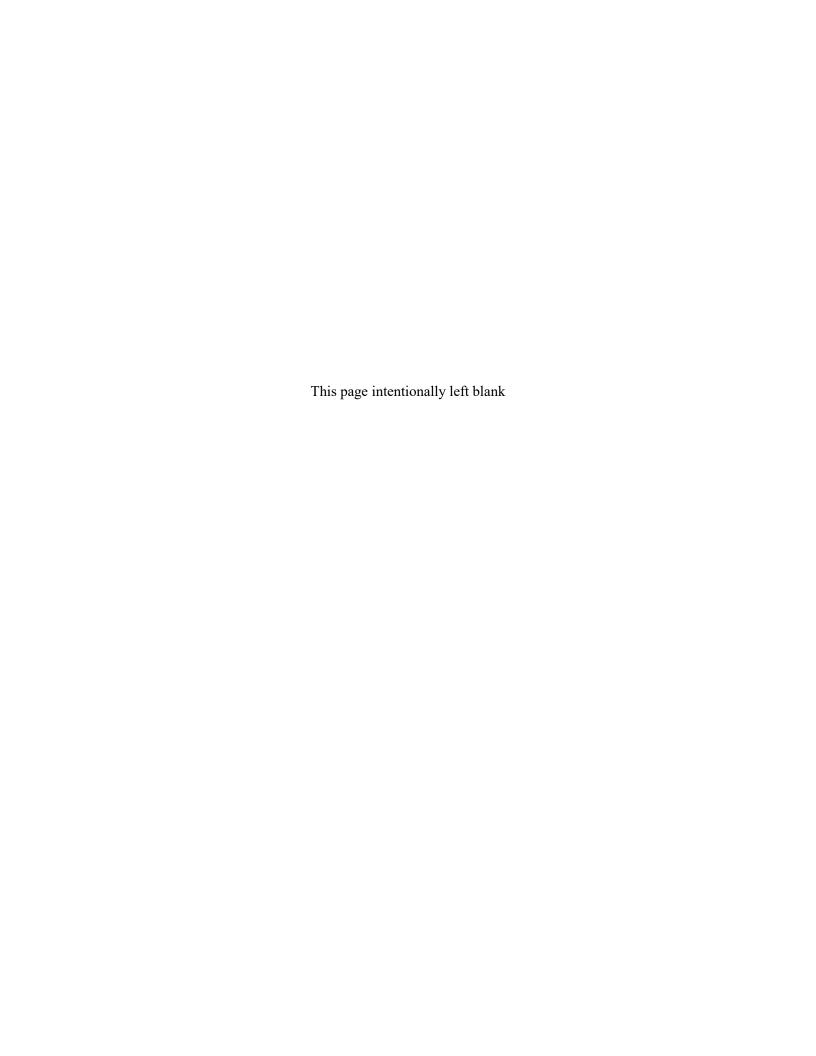


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1.0 Introduction

The U.S. Army Corps of Engineers (USACE) Omaha District prepared this Biological Assessment (BA) to determine whether the proposed action may affect threatened or endangered species under Section 7 of the Endangered Species Act (ESA) of 1973, as amended. Section 7 of the ESA states that Federal agencies shall ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in destruction or adverse modification to designated critical habitat.

In March 2019, a flood event was declared for the Missouri River and its tributaries due to rapid snowmelt and heavy rains in the region. Extreme runoff resulted in high to record flows along unregulated streams and rivers in eastern Nebraska and western Iowa. As a result of this event, widespread damage to levees within the USACE Omaha District occurred. Damages to levees were reported along the Missouri River and its tributaries, resulting in damage to over 30 levee systems and dozens of levee breaches.

A major mission of the USACE Omaha District is the Emergency Levee Rehabilitation Program and the Advanced Measures Civil Emergency Management Program (commonly referred to as Public Law 84-99 or PL 84-99). These programs allow the USACE to provide for the inspection and rehabilitation of federal and non-federal flood risk management projects enrolled in the PL 84-99 program that may have been damaged or destroyed by floods. Additionally, they allow the USACE to provide advance measures assistance in order to prevent or reduce damages when there is an imminent threat of unusual flooding that pose a significant threat to life and/or significant damages to urban and public facilities. Due to the magnitude of levee damages along the Missouri River, this BA focuses primarily on species that may be present along the Missouri River maninstem and major tributaries. Site-specific consultation with the USFWS on potential impacts to listed species to the Missouri River and tributary levee systems also has and will continue to occur during the ongoing PL 84-99 construction implementation.

1.1 Project Authority

The PL 84-99 program is authorized under the authorities of 33 U.S.C. 701n; the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5121 et seq); Army Regulation 500-60, Disaster Relief; and Engineer Regulation 1130-2-530, Flood Control Operations and Maintenance Policies. These laws and authorities allow the USACE to provide a levee rehabilitation program for repairing levees after flood events and perform advanced measures prior to flooding or flood fighting to protect against loss of life and significant damages to urban and/or public facilities.

1.2 NEPA approach

A programmatic environmental assessment (PEA) has been developed for the overall PL 84-99 flood response efforts. Project area-specific documentation and coordination is occurring separately from the PEA and this BA. The purpose of the PEA is to describe the environmental impacts of PL 84-99 levee rehabilitation program and to comply with the procedural requirements of NEPA. Development of the PEA was used to determine whether to prepare a Finding of No Significant Impact (FONSI) or prepare an environmental impact statement (EIS). The PEA concludes that the levee repair projects do not have a significant impact on the human

environment, and so it is expected that a FONSI would be prepared following public comment on the draft document.

These projects can be characterized in a general (or programmatic) nature based on the observed environmental impacts associated with PL 84-99 efforts in previous high water years (e.g., 2010, 2011, 2018, etc.). Individual projects would be evaluated to determine if their scope and impacts are within the scope and impact analysis of this programmatic document. If it is determined that repair efforts at individual levee systems require a separate NEPA analysis that would be tiered off of this programmatic document.

It is the primary intent of this BA to provide document ESA compliance for all NWO PL 84-99 efforts initiated in response to the 2019 flood event, construction of which may last for multiple years. It is assumed that this BA would apply to any future flood damage on levees that 2019 rehabilitation is still ongoing.

1.3 Consultation History

1.3.1 Emergency Consultation

Emergency consultation is where emergency responses are required that may affect listed species and/or critical habitat, but the Federal agency may not have the time for the administrative work required by the consultation regulations under non-emergency conditions.

Emergency consultation was initiated by phone on May 10, 2019 for immediate actions regarding PL 84-99 activities that prevent or reduce damages when there is an imminent threat of unusual flooding that pose a significant threat to life and/or significant damages to urban and public facilities. On May 15, 2019 USACE held a conference call with the U.S. Fish and Wildlife Service (USFWS) Region 6, Ecological Field Office to further discuss these immediate actions. USFWS requested the USACE consult under emergency consultation for PL 84-99 actions that have occurred or are currently occurring in response of levee breach closures. Future PL 84-99 actions would be coordinated under emergency or informal consultation procedures, depending on the construction conditions. During the month of August emergency consultation was initiated with the Columbia, MO Ecological Service Field Office for work being conducted in Iowa and Missouri. The Missouri office provided recommendations to minimize effects of the emergency response action on federally listed species.

1.3.2 Informal Consultation

On May 10, 2019 the USACE sent the USFWS an initial scoping letter regarding the PL 84-99 activities. The USACE requested the USFWS to provide concerns and/or potential impacts to listed species that may be affected by the proposed action. On May 15, 2019 USACE held a conference call with the USFWS Region 6, Ecological Field Office to further discuss PL 84-99 activities. Following the May 15, 2019 conference call, the Grand Island, NE and Columbia, MO ecological services field offices were coordinated with on a project-specific basis.

2.0 Action Area

2.1 Action Area Description

The combined action area includes numerous levees enrolled and in active-status in the USACE PL 84-99 Program in eastern Nebraska, western Iowa, and northern Missouri. This includes areas along the Missouri River mainstem from River Mile (RM) 625 to RM 515, the Platte River, Elkhorn River, and other tributaries (Figure 2-1). Table 2-1 provides a list of the project sites and associated waterways.

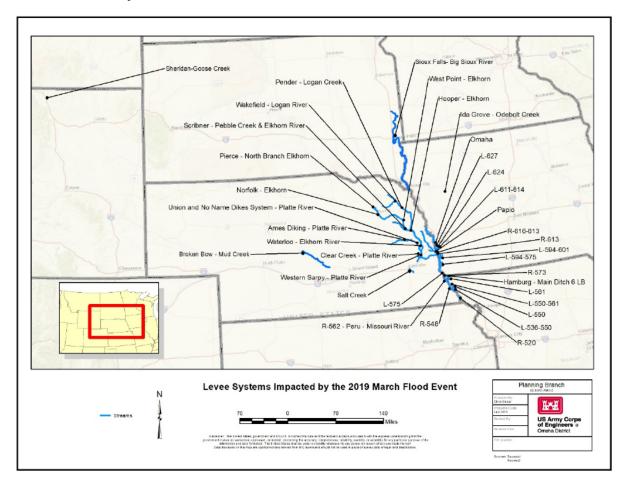


Figure 2-1. Action Area for the Biological Assessment for the PL 84-99 Emergency Levee Rehabilitation Program and Advanced Measures Civil Emergency Management Program

Table 2-1. Individual levee system project areas within the action area

Major Streams (Tributaries)	Project Sites	Damage Eligible for PL 84-99 Assistance following 2019 spring flooding
Missouri River	L-536-550 L-550-561-Missouri River LB	Yes Yes
	L-601 Watkins Ditch RB	No Yes

	L-611-614-MoRiv LB & Upper Pony Creek LB &	Yes
Pony Creek	Lateral 1B LB	Yes
Tony Creek	L-627 CB	Yes
	R-548 Little Nemaha LB/Happy Hollow RB	Yes
	R-616-613 - MO Riv RB & Papillion Cr LB	Yes
	<u> </u>	
	Lake Waconda-Missouri River RB	Yes
37. 1 1 2	Missouri River RB-Omaha	Yes
Nishnabotna River	L-561 Nishnabota LB & High Creek RB	Yes
High Creek		
Rock Creek	L-550-Rock-LB-Turk-RB	Yes
Turkey Creek		
Mill Creek	L-536-550 Turkey Crk LB, Rock Crk LB, Mo Riv LB,	No
Turkey Creek	& Mill Crk RB	
Rock Creek		
Plumb Creek	L-575	Yes
Papillion Creek	Little Papio RB & Big Papio LB (Fed)	Yes
1	Little Papio RB & Big Papio LB (Non-Fed)	Yes
	West Papio RB-96th-Big Papio	Yes
	West Papio LB & Big Papio RB	Yes
	Big Papio LB/RB W. Center to L. St.	Yes
	Big Papio LB-Betz Ditch to Capehart	Yes
	36th St. to Willow Lakes GC	Yes
	Big Papio LB-Mud Creek to Betz Ditch	Yes
	Big Papio RB-L St to Thomson Cr.	Yes
	Big Papio LB-Little Papio to Copper Cr.	Yes
	Big Papio LB-Copper Cr. to Big Elk Cr.	Yes
	Big Papio LB-Big Elk Cr to Mud Cr.	Yes
Winnebago Creek	R-520-Missouri River RB	Yes
Little Nemaha River	R-548-Missouri River & Little Nemaha	Yes
South Branch Camp	R-562-Peru-Missouri River RB	Yes
Creek	D 572 M; ; D; DD	37
Fourmile Creek	R-573-Missouri River RB	Yes
Waubonsie Creek	L-594-575 (BW-PV-Waubonsie)	Yes
Big Sioux River	Sioux Falls – Big Sioux RB and Skunk Creek RB	Yes
Platte River	R-613-Platte LB & Papillion RB & Mo River RB	Yes
	Valley-Platte-LB	Yes
	Western Sarp -Platte River LB	Yes
	Ames Diking-Platte River LB	Yes
	YMCA Camp Kitaki	No
Salt Creek	Salt Creek RB	Yes
	Salt Creek LB and Oak Creek LB	Yes
	Salt Creek RB to Dead Mans Run	Yes
Cedar Creek	Cedar Creek Omaha (F&W)	Yes
Elkhorn River	West Point-Elkhorn LB	Yes
	Waterloo-Elkhorn River RB	Yes

	Hooper-Elkhorn River-Bloomendahl Ditch	No
North Fork Elkhorn	Pierce-North Branch Elkhorn RB	Yes
River	Norfolk-Elkhorn River RB and LB	Yes
Pebble Creek	Scribner-Elkhorn River RB & Pebble Creek LB	Yes
Logan Creek	Pender-Logan Creek RB	Yes
	Wakefield-Logan River RB	Yes
Antelope Creek	Antelope Creek (Lincoln)	No
Odebolt Creek	Ida Grove-Odebolt Creek LB	Yes
Mud Creek	Broken Bow - Mud Creek LB/RB;	Yes
Loup River	Columbus-Loup River LB	Yes
Goose Creek	Sheridan – Goose Creek RB	Yes

2.2 Species in the Action Area

Species lists were requested from USFWS's Information for Planning and Consultation (IPAC) system in May 2019 to encompass a potential action area in eastern Nebraska, Iowa, and Missouri (Table 2-2). Species lists were then verified through literature review, records search, and coordination with USFWS to be present in the action area. While other listed species may be present in the South Dakota and Wyoming project areas, the Sioux Falls and Sheridan projects areas represent an insignificant amount of the overall study area and potential effects to those species will be addressed individually during project-specific informal consultation.

Table 2-2. USFWS ESA-listed Species in the Proposed Action Area in NE, IA, and MO

			Presence in the
Common Name	Scientific Name	ESA Status	Study Area
Birds			
Least Tern	Sternula antillarum	Endangered	Present
Piping Plover	Charadrius melodus	Threatened	Present
Whooping Crane	Grus americana	Endangered	Present
Fish			
Pallid Sturgeon	Scaphirhynchus albus	Endangered	Present
Topeka Shiner	Notropis topeka (=tristis)	Endangered	Present
Mammals			
Indiana Bat	Myotis sodalis	Endangered	Present
Northern Long-eared Bat	Myotis septentrionalis	Threatened	Present
Clams			
Scaleshell Mussel	Leptodea leptodon	Endangered	Not Present
Insects			
Salt Creek Tiger Beetle	Cicindela nevadica lincolniana	Endangered	Present
Flowering Plants			
Prairie Bush clover	Lespedeza leptostachya	Threatened	Not Present
Western Prairie Fringed Orchid	Platanthera praeclara	Threatened	Present

Note: Species list is based on an unofficial IPAC report run for the action area on 05/01/19. Presence determinations for the Missouri River floodplain were made with technical input from USFWS staff.

3.0 Description of the Proposed Action

The proposed action includes a range of structural repair activities that provide rehabilitation, advanced measures, and direct assistance to Federal and non-Federal levee sponsors along the Missouri, Platte, and Elkhorn Rivers and other smaller streams in eastern Nebraska, western Iowa, northern Missouri, southern South Dakota, and Eastern Wyoming enrolled in the PL 84-99 Program. The rehabilitation of levees typically consists of repairs of existing structures to their

pre-flood condition. Anticipated PL 84-99 activities include, but are not necessarily limited to, repairs to levee scours, levee crests, levee berms, levee breaches, partial breaches, partially eroded levees, sand boils, relief wells, drainage structures, and pump stations. Levee setbacks may also be implemented as part of this PL 84-99 effort where necessary. Advanced measures consist of temporary flood-prevention structures that are removed once the high flow event has passed.

The proposed action is a combination of structural levee repairs that include in-line repairs, small scale levee setbacks, large-scale levee setbacks, and borrow material mining. The proposed action is consistent with all applicable Federal and state laws, Tribal trust responsibilities, and interstate compacts and decrees.

3.1 In-line Repairs

Structural, in-line repair activities take place within the existing levee or flood risk management feature footprint. In general, the less damaged a levee received from a flood, the more likely it is to be repaired in-line. Examples of damages that are typically repaired in-line include the following:

3.1.1 <u>Levee repair actions</u>

- Placing underwater material to fill scour holes and then placing confining material primarily consisting of riprap and geotextile fabrics
- Filling levee scour holes with sand, and filling erosional areas with cohesive material (clay)
- Placing new riprap along eroded levee sections for protection
- Regrade levee slopes and add sod or lost protective vegetative cover and/or riprap
- Reseeding of all slopes that had vegetation damage, this may involve application of herbicide to first remove all undesirable vegetation
- Replacement of levee rock surfacing following levee crest reconstruction
- Mechanically placed fill breach repair, which consists of degrading the severely damaged levee sections upstream and downstream of the breach, filling the scour hole with pervious fill to the dimensions necessary to provide a base for levee construction using dredging or mechanical means, berm construction along the pre-flood alignment, and reconstruction of the levee and berm with mechanically placed fill
- Levee ramp damage repair
- Rebuilding a levee at the site of a breach. This can take the form of filling the scour with
 pervious material and rebuilding the levee to match the specifications of the surrounding
 levee cross section. Extended seepage or drainage features may also be required at the
 site of breach closures. If permanent breach closure repairs are conducted using sheet
 piling as a means of controlling under seepage, new or extended seepage or drainage
 features are usually not necessary.
- New levee seepage berm or other drainage features construction. While not exactly considered an exact "in-line" repair, construction of new or extended seepage or drainage features is a common PL 84-99 activity. These are typically constructed in areas where flood water seepage through a levee or its foundation have contributed to incrementally

- degraded geotechnical conditions. These also have the ability to result in more habitat impacts than the other in-line repairs.
- Rehabilitation of rock jetties or other in-stream bank stabilization features associated with the flood risk management levee project covered under the PL 84-99 Program
- Repair damaged streambank erosion protection structures
- Repairs to the existing river bank involving stabilization of the bank with riprap and implementation of a buffer area between the bank and the levee toe
- Installation of temporary channel crossings (e.g., temporary culverts and placed riprap to provide equipment access to a construction site and must result in a no-rise hydraulic condition)

3.1.2 <u>Seepage control and drainage structures</u>

- Construction of new interior drainage structures (culverts, pipes, flapgates, gatewells, etc.)
- Replacement of interior drainage structures
- Abandonment of interior drainage structures (e.g., filling pipe and gatewell structure with grout)
- Modification of existing drainage structures
- Installation of pump stations
- Removal of interior drainage structures
- Installation of new relief wells
- Abandonment of existing relief wells

3.1.3 Other minor activities

- Geotechnical explorations (e.g., pot holing with mechanical equipment, cone penetration tests, multi-electrode resistivity tests, etc.)
- Temporary staging areas and working pads for material and equipment (within project right of way; may also include levee crests or berms acting as haul roads, impacted areas would be restored to pre-disturbance conditions)
- Fencing
- Modifications to existing utility poles (as needed to complete PL 84-99 activities)
- Removal of existing utility poles and backfilling with compacted materials
- Street paving/ repair (any damage to public roads caused by construction activities would be repaired to pre-flood condition)
- Placement of monitoring monuments (e.g., carsonite posts, brass caps, etc.)

3.2 Small-scale levee setback/ levee breach closure

Small-scale levee setbacks, or reconstructing a small portion of the levee landward on a new alignment, are typically used in locations that have been subject to a levee breach or severe erosion of the levee, and typically are associated with large landward or riverward scour holes. Small-scale setback typically occur as part of emergency flood response efforts in order to close off levee breaches and might only be temporary in nature. Repairs that are outside of the original levee alignment, such as these small-scale setbacks, would be conducted when they are more technically feasible or less expensive than in-line repairs. Large scour holes can develop when a

levee is breached or overtopped. Levee breaches from the 2019 flood were between 10 and 70 feet in depth and dozens of acres in size. Rebuilding the levee in-line at a large breach can require more earthen material than it would to realign the levee in a new location. Structural repair in the form of a small-scale setback would likely use mechanically placed fill, but may use hydraulically placed fill and would consist of a setback levee of various lengths landward of the pre-flood alignment.

Heavy equipment would be used to obtain, move, shape, and compact earthen materials. Activities involved in small-scale setbacks involve filling a portion of the scour hole with pervious material to cut off river flow through the levee, placement of additional pervious material to create an expanded "sand pad" through the scour hole, building up the elevation of the sand pad to above the current river stage elevation, and construction of a berm on top of the sand pad to tie into the adjacent levee segments. The sand pad width would be determined by the need for seepage control and likely does not completely fill the scour hole.

In cases where the breach closure measures (as described above) will be incorporated into the permanent levee repairs, cohesive material would be placed on the riverward slope, levee crest, and possibly on the landward slope. Corps would then install sheet piling or construct seepage berms/ relief wells to control seepage. The levee would then typically be reseeded following construction to minimize soil erosion.

3.3 Large-scale levee setback

Large-scale levee setbacks are considered where significant foundational and/ or levee section damage precludes in-line repairs across 1 or more miles of a levee. These setbacks are typically multiple miles long, reconnect hundreds or thousands of acres of landward floodplain to the riverward side of the levee, and have only been conducted along the Missouri River in NWO to date. Such setbacks are likely to only take place along the Missouri River. Typically, construction of these kinds of setbacks under PL 84-99 in the NWO has been conducted where public lands were available, but setbacks could be conducted on or around private lands as well,. The USACE may also coordinate PL 84-99 large-scale levee setbacks with other programs (e.g., Missouri River Recovery Program, NRCS easements, State-owned lands, partnerships with The Nature Conservancy, etc.) to help reduce the impacts to private land if possible. Habitat restoration is recognized as being a significant benefit that can be achieved with large-scale levee setbacks.

3.4 Borrow

3.4.1 Routine, in-line repairs and non-Missouri River small-scale levee setbacks:

For more routine in-line repairs as well as the small-scale levee setbacks along streams other than the Missouri River, earthen materials may be obtained from previously used borrow sites, new borrow sites, commercial sites, or floodplain areas adjacent to the project area. Additionally, sand deposits transported onto the floodplain by flood waters could be scraped up and used as material for levee repairs.

3.4.2 Missouri River small-scale setbacks:

Regarding flood response efforts for closing Missouri River flowing inlet breaches, breach closure activities may have to be performed in standing water. Fill material may be sourced from dredging along the inside bends of the Missouri River channel or adjacent floodplain near the site, or silted-in Missouri River BSNP fish and wildlife mitigation sites such as side channels, backwaters, or wetlands. Mechanical excavations from the floodplain would be conducted where the floodplain is not inundated or only very shallowly inundated.

3.4.3 Missouri River large-scale setbacks:

The same methods associated with borrow mining for routine, in-line repairs described above are expected to be used for large-scale levee setbacks as well. Once exceptions is that the levee being replaced would also eventually be used as a source of borrow material, but not until the setback levee has been built to an evaluation with approximately a 25 year level of protection.

3.5 Construction associated with MRRP WMAs or other federal, state, or private habitat conservation land

The Missouri River Recovery Program (MRRP) was established by the U.S. Army Corps of Engineers (Corps) in 2005. The MRRP is an umbrella program that combines the following efforts: 1) Endangered Species Act (ESA) compliance for the Operation of the Missouri River Main Stem Reservoir System, Operation and Maintenance of the Bank Stabilization and Navigation Project (BSNP), and Operation of the Kansas River Reservoir System; 2) Acquiring and developing lands to mitigate for lost habitats as authorized in Section 601(a) of the Water Resources Development Act (WRDA) 1986 and modified by Section 334(a) of WRDA 1999 (collectively known as the BSNP Fish and Wildlife Mitigation Project); and 3) Implementation of WRDA 2007 including MRRIC and Section 3176, which allowed USACE to use recovery and mitigation funds in the upper basin states of Montana, Nebraska, North Dakota, and South Dakota.

Under the MRRP, the Corps has authority to acquire and develop 166,750 acres of land along the Missouri River. The purpose of MRRP is to restore a portion of the fish and wildlife habitat lost or degraded along the Missouri River due to the BSNP. The Fish and Wildlife Mitigation Plan of 1981 estimated losses from 1912 to 2003 to total 522,000 acres of aquatic and terrestrial habitat. This approximated aquatic habitat losses at 100,200 acres and 421,800 acres of terrestrial habitat. Desired habitat types are provided in the 2003 Record of Decision for the Final Supplemental Environmental Impact Statement for the Missouri River Bank Stabilization and Navigation Project. These desired habitat types include wetlands, bottomland forest, native prairie, chutes and side channels, shallow water habitat, backwater habitat, backwater areas and slack water habitats. The Missouri River Recovery Management Plan Environmental Impact Statement (MRRMP-EIS) identifies ideal aquatic habitat as open water at varying depths and inundation durations, including chutes, backwaters, floodplain lakes/oxbows, and emergent and forested wetlands and swales.

Portions of the MRRP sites can be designated for use as potential borrow areas for adjacent levee rehab. 33 CFR, Part 203 outlines requirements of local cooperation under the PL 84-99 program and section 203.82a states that, "If more advantageous to the Federal Government, borrow and disposal areas may be assumed as a Federal responsibility." Other federal, state, or privately

owned habitat conservation property could also be identified as a borrow site, such as state recreation areas or private NRCS easement areas. Portions of these sites that are considered as being put to optimal use would be avoided for use as borrow pits. Portions of these sites that would benefit from being converted to wetland (and that contain usable material) would be selected for use as a borrow site. Mechanical excavations would result in wetlands while hydraulic excavations would result in floodplain pools or restoration of previously constructed sand-filled aquatic habitat features (e.g., chutes or backwaters). The excavations are expected to result in ecological improvements to the WMAs. Fine grading and seeding plans to ensure proper site restoration would be developed for borrow pits on habitat conservation property.

3.6 Advanced Measures

Advanced measures responses consists of a combination of low-lying earthen embankments, sandbag structures, and/or innovative flood fight structures to minimize potential flood damages. A single course of action is developed due to the emergency nature of the proposed projects. The advanced measures are generally placed in locations where 'voids' in the existing flood management structures occur and are removed once the high flow event has passed. The ability to place earthen levees in all locations may be restricted due to constructability and limited available space. There may be other infrastructure outside of the areas protected by flood control structures that may require flood fight assistance. In these instances, the USACE would provide the entities with flood fight and flood proofing techniques to be disseminated to the affected residents.

4.0 Status of the Species and Critical Habitat

Species discussed in this section are those that were reported from the IPAC system and then verified through literature review, records search, and coordination with USFWS to be present in the action area. Those species listed in Table 2-1 as "Not Present" in the action area had no associated documentation, records, or evidence to support their presence in the action area. Determinations of species presences in the Missouri River floodplain were previously coordinated with USFWS during Section 7 consultation for the Biological Opinion (BiOp) for the Operation of the Missouri River Mainstem Reservoir System, the Operation and Maintenance of the Bank Stabilization and Navigation Project, the Operation of Kansas River Reservoir System, and the Implementation of the Missouri River Recovery Management Plan (USFWS 2018a). Those species that are not present in the action are not evaluated further.

4.1 Interior Least Tern, Endangered

4.1.1 Status

The interior population of the least tern was listed as endangered under the ESA on May 28, 1985. The interior population was defined as any least tern that nested more than 50 km (31.1 miles) from the coast. On September 19, 1990, the recovery plan for the interior population was approved by USFWS. The recovery plan estimated the interior population at 5,000 adults in the United States, and set the recovery goal of 7,000 adults, which would have to be maintained for ten years before the species would be considered for de-listing. The plan set river and system goals of 2,100 adults on the Missouri River system, 2,500 for the lower Mississippi River, 1,600 adults for the Arkansas River system, 300 adults for the Red River system and 500 adults for the Rio Grande River system. The Missouri River system includes five rivers in five states. The Missouri River goal, essentially, was set at 900 adults.

In October 2013, USFWS completed a 5-year review of the interior least tern's listing status in accordance with requirements of the ESA of 1973 (USFWS 2013a). USFWS, through the 5-year review process evaluated the best available scientific information, which demonstrated an increase in abundance, number of breeding sites, and range of the least tern. These results led USFWS to conclude that the interior least tern is biologically recovered. However, a de-listing proposal will not be initiated until a range wide population model and monitoring strategy are completed, and commitments to maintain management through conservation agreements are in place.

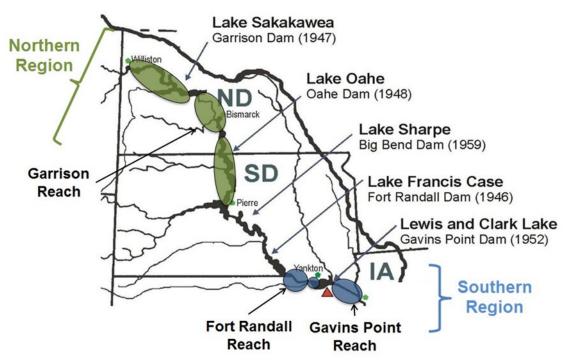
Interior least tern adult numbers on the Missouri River have fluctuated over time with a high of 1,054 observed in 2016 and a low of 273 in 2011. In 2018, the adult plover count was 987 birds, down 5% from 2017 (USACE 2019).

In the lower Platte River Valley, between 200 and 400 nests have been recorded since 2008 (Brown et al 2016). In 2017, approximately 70 nests were observed on sandbars between Columbus, NE and Plattsmouth, NE, while approximately 175 nests were observed at off-river sites (Brown et al. 2017).

4.1.2 Distribution

In the Great Plains, the interior least tern breeds along: portions of the Missouri River and many of its major tributaries; the Arkansas River in Oklahoma and Arkansas, the Cimarron and Canadian Rivers in Oklahoma and Texas; and the Red River and Rio Grande River in Texas (USFWS 1990). The interior least tern currently nests along > 4,600 km (2,858.3 miles) of river channels across the Great Plains and the Lower Mississippi Valley (Lott et al. 2013). Least terns are believed to winter primarily along coastal areas adjacent to the Pacific and Atlantic Oceans. On the Pacific side least terns have been reported wintering in southern Mexico and Columbia. On the Atlantic side, terns have been reported along the coast of Brazil and as far south as northern Argentina.

Along the Missouri River, least terns primarily nest in two regions: the Northern Region which includes the Missouri River from Fort Peck Lake, Montana to Fort Randall Dam, South Dakota, and the Southern Region which includes the Missouri River from Fort Randall Dam, South Dakota to Ponca, Nebraska (Figure 4-1). Other river systems within the action area where least terns are known to nest include the Platte and Elkhorn rivers.



Source: Adopted from Buenau et al. 2014

Figure 4-1. Geographic Range of Interior Least Terns and Piping Plovers on the Missouri River

4.1.3 Life History

The least tern is the smallest member of the tern family in North America. It is a slender bird with long narrow wings, a forked tail and pointed bill. Characteristics of the least tern that distinguish it in its alternative plumage from other terns include a black head cap, a white underside and forehead, grayish back and wings, orange legs, and yellow bill with a black tip. Interior least terns begin to arrive at the breeding grounds of the interior rivers in late April to early June and spend about 4 to 5 months at their breeding grounds. Least terns are gregarious and will typically nest in colonies of ten or more nests at a site. The terns are monogamous and

may retain mates over more than one breeding season. Unpaired terns will undergo courtship after arriving on the breeding grounds. Courtship involves courtship feeding, posturing, parading, nest scrapes and the fish flight. After the end of the courtship the pair will mate and both will construct nests with the female ultimately selecting the nest for egg laying.

Interior least terns nest on the ground, in open areas, and near appropriate feeding habitat (Lott et al. 2013). Nests are simple scrapes in the sand, and nesting sites are characterized by coarser and larger substrate materials, more debris, and shorter and less vegetation compared to surrounding areas. Vegetation free sand or gravel sandbars are preferred for nesting, although, sand banks, point bars, and beaches may also be utilized. Areas with trees or other vegetation that may hide or support predators are often avoided. Sandbar geophysiology and associated hydrology are integral components of suitable habitat. Least terns also nest on anthropogenic sites near water bodies with appropriate fish species and abundance, including industrial sites, dredge disposal sites, sand pits, and constructed habitats (Ciuzio et al. 2005).

Interior least terns are opportunistic piscivores, feeding on small fish species generally < 52 mm (2.0 in.) in length. Least terns will also occasionally feed on aquatic invertebrates and insects. Foraging habitat for least terns include side channels, sloughs, tributaries, and shallow water habitats adjacent to sandbars and the main channel.

4.1.4 Threats

The 1988 Least Tern Recovery Plan lists actual and functional loss of riverine sandbar habitat as the central threat. However, the 5-year interior least tern review indicates that the birds are resilient to range wide threats. Remaining threats and sources of threats to interior least terns are primarily localized (e.g., predation, vegetation encroachment on habitat, human disturbance, reservoir releases), regional (e.g., water table and flow declines), and/or stochastic (e.g., floods and droughts) and are not significant to the range wide status of the species. The population, number of breeding colonies, and range for least terns have expanded showing resilience to these threats and responsiveness to continued and ongoing local management (USFWS 2013).

4.2 Piping Plover, Threatened

4.2.1 Status

The piping plover was listed as threatened outside of the Great Lakes watershed on December 11, 1985, under the provisions of the ESA (USFWS 1985). In 2010, USFWS conducted a 5-year status review of the piping plover. The status review recommended retaining the piping plover's current classifications, endangered in the Great Lakes watershed and threatened elsewhere. The review indicated that the population of Northern Great Plains piping plover has increased since the listing, but remains below the recovery goals set out in the 1988 recovery plan. The Northern Great Plains population has historically been the largest of the three sub-populations (Figure 4-1).

Every five years, beginning in 1991, an International Piping Plover Census has been conducted of both the breeding and wintering grounds. The results of this census indicate that the Northern Great Plains piping plovers are the most numerous among the three, with an estimated 2,953 individuals in 1991 and an estimated 4,662 individuals in 2006. The breeding census fell to 2,249 on the Northern Great Plains in 2011 due to extreme flooding on the Missouri River and high

water levels elsewhere in this geographic area (Elliott-Smith et al. 2015). Results from the 2016 census are not yet available.

Piping plover adult numbers on the Missouri River have varied from a low of 82 in 1997 to high of 1,832 in 2016. The 30-year average is 810 adults. The adult plover count during the census interval of June 18 – July 3 was 1,277 birds, down 16% from 2017 (USACE 2019). A peak in fledge ratios preceded the peak in population sizes as a result of the lag of 1 to 2 years for birds to recruit into the breeding population. The largest numbers of fledglings were produced in 2004, followed by a peak in adult abundance in 2005. In 2018, habitat limitation, nest inundation, and predation reduced the annual fledge ratio to the lowest observed level since surveys began in 1993.

Along the lower Platte River from the Loup River confluence to the Missouri River confluence, the number of nests recorded on river sandbars since 2008 has ranged from 47 in 2009 to zero in 2015 (Brown et al. 2016). Piping Plovers most commonly nest at off-river sites in the lower Platte River Valley. Off-river sites are either active sand and gravel mines or retired mines which are converted to lakeshore housing developments (Brown et al. 2011). The number of nests recorded at off-river sites since 2008 has ranged from 42 in 2008 to 83 in 2017 (Brown et al. 2017).

4.2.2 Distribution

Piping plovers breed in three geographic regions of North America: beaches of the Atlantic Coast from South Carolina to Newfoundland, shorelines of the Great Lakes, and along alkaline wetlands and major rivers and reservoirs of the Northern Great Plains. The breeding population of the Northern Great Plains piping plover extends from Nebraska north along the Missouri River through South Dakota, North Dakota, and eastern Montana, and on alkaline reservoirs in North Dakota, Montana, and extending into Canada. Current geographic distribution of the Missouri River piping plover population is described by two distinct geographic regions as mentioned in Section 4.1.2 and Figure 4-1: the Northern Region and the Southern Region. Nesting plovers have also been documented on a number of Missouri River tributaries, including the Niobrara River, Loup Rivers, the Platte River, and the Kansas River. Piping plovers nesting at the periphery of the Northern Great Plains populations range are found in Colorado, Iowa, Kansas, and Minnesota.

The wintering grounds for piping plovers include the south Atlantic Coast from North Carolina to Florida, the Gulf Coast from Florida to Mexico, and the Caribbean. The majority of piping plovers from Prairie Canada winter along the south Texas coast, while breeding piping plovers from the United States are more widely distributed along the Gulf Coast from Florida to Texas.

4.2.3 Critical Habitat

Critical habitat was designated on the northern Great Plains breeding grounds on September 11, 2002. Critical habitat was designated for all populations of piping plovers on the wintering grounds on July 10, 2001, and redesignated in 2008 and 2009. Nineteen critical habitat units originally contained approximately 183,422 acres of prairie alkaline wetlands, inland and reservoir lakes, and portions of four rivers totaling approximately 1,207.5 river miles in Montana, Nebraska, South Dakota, North Dakota, and Minnesota. The Nebraska portion of the

critical habitat was vacated by U.S. District Court on October 13, 2005 due to incomplete economic analysis.

Primary constituent elements of critical habitat of the northern Great Plains population of the piping plover are those habitat processes (biological) and components (physical) essential for the biological needs of courtship, nesting, sheltering, brood rearing, foraging, roosting, intraspecific communication, and migration. The overriding primary constituent element (biological) necessary on all sites is the dynamic ecological processes that create and maintain the physical components of piping plover habitat. On rivers, the physical primary constituent elements include sparsely vegetated channel sandbars, sand and gravel beaches on islands, temporary pools on sandbars and islands, and the interface with the river. On reservoirs, the physical primary constituent elements include sparsely vegetated shoreline beaches; peninsulas; islands composed of sand, gravel, or shale; and their interface with the water bodies.

4.2.4 Life History

The piping plover is a small, stocky, migratory shorebird of the family Charadriidae. Adult piping plovers weigh between 43 and 63 g (1.5 and 2.2 oz) and have an average body length of 17 cm (6.7 in.) (Haig 1992). Throughout the year, adults have a sand-colored upper body, white undersides, and orange legs. During the breeding season, adults develop orange bills and single black bands on the forehead and breast.

Piping plovers begin to arrive on the breeding grounds in the first half of April, with courtship and nesting beginning in mid-to-late April. Finished nest scrapes or bowls are shallow depressions frequently lined with small pebbles or shell fragments (USFWS 1988a). The average clutch size for piping plovers is four eggs and eggs are laid every other day until the clutch is complete. Both adults will share incubation. Piping plovers readily re-nest if earlier nests fail, with the second clutch generally containing fewer eggs than the customary first clutch due the large energy expenditure. Piping plovers begin to leave the breeding grounds as early as mid-July, with adults leaving first and juveniles last (Elliott-Smith and Haig 2004).

Piping plover breeding habitat is comprised of open, sparsely vegetated sand and gravel beaches adjacent to alkali lakes and wetlands, on beaches of lakes and reservoirs, and on sandbars of rivers. Open, wet, sandy areas provide feeding habitat for plovers on river systems and throughout most of the birds' nesting range. Piping plovers feed primarily on exposed substrates by pecking for invertebrates at or just below the surface.

4.2.5 Threats

Reservoirs, channelization of rivers, and modification of river flows were identified in the 2016 piping plover 5-year review as major continuing threats because they reduce sandbar riverine habitat, increase flooding of remaining breeding habitat during the nesting season, and promote vegetation growth on sandbars that are rarely scoured by high flows (USFWS 2015). Avian and mammal predators are also a major threat to piping plover productivity throughout the species' breeding range. Predation reduces survival of eggs to chicks and survival of chicks to fledglings, with a much smaller impact on the survival of more mobile and experienced adults. Predation has been observed to be more significant when habitat is limited and nest densities are

higher. Predation is also affected by nest location (e.g., whether or not nests are on floodplain-connected habitat or separated by the river channel or near gallery forest) (Buenau et al. 2014).

4.3 Whooping Crane

4.3.1 Status and Distribution

The whooping crane was listed as endangered on June 2, 1970 under the provisions of the ESA. The wild flock that typically migrates through Nebraska is often referred to as the Aransas-Wood Buffalo Population (AWBP). In 2000, there were an estimated 180 birds in the AWBP. However, by 2017-2018, the mean population estimate had increased to 505 individuals (Silcock and Jorgensen 2018).

The migration through Nebraska occurs during the spring in late March through mid-April. Whooping cranes primarily migrate through central Nebraska but occasionally birds are found in the west and east. The greatest number is reported along the central Platte River region with fewer from the Loup River system, middle Niobrara River, and other areas (Silcock and Jorgensen 2018). Only a few whooping cranes have been reported in the eastern part of the state with two observed in the fall of 2010 in Lancaster County. Along the Missouri River, whooping cranes have been observed on wide sections of the river or floodplain where they can find shallow water, floodplain wetlands, or a wet sandbar. A 53-mile stretch of the Platte River, from Shelton, Nebraska to Lexington, Nebraska, has been designated as Critical Habitat by the USFWS. There is no critical habitat within the action area.

4.3.2 Life History

The whooping crane is the tallest bird in North America with snowy white plumage and black feathers on the carmine crown and malar region. Whooping cranes use shallow, sparsely vegetated streams and wetlands to breed, feed and roost during their migration. They feed on blue crabs, clams, frogs, rodents, small birds, and berries. Whooping cranes mate for life and generally live up to 24 years.

4.3.3 Threats

Collisions with manmade objects such as power lines and fences, shooting, chemical spills, predators, disease, and habitat destruction have been identified by the USFWS as current threats to wild cranes. In addition, the species has a slow reproductive potential, cyclic nesting, and a loss of two thirds of the original genetic material that have also resulted in low population numbers (USFWS 2018c).

4.4 Pallid Sturgeon, Endangered

4.4.1 Status

The pallid sturgeon was listed as endangered under the ESA on September 9, 1990. The USFWS established four recovery management areas listed below (USFWS 2014).

1. Great Plains Management Unit (GPMU), extending from the Great Falls of the Missouri River in Montana downstream to Fort Randall Dam, South Dakota, and including major tributaries such as the Yellowstone, Marias, and Milk rivers;

- 2. Central Lowlands Management Unit (CLMU), extending from Fort Randall Dam, South Dakota downstream to the confluence of the Missouri River with the Grand River, Missouri, and including major tributaries such as the Platte and Kansas rivers;
- 3. Interior Highlands Management Unit (IHMU), extending from the Grand River, Missouri to the confluence of the Missouri River with the Mississippi River and the segment of the Mississippi River from Keokuk, Iowa to Cairo, Illinois (confluence of the Ohio River); and
- 4. Coastal Plain Management Unit (CPMU), extending along the Mississippi River from the confluence of the Ohio River to the Gulf of Mexico, and including the Atchafalaya River distributary system.

A total population estimate is not available for the reach below Fort Randall Dam. Using published survival rates from hatchery-produced pallid sturgeon, it is estimated that approximately 1,986 hatchery-produced pallid sturgeon are currently present in this area.

4.4.2 Distribution

The historical distribution of the pallid sturgeon includes the Missouri and Mississippi River drainages. This included the Missouri River from its confluence with the Mississippi River upstream to the Great Falls in Montana and the Yellowstone River (USFWS 2014). In the Mississippi, the distribution most likely extended from near Keokuk, Iowa downstream to New Orleans, Louisiana (USFWS 2014). Pallid sturgeon also were documented in the lower reaches of large tributaries including the Tongue, Milk, Niobrara, Platte, Kansas, Big Sioux, St. Francis, Grand, and Big Sunflower Rivers (USFWS 2014). The present pallid sturgeon distribution is truncated by dam construction. Despite an overall decrease in distribution, pallid sturgeon were documented in the Atchafalaya River, Louisiana in 1991 due to increased sampling effort in the Mississippi River basin (USFWS 2014).

4.4.3 Life History

The pallid sturgeon is native to the Missouri and Mississippi rivers and is adapted to large, free flowing, warm-water, turbid rivers with a high sediment load that contributed to a shifting, dynamic, complex river morphology. Pallid sturgeon are a bottom-oriented, large river obligate fish that primarily use the main channel, side channels, and channel border habitats and have rarely been observed in habitats without flowing water (i.e., backwaters; USFWS 2014). Pallid sturgeon have been documented over a variety of substrates, but are often associated with sandy and fine bottom materials, preferring that to mud, silt, or vegetated river bottoms.

Based on wild fish, estimated age at first reproduction is 9 to 20 years for females and approximately 7 to 9 years for males (Keenlyne and Jenkins 1993; Steffensen et al. 2010); however, for hatchery fish stocked into the upper Missouri River, the earliest that males are reaching sexual maturity is 10 years of age and females 17 years of age.

Juvenile and adult wild pallid sturgeon feed opportunistically on benthic macroinvertebrates with increasing piscivory as they grow with fish > 600 mm (23.6 in.) consuming primarily fish in the upper Missouri River (Grohs et al. 2009). Larvae and age-0 juveniles consume brine shrimp in hatchery settings, indicating they may feed on zooplankton and other small invertebrates in the wild, but they (like other sturgeon larvae) are believed to forage on the bottom on any invertebrate or zooplankton that fits into their mouth (Buckley and Kynard 1981).

4.4.4 Threats

In 2014, USFWS's Pallid Sturgeon Recovery Plan described known and potential threats to pallid sturgeon throughout the species range. In the Missouri River basin, the primary habitat-related threats include river channelization, bank stabilization, and dam construction. These alterations have potentially affected pallid sturgeon by blocking spawning migrations, isolating populations, limiting genetic exchange, trapping large quantities of sediment, altering larval drift, altering water chemistry (DO, temperature, etc.), minimizing natural flow pulses, minimizing floodwater movement onto the floodplain and reducing habitat diversity by eliminating riverine habitat.

Other known and potential threats identified in the recovery plan include overutilization, disease/predation, inadequate regulatory mechanisms, and other natural or manmade factors. While disease and predation are both considered likely threats, the potential effects on pallid sturgeon populations are unknown due to limited data. Similarly, the potential impact of inadequate regulatory mechanisms is largely unknown due to a lack of information on population size, habitat use and susceptibility to various threats (such as contaminants and entrainment). Uncertainty also exists regarding other natural or manmade factors, which include energy development, hybridization, and invasive species.

4.5 Topeka Shiner

4.5.1 Status and Distribution

The Topeka shiner was listed as endangered on December 5, 1998 under the provisions of the ESA. The Topeka shiner is a small minnow that lives in small to mid-size prairie streams in the central U.S. Populations of the Topeka shiner have declined by 70% across its range over the past half century. Since 1999, the Topeka shiner has been documented in 223 small streams condensed into 87 HUC10 populations, and distributed among six states that include South Dakota, Minnesota, Iowa, Nebraska, Kansas, and Missouri (USFWS 2018b). In Nebraska only three streams are identified as potentially still harboring the species. Two streams, Taylor Creek and Union Creek are located within the Elkhorn River watershed in Madison County, and the other, Big Creek, is located within the North Loup River watershed in Cherry County. Big Creek, Taylor Creek, and Union Creek are located on privately owned land; however, these streams have had Topeka shiner collection records dated 1999 or later, with Topeka shiner documented in Taylor Creek as recently as 2016 (USFWS 2018b).

4.5.2 Critical Habitat

The USFWS designated 836 miles of stream as critical habitat for the Topeka shiner in 2004 in Minnesota, Nebraska, and Iowa. In Nebraska, critical habitat is designated in one stream segment, Taylor Creek totaling six stream miles of the Elkhorn River watershed in Madison County (USFWS 2004). Taylor Creek is somewhat modified in portions of its watershed, but retains several of the primary constituent elements necessary for designation as critical habitat, including stream morphology, pools, and instream habitat. The proposed reach of Taylor Creek is upstream from its confluence with Union Creek, near Madison, Nebraska (USFWS 2004).

4.5.3 Life History

The Topeka shiner is a small stocky fish with silvery to olive color and a pronounced black line which extends along the side. Their life span is three years with nearly 90% dying within the first

year (USFWS 2018b). Topeka shiners are found in quiet, slow-moving streams or spring-fed pools. They require gravel or sand-bottomed substrates with clear water. Pool areas outside the main channel of a stream are preferred. Topeka shiners are omnivores primarily feeding on insects and plant material. Topeka shiners are broadcast spawners with spawning season occurring in the summer months.

4.5.4 Threats

The three main threats to the Topeka shiner include habitat loss, increased sedimentation in small streams, and reduced water quality (USFWS 2018b). Additional threats include the creation of dams or impoundments on small streams and ponds being stocked with larger predatory fish which prey upon many smaller fish. Dams and impoundments change the water flow, temperature, and water quality to which the Topeka shiner is specifically adapted to. Dams also prevent migration up and downstream to find better habitat during times of low stream flow.

4.6 Indiana Bat, Endangered

4.6.1 Status and Distribution

In 1967, declining populations of the Indiana bat from disturbance and modification of hibernacula prompted its listing as "in danger of extinction" under the Endangered Species Preservation Act of 1966. Currently, under ESA, the Indiana bat is listed as endangered (USFWS 2016a). Critical habitat for the Indiana bat was designated on September 24, 1976, which includes 11 caves and 2 mines in the states of Illinois, Indiana, Kentucky, Missouri, Tennessee, and West Virginia. Out of the 6 states that contain Indiana bat designated critical habitat, Missouri has the largest number of these designated hibernacula with 5 caves and 1 mine (USFWS 2007). The range of the Indiana bat spans most of the eastern half of the United States. In 2005 it was estimated that over half of the entire population hibernated in caves in southern Indiana.

Indiana bat range includes portions of the lower Missouri River basin, specifically in Missouri. Hibernating population estimates for Indiana bat in Missouri show a downward trend from an estimated 399,000 in 1965 to 65,104 in 2005. As of 2006, 20 Indiana bat maternity colonies have been recorded in Missouri, some of which are in Chariton and Gasconade County, which are adjacent to the Missouri River. Two caves out of the six hibernacula designated as critical habitat for the Indiana bat in Missouri, are in Franklin County which is also adjacent to the Missouri River (USFWS 2007) although these hibernacula are not within the action area. Indiana bats are known for their small, mouse-like ears and dark-brown to black fur. Similar in size and weight to the northern long-eared bat, the Indiana bat weighs approximately 7g and has a wing span of 228.6 and 279.4 mm (9 and 11 in.) (USFWS 2016a). The head and body length of this species ranges between 4.1 and 49 mm (1.6 and 1.9 in.) and can be distinguished from similar bats by its distinctly keeled calcar (USFWS 2007).

4.6.2 Life History

The Indiana bat is often compared to the northern long-eared bat due to its similarity in size and habitat requirements. However, the Indiana bat requires hibernacula with cooler temperatures than those used by the northern long-eared bat and is more selective when choosing a roosting site (Foster and Kurta 1999).

Indiana bats begin to copulate in late summer to early fall and will store sperm through the winter and become pregnant in early spring after emerging from the caves. Female Indiana bats roost in maternity colonies of up to 100 or more individuals. Only one pup is born per female where they stay with their mother throughout the first summer (USFWS 2016a). Indiana bats will move to multiple new roosts, utilizing many different trees throughout the maternity season (Foster and Kurta 1999). Indiana bats are insectivores, feeding while in flight, on a variety of flying insects along rivers, reservoirs, and uplands. Each night this bat consumes up to half of their own body weight in insects (USFWS 2016a).

Indiana bats spend the winter hibernating in caves or mines in areas of stable temperatures below 50°C (122°F), but above freezing, with high humidity, and no air currents. Caves with these specific characteristics are limited throughout the range of the Indiana bat (USFWS 2016a). Indiana bats spend the summer months roosting in trees underneath bark, in cavities, or in crevices (USFWS 2016a). Indiana bats demonstrate preference when selecting a roost tree for those that are dying or dead and have been found to select trees by size, species, and surrounding canopy cover (Foster and Kurta 1999, and USFWS 2016a). Foraging habitat for this bat species is predominately forested areas or forested edges along rivers and reservoirs (Foster and Kurta 1999, and USFWS 2016a).

4.6.3 Threats

A primary threat to the Indiana bat is white-nose syndrome. This disease, first discovered in New York has spread rapidly into the Midwest region of the United States. Human activities such as disturbance of hibernacula, summer habitat loss or degradation, the use of pesticides and environmental contaminants, and wind farm operations are all responsible for declines in the Indiana bat populations (USFWS 2016a). Indiana bats are particularly vulnerable to disturbance as they hibernate in large numbers in only a limited number of suitable caves. A single hibernacula can contain 20,000 to 50,000 individuals, which if disturbed, can have significant impacts to the Indiana bat population. Caves have been modified by human activity and use. Through cave commercialization and improper gating, structural and climate characteristics have been altered in a way that is often times harmful to these species. Fragmentation and loss of forest has decreased the availability summer roosting and foraging habitat. The use of pesticides can decrease the amount of available prey (insects) for these species in localized areas and has led to the consumption of contaminated insects and water (USFWS 2016a).

4.7 Northern Long-eared Bat, Threatened

4.7.1 Status and Distribution

The northern long-eared bat was listed under ESA on April 2, 2015 as threatened due to severe impacts to the population from the effects of white-nose syndrome (USFWS 2016b). The status of this species remains centered on white-nose syndrome which is evident in the Final 4(d) Rule established in January 2016 which allows for flexibility under ESA in areas not affected by white-nose syndrome. In April 2016 it was ruled that designating critical habitat for the northern long-eared bat was not prudent (USFWS 2016b).

The northern long-eared bat is widely distributed throughout the eastern and north central United States, and Canada (USFWS 2016b). During swarming and hibernation, it is commonly encountered in the New England states of the US, Quebec Canada, and Ontario Canada (Caceres

and Barclay 2000). Less commonly, the northern long-eared Bat ranges south into Florida and west into Alberta, British Columbia, Montana, and Wyoming (Caceres and Barclay 2000). During the summer months this species could occur in the action area to feed and roost in forested areas along rivers. Abundance of this species has the potential to be high during the summer in localized areas along the Missouri River where there is available roosting and foraging habitat. This species is present in the Missouri River basin and action area. Much of the upper and lower Missouri River runs through the range of the northern long-eared bat. The portion of the Missouri River in southeastern South Dakota, along the Iowa/Nebraska border and through the entire state of Missouri is within the white-nose syndrome zone. Thus, individuals in these areas are subject to full protection under ESA. Some of the counties adjacent to the Missouri River in Nebraska have known hibernacula infected with white-nose syndrome.

4.7.2 Life History

The northern long-eared bat, is identifiable by its long ears, medium to dark brown fur, medium-sized body, and relatively longer tail when compared to other similar bat species (USFWS 2016b). The head and body length of an adult northern long-eared bat is less than 50 mm, with overall total body length reaching up to 95mm. This species has a body mass of 5–8 g (0.2–0.3 oz) and females are generally larger and heavier than the males.

Northern long-eared bats typically hibernate mid-fall through mid-spring each year. Prior to hibernation, male and female northern long-eared bats begin to visit hibernacula and copulate in July until September or early October (Caceres and Barclay 2000). Female northern long-eared bats will store sperm throughout the winter months until the spring when they will fertilize a single egg (Caceres and Barclay 2000). Following fertilization, females migrate to summer areas where they roost individually or in colonies (USFWS 2016b). Northern long-eared bats do not reproduce in the action area but will rear young in forested areas adjacent to rivers. The northern long-eared bat is an insectivore, feeding at dusk preying on moths, leafhoppers, caddisflies, and beetles while in flight or by gleaning insects from vegetation (USFWS 2016c).

The northern long-eared bat spends its winters hibernating in caves or mines with areas of constant temperatures, high humidity, and no air currents (USFWS 2016c). During summer, suitable habitat includes forested areas, including adjacent areas such as wetlands, agricultural fields, and pastures. The northern long-eared bat spends the summer months roosting in trees underneath bark, in cavities, or in crevices (USFWS 2016c). Generally, northern long-eared bats have a broad roosting niche and are likely not dependent on a particular species of tree. Trees, either live or dead, which form suitable cavities or retain bark, can be considered viable roost trees for northern long-eared bats and will be used if present. This bat has also occasionally been found roosting in structures like barns, bridges, and bat houses, particularly when other suitable roosts are unavailable. Foraging habitat for this species is predominately forested areas or forested edges along rivers and reservoirs (USFWS 2016b and USFWS 2016c).

4.7.3 Threats

The primary and most significant threat to the northern long-eared bat is white-nose syndrome. This disease, first discovered in New York has spread rapidly into the Midwest region of the United States and is anticipated to continue to spread throughout the rest of the northern long-eared bat's range and further west. It is estimated that the population of northern long-eared bats

in the Northeast has declined by up to 99 percent with the primary factor aiding in this decline being white-nose syndrome (USFWS 2016b). Human activities such as disturbance of hibernacula, summer habitat loss or degradation, the use of pesticides and environmental contaminants, and wind farm operation are all responsible for declines in the northern long-eared bat populations (USFWS 2016b and USFWS 2016c). Through cave commercialization and improper gating, structural and climate characteristics have been altered in a way that is often times harmful to bats. Fragmentation and loss of forest has decreased the availability summer roosting and foraging habitat. The use of pesticides can decrease the amount of available prey (insects) for these species in localized areas and has led to the consumption of contaminated insects and water (USFWS 2016b). Wind turbines have been known kill bats in large numbers through strike and several documented mortality cases for northern long-eared bats exist, although small in number (USFWS 2016b).

4.8 Salt Creek Tiger Beetle

4.8.1 Status and Distribution

The Salt Creek tiger beetle was listed as federally endangered on November 7, 2005. The Salt Creek tiger beetle has one of the most restricted ranges of any insect in the U.S. and is currently limited to segments of Little Salt Creek and adjacent remnant saline wetlands in northern Lancaster County, Nebraska (USFWS 2016d). Six metapopulations of the subspecies once occurred on Rock and Oak Creeks, in addition to Little Salt Creek. The Rock and Oak Creeks metapopulations are thought to have been extirpated since 1991 (USFWS 2016d). Critical habitat for the Salt Creek tiger beetle was designated on May 6, 2014 which included 449 hectares (1,110 acres) in Lancaster and Saunders Counties, Nebraska (79 FR 26013). The designation includes saline seeps along Rock, Little Salt, Oak, and Haines Branch Creeks. No critical habitat is located within the action area.

4.8.2 Life History

The Salt Creek tiger beetle is metallic brown to dark olive green above, with a metallic dark green underside. It is distinguished from other tiger beetles by its distinctive form, reduced markings, and the color pattern on its dorsal and ventral surfaces. Research indicates that the subspecies naturally has a two-year life cycle. Adults are first observed as early as mid-May or as late as mid-June. Their numbers peak about two-weeks after the first individuals appear and begin to feed and mate.

The entire life cycle of the Salt Creek tiger beetle occurs in saline wetlands, on exposed saline mud flats, or along mud banks of streams and seeps that contain salt deposits and are sparsely vegetated (USFWS 2016d). Salt Creek tiger beetles require a permanent source of water; open, barren salt flat areas for construction of larval burrows, thermoregulation, and foraging. Adults prey on other insects on sandbar, mid-stream gravel bar, and salt flat habitats.

4.8.3 Threats

The USFWS recovery plan lists the Salt Creek tiger beetle as a recovery priority number of 6C, which means it is a subspecies that faces a high level of threat. The most significant threat is the destruction, modification, or curtailment of habitat or range. Commercial and residential developments have resulted in the extirpation of two of the metapopulations and a reduction in

the remaining saline wetlands. Additional threats include stream channelization, bank stabilization, incisement, and agricultural development.

4.9 Western Prairie Fringed Orchid

4.9.1 Status and Habitat

The prairie fringed orchid was listed as threatened on September 28, 1989. The western prairie fringed orchid is an herbaceous perennial that can grow up to three feet in height. The western prairie fringed orchid is reportedly long lived, provided adequate environmental factors. This plant is entirely propagated by seed and perpetuates through a perennating bud which forms on fusiform tubers. The initial shoot will emerge between April and May. The western prairie fringed orchid historically was found throughout the Tallgrass prairie region of the central U.S. Currently, it is found from Manitoba in the north to Oklahoma in the south. Approximately 90% of all extant plants in North America occur in North Dakota, Minnesota, and Manitoba, Canada (Morrison et al. 2015). The western prairie fringed orchid occurs in moist tallgrass prairies and sedge meadows. Soil moisture is a critical determinant of growth, flowering, and distribution of western prairie fringed orchid (USFWS 2009).

In Iowa, southeastern Kansas, Missouri, and eastern Nebraska the species is now extirpated from a significant number of counties where it occurred historically (USFWS 2009). In eastern Nebraska they have been found in upland prairies and loess soils. In central Nebraska and northeast Nebraska they occur in wet prairies and meadows. Nebraska counties within the action area where historical populations have been previously reported include Sarpy, Otoe, Lancaster, Seward, Saline, Madison, and Pierce counties. In Iowa, extant populations have been reported in Pottawattamie and Mills counties and in Missouri, Atchison and Holt counties (USFWS 2009). According to coordination with USFWS during consultation for the Missouri River BiOp, there are no records or habitat for the western prairie fringed orchid in the Missouri River floodplain (USFWS 2018a).

4.9.2 Threats

Identified threats to the western prairie fringed orchid include conversion of habitat to cropland, overgrazing, invasive species, lack of management, drainage, and actions to control invasive species (USFWS 2009). The USFWS identified intensive hay mowing that may reduce primary productivity and reduce seed dispersal as a threat at the time of listing in 1989 and reconfirmed the importance of this threat in Nebraska in 2005, pointing specifically to annual mid-summer haying as a practice that is facilitating the long-term invasion of western prairie fringed orchid habitats by exotic cool season grasses (USFWS 2009).

5.0 Effects Analysis

This section discusses the effects of the proposed action on those species identified by the IPAC report to occur in the action area. This section provides a detailed description of the elements of the proposed action and the associated activities to determine what activities the species would be exposed to and if the exposure produced a likelihood of a response and effect, and if so, the magnitude or significance of that effect. Effects are described as direct or indirect effects. Direct effects include all immediate impacts (adverse and beneficial) from project-related actions. According to the ESA rules and regulations, direct effects occur at or very close to the time of

the action itself. Indirect effects are caused by or result from the proposed action, are later in time and are reasonably certain to occur. Indirect effects may occur outside of the area directly affected by the action. Only those activities that have been determined to have potential effects on a species are further discussed in this section.

USACE would coordinate with USFWS during site-specific project implementation to ensure impacts are avoided or minimized. Avoidance, minimization, and mitigation measures would be developed and implemented at the site-specific level when individual projects are implemented.

5.1 Interior Least Tern and Piping Plover

5.1.1 Direct and Indirect Effects

The interior least tern and piping plover nest along the Missouri River in the Northern Region and Southern Region (Figure 4-1) from mid-April through August. The reach of the Missouri River below Ponca, Nebraska defined as the BSNP does not typically support nesting of least terns and piping plovers. No piping plover nesting activity has been recorded on this reach of the Missouri River since the species was listed. Least terns have been observed nesting within the completed Deer Island "top width widening" habitat restoration project in Harrison County, IA and among the floodplain sand deposited that resulted from the 2011 flooding. Although the BSNP does not typically support nesting habitat, it is possible for least terns and piping plovers to nest on large sand deposits near or adjacent to the river as a result of the 2019 flood event. If levee repair or borrow activities were to occur during the nesting season at these sand deposits, direct effects may include minor and temporary physical disturbance from construction equipment, noise disturbance, and human present.

During the nesting season, it is likely that interior least terns and piping plovers would be present in the portion of the action area along the lower Platte and Elkhorn rivers. From mid-April through August terns and plovers may be found nesting on river sandbars, lakeshore housing developments, reservoirs, and sand and gravel mines located along these river reaches. If levee repair activities were to occur during this timeframe, direct effects may include minor and temporary physical disturbance from nearby construction equipment, noise disturbance, and human presence. No impacts to nesting habitat would occur as work would be located on levees that are manmade structures planted with grass species that are frequently mowed. No indirect effects are anticipated to occur to the least tern or piping plover as a result of the proposed action. After evaluation of the potential effects of the proposed action, the USACE concludes that the proposed action may affect, but will not likely adversely affect the least tern and piping plover.

In the event of a major levee setback project, USACE would coordinate with USFWS during site-specific project implementation to ensure impacts are avoided or minimized.

5.1.2 Conservation Measures

Surveys would be conducted if least terns and piping plovers are present within 0.25 miles of the proposed activities during the nesting period of April 15 – August 15. If at any time, a nest, nesting behavior, and/or chicks are observed within 0.25 miles of where construction activities will occur, work will cease and USFWS will be contacted immediately.

5.2 Piping Plover Critical Habitat

There is no piping plover critical habitat designated within the action area of the proposed action. The proposed action will have no effect on piping plover critical habitat as activities associated with the proposed action would not occur within the bounds of the designated critical habitat.

5.3 Whooping Crane

5.3.1 Direct and Indirect Effects

Whooping crane migration periods occur between March and May and September to November and would only likely be found in the action area as it is passing through. Migrating birds feed in croplands and roost in shallow, freshwater wetlands. It is not anticipated that whooping cranes would be negatively impacted by the proposed action as it is not likely they would be found in the action area. Habitats on levees are usually disturbed by manmade activities and often protect urban areas.

Levee setbacks would have long-term beneficial impacts on whooping cranes by restoring the floodplain or floodway which would create additional foraging and roosting habitat. Additionally, borrow material from BSNP fish and wildlife mitigation sites would create additional wetland habitat that would be beneficial for whooping cranes. As a result of the proposed action, no direct or indirect effects are anticipated to occur to the whooping crane. The proposed action would have no effect on the whooping crane.

5.4 Pallid Sturgeon

5.4.1 Direct and Indirect Effects

As noted in Section 4.4, pallid sturgeon are native to the Missouri and Mississippi Rivers and is adapted to large, free flowing, warm-water, turbid rivers with a high sediment load. Pallid sturgeon do occur in the action area within the lower Missouri River and lower reaches of the Platte River. Activities for in-line repairs that include mechanical fill would have no direct or indirect effects on pallid sturgeon as these activities would occur outside of the river channel on dry land.

Hydraulic dredging in the Missouri River for the use of emergency levee breach closure work has the potential to temporarily impact pallid sturgeon. Hydraulic dredging would only occur in the floodplain and/or in specified locations within river channel on the inside bends in between the dike fields. No dredging activities would occur in the thalweg of the main channel. Lower Missouri River pallid sturgeon have been documented to spawn in deep, turbulent, fast water on the outside of river bends, over revetted banks or bedrock (DeLonay et al. 2014; Jacobson et al. 2016). Because of this, pallid sturgeon eggs are not likely to be co-located with dikes, sills, and kickers and are therefore unlikely to be adversely affected by hydraulic dredging or the placement of hydraulic fill on levee breaches. Nearby dredging could result in localized increases in turbidity, however, the increases generated from this activity is likely to be well within pre-regulation turbidity levels of the Missouri River.

Placement of stone material into portions of the Missouri River, Platte River, Elkhorn River, Niobrara River, or their stream banks may be required as part of levee rehabilitation activities. This has the potential to negatively impact pallid sturgeon individuals or their habitat if

conducted during March 1 and June 30. Because of this, the Corps would seek to avoid construction activities that required placement of rock into these streams between March 1 and June 30. Therefore, rock placement in these stream may affect, but it not likely to adversely affect the pallid sturgeon.

The vast majority of pallid sturgeon free embryos drift in or adjacent to the thalweg where velocities are high. Although a few free embryos will drift into regions of lower velocity flow (for example, along inside bends), most will be concentrated in the higher velocity regions and adjacent to outside bends. Because of this, pallid sturgeon free embryo/larvae are not likely to be adversely affected by hydraulic dredging if dredging occurs within the specified channel locations and/or within the spawning season.

Juvenile and adult pallid sturgeon occur throughout the Missouri River so juvenile pallid sturgeon could be present in proximity to dikes, however the benthic nature of juvenile pallid sturgeon suggests the probability of pallid sturgeon occupying the actual physical structures is low and any effect would be discountable. Hydraulic dredging would result in short-term disturbance, localized increases in turbidity, and may generate unnatural noise levels. It is anticipated that juvenile pallid sturgeon would immediately move away from the dredging location once equipment was mobilized to the site and activities began to occur. Short-term and localized turbidity increases generated from dredging are likely to be well within historic high turbidity levels of the Missouri River. Noise attenuates through water and dissipates when it encounters land. Thus, in a meandering river, the distance that noise would travel is limited to the first bend upstream and downstream of the dredging area.

In 2015, USACE completed a biological assessment for commercial sand and gravel dredging on the lower Missouri River (USACE 2015). The risk of entrainment to juvenile pallid sturgeon within the lower Missouri River was thoroughly analyzed and USACE concluded "...the proposed action's potential to adversely affect the pallid sturgeon during the larval drift period is improbably low, thus minor and discountable. Concurrence from the USFWS was provided in a letter dated Nov. 20, 2015 that stated "The USACE Biological Assessment focuses much of the analyses on potential effects to the pallid sturgeon. The document included updated information on larval sturgeon," based on those analyses, the USFWS concurs with the USACE determination that the proposed permits, including the conservation measures incorporated as special conditions, may affect, but are not likely to adversely affect the pallid sturgeon." For more information regarding the analyses contained within the Biological Assessment and Letter of Concurrence from USFWS see http://www.nwk.usace.army.mil/Missions/Regulatory-Branch/Missouri-River-Commercial-Dredging/.

Levee setbacks would have negligible impacts on pallid sturgeon. Conversion of predominantly agricultural lands to native floodplain habitats may increase localized in-river primary and secondary productivity, which could provide a long-term, indirect benefit for pallid sturgeon. After evaluation of the potential effects of the proposed action, the USACE concludes that the proposed action may affect, but will not likely adversely affect the pallid sturgeon.

5.4.2 Conservation Measures

Pallid sturgeon spawning locations on the lower Missouri River are monitored annually as part of the USACE-funded Comprehensive Sturgeon Research Project led by the U.S. Geological Survey. Individual pallid sturgeon of both sexes have been documented returning to the same section of river to spawn (DeLonay et al., 2010; DeLonay et al., 2012).

USACE would use the results of ongoing monitoring of pallid sturgeon spawning behavior on the lower Missouri River to evaluate if seasonal restrictions on the proposed activities are warranted. USACE would implement seasonal restrictions on proposed activities where appropriate.

5.5 Topeka Shiner

5.5.1 Direct and Indirect Effects

In Nebraska only three streams are identified as potentially still harboring the Topeka shiner. Two streams, Taylor Creek and Union Creek are located within the Elkhorn River watershed in Madison County, and the other, Big Creek, is located within the North Loup River watershed in Cherry County. All three streams are located outside of the action area. Proposed work in Madison County will be located in northeastern Madison County on the North Fork Elkhorn River near Norfolk, Nebraska. Therefore, no direct effects to the Topeka shiner from the proposed action would occur.

Although the action area is in the same watershed as the streams inhabited by the Topeka shiner, the mouth of the North Fork Elkhorn River is upstream of the mouth of Union Creek. Any temporary increase in turbidity from rehabilitation work would flow into the Elkhorn River and not into Union Creek. Therefore, no indirect effects to the Topeka shiner from the proposed action would occur. The proposed action will have no effect on the Topeka shiner as activities associated with the proposed action would not occur within the bounds of the streams identified as potentially harboring the Topeka shiner.

5.5.2 Topeka Shiner Critical Habitat

The IPAC reviewed for this species indicates that the designated critical habitat includes most of Madison County, Nebraska. However, according to the Federal Register, critical habitat is only designated in one stream segment, Taylor Creek, totaling six stream miles of the Elkhorn River watershed in Madison County (USFWS 2004). Therefore, according to the Federal Register, there is no Topeka shiner critical habitat designated within the action area of the proposed action. The proposed action will have no effect on Topeka shiner critical habitat as activities associated with the proposed action would not occur within the bounds of the designated critical habitat.

5.6 Indiana Bat, Endangered

5.6.1 Direct and Indirect Effects

During the summer months, it is likely that Indiana bats would be present in the portion of the action area along the lower river in Missouri. There are known maternity colonies in Missouri counties that are adjacent to the river. Indiana bats roost in large colonies underneath bark, in cavities, or in crevices of trees in areas along the river. This roosting habitat is essential for birthing and rearing young. Any clearing of trees and vegetation in the action area while these

bats are roosting and rearing young has the potential to disrupt the females and their young. Clearing of vegetation or trees also has the potential to reduce the amount of foraging and roosting habitat available to bats present at the time or in the future. Noise and other physical disturbance would be temporary and localized and would not affect the availability of roosting areas or foraging opportunities for the Indiana bat. The proposed action may affect but will not likely adversely affect this species in the case of clearing and vegetation removal in roosting and foraging habitat areas. The implementation of conservation measures specifically to avoid disruption or removal of trees during the roosting season will be required to avoid effects to this species.

5.6.2 Conservation Measures

Site specific analysis would occur prior to project implementation to avoid effects to Indiana bat. To avoid impacts to Indiana bats clearing of trees greater than or equal to 5 inches in diameter will be restricted March 31 to October 31 unless it is determined that no hibernaculum exists within a 5-mile radius of the project site. If no hibernaculum exists within a 5-mile radius of the project area, then clearing of trees greater than or equal to 5 inches in diameter will be restricted from March 31 to November 31. On a site to site basis and when possible, clearing large trees with sluffing bark and snags will be avoided, even outside of clearing restriction timeframes. When necessary, bat surveys will be conducted to ensure effects are avoided to the extent possible.

5.7 Northern Long-eared Bat, Threatened

5.7.1 Direct and Indirect Effects

During the summer months, it is likely that northern long-eared bats would be present in the action area in forested areas along the rivers to roost, rear their young, and forage. Northern long-eared bats roost underneath bark, in cavities, or in crevices of trees. This roosting habitat is essential for birthing and rearing young. Any clearing of trees and vegetation in the action area while these bats are roosting and rearing young has the potential to disrupt the females and their young. Clearing of vegetation or trees also has the potential to reduce the amount of foraging and roosting habitat available to bats present at the time or in the future. Noise and other physical disturbance would be temporary and localized and would not affect the availability of roosting areas or foraging opportunities for the northern long-eared bat. The proposed action may affect but will not likely adversely affect this species in the case of clearing and vegetation removal in roosting and foraging habitat areas. The implementation of conservation measures specifically for the northern long-eared bat will avoid effects to this species.

5.7.2 Conservation Measures

Site specific analysis would occur prior to project implementation to avoid effects to the northern long-eared bat. Projects requiring clearing in the range of the northern long-eared bat will need to comply with the 4 (d) rule, and consultation with the appropriate USFWS office on each individual project will occur. Through consultation, each project location will be evaluated for its proximity to known hibernaculum, proximity to maternity roost trees, and whether the project is in the white nose syndrome zone or not. To avoid impacts to northern long-eared bats, cutting or removal of known roost trees or clearcut and other tree clearing methods within a 25-mile radius of a known roost tree between June 1 to July 31. On a site to site basis and when possible, clearing large trees with sluffing bark and snags will be avoided, even outside of clearing restriction

timeframes. When necessary, bat surveys will be conducted to ensure effects are avoided to the extent possible.

5.8 Salt Creek Tiger Beetle

5.8.1 Direct and Indirect Effects

The Salt Creek tiger beetle is currently limited to segments of Little Salt Creek and adjacent remnant saline wetlands in northern Lancaster County, Nebraska (USFWS 2016d). No saline wetlands are present within the proposed action area. The proposed action area includes the levee along Salt Creek from approximately Van Dorn Street to Superior Street in Lincoln, Nebraska. Most levees are manmade structures and are devoid of trees, shrubs, and bushy vegetation. No project activities are expected to occur within the vicinity of suitable habitat. In addition, no designated critical habitat is present within the action area. As a result of the proposed action, no direct or indirect effects are anticipated to occur to the endangered Salt Creek tiger beetle. After evaluating the potential effects of the proposed action, the USACE concludes that the proposed action would have no effect on the Salt Creek tiger beetle or Salt Creek tiger beetle critical habitat on the premise that the action area is not located within suitable habitat for this species.

5.9 Western Prairie Fringed Orchid

5.9.1 Direct and Indirect Effects

Most levees proposed for rehabilitation occur within urban areas and not in western prairie fringed orchid habitat of wet prairies and meadows. The disturbance caused by associated factors with urbanization has likely diminished this species' ability to thrive within the action area. It is not expected that the western prairie fringed orchid would be found within the action area, therefore it is not expected there would be direct effects as a result of the proposed action. Most levees are manmade structures and are devoid of trees, shrubs, and bushy vegetation, and habitats on levees are usually disturbed by manmade activities. As per coordination with the USFWS during the 2018 BiOp consultation, no records of the western prairie fringed orchid or habitat occur in the Missouri River floodplain. As a result, no direct or indirect effects are anticipated to occur to the western prairie fringed orchid from hydraulic dredging in the Missouri River floodplain or obtaining borrow from MRRP lands. After evaluating the potential effects of the proposed action, the USACE concludes that the proposed action would have no effect on the western prairie fringed orchid.

5.10 Cumulative Effects

Cumulative effects under the ESA are defined as "...those effects of future State, or private activities, not involving federal activities that are reasonably certain to occur within the action area of the federal action subject to consultation" (50 CFR 402.02). Future federal activities that are not inter-related or interdependent to the proposed action are not considered because they would be subject to separate future consultation under the ESA. Many levees and structures within the action area are privately owned or do not fall under the PL 84-99 program. Repairs to these structures by other levee sponsors or private entities is reasonably certain to occur as a result of recent and potential future flood events.

Ongoing trends that are likely to occur include further expansion of commercial and residential areas, increased floodplain development (i.e., urban, industrial, commercial), management of flood control structures, continued depletions and return flows from municipal, industrial and agricultural uses on the Platte and lower Missouri Rivers, and ongoing construction and maintenance of bridges, highways, local roads, railways, and utility rights-of-way.

Increased water temperatures from outfalls and introduction of contaminants from industrial, agricultural, and municipal sources may contribute to lack of pallid sturgeon recruitment by reduced egg quality and fitness of offspring, but the levels of contaminants associated with diminished fitness in the laboratory are substantially higher than those documented in field data (Buckler 2011). Runoff from surrounding commercial, residential and agriculture developments may also continue to pose a threat to saline wetlands in which the salt creek tiger beetle inhabits. Terrestrial habitats would continue to be disturbed and degraded through removal of natural vegetation with ongoing development from a variety of sources. As floodplains become more developed, human disturbance will be a continuing and likely increasing threat to several listed species such as the piping plover (USFWS 2015). Human disturbance was identified as a continuing threat in the draft revised piping plover 5-year review conducted by the USFWS in 2015.

5.11 Influence of Climate Change on Effects of the Proposed Action

Across the Northern Great Plains, summer temperatures are projected to increase from 2.3°–6.7°F (1.3°–3.7°C) to more than 5.4°–11.0°F (3.0°–6.1°C) by the end of the century (Hayhoe et al. 2018). Northern areas of the Great Plains are projected to experience a wetter climate by the end of this century as precipitation increases of up to 20% are projected in winter and spring for the north central United States (Hayhoe et al. 2018). This shift in temperature and moisture could have potential effects to levee systems and flood control structures. Climate models project an increase in the number of heavy precipitation events, and these extreme precipitation events may lead to more severe floods and greater risk of infrastructure failure. Additionally, changing precipitation patterns in the Rocky Mountains would likely have potential effects on the amount of inflow into the Platte and Missouri River systems, also affecting listed species that inhabit these watersheds. Precipitation data from 1901 through 2012 show an increase in average precipitation over the time period (NRCS 2012).

The climate scenario described could influence the long-term availability of habitats used by ESA-listed species evaluated in this BA. An increase in the frequency of flooding that would inundate other habitat more frequently could cause changes in the acres of habitat classes with increases in wetter habitats (i.e., open water, emergent wetland, scrub shrub wetland, and riparian woodland/forested wetland) and decreases in drier habitats (i.e., forest and upland grassland) if precipitation and streamflow increase. Increased drought conditions could have the opposite effect (i.e., increases in drier habitats and decreases in wetter habitats). The influence of climate change is not expected to exacerbate the impacts of the Proposed Action on ESA-listed species evaluated in this BA.

6.0 Determination of Effects Summary and Conclusion

Table 6-1 summarizes USACE determination on the effects of the proposed action on the ESA-listed species analyzed in Section 5. The proposed action includes a range of O&M and structural repair activities that provide rehabilitation, advanced measures, and direct assistance to Federal and non-Federal levee sponsors along the Missouri, Platte, and Elkhorn Rivers in eastern Nebraska, western Iowa, and northern Missouri enrolled in the PL 84-99 Program. Under the proposed action, USACE concludes that the proposed action would have "no effect" on piping plover critical habitat, whooping crane, Topeka shiner, Topeka shiner critical habitat, Salt Creek tiger beetle, Salt Creek tiger beetle critical habitat, and western prairie fringed orchid. USACE concludes that the proposed action "may affect, but not likely to adversely affect" the least tern, piping plover, pallid sturgeon, Indiana bat, and northern long-eared bat.

Table 6-1. Effects Determination for ESA-listed Species in the Proposed Action Area

Common Name	Scientific Name	Determination of Effect
Least Tern	Sternula antillarum	May Affect, Not Likely to Adversely Affect
Piping Plover	Charadrius melodus	May Affect, Not Likely to Adversely Affect
Piping Plover Critical Habitat		No Effect
Whooping Crane	Grus americana	No Effect
Pallid Sturgeon	Scaphirhynchus albus	May Affect, Not Likely to Adversely Affect
Topeka Shiner	Notropis topeka (=tristis)	No Effect
Topeka Shiner Critical Habitat		No Effect
Indiana Bat	Myotis sodalis	May Affect, Not Likely to Adversely Affect
Northern Long-eared Bat	Myotis septentrionalis	May Affect, Not Likely to Adversely Affect
Salt Creek Tiger Beetle	Cicindela nevadica lincolniana	No Effect
Salt Creek Tiger Beetle Critical		
Habitat		No Effect
Western Prairie Fringed Orchid	Platanthera praeclara	No Effect

7.0 Determination of Effects Summary under Emergency Consultation

Table 6-1 summarized USACE determination on the effects of the proposed action on the ESA listed species analyzed in Section 5. The proposed action includes actions that have occurred or are currently occurring in response of levee breach closures. These actions include tree clearing and hydraulic dredging in the Missouri River floodplain and in the inside bends of designated locations within the Missouri River. The USACE concludes that the proposed action "may affect, but not likely to adversely affect" the pallid sturgeon, Indiana bat, and northern long-eared bat.

8.0 References and Literature Cited

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APPENDIX C SOP FOR BORROW MATERIAL MINING ON MRRP LANDS

Standard Operating Procedure for 2019 Missouri River Flood Response

Use of Missouri River Recovery Program Lands for Emergency Levee Repair and Rehabilitation Activities

1. Purpose: The purpose of this Standard Operating Procedure (SOP) is to provide guidance to USACE staff and contractors when Missouri River Recovery Program (MRRP) lands are being utilized for emergency levee repair and rehabilitation activities. Typically, the project sponsor is responsible for providing without cost to the United States all lands, easements, rights-of-way, relocation, and disposal areas (LERRDS) necessary for levee repair and rehabilitation projects. However, if it is more advantageous to the Federal Government, MRRP lands may be made available for the project if it is done in a manner that is consistent with the purpose of the MRRP and applicable civil works policies.

This document provides broad guidance and conditions on using MRRP lands for emergency levee repair and rehabilitation when the project sponsor is not reasonably able to obtain borrow from other locations. This SOP is a working document and will be updated as needed. It should not be viewed as absolute. Site specific circumstances should always be considered. Also, there may be other factors, such as avoiding wetlands pursuant to the Clean Water Act and consideration of NRCS easements that need to be considered. (Refer to Section IV Emergency Actions of the Memorandum of Understanding Among U.S. Department of Agriculture Natural Resources Conservation Service – Central Region and U.S. Department of Army U.S. Army Corps of Engineers – Northwestern Division for information on established protocols with NRCS during emergency levee repair and rehabilitation activities.)

- **2. Scope:** This SOP is applicable to emergency levee repair and rehabilitation efforts for damages incurred during 2019 flooding along the Missouri River and its tributaries in both the Omaha and Kansas City Districts. It is not applicable to other civil works projects, flood events, or time periods.
- 3. Background: As part of the MRRP, USACE has acquired land along the lower Missouri River to develop fish and wildlife habitat as authorized by Congress in the Water Resource Development Acts of 1986 and 1999. The purpose of these lands are to mitigate for fish and wildlife habitat that was lost due to the construction and operation of the Missouri River Bank Stabilization and Navigation Project. Separately, USACE also

has requirements under Public Law 84-99 to provide emergency levee repair and rehabilitation assistance to project sponsors. In instances when no other lands are reasonably available to project sponsors, MRRP lands may be used to provide assistance for emergency levee repair and rehabilitation. USACE must ensure that any approval to use MRRP lands for emergency levee repair and rehabilitation is compatible with the intended use of these lands. Additionally, USACE must comply with applicable environmental laws and policies when providing assistance.

4. Sponsor Requests and Determination of Compatibility with MRRP Lands:

- 4.1. A sponsor can request to utilize MRRP lands if they are unable to reasonably provide the necessary LERRDS for an emergency levee repair or rehabilitation. The Project Delivery Team (PDT) should consider, cost, proximity, availability, and other pertinent factors when determining if the sponsor is reasonably able to provide the necessary LERRDS.
- 4.2. If the PDT concurs that no other lands are reasonably available, the request to use MRRP lands will be provided to the MRRP Program Manager. The Program Manager will determine if the proposed uses are compatible with the intended purpose of the MRRP lands. The environmental lead, after coordinating with any land managers USACE has partnership agreements, will provide the MRRP Program Manager with any interim or long-term site management plans and provide a recommendation as to whether lands can be used in a compatible manner. If site management plans do not exist for a particular site, an interim plan can be developed which would include information regarding whether there are areas where the proposed uses would be compatible with MRRP's intended purpose. If the lands cannot be used in a manner that is compatible with the intended purpose of the MRRP permission to use the site should not be granted. USACE has no requirement to allow the sponsor to use MRRP lands. Each District should maintain Appendix A to provide an up to date list of appropriate MRRP contacts.
- 4.3. If it is determined that MRRP lands can be used for emergency levee repair and rehabilitation in a manner that is compatible with their intended purpose, the environmental lead will work closely with the PDT to ensure that the planning, design, construction, and post-construction monitoring are conducted in accordance with the site management plan. The environmental lead will also be responsible for coordination activities with other resource agencies as appropriate. The environmental lead and any land managers USACE has partnered with shall be provided the opportunity for site visits prior to demobilizing earthmoving equipment from the site so that adjustments to grade can be made if needed.
- 4.4. The environmental lead will review the project plans and specs and ensure that they align with the site management plan. The MRRP Program Manager should be provided an opportunity to review the BCOES package prior to award of any

construction contracts. Any changes to the plans and specs during construction must be approved by the PDT, including the environmental lead who will coordinate with the MRRP Program Manager.

5. Compatibility Considerations:

5.1. The primary purpose of MRRP lands are to provide fish and wildlife habitat as mitigation for environmental impacts that resulted from the construction and operation of the Missouri River Bank Stabilization and Navigation Project. Desired habitat types are provided in the 2003 Record of Decision for the Missouri River Bank Stabilization and Navigation Project and include wetlands, bottomland forest, native prairie, chutes and side channels, shallow water habitat, backwater areas, and slack water habitats.

5.2. General Considerations:

- 5.2.1. For repairs of federal levees, proposed borrow sites shall be reviewed by Engineering Division staff for evaluation of potential impacts to adjacent levees. Generally, borrow material should not be excavated within 500 feet riverward of the levee centerline or 1000 feet landward of the levee centerline. An exception to this general guidance is in instances where the proposed levee repairs involve a levee setback around a breached levee or newly formed scour hole as the most economical repair option. In those instances, it may be acceptable to remove the remaining portions of the breached levee and to remove existing material from around the perimeter of the scour hole. Do not excavate within 100 feet of any dike structures and maintain a minimum distance of 150 feet from the top of the river bank. Note that these constraints do not apply to removal of material deposited during recent floods on top of the original ground surface (see section 5.2.3). The distances provided in these guidelines may be modified by PDT members providing engineering expertise on a case-bycase basis.
- 5.2.2. Borrow shall not be obtained from areas on the MRRP property where fish and wildlife habitat improvements or restoration have previously occurred (e.g. native grass plantings, wetland development, etc.).
- 5.2.3. Material that has been deposited on MRRP lands during the 2019 flood event and is detrimental to desired habitat types should be used as the first option for borrow if the material is suitable.
- 5.2.4. Obtaining borrow from MRRP lands that have recently been used for growing crops (agricultural lands) should be prioritized over areas in a native vegetative habitat cover. Areas with invasive plant species can be utilized if it can be determined that using these areas will not result in the spread of invasive species to new locations.
- 5.2.5. Tree clearing should generally be avoided.
- 5.2.6. Borrow shall not be obtained from within 660 feet of known active bald

- eagle nests without first consulting the USFWS. Also, the Endangered Species Act 4(d) Rule issued by USFWS should be followed with regard to northern long eared bat. Impacts to Indiana bat should be avoided in accordance with the Endangered Species Act.
- 5.2.7. In the unlikely event that cultural resources are discovered, the immediate area of discovery should be avoided until the area is investigated by a qualified archeologist and the find is coordinated with the appropriate State Historic Preservation Office and/or Tribes.

5.3. Consideration of Wetlands:

- 5.3.1. Borrow material should only be obtained from wetlands in instances when material deposited was during the 2019 flood event is being removed to restore the wetland. In these instances, care must be taken not to excavate material that was in place prior to 2019.
- 5.3.2. Locations that have been previously used to obtain borrow in a manner intended to result in wetland development, for example after the 2011 Missouri River Flood, should be avoided. However, locations adjacent to these areas can be considered for borrow, especially where opportunities exist to expand an existing wetland area without impacting the quality of existing wetlands (i.e. result in dewatering). Care must be taken not to adversely impact the existing hydrology of any existing wetlands.
- 5.3.3. Levee setbacks, seepage berms, and temporary construction features (staging, haul roads, etc) should be designed in a manner to avoid and minimize impacts to existing wetlands. For example, installing relief wells instead of constructing seepage berms in wetland areas is desirable to minimize impacts. When impacts to wetlands cannot be avoided, they should be mitigated for onsite. A post-construction monitoring and adaptive management plan should be developed to ensure success of the wetland.

6. Haul Roads, Test Pits, and Staging Areas:

- **6.1.** Haul roads and staging areas should be established to avoid land disturbance to the maximum extent possible.
- **6.2.** Procedures for test pit excavation and restoration will be determined prior to construction in coordination with the environmental lead.
- 6.3. In an effort to avoid unnecessary land disturbance, 2011 borrow pit mapping should be consulted to help determine location and type of materials available on MRRP sites.

7. Borrow Area Design:

7.1. Slope: In general, borrow areas should not have slopes steeper than 10H on 1V and should have variability with areas of lower slope. Where site conditions

- and construction equipment allow, slopes of 20H on 1V are preferred.
- **7.2. Shaping and Grading**: Avoid rectangular shapes when obtaining borrow. Create natural looking wetland and depression area. Leave a rough finish grade to maximize depth variation. Smooth finish grading is not desired. See ATTACHMENT B for general guidelines.
- **7.3. Depths:** For created wetlands and depression areas, variable depths of excavation between 0-7 feet are desired with no excavation depths greater than 7 feet. See Figure 2 in ATTACHMENT B for an example. Excavations deeper than 7 feet may be acceptable on a case-by-case basis.
- 7.4. Substrate: If the borrow area contains clay (cohesive soils), leaving a clay layer is desired to retain hydrology for wetland establishment. If this is not possible, the borrow area should be lined with clay once borrow removal is complete using suitable clay material. Borrow areas that contain only sand and are not intended to serve as wetland habitat do not need to be lined. Suitable substrate material such as top soil may be required to restore the area to the intended long-term habitat condition.
- 7.5. Seeding: Recommendations will be provided by environmental staff to insure an appropriate seed mix. In general, all disturbed land areas should be reseeded with native seed mixes. The preferred seed mix for upland areas is native tallgrass/mixed grass prairie and for wetland basins includes a variety of wetland species to account for the seasonably variable water depths. Based on site specific conditions, alternative seed mixes and plantings may be provided. Non-native seed mixes may be used on structural portions of levees including the levee right of way and other areas needed for the structural integrity of the levee. See ATTACHEMENT C for seed mixes and potential suppliers.
- **7.6. Floodway:** Borrow sites and temporary construction features occurring within the floodway, as indicated on the FEMA flood insurance maps, are required to be graded so that their elevation does not exceed original elevation of the preexisting topography (no berms or elevated haul roads left above ground).
- 7.7. Dredged Borrow Material: Dredging is typically only used as a method of borrow mining during emergency response efforts. MRRP lands may be dredged to remove recently deposited material or for the creation of aquatic habitat. Any borrow areas on MRRP lands excavated using a dredge will likely need to be re-graded after the water elevations recede.
- 7.8. In addition to the requirements for site reclamation described here, principles from the NRCS Engineering Field Handbook, Chapter 13 should be used to the extent practicable for site reclamation of borrow areas. This document is available online at:
 - https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17765. wba

8. Questions pertaining to this SOP can be directed to Dave Crane of the Omaha District at (402) 995-2676, Mike Snyder of the Kansas City District at (816) 389-3141, or Jesse Granet of the Northwestern Division at (503) 808-3966.

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	Mark Harberg MRRP Program Manager	
APPROVED:	Frances E. Coffey, P.F. PMP Director, Programs	DATE: 6/14/19

ATTACHMENT A – Table to be maintained by Omaha and Kansas City Districts

Levee Project	Nearest MRRP Site	MRRP Environmental Lead (Central Env POC*)	Missouri River Recovery Program POC	USACE Operations POC	Land Manager Contact
		Oma	ha District		
TBD	TBD	Aaron Quinn (402- 995-2669)	Mark Harberg (402-995-2554)	John Skelton (816-389-3968)	MDC & NRCS
L550	Nisnabotna Conservation Area	Dave Crane (402- 995-2676)	Luke Wallace (402-995-2692)	John Skelton (816-389-3968)	NRCS
L575	Copeland Bend/Lower Hamburg	Dave Crane (402-995- 2676) Luke Wallace (402-995-2692)	Luke Wallace (402-995-2692)		IADNR-Carl Priebe (712-350 0147) MDC&NRCS
Ditch 6	NA	Cindy Upah (402- 995-2672)	NA		NA
L594	Auldon Bar	Cindy Upah (402- 995-2672)	Luke Wallace (402-995-2692)		ADNR-Carl Priebe (712-350 0147)
L601	Nottleman Island	Aaron Quinn (402- 995-2669)	Lynn Heng (402-996-3761)		ADNR-Carl Priebe (712-350 0147)
L611-614	St Mary's Bend	Matt Vandenberg (402-995-2694)	Mark Harberg (402-995-2554)		ADNR-Carl Priebe (712-350 0147)
L624-627	NA	Matt Vandenberg (402-995-2694)	NA		NA

R520	NA	Matt Vandenberg (402-995-2694)	NA	NA
R548	Brownville Bend	Matt Vandenberg (402-995-2694)	Lynn Heng (402-996-3761)	GPC-Mike Remund (402 335-8033)
R562	Kansas Bend	Matt Vandenberg (402-995-2694)	Lynn Heng (402-996-3761)	NGPC-Mike Remund (402 335-8033)& NRCS - Don Doty, 402-269-5367
R573	Upper Hamburg Bend	Matt Vandenberg (402-995-2694)	Luke Wallace (402-995-2692)	NGPC-Neil Van Winkle (402) 296- 0041) & NRCS Don Doty, Private Land
Lake WCD	Van Horn	Matt Vandenberg (402-995-2694)	Lynn Heng (402-996-3761)	MR Project Office- COE- Lynn Heng (402-996-3752) & NRCS
R613	Potential	Cindy Upah (402-995-2672)	Lynn Heng (402-996-3761)	NA
R616	NA	Cindy Upah (402-995-2672)	NA	NA
Omaha/R627	NA	Matt Vandenberg (402-995-2694)	NA	NA
OFWC	NA	Matt Vandenberg (402-995-2694)	NA	NA
Sidney, NE	NA	Matt Vandenberg (402-995-2694)	NA	NA

Howells, NE	NA	Matt Vandenberg (402-995-2694)	NA		NA
Kansas City D	istrict				
L-575	Lower Hamburg	Mike Snyder (816- 389-3141)	Dane Morris (816- 389-3476)	John Skelton X3968 David Hoover X3497	MDC
L-550	Nishnabotna Aspinwall Bend	Mike Snyder (816- 389-3141)	Dane Morris (816- 389-3476)	John Skelton X3968 David Hoover X3497	MDC
L-536	Deroin Bend Corning	Mike Snyder (816- 389-3141)	Dane Morris (816- 389-3476)	John Skelton X3968 David Hoover X3497	MDC
Union Township	Thurnau	Mike Snyder (816- 389-3141)	Dane Morris (816- 389-3476)	John Skelton X3968 David Hoover X3497	MDC
Holt Co. No.	Rush Bottom Bend	Mike Snyder (816- 389-3141)	Dane Morris (816- 389-3476)	John Skelton X3968 David Hoover X3497	MDC
L-497	Wolf Creek Bend	Mike Snyder (816- 389-3141)	Dane Morris (816- 389-3476)	John Skelton X3968 David Hoover X3497	MDC

L-488	Jim & Olivia Hare	Mike Snyder (816- 389-3141)	Dane Morris (816- 389-3476)	John Skelton X3968 David Hoover X3497	МО
R-482	Bur Oak	Mike Snyder (816- 389-3141)	Dane Morris (816- 389-3476)	John Skelton X3968 David Hoover X3497	KDWPT
L-476	Worthwine Island	Mike Snyder (816- 389-3141)	Dane Morris (816- 389-3476)	John Skelton X3968 David Hoover X3497	MDC
L-471-460	Elwood Bottoms	Mike Snyder (816- 389-3141)	Dane Morris (816- 389-3476)	John Skelton X3968 David Hoover X3497	KDWPT
R-440	Benedictine Bottoms	Mike Snyder (816- 389-3141)	Dane Morris (816- 389-3476)	John Skelton X3968 David Hoover X3497	KDWPT
Bean Lake	Bean lake	Mike Snyder (816- 389-3141)	Dane Morris (816- 389-3476)	John Skelton X3968 David Hoover X3497	USACE
Grape-Bollin- Schwartz	Oak Mills	Mike Snyder (816- 389-3141)	Dane Morris (816- 389-3476)	John Skelton X3968 David Hoover X3497	KDWPT

	Kickapoo Island	Mike Snyder (816- 389-3141)	Dane Morris (816- 389-3476)	John Skelton X3968 David Hoover X3497	USACE
	Camden Bend	Mike Snyder (816- 389-3141)	Dane Morris (816- 389-3476)	John Skelton X3968 David Hoover X3497	USACE
Ray-Lafayette	Bootlegger Bend	Mike Snyder (816- 389-3141)	Dane Morris (816- 389-3476)	John Skelton X3968 David Hoover X3497	USACE
Saline- Lafayette	Cranberry Bend	Mike Snyder (816- 389-3141)	Dane Morris (816- 389-3476)	John Skelton X3968 David Hoover X3497	USFWS
Wakenda	Tamerlane Bend	Mike Snyder (816- 389-3141)	Dane Morris (816- 389-3476)	John Skelton X3968 David Hoover X3497	USACE
Miami	DeWitt Bend	Mike Snyder (816- 389-3141)	Dane Morris (816- 389-3476)	John Skelton X3968 David Hoover X3497	USACE
Saline County	Grand River Bend	Mike Snyder (816- 389-3141)	Dane Morris (816- 389-3476)	John Skelton X3968 David Hoover X3497	USACE

Lower Chariton River	Cambridge Bend	Mike Snyder (816- 389-3141)	Dane Morris (816- 389-3476)	John Skelton X3968 David Hoover X3497	USFWS
Cooper Co. No. 1	Overton Bottoms	Mike Snyder (816- 389-3141)	Dane Morris (816- 389-3476)	John Skelton X3968 David Hoover X3497	USFWS
McBaine	Eagle Bluffs	Mike Snyder (816- 389-3141)	Dane Morris (816- 389-3476)	John Skelton X3968 David Hoover X3497	MDC
	Providence Bend	Mike Snyder (816- 389-3141)	Dane Morris (816- 389-3476)	John Skelton X3968 David Hoover X3497	USFWS
Tri-County LD Sect. 1	Heckmans Island	Mike Snyder (816- 389-3141)	Dane Morris (816- 389-3476)	John Skelton X3968 David Hoover X3497	USFWS
Berger	Berger Bend	Mike Snyder (816- 389-3141)	Dane Morris (816- 389-3476)	John Skelton X3968 David Hoover X3497	USFWS
Missouri Bottoms	Bryan Island	Mike Snyder (816- 389-3141)	Dane Morris (816- 389-3476)	John Skelton X3968 David Hoover X3497	USACE

L-15	Cora island	Mike Snyder (816- 389-3141)	Dane Morris (816- 389-3476)	John Skelton X3968 David Hoover X3497	USFWS
Columbia Bottoms	Columbia Bottoms	Mike Snyder (816- 389-3141)	Dane Morris (816- 389-3476)	John Skelton X3968 David Hoover X3497	MDC
Kuhs LD	Confluence Point	Mike Snyder (816- 389-3141)	Dane Morris (816- 389-3476)	John Skelton X3968 David Hoover X3497	MDNR

ATTACHMENT B

The following are provided as general examples. These can be adapted to fit sight conditions, type of borrow needed, type of equipment available, etc. Please coordinate any questions with the Environmental Team Member.

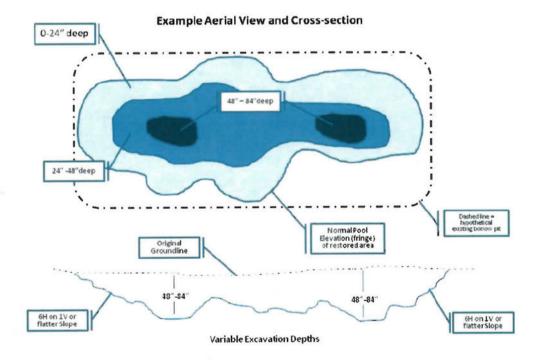
Simple Depression – generally oval shaped

Oxbow – kidney shaped with two lobes

Amoeba – multiple lobes with random Shape, high perimeter to surface ratio

Swale – mimics an abandoned river

meander



ATTACHMENT C

Example Seed Mixes

(these are bare bones minimum seed mixes that should generally be suitable across NE, IA, KS, and MO, but biologists are encouraged to develop site-specific seed mixes for each project site)

WETLAND BASIN MIX

	Lbs. of PLS/acre
Species	
Big bluestem (Andropogon gerardii)	2
Virginia wildrye (Elymus virginicus)	2
Switchgrass (Panicum virgatum)	1
Prairie cordgrass (Spartina pectinata)	1
Fox sedge (Carex vulpinoidea)	0.5
Arrowhead (Sagittaria cuneata or Sagittaria latifolia)	4
Water plantain (Alisma triviale)	1.5

UPLAND BUFFER AREA MIX

OF EARD BOTT ETCAREA MILK	Lbs. of PLS/acre
Species	
Canada wildrye (Elymus canadensis)	4
Slender wheatgrass (Elymus trachycaulus)	4
Western wheatgrass (Pascopyrum smithii)	4
Sand lovegrass (Eragrostis trichodes)	0.25
Big bluestem (Andropogon gerardii)	3
Prairie cordgrass (Spartina pectinata)	0.6
Switchgrass (Panicum virgatum)	1
Indiangrass (Sorghastrum nutans)	2.5
Sideoats grama (Bouteloua curtipendula)	3
Little bluestem (Schizachryium scoparium)	2
Oats or wheat	Oats 12 Wheat

Potential Seed Sources

The below contacts are offered only for reference. The contractor is not limited to these seed providers.

Iowa Pheasants Forever (563) 926-2357

2880 Thunder Road, Hopkinton, Iowa 52237

Fax: (563) 926-2357

Email: moconnor@habitatforever.org

Website: http://www.iowapf.org/page/1100/Native-Seed-Program.jsp

Ion Exchange (800) 291-2143

1878 Old Mission Drive, Harpers

Ferry, lowa 52146 Fax: (563) 535-

7362

Email:

hbright@acegroup.cc

Website:

http://www.ionxchange.c

om

J & J Seed (660) 663-3165

29341 210th, Gallatin MO 64640

Fax: 660-663-2301 or 660-663-4350

E-mail:

information@jandjseed.

com Website:

http://jandjseed.com

Grace Native Seed (660) 726-5884

5790 Hwy J., Albany, MO 64402

Email: jgrace@albanymo.net

Stock Seed Farms (402) 867-3771

28008 Mill Rd., Murdock, Nebraska

68407-2350. Fax: 402/867-2442

E-mail:

prairie@stockseed.com

Web:

www.stockseed.com

<u>APPENDIX B – BIOLOGICAL ASSESSMENT</u>

Biological Assessment for

PL 84-99 Emergency Levee Rehabilitation Program and Advanced Measures Civil Emergency Management Program

Final (updated July 2020 for L-536 dredging) May 2020 This page intentionally left blank

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1.0 Introduction

The U.S. Army Corps of Engineers (USACE) Omaha District prepared this Biological Assessment (BA) to determine whether the proposed action may affect threatened or endangered species under Section 7 of the Endangered Species Act (ESA) of 1973, as amended. Section 7 of the ESA states that Federal agencies shall ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in destruction or adverse modification to designated critical habitat.

In March 2019, a flood event was declared for the Missouri River and its tributaries due to rapid snowmelt and heavy rains in the region. Extreme runoff resulted in high to record flows along unregulated streams and rivers in eastern Nebraska and western Iowa. As a result of this event, widespread damage to levees within the USACE Omaha District occurred. Damages to levees were reported along the Missouri River and its tributaries, resulting in damage to over 30 levee systems and dozens of levee breaches.

A major mission of the USACE Omaha District is the Emergency Levee Rehabilitation Program and the Advanced Measures Civil Emergency Management Program (commonly referred to as Public Law 84-99 or PL 84-99). These programs allow the USACE to provide for the inspection and rehabilitation of federal and non-federal flood risk management projects enrolled in the PL 84-99 program that may have been damaged or destroyed by floods. Additionally, they allow the USACE to provide advance measures assistance in order to prevent or reduce damages when there is an imminent threat of unusual flooding that pose a significant threat to life and/or significant damages to urban and public facilities. Due to the magnitude of levee damages along the Missouri River, this BA focuses primarily on species that may be present along the Missouri River mainstem and major tributaries. Site-specific consultation with the USFWS on potential impacts to listed species to the Missouri River and tributary levee systems also has and will continue to occur during the ongoing PL 84-99 construction implementation.

1.1 Project Authority

The PL 84-99 program is authorized under the authorities of 33 U.S.C. 701n; the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5121 et seq); Army Regulation 500-60, Disaster Relief; and Engineer Regulation 1130-2-530, Flood Control Operations and Maintenance Policies. These laws and authorities allow the USACE to provide a levee rehabilitation program for repairing levees after flood events and perform advanced measures prior to flooding or flood fighting to protect against loss of life and significant damages to urban and/or public facilities.

1.2 NEPA approach

A programmatic environmental assessment (PEA) has been developed for the overall PL 84-99 flood response efforts. Project area-specific documentation and coordination is occurring separately from the PEA and this BA. The purpose of the PEA is to describe the environmental impacts of PL 84-99 levee rehabilitation program and to comply with the procedural requirements of NEPA. Development of the PEA was used to determine whether to prepare a Finding of No Significant Impact (FONSI) or prepare an environmental impact statement (EIS). The PEA concludes that the levee repair projects do not have a significant impact on the human

environment, and so it is expected that a FONSI would be prepared following public comment on the draft document.

These projects can be characterized in a general (or programmatic) nature based on the observed environmental impacts associated with PL 84-99 efforts in previous high water years (e.g., 2010, 2011, 2018, etc.). Individual projects would be evaluated to determine if their scope and impacts are within the scope and impact analysis of this programmatic document. If it is determined that repair efforts at individual levee systems require a separate NEPA analysis that would be tiered off of this programmatic document.

It is the primary intent of this BA to provide document ESA compliance for all NWO PL 84-99 efforts initiated in response to the 2019 flood event, construction of which may last for multiple years. It is assumed that this BA would apply to any future flood damage on levees that 2019 rehabilitation is still ongoing.

1.3 Consultation History

1.3.1 Emergency Consultation

Emergency consultation is where emergency responses are required that may affect listed species and/or critical habitat, but the Federal agency may not have the time for the administrative work required by the consultation regulations under non-emergency conditions.

Emergency consultation was initiated by phone on May 10, 2019 for immediate actions regarding PL 84-99 activities that prevent or reduce damages when there is an imminent threat of unusual flooding that pose a significant threat to life and/or significant damages to urban and public facilities. On May 15, 2019 USACE held a conference call with the U.S. Fish and Wildlife Service (USFWS) Region 6, Ecological Field Office to further discuss these immediate actions. USFWS requested the USACE consult under emergency consultation for PL 84-99 actions that have occurred or are currently occurring in response of levee breach closures. Future PL 84-99 actions would be coordinated under emergency or informal consultation procedures, depending on the construction conditions. During the month of August emergency consultation was initiated with the Columbia, MO Ecological Service Field Office for work being conducted in Iowa and Missouri. The Missouri office provided recommendations to minimize effects of the emergency response action on federally listed species.

1.3.2 Informal Consultation

On May 10, 2019 the USACE sent the USFWS an initial scoping letter regarding the PL 84-99 activities. The USACE requested the USFWS to provide concerns and/or potential impacts to listed species that may be affected by the proposed action. On May 15, 2019 USACE held a conference call with the USFWS Region 6, Ecological Field Office to further discuss PL 84-99 activities. Following the May 15, 2019 conference call, the Grand Island, NE and Columbia, MO ecological services field offices were coordinated with on a project-specific basis.

2.0 Action Area

2.1 Action Area Description

The combined action area includes numerous levees enrolled and in active-status in the USACE PL 84-99 Program in eastern Nebraska, western Iowa, and northern Missouri. This includes areas along the Missouri River mainstem from River Mile (RM) 625 to RM 515, the Platte River, Elkhorn River, and other tributaries (Figure 2-1). **Error! Reference source not found.** provides a list of the project sites and associated waterways.

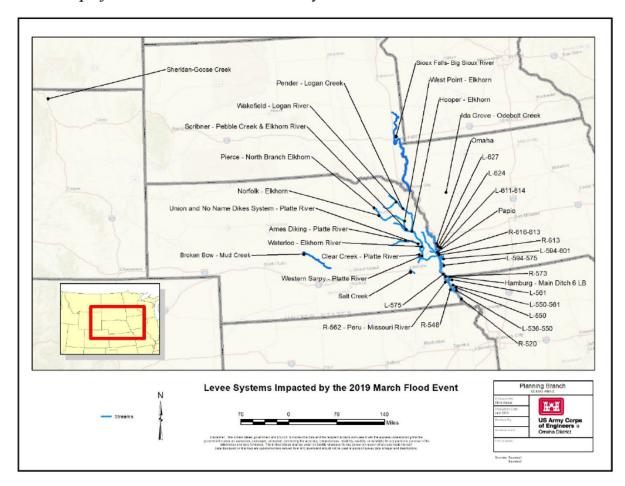


Figure 2-1. Action Area for the Biological Assessment for the PL 84-99 Emergency Levee Rehabilitation Program and Advanced Measures Civil Emergency Management Program

Table 2-1. Individual levee system project areas within the action area

Major Streams (Tributaries)	Project Sites	Damage Eligible for PL 84-99 Assistance following 2019 spring flooding
Missouri River	L-536-550 L-550-561-Missouri River LB	Yes Yes
	L-601 Watkins Ditch RB	No

	I (11 (14 M.DID 0 II	37
D C 1	L-611-614-MoRiv LB & Upper Pony Creek LB &	Yes
Pony Creek	Lateral 1B LB	Yes
	L-627 CB	Yes
	R-548 Little Nemaha LB/Happy Hollow RB	Yes
	R-616-613 - MO Riv RB & Papillion Cr LB	Yes
	Lake Waconda-Missouri River RB	Yes
	Missouri River RB-Omaha	Yes
Nishnabotna River	L-561 Nishnabota LB & High Creek RB	Yes
High Creek		
Rock Creek	L-550-Rock-LB-Turk-RB	Yes
Turkey Creek		
Mill Creek	L-536-550 Turkey Crk LB, Rock Crk LB, Mo Riv LB,	No
Turkey Creek	& Mill Crk RB	
Rock Creek		
Plumb Creek	L-575	Yes
Papillion Creek	Little Papio RB & Big Papio LB (Fed)	Yes
<u>*</u>	Little Papio RB & Big Papio LB (Non-Fed)	Yes
	West Papio RB-96th-Big Papio	Yes
	West Papio LB & Big Papio RB	Yes
	Big Papio LB/RB W. Center to L. St.	Yes
	Big Papio LB-Betz Ditch to Capehart	Yes
	36th St. to Willow Lakes GC	Yes
	Big Papio LB-Mud Creek to Betz Ditch	Yes
	Big Papio RB-L St to Thomson Cr.	Yes
	Big Papio LB-Little Papio to Copper Cr.	Yes
	Big Papio LB-Copper Cr. to Big Elk Cr.	Yes
	Big Papio LB-Big Elk Cr to Mud Cr.	Yes
Winnebago Creek	R-520-Missouri River RB	Yes
Little Nemaha River	R-548-Missouri River & Little Nemaha	Yes
South Branch Camp	R-562-Peru-Missouri River RB	Yes
Creek	K-302-1 Clu-Wilssoull Kivel KD	103
Fourmile Creek	R-573-Missouri River RB	Yes
Waubonsie Creek	L-594-575 (BW-PV-Waubonsie)	Yes
Big Sioux River	Sioux Falls – Big Sioux RB and Skunk Creek RB	Yes
Platte River	R-613-Platte LB & Papillion RB & Mo River RB	Yes
I latte Kivei	Valley-Platte-LB	Yes
	Western Sarp -Platte River LB	Yes
	Ames Diking-Platte River LB	Yes
	YMCA Camp Kitaki	No
Salt Creek	Salt Creek RB	Yes
sun Creek	Salt Creek RB Salt Creek LB and Oak Creek LB	Yes
Coden Cuel	Salt Creek RB to Dead Mans Run	Yes
Cedar Creek	Cedar Creek Omaha (F&W)	Yes
Elkhorn River	West Point-Elkhorn LB	Yes
	Waterloo-Elkhorn River RB	Yes

	Hooper-Elkhorn River-Bloomendahl Ditch	No
North Fork Elkhorn	Pierce-North Branch Elkhorn RB	Yes
River	Norfolk-Elkhorn River RB and LB	Yes
Pebble Creek	Scribner-Elkhorn River RB & Pebble Creek LB	Yes
Logan Creek	Pender-Logan Creek RB	Yes
	Wakefield-Logan River RB	Yes
Antelope Creek	Antelope Creek (Lincoln)	No
Odebolt Creek	Ida Grove-Odebolt Creek LB	Yes
Mud Creek	Broken Bow - Mud Creek LB/RB;	Yes
Loup River	Columbus-Loup River LB	Yes
Goose Creek	Sheridan – Goose Creek RB	Yes

2.2 Species in the Action Area

Species lists were requested from USFWS's Information for Planning and Consultation (IPAC) system in May 2019 to encompass a potential action area in eastern Nebraska, Iowa, and Missouri (Table 2-2). Species lists were then verified through literature review, records search, and coordination with USFWS to be present in the action area. While other listed species may be present in the South Dakota and Wyoming project areas, the Sioux Falls and Sheridan projects areas represent an insignificant amount of the overall study area and potential effects to those species will be addressed individually during project-specific informal consultation.

Table 2-2. USFWS ESA-listed Species in the Proposed Action Area in NE, IA, and MO

			Presence in the
Common Name	Scientific Name	ESA Status	Study Area
Birds			
Least Tern	Sternula antillarum	Endangered	Present
Piping Plover	Charadrius melodus	Threatened	Present
Whooping Crane	Grus americana	Endangered	Present
Fish			
Pallid Sturgeon	Scaphirhynchus albus	Endangered	Present
Topeka Shiner	Notropis topeka (=tristis)	Endangered	Present
Mammals			
Indiana Bat	Myotis sodalis	Endangered	Present
Northern Long-eared Bat	Myotis septentrionalis	Threatened	Present
Clams			
Scaleshell Mussel	Leptodea leptodon	Endangered	Not Present
Insects			
Salt Creek Tiger Beetle	Cicindela nevadica lincolniana	Endangered	Present
Flowering Plants			
Prairie Bush clover	Lespedeza leptostachya	Threatened	Not Present
Western Prairie Fringed Orchid	Platanthera praeclara	Threatened	Present

Note: Species list is based on an unofficial IPAC report run for the action area on 05/01/19. Presence determinations for the Missouri River floodplain were made with technical input from USFWS staff.

3.0 Description of the Proposed Action

The proposed action includes a range of structural repair activities that provide rehabilitation, advanced measures, and direct assistance to Federal and non-Federal levee sponsors along the Missouri, Platte, and Elkhorn Rivers and other smaller streams in eastern Nebraska, western Iowa, northern Missouri, southern South Dakota, and Eastern Wyoming enrolled in the PL 84-99 Program. The rehabilitation of levees typically consists of repairs of existing structures to their

pre-flood condition. Anticipated PL 84-99 activities include, but are not necessarily limited to, repairs to levee scours, levee crests, levee berms, levee breaches, partial breaches, partially eroded levees, sand boils, relief wells, drainage structures, and pump stations. Levee setbacks may also be implemented as part of this PL 84-99 effort where necessary. Advanced measures consist of temporary flood-prevention structures that are removed once the high flow event has passed.

The proposed action is a combination of structural levee repairs that include in-line repairs, small scale levee setbacks, large-scale levee setbacks, and borrow material mining. The proposed action is consistent with all applicable Federal and state laws, Tribal trust responsibilities, and interstate compacts and decrees.

3.1 In-line Repairs

Structural, in-line repair activities take place within the existing levee or flood risk management feature footprint. In general, the less damaged a levee received from a flood, the more likely it is to be repaired in-line. Examples of damages that are typically repaired in-line include the following:

3.1.1 Levee repair actions

- Placing underwater material to fill scour holes and then placing confining material primarily consisting of riprap and geotextile fabrics
- Filling levee scour holes with sand, and filling erosional areas with cohesive material (clay)
- Placing new riprap along eroded levee sections for protection
- Regrade levee slopes and add sod or lost protective vegetative cover and/or riprap
- Reseeding of all slopes that had vegetation damage, this may involve application of herbicide to first remove all undesirable vegetation
- Replacement of levee rock surfacing following levee crest reconstruction
- Mechanically placed fill breach repair, which consists of degrading the severely damaged levee sections upstream and downstream of the breach, filling the scour hole with pervious fill to the dimensions necessary to provide a base for levee construction using dredging or mechanical means, berm construction along the pre-flood alignment, and reconstruction of the levee and berm with mechanically placed fill
- Levee ramp damage repair
- Rebuilding a levee at the site of a breach. This can take the form of filling the scour with
 pervious material and rebuilding the levee to match the specifications of the surrounding
 levee cross section. Extended seepage or drainage features may also be required at the
 site of breach closures. If permanent breach closure repairs are conducted using sheet
 piling as a means of controlling under seepage, new or extended seepage or drainage
 features are usually not necessary.
- New levee seepage berm or other drainage features construction. While not exactly considered an exact "in-line" repair, construction of new or extended seepage or drainage features is a common PL 84-99 activity. These are typically constructed in areas where flood water seepage through a levee or its foundation have contributed to incrementally

- degraded geotechnical conditions. These also have the ability to result in more habitat impacts than the other in-line repairs.
- Rehabilitation of rock jetties or other in-stream bank stabilization features associated with the flood risk management levee project covered under the PL 84-99 Program
- Repair damaged streambank erosion protection structures
- Repairs to the existing river bank involving stabilization of the bank with riprap and implementation of a buffer area between the bank and the levee toe
- Installation of temporary channel crossings (e.g., temporary culverts and placed riprap to provide equipment access to a construction site and must result in a no-rise hydraulic condition)

3.1.2 <u>Seepage control and drainage structures</u>

- Construction of new interior drainage structures (culverts, pipes, flapgates, gatewells, etc.)
- Replacement of interior drainage structures
- Abandonment of interior drainage structures (e.g., filling pipe and gatewell structure with grout)
- Modification of existing drainage structures
- Installation of pump stations
- Removal of interior drainage structures
- Installation of new relief wells
- Abandonment of existing relief wells

3.1.3 Other minor activities

- Geotechnical explorations (e.g., pot holing with mechanical equipment, cone penetration tests, multi-electrode resistivity tests, etc.)
- Temporary staging areas and working pads for material and equipment (within project right of way; may also include levee crests or berms acting as haul roads, impacted areas would be restored to pre-disturbance conditions)
- Fencing
- Modifications to existing utility poles (as needed to complete PL 84-99 activities)
- Removal of existing utility poles and backfilling with compacted materials
- Street paving/ repair (any damage to public roads caused by construction activities would be repaired to pre-flood condition)
- Placement of monitoring monuments (e.g., carsonite posts, brass caps, etc.)

3.2 Small-scale levee setback/ levee breach closure

Small-scale levee setbacks, or reconstructing a small portion of the levee landward on a new alignment, are typically used in locations that have been subject to a levee breach or severe erosion of the levee, and typically are associated with large landward or riverward scour holes. Small-scale setback typically occur as part of emergency flood response efforts in order to close off levee breaches and might only be temporary in nature. Repairs that are outside of the original levee alignment, such as these small-scale setbacks, would be conducted when they are more technically feasible or less expensive than in-line repairs. Large scour holes can develop when a

levee is breached or overtopped. Levee breaches from the 2019 flood were between 10 and 70 feet in depth and dozens of acres in size. Rebuilding the levee in-line at a large breach can require more earthen material than it would to realign the levee in a new location. Structural repair in the form of a small-scale setback would likely use mechanically placed fill, but may use hydraulically placed fill and would consist of a setback levee of various lengths landward of the pre-flood alignment.

Heavy equipment would be used to obtain, move, shape, and compact earthen materials. Activities involved in small-scale setbacks involve filling a portion of the scour hole with pervious material to cut off river flow through the levee, placement of additional pervious material to create an expanded "sand pad" through the scour hole, building up the elevation of the sand pad to above the current river stage elevation, and construction of a berm on top of the sand pad to tie into the adjacent levee segments. The sand pad width would be determined by the need for seepage control and likely does not completely fill the scour hole.

In cases where the breach closure measures (as described above) will be incorporated into the permanent levee repairs, cohesive material would be placed on the riverward slope, levee crest, and possibly on the landward slope. Corps would then install sheet piling or construct seepage berms/ relief wells to control seepage. The levee would then typically be reseeded following construction to minimize soil erosion.

3.3 Large-scale levee setback

Large-scale levee setbacks are considered where significant foundational and/ or levee section damage precludes in-line repairs across 1 or more miles of a levee. These setbacks are typically multiple miles long, reconnect hundreds or thousands of acres of landward floodplain to the riverward side of the levee, and have only been conducted along the Missouri River in NWO to date. Such setbacks are likely to only take place along the Missouri River. Typically, construction of these kinds of setbacks under PL 84-99 in the NWO has been conducted where public lands were available, but setbacks could be conducted on or around private lands as well,. The USACE may also coordinate PL 84-99 large-scale levee setbacks with other programs (e.g., Missouri River Recovery Program, NRCS easements, State-owned lands, partnerships with The Nature Conservancy, etc.) to help reduce the impacts to private land if possible. Habitat restoration is recognized as being a significant benefit that can be achieved with large-scale levee setbacks.

3.4 Borrow

3.4.1 Routine, in-line repairs and non-Missouri River small-scale levee setbacks:

For more routine in-line repairs as well as the small-scale levee setbacks along streams other than the Missouri River, earthen materials may be obtained from previously used borrow sites, new borrow sites, commercial sites, or floodplain areas adjacent to the project area. Additionally, sand deposits transported onto the floodplain by flood waters could be scraped up and used as material for levee repairs.

3.4.2 Missouri River small-scale setbacks:

Regarding flood response efforts for closing Missouri River flowing inlet breaches, breach closure activities may have to be performed in standing water. Fill material may be sourced from dredging along the inside bends of the Missouri River channel or adjacent floodplain near the site, or silted-in Missouri River BSNP fish and wildlife mitigation sites such as side channels, backwaters, or wetlands. Mechanical excavations from the floodplain would be conducted where the floodplain is not inundated or only very shallowly inundated.

3.4.3 Missouri River large-scale setbacks:

The same methods associated with borrow mining for routine, in-line repairs described above are expected to be used for large-scale levee setbacks as well. Once exceptions is that the levee being replaced would also eventually be used as a source of borrow material, but not until the setback levee has been built to an evaluation with approximately a 25 year level of protection.

3.5 Construction associated with MRRP WMAs or other federal, state, or private habitat conservation land

The Missouri River Recovery Program (MRRP) was established by the U.S. Army Corps of Engineers (Corps) in 2005. The MRRP is an umbrella program that combines the following efforts: 1) Endangered Species Act (ESA) compliance for the Operation of the Missouri River Main Stem Reservoir System, Operation and Maintenance of the Bank Stabilization and Navigation Project (BSNP), and Operation of the Kansas River Reservoir System; 2) Acquiring and developing lands to mitigate for lost habitats as authorized in Section 601(a) of the Water Resources Development Act (WRDA) 1986 and modified by Section 334(a) of WRDA 1999 (collectively known as the BSNP Fish and Wildlife Mitigation Project); and 3) Implementation of WRDA 2007 including MRRIC and Section 3176, which allowed USACE to use recovery and mitigation funds in the upper basin states of Montana, Nebraska, North Dakota, and South Dakota.

Under the MRRP, the Corps has authority to acquire and develop 166,750 acres of land along the Missouri River. The purpose of MRRP is to restore a portion of the fish and wildlife habitat lost or degraded along the Missouri River due to the BSNP. The Fish and Wildlife Mitigation Plan of 1981 estimated losses from 1912 to 2003 to total 522,000 acres of aquatic and terrestrial habitat. This approximated aquatic habitat losses at 100,200 acres and 421,800 acres of terrestrial habitat. Desired habitat types are provided in the 2003 Record of Decision for the Final Supplemental Environmental Impact Statement for the Missouri River Bank Stabilization and Navigation Project. These desired habitat types include wetlands, bottomland forest, native prairie, chutes and side channels, shallow water habitat, backwater habitat, backwater areas and slack water habitats. The Missouri River Recovery Management Plan Environmental Impact Statement (MRRMP-EIS) identifies ideal aquatic habitat as open water at varying depths and inundation durations, including chutes, backwaters, floodplain lakes/oxbows, and emergent and forested wetlands and swales.

Portions of the MRRP sites can be designated for use as potential borrow areas for adjacent levee rehab. 33 CFR, Part 203 outlines requirements of local cooperation under the PL 84-99 program and section 203.82a states that, "If more advantageous to the Federal Government, borrow and disposal areas may be assumed as a Federal responsibility." Other federal, state, or privately

owned habitat conservation property could also be identified as a borrow site, such as state recreation areas or private NRCS easement areas. Portions of these sites that are considered as being put to optimal use would be avoided for use as borrow pits. Portions of these sites that would benefit from being converted to wetland (and that contain usable material) would be selected for use as a borrow site. Mechanical excavations would result in wetlands while hydraulic excavations would result in floodplain pools or restoration of previously constructed sand-filled aquatic habitat features (e.g., chutes or backwaters). The excavations are expected to result in ecological improvements to the WMAs. Fine grading and seeding plans to ensure proper site restoration would be developed for borrow pits on habitat conservation property.

3.6 Advanced Measures

Advanced measures responses consists of a combination of low-lying earthen embankments, sandbag structures, and/or innovative flood fight structures to minimize potential flood damages. A single course of action is developed due to the emergency nature of the proposed projects. The advanced measures are generally placed in locations where 'voids' in the existing flood management structures occur and are removed once the high flow event has passed. The ability to place earthen levees in all locations may be restricted due to constructability and limited available space. There may be other infrastructure outside of the areas protected by flood control structures that may require flood fight assistance. In these instances, the USACE would provide the entities with flood fight and flood proofing techniques to be disseminated to the affected residents.

4.0 Status of the Species and Critical Habitat

Species discussed in this section are those that were reported from the IPAC system and then verified through literature review, records search, and coordination with USFWS to be present in the action area. Those species listed in **Error! Reference source not found.** as "Not Present" in the action area had no associated documentation, records, or evidence to support their presence in the action area. Determinations of species presences in the Missouri River floodplain were previously coordinated with USFWS during Section 7 consultation for the Biological Opinion (BiOp) for the Operation of the Missouri River Mainstem Reservoir System, the Operation and Maintenance of the Bank Stabilization and Navigation Project, the Operation of Kansas River Reservoir System, and the Implementation of the Missouri River Recovery Management Plan (USFWS 2018a). Those species that are not present in the action are not evaluated further.

4.1 Interior Least Tern, Endangered

4.1.1 Status

The interior population of the least tern was listed as endangered under the ESA on May 28, 1985. The interior population was defined as any least tern that nested more than 50 km (31.1 miles) from the coast. On September 19, 1990, the recovery plan for the interior population was approved by USFWS. The recovery plan estimated the interior population at 5,000 adults in the United States, and set the recovery goal of 7,000 adults, which would have to be maintained for ten years before the species would be considered for de-listing. The plan set river and system goals of 2,100 adults on the Missouri River system, 2,500 for the lower Mississippi River, 1,600 adults for the Arkansas River system, 300 adults for the Red River system and 500 adults for the Rio Grande River system. The Missouri River system includes five rivers in five states. The Missouri River goal, essentially, was set at 900 adults.

In October 2013, USFWS completed a 5-year review of the interior least tern's listing status in accordance with requirements of the ESA of 1973 (USFWS 2013a). USFWS, through the 5-year review process evaluated the best available scientific information, which demonstrated an increase in abundance, number of breeding sites, and range of the least tern. These results led USFWS to conclude that the interior least tern is biologically recovered. However, a de-listing proposal will not be initiated until a range wide population model and monitoring strategy are completed, and commitments to maintain management through conservation agreements are in place.

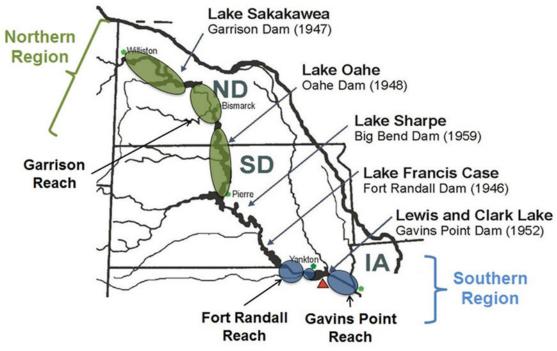
Interior least tern adult numbers on the Missouri River have fluctuated over time with a high of 1,054 observed in 2016 and a low of 273 in 2011. In 2018, the adult plover count was 987 birds, down 5% from 2017 (USACE 2019).

In the lower Platte River Valley, between 200 and 400 nests have been recorded since 2008 (Brown et al 2016). In 2017, approximately 70 nests were observed on sandbars between Columbus, NE and Plattsmouth, NE, while approximately 175 nests were observed at off-river sites (Brown et al. 2017).

4.1.2 Distribution

In the Great Plains, the interior least tern breeds along: portions of the Missouri River and many of its major tributaries; the Arkansas River in Oklahoma and Arkansas, the Cimarron and Canadian Rivers in Oklahoma and Texas; and the Red River and Rio Grande River in Texas (USFWS 1990). The interior least tern currently nests along > 4,600 km (2,858.3 miles) of river channels across the Great Plains and the Lower Mississippi Valley (Lott et al. 2013). Least terns are believed to winter primarily along coastal areas adjacent to the Pacific and Atlantic Oceans. On the Pacific side least terns have been reported wintering in southern Mexico and Columbia. On the Atlantic side, terns have been reported along the coast of Brazil and as far south as northern Argentina.

Along the Missouri River, least terns primarily nest in two regions: the Northern Region which includes the Missouri River from Fort Peck Lake, Montana to Fort Randall Dam, South Dakota, and the Southern Region which includes the Missouri River from Fort Randall Dam, South Dakota to Ponca, Nebraska (Figure 4-1). Other river systems within the action area where least terns are known to nest include the Platte and Elkhorn rivers.



Source: Adopted from Buenau et al. 2014

Figure 4-1. Geographic Range of Interior Least Terns and Piping Plovers on the Missouri River

4.1.3 Life History

The least tern is the smallest member of the tern family in North America. It is a slender bird with long narrow wings, a forked tail and pointed bill. Characteristics of the least tern that distinguish it in its alternative plumage from other terns include a black head cap, a white underside and forehead, grayish back and wings, orange legs, and yellow bill with a black tip. Interior least terns begin to arrive at the breeding grounds of the interior rivers in late April to early June and spend about 4 to 5 months at their breeding grounds. Least terns are gregarious and will typically nest in colonies of ten or more nests at a site. The terns are monogamous and

may retain mates over more than one breeding season. Unpaired terns will undergo courtship after arriving on the breeding grounds. Courtship involves courtship feeding, posturing, parading, nest scrapes and the fish flight. After the end of the courtship the pair will mate and both will construct nests with the female ultimately selecting the nest for egg laying.

Interior least terns nest on the ground, in open areas, and near appropriate feeding habitat (Lott et al. 2013). Nests are simple scrapes in the sand, and nesting sites are characterized by coarser and larger substrate materials, more debris, and shorter and less vegetation compared to surrounding areas. Vegetation free sand or gravel sandbars are preferred for nesting, although, sand banks, point bars, and beaches may also be utilized. Areas with trees or other vegetation that may hide or support predators are often avoided. Sandbar geophysiology and associated hydrology are integral components of suitable habitat. Least terns also nest on anthropogenic sites near water bodies with appropriate fish species and abundance, including industrial sites, dredge disposal sites, sand pits, and constructed habitats (Ciuzio et al. 2005).

Interior least terns are opportunistic piscivores, feeding on small fish species generally < 52 mm (2.0 in.) in length. Least terns will also occasionally feed on aquatic invertebrates and insects. Foraging habitat for least terns include side channels, sloughs, tributaries, and shallow water habitats adjacent to sandbars and the main channel.

4.1.4 Threats

The 1988 Least Tern Recovery Plan lists actual and functional loss of riverine sandbar habitat as the central threat. However, the 5-year interior least tern review indicates that the birds are resilient to range wide threats. Remaining threats and sources of threats to interior least terns are primarily localized (e.g., predation, vegetation encroachment on habitat, human disturbance, reservoir releases), regional (e.g., water table and flow declines), and/or stochastic (e.g., floods and droughts) and are not significant to the range wide status of the species. The population, number of breeding colonies, and range for least terns have expanded showing resilience to these threats and responsiveness to continued and ongoing local management (USFWS 2013).

4.2 Piping Plover, Threatened

4.2.1 Status

The piping plover was listed as threatened outside of the Great Lakes watershed on December 11, 1985, under the provisions of the ESA (USFWS 1985). In 2010, USFWS conducted a 5-year status review of the piping plover. The status review recommended retaining the piping plover's current classifications, endangered in the Great Lakes watershed and threatened elsewhere. The review indicated that the population of Northern Great Plains piping plover has increased since the listing, but remains below the recovery goals set out in the 1988 recovery plan. The Northern Great Plains population has historically been the largest of the three sub-populations (Figure 4-1).

Every five years, beginning in 1991, an International Piping Plover Census has been conducted of both the breeding and wintering grounds. The results of this census indicate that the Northern Great Plains piping plovers are the most numerous among the three, with an estimated 2,953 individuals in 1991 and an estimated 4,662 individuals in 2006. The breeding census fell to 2,249 on the Northern Great Plains in 2011 due to extreme flooding on the Missouri River and high

water levels elsewhere in this geographic area (Elliott-Smith et al. 2015). Results from the 2016 census are not yet available.

Piping plover adult numbers on the Missouri River have varied from a low of 82 in 1997 to high of 1,832 in 2016. The 30-year average is 810 adults. The adult plover count during the census interval of June 18 – July 3 was 1,277 birds, down 16% from 2017 (USACE 2019). A peak in fledge ratios preceded the peak in population sizes as a result of the lag of 1 to 2 years for birds to recruit into the breeding population. The largest numbers of fledglings were produced in 2004, followed by a peak in adult abundance in 2005. In 2018, habitat limitation, nest inundation, and predation reduced the annual fledge ratio to the lowest observed level since surveys began in 1993.

Along the lower Platte River from the Loup River confluence to the Missouri River confluence, the number of nests recorded on river sandbars since 2008 has ranged from 47 in 2009 to zero in 2015 (Brown et al. 2016). Piping Plovers most commonly nest at off-river sites in the lower Platte River Valley. Off-river sites are either active sand and gravel mines or retired mines which are converted to lakeshore housing developments (Brown et al. 2011). The number of nests recorded at off-river sites since 2008 has ranged from 42 in 2008 to 83 in 2017 (Brown et al. 2017).

4.2.2 Distribution

Piping plovers breed in three geographic regions of North America: beaches of the Atlantic Coast from South Carolina to Newfoundland, shorelines of the Great Lakes, and along alkaline wetlands and major rivers and reservoirs of the Northern Great Plains. The breeding population of the Northern Great Plains piping plover extends from Nebraska north along the Missouri River through South Dakota, North Dakota, and eastern Montana, and on alkaline reservoirs in North Dakota, Montana, and extending into Canada. Current geographic distribution of the Missouri River piping plover population is described by two distinct geographic regions as mentioned in Section 4.1.2 and Figure 4-1: the Northern Region and the Southern Region. Nesting plovers have also been documented on a number of Missouri River tributaries, including the Niobrara River, Loup Rivers, the Platte River, and the Kansas River. Piping plovers nesting at the periphery of the Northern Great Plains populations range are found in Colorado, Iowa, Kansas, and Minnesota.

The wintering grounds for piping plovers include the south Atlantic Coast from North Carolina to Florida, the Gulf Coast from Florida to Mexico, and the Caribbean. The majority of piping plovers from Prairie Canada winter along the south Texas coast, while breeding piping plovers from the United States are more widely distributed along the Gulf Coast from Florida to Texas.

4.2.3 Critical Habitat

Critical habitat was designated on the northern Great Plains breeding grounds on September 11, 2002. Critical habitat was designated for all populations of piping plovers on the wintering grounds on July 10, 2001, and redesignated in 2008 and 2009. Nineteen critical habitat units originally contained approximately 183,422 acres of prairie alkaline wetlands, inland and reservoir lakes, and portions of four rivers totaling approximately 1,207.5 river miles in Montana, Nebraska, South Dakota, North Dakota, and Minnesota. The Nebraska portion of the

critical habitat was vacated by U.S. District Court on October 13, 2005 due to incomplete economic analysis.

Primary constituent elements of critical habitat of the northern Great Plains population of the piping plover are those habitat processes (biological) and components (physical) essential for the biological needs of courtship, nesting, sheltering, brood rearing, foraging, roosting, intraspecific communication, and migration. The overriding primary constituent element (biological) necessary on all sites is the dynamic ecological processes that create and maintain the physical components of piping plover habitat. On rivers, the physical primary constituent elements include sparsely vegetated channel sandbars, sand and gravel beaches on islands, temporary pools on sandbars and islands, and the interface with the river. On reservoirs, the physical primary constituent elements include sparsely vegetated shoreline beaches; peninsulas; islands composed of sand, gravel, or shale; and their interface with the water bodies.

4.2.4 Life History

The piping plover is a small, stocky, migratory shorebird of the family Charadriidae. Adult piping plovers weigh between 43 and 63 g (1.5 and 2.2 oz) and have an average body length of 17 cm (6.7 in.) (Haig 1992). Throughout the year, adults have a sand-colored upper body, white undersides, and orange legs. During the breeding season, adults develop orange bills and single black bands on the forehead and breast.

Piping plovers begin to arrive on the breeding grounds in the first half of April, with courtship and nesting beginning in mid-to-late April. Finished nest scrapes or bowls are shallow depressions frequently lined with small pebbles or shell fragments (USFWS 1988a). The average clutch size for piping plovers is four eggs and eggs are laid every other day until the clutch is complete. Both adults will share incubation. Piping plovers readily re-nest if earlier nests fail, with the second clutch generally containing fewer eggs than the customary first clutch due the large energy expenditure. Piping plovers begin to leave the breeding grounds as early as mid-July, with adults leaving first and juveniles last (Elliott-Smith and Haig 2004).

Piping plover breeding habitat is comprised of open, sparsely vegetated sand and gravel beaches adjacent to alkali lakes and wetlands, on beaches of lakes and reservoirs, and on sandbars of rivers. Open, wet, sandy areas provide feeding habitat for plovers on river systems and throughout most of the birds' nesting range. Piping plovers feed primarily on exposed substrates by pecking for invertebrates at or just below the surface.

4.2.5 Threats

Reservoirs, channelization of rivers, and modification of river flows were identified in the 2016 piping plover 5-year review as major continuing threats because they reduce sandbar riverine habitat, increase flooding of remaining breeding habitat during the nesting season, and promote vegetation growth on sandbars that are rarely scoured by high flows (USFWS 2015). Avian and mammal predators are also a major threat to piping plover productivity throughout the species' breeding range. Predation reduces survival of eggs to chicks and survival of chicks to fledglings, with a much smaller impact on the survival of more mobile and experienced adults. Predation has been observed to be more significant when habitat is limited and nest densities are

higher. Predation is also affected by nest location (e.g., whether or not nests are on floodplain-connected habitat or separated by the river channel or near gallery forest) (Buenau et al. 2014).

4.3 Whooping Crane

4.3.1 Status and Distribution

The whooping crane was listed as endangered on June 2, 1970 under the provisions of the ESA. The wild flock that typically migrates through Nebraska is often referred to as the Aransas-Wood Buffalo Population (AWBP). In 2000, there were an estimated 180 birds in the AWBP. However, by 2017-2018, the mean population estimate had increased to 505 individuals (Silcock and Jorgensen 2018).

The migration through Nebraska occurs during the spring in late March through mid-April. Whooping cranes primarily migrate through central Nebraska but occasionally birds are found in the west and east. The greatest number is reported along the central Platte River region with fewer from the Loup River system, middle Niobrara River, and other areas (Silcock and Jorgensen 2018). Only a few whooping cranes have been reported in the eastern part of the state with two observed in the fall of 2010 in Lancaster County. Along the Missouri River, whooping cranes have been observed on wide sections of the river or floodplain where they can find shallow water, floodplain wetlands, or a wet sandbar. A 53-mile stretch of the Platte River, from Shelton, Nebraska to Lexington, Nebraska, has been designated as Critical Habitat by the USFWS. There is no critical habitat within the action area.

4.3.2 Life History

The whooping crane is the tallest bird in North America with snowy white plumage and black feathers on the carmine crown and malar region. Whooping cranes use shallow, sparsely vegetated streams and wetlands to breed, feed and roost during their migration. They feed on blue crabs, clams, frogs, rodents, small birds, and berries. Whooping cranes mate for life and generally live up to 24 years.

4.3.3 Threats

Collisions with manmade objects such as power lines and fences, shooting, chemical spills, predators, disease, and habitat destruction have been identified by the USFWS as current threats to wild cranes. In addition, the species has a slow reproductive potential, cyclic nesting, and a loss of two thirds of the original genetic material that have also resulted in low population numbers (USFWS 2018c).

4.4 Pallid Sturgeon, Endangered

4.4.1 Status

The pallid sturgeon was listed as endangered under the ESA on September 9, 1990. The USFWS established four recovery management areas listed below (USFWS 2014).

1. Great Plains Management Unit (GPMU), extending from the Great Falls of the Missouri River in Montana downstream to Fort Randall Dam, South Dakota, and including major tributaries such as the Yellowstone, Marias, and Milk rivers;

- 2. Central Lowlands Management Unit (CLMU), extending from Fort Randall Dam, South Dakota downstream to the confluence of the Missouri River with the Grand River, Missouri, and including major tributaries such as the Platte and Kansas rivers;
- 3. Interior Highlands Management Unit (IHMU), extending from the Grand River, Missouri to the confluence of the Missouri River with the Mississippi River and the segment of the Mississippi River from Keokuk, Iowa to Cairo, Illinois (confluence of the Ohio River); and
- 4. Coastal Plain Management Unit (CPMU), extending along the Mississippi River from the confluence of the Ohio River to the Gulf of Mexico, and including the Atchafalaya River distributary system.

A total population estimate is not available for the reach below Fort Randall Dam. Using published survival rates from hatchery-produced pallid sturgeon, it is estimated that approximately 1,986 hatchery-produced pallid sturgeon are currently present in this area.

4.4.2 Distribution

The historical distribution of the pallid sturgeon includes the Missouri and Mississippi River drainages. This included the Missouri River from its confluence with the Mississippi River upstream to the Great Falls in Montana and the Yellowstone River (USFWS 2014). In the Mississippi, the distribution most likely extended from near Keokuk, Iowa downstream to New Orleans, Louisiana (USFWS 2014). Pallid sturgeon also were documented in the lower reaches of large tributaries including the Tongue, Milk, Niobrara, Platte, Kansas, Big Sioux, St. Francis, Grand, and Big Sunflower Rivers (USFWS 2014). The present pallid sturgeon distribution is truncated by dam construction. Despite an overall decrease in distribution, pallid sturgeon were documented in the Atchafalaya River, Louisiana in 1991 due to increased sampling effort in the Mississippi River basin (USFWS 2014).

4.4.3 Life History

The pallid sturgeon is native to the Missouri and Mississippi rivers and is adapted to large, free flowing, warm-water, turbid rivers with a high sediment load that contributed to a shifting, dynamic, complex river morphology. Pallid sturgeon are a bottom-oriented, large river obligate fish that primarily use the main channel, side channels, and channel border habitats and have rarely been observed in habitats without flowing water (i.e., backwaters; USFWS 2014). Pallid sturgeon have been documented over a variety of substrates, but are often associated with sandy and fine bottom materials, preferring that to mud, silt, or vegetated river bottoms.

Based on wild fish, estimated age at first reproduction is 9 to 20 years for females and approximately 7 to 9 years for males (Keenlyne and Jenkins 1993; Steffensen et al. 2010); however, for hatchery fish stocked into the upper Missouri River, the earliest that males are reaching sexual maturity is 10 years of age and females 17 years of age.

Juvenile and adult wild pallid sturgeon feed opportunistically on benthic macroinvertebrates with increasing piscivory as they grow with fish > 600 mm (23.6 in.) consuming primarily fish in the upper Missouri River (Grohs et al. 2009). Larvae and age-0 juveniles consume brine shrimp in hatchery settings, indicating they may feed on zooplankton and other small invertebrates in the wild, but they (like other sturgeon larvae) are believed to forage on the bottom on any invertebrate or zooplankton that fits into their mouth (Buckley and Kynard 1981).

4.4.4 Threats

In 2014, USFWS's Pallid Sturgeon Recovery Plan described known and potential threats to pallid sturgeon throughout the species range. In the Missouri River basin, the primary habitat-related threats include river channelization, bank stabilization, and dam construction. These alterations have potentially affected pallid sturgeon by blocking spawning migrations, isolating populations, limiting genetic exchange, trapping large quantities of sediment, altering larval drift, altering water chemistry (DO, temperature, etc.), minimizing natural flow pulses, minimizing floodwater movement onto the floodplain and reducing habitat diversity by eliminating riverine habitat.

Other known and potential threats identified in the recovery plan include overutilization, disease/predation, inadequate regulatory mechanisms, and other natural or manmade factors. While disease and predation are both considered likely threats, the potential effects on pallid sturgeon populations are unknown due to limited data. Similarly, the potential impact of inadequate regulatory mechanisms is largely unknown due to a lack of information on population size, habitat use and susceptibility to various threats (such as contaminants and entrainment). Uncertainty also exists regarding other natural or manmade factors, which include energy development, hybridization, and invasive species.

4.5 Topeka Shiner

4.5.1 Status and Distribution

The Topeka shiner was listed as endangered on December 5, 1998 under the provisions of the ESA. The Topeka shiner is a small minnow that lives in small to mid-size prairie streams in the central U.S. Populations of the Topeka shiner have declined by 70% across its range over the past half century. Since 1999, the Topeka shiner has been documented in 223 small streams condensed into 87 HUC10 populations, and distributed among six states that include South Dakota, Minnesota, Iowa, Nebraska, Kansas, and Missouri (USFWS 2018b). In Nebraska only three streams are identified as potentially still harboring the species. Two streams, Taylor Creek and Union Creek are located within the Elkhorn River watershed in Madison County, and the other, Big Creek, is located within the North Loup River watershed in Cherry County. Big Creek, Taylor Creek, and Union Creek are located on privately owned land; however, these streams have had Topeka shiner collection records dated 1999 or later, with Topeka shiner documented in Taylor Creek as recently as 2016 (USFWS 2018b).

4.5.2 Critical Habitat

The USFWS designated 836 miles of stream as critical habitat for the Topeka shiner in 2004 in Minnesota, Nebraska, and Iowa. In Nebraska, critical habitat is designated in one stream segment, Taylor Creek totaling six stream miles of the Elkhorn River watershed in Madison County (USFWS 2004). Taylor Creek is somewhat modified in portions of its watershed, but retains several of the primary constituent elements necessary for designation as critical habitat, including stream morphology, pools, and instream habitat. The proposed reach of Taylor Creek is upstream from its confluence with Union Creek, near Madison, Nebraska (USFWS 2004).

4.5.3 Life History

The Topeka shiner is a small stocky fish with silvery to olive color and a pronounced black line which extends along the side. Their life span is three years with nearly 90% dying within the first

year (USFWS 2018b). Topeka shiners are found in quiet, slow-moving streams or spring-fed pools. They require gravel or sand-bottomed substrates with clear water. Pool areas outside the main channel of a stream are preferred. Topeka shiners are omnivores primarily feeding on insects and plant material. Topeka shiners are broadcast spawners with spawning season occurring in the summer months.

4.5.4 Threats

The three main threats to the Topeka shiner include habitat loss, increased sedimentation in small streams, and reduced water quality (USFWS 2018b). Additional threats include the creation of dams or impoundments on small streams and ponds being stocked with larger predatory fish which prey upon many smaller fish. Dams and impoundments change the water flow, temperature, and water quality to which the Topeka shiner is specifically adapted to. Dams also prevent migration up and downstream to find better habitat during times of low stream flow.

4.6 Indiana Bat, Endangered

4.6.1 Status and Distribution

In 1967, declining populations of the Indiana bat from disturbance and modification of hibernacula prompted its listing as "in danger of extinction" under the Endangered Species Preservation Act of 1966. Currently, under ESA, the Indiana bat is listed as endangered (USFWS 2016a). Critical habitat for the Indiana bat was designated on September 24, 1976, which includes 11 caves and 2 mines in the states of Illinois, Indiana, Kentucky, Missouri, Tennessee, and West Virginia. Out of the 6 states that contain Indiana bat designated critical habitat, Missouri has the largest number of these designated hibernacula with 5 caves and 1 mine (USFWS 2007). The range of the Indiana bat spans most of the eastern half of the United States. In 2005 it was estimated that over half of the entire population hibernated in caves in southern Indiana.

Indiana bat range includes portions of the lower Missouri River basin, specifically in Missouri. Hibernating population estimates for Indiana bat in Missouri show a downward trend from an estimated 399,000 in 1965 to 65,104 in 2005. As of 2006, 20 Indiana bat maternity colonies have been recorded in Missouri, some of which are in Chariton and Gasconade County, which are adjacent to the Missouri River. Two caves out of the six hibernacula designated as critical habitat for the Indiana bat in Missouri, are in Franklin County which is also adjacent to the Missouri River (USFWS 2007) although these hibernacula are not within the action area. Indiana bats are known for their small, mouse-like ears and dark-brown to black fur. Similar in size and weight to the northern long-eared bat, the Indiana bat weighs approximately 7g and has a wing span of 228.6 and 279.4 mm (9 and 11 in.) (USFWS 2016a). The head and body length of this species ranges between 4.1 and 49 mm (1.6 and 1.9 in.) and can be distinguished from similar bats by its distinctly keeled calcar (USFWS 2007).

4.6.2 Life History

The Indiana bat is often compared to the northern long-eared bat due to its similarity in size and habitat requirements. However, the Indiana bat requires hibernacula with cooler temperatures than those used by the northern long-eared bat and is more selective when choosing a roosting site (Foster and Kurta 1999).

Indiana bats begin to copulate in late summer to early fall and will store sperm through the winter and become pregnant in early spring after emerging from the caves. Female Indiana bats roost in maternity colonies of up to 100 or more individuals. Only one pup is born per female where they stay with their mother throughout the first summer (USFWS 2016a). Indiana bats will move to multiple new roosts, utilizing many different trees throughout the maternity season (Foster and Kurta 1999). Indiana bats are insectivores, feeding while in flight, on a variety of flying insects along rivers, reservoirs, and uplands. Each night this bat consumes up to half of their own body weight in insects (USFWS 2016a).

Indiana bats spend the winter hibernating in caves or mines in areas of stable temperatures below 50°C (122°F), but above freezing, with high humidity, and no air currents. Caves with these specific characteristics are limited throughout the range of the Indiana bat (USFWS 2016a). Indiana bats spend the summer months roosting in trees underneath bark, in cavities, or in crevices (USFWS 2016a). Indiana bats demonstrate preference when selecting a roost tree for those that are dying or dead and have been found to select trees by size, species, and surrounding canopy cover (Foster and Kurta 1999, and USFWS 2016a). Foraging habitat for this bat species is predominately forested areas or forested edges along rivers and reservoirs (Foster and Kurta 1999, and USFWS 2016a).

4.6.3 Threats

A primary threat to the Indiana bat is white-nose syndrome. This disease, first discovered in New York has spread rapidly into the Midwest region of the United States. Human activities such as disturbance of hibernacula, summer habitat loss or degradation, the use of pesticides and environmental contaminants, and wind farm operations are all responsible for declines in the Indiana bat populations (USFWS 2016a). Indiana bats are particularly vulnerable to disturbance as they hibernate in large numbers in only a limited number of suitable caves. A single hibernacula can contain 20,000 to 50,000 individuals, which if disturbed, can have significant impacts to the Indiana bat population. Caves have been modified by human activity and use. Through cave commercialization and improper gating, structural and climate characteristics have been altered in a way that is often times harmful to these species. Fragmentation and loss of forest has decreased the availability summer roosting and foraging habitat. The use of pesticides can decrease the amount of available prey (insects) for these species in localized areas and has led to the consumption of contaminated insects and water (USFWS 2016a).

4.7 Northern Long-eared Bat, Threatened

4.7.1 Status and Distribution

The northern long-eared bat was listed under ESA on April 2, 2015 as threatened due to severe impacts to the population from the effects of white-nose syndrome (USFWS 2016b). The status of this species remains centered on white-nose syndrome which is evident in the Final 4(d) Rule established in January 2016 which allows for flexibility under ESA in areas not affected by white-nose syndrome. In April 2016 it was ruled that designating critical habitat for the northern long-eared bat was not prudent (USFWS 2016b).

The northern long-eared bat is widely distributed throughout the eastern and north central United States, and Canada (USFWS 2016b). During swarming and hibernation, it is commonly encountered in the New England states of the US, Quebec Canada, and Ontario Canada (Caceres

and Barclay 2000). Less commonly, the northern long-eared Bat ranges south into Florida and west into Alberta, British Columbia, Montana, and Wyoming (Caceres and Barclay 2000). During the summer months this species could occur in the action area to feed and roost in forested areas along rivers. Abundance of this species has the potential to be high during the summer in localized areas along the Missouri River where there is available roosting and foraging habitat. This species is present in the Missouri River basin and action area. Much of the upper and lower Missouri River runs through the range of the northern long-eared bat. The portion of the Missouri River in southeastern South Dakota, along the Iowa/Nebraska border and through the entire state of Missouri is within the white-nose syndrome zone. Thus, individuals in these areas are subject to full protection under ESA. Some of the counties adjacent to the Missouri River in Nebraska have known hibernacula infected with white-nose syndrome.

4.7.2 Life History

The northern long-eared bat, is identifiable by its long ears, medium to dark brown fur, medium-sized body, and relatively longer tail when compared to other similar bat species (USFWS 2016b). The head and body length of an adult northern long-eared bat is less than 50 mm, with overall total body length reaching up to 95mm. This species has a body mass of 5–8 g (0.2–0.3 oz) and females are generally larger and heavier than the males.

Northern long-eared bats typically hibernate mid-fall through mid-spring each year. Prior to hibernation, male and female northern long-eared bats begin to visit hibernacula and copulate in July until September or early October (Caceres and Barclay 2000). Female northern long-eared bats will store sperm throughout the winter months until the spring when they will fertilize a single egg (Caceres and Barclay 2000). Following fertilization, females migrate to summer areas where they roost individually or in colonies (USFWS 2016b). Northern long-eared bats do not reproduce in the action area but will rear young in forested areas adjacent to rivers. The northern long-eared bat is an insectivore, feeding at dusk preying on moths, leafhoppers, caddisflies, and beetles while in flight or by gleaning insects from vegetation (USFWS 2016c).

The northern long-eared bat spends its winters hibernating in caves or mines with areas of constant temperatures, high humidity, and no air currents (USFWS 2016c). During summer, suitable habitat includes forested areas, including adjacent areas such as wetlands, agricultural fields, and pastures. The northern long-eared bat spends the summer months roosting in trees underneath bark, in cavities, or in crevices (USFWS 2016c). Generally, northern long-eared bats have a broad roosting niche and are likely not dependent on a particular species of tree. Trees, either live or dead, which form suitable cavities or retain bark, can be considered viable roost trees for northern long-eared bats and will be used if present. This bat has also occasionally been found roosting in structures like barns, bridges, and bat houses, particularly when other suitable roosts are unavailable. Foraging habitat for this species is predominately forested areas or forested edges along rivers and reservoirs (USFWS 2016b and USFWS 2016c).

4.7.3 Threats

The primary and most significant threat to the northern long-eared bat is white-nose syndrome. This disease, first discovered in New York has spread rapidly into the Midwest region of the United States and is anticipated to continue to spread throughout the rest of the northern long-eared bat's range and further west. It is estimated that the population of northern long-eared bats

in the Northeast has declined by up to 99 percent with the primary factor aiding in this decline being white-nose syndrome (USFWS 2016b). Human activities such as disturbance of hibernacula, summer habitat loss or degradation, the use of pesticides and environmental contaminants, and wind farm operation are all responsible for declines in the northern long-eared bat populations (USFWS 2016b and USFWS 2016c). Through cave commercialization and improper gating, structural and climate characteristics have been altered in a way that is often times harmful to bats. Fragmentation and loss of forest has decreased the availability summer roosting and foraging habitat. The use of pesticides can decrease the amount of available prey (insects) for these species in localized areas and has led to the consumption of contaminated insects and water (USFWS 2016b). Wind turbines have been known kill bats in large numbers through strike and several documented mortality cases for northern long-eared bats exist, although small in number (USFWS 2016b).

4.8 Salt Creek Tiger Beetle

4.8.1 Status and Distribution

The Salt Creek tiger beetle was listed as federally endangered on November 7, 2005. The Salt Creek tiger beetle has one of the most restricted ranges of any insect in the U.S. and is currently limited to segments of Little Salt Creek and adjacent remnant saline wetlands in northern Lancaster County, Nebraska (USFWS 2016d). Six metapopulations of the subspecies once occurred on Rock and Oak Creeks, in addition to Little Salt Creek. The Rock and Oak Creeks metapopulations are thought to have been extirpated since 1991 (USFWS 2016d). Critical habitat for the Salt Creek tiger beetle was designated on May 6, 2014 which included 449 hectares (1,110 acres) in Lancaster and Saunders Counties, Nebraska (79 FR 26013). The designation includes saline seeps along Rock, Little Salt, Oak, and Haines Branch Creeks. No critical habitat is located within the action area.

4.8.2 Life History

The Salt Creek tiger beetle is metallic brown to dark olive green above, with a metallic dark green underside. It is distinguished from other tiger beetles by its distinctive form, reduced markings, and the color pattern on its dorsal and ventral surfaces. Research indicates that the subspecies naturally has a two-year life cycle. Adults are first observed as early as mid-May or as late as mid-June. Their numbers peak about two-weeks after the first individuals appear and begin to feed and mate.

The entire life cycle of the Salt Creek tiger beetle occurs in saline wetlands, on exposed saline mud flats, or along mud banks of streams and seeps that contain salt deposits and are sparsely vegetated (USFWS 2016d). Salt Creek tiger beetles require a permanent source of water; open, barren salt flat areas for construction of larval burrows, thermoregulation, and foraging. Adults prey on other insects on sandbar, mid-stream gravel bar, and salt flat habitats.

4.8.3 Threats

The USFWS recovery plan lists the Salt Creek tiger beetle as a recovery priority number of 6C, which means it is a subspecies that faces a high level of threat. The most significant threat is the destruction, modification, or curtailment of habitat or range. Commercial and residential developments have resulted in the extirpation of two of the metapopulations and a reduction in

the remaining saline wetlands. Additional threats include stream channelization, bank stabilization, incisement, and agricultural development.

4.9 Western Prairie Fringed Orchid

4.9.1 Status and Habitat

The prairie fringed orchid was listed as threatened on September 28, 1989. The western prairie fringed orchid is an herbaceous perennial that can grow up to three feet in height. The western prairie fringed orchid is reportedly long lived, provided adequate environmental factors. This plant is entirely propagated by seed and perpetuates through a perennating bud which forms on fusiform tubers. The initial shoot will emerge between April and May. The western prairie fringed orchid historically was found throughout the Tallgrass prairie region of the central U.S. Currently, it is found from Manitoba in the north to Oklahoma in the south. Approximately 90% of all extant plants in North America occur in North Dakota, Minnesota, and Manitoba, Canada (Morrison et al. 2015). The western prairie fringed orchid occurs in moist tallgrass prairies and sedge meadows. Soil moisture is a critical determinant of growth, flowering, and distribution of western prairie fringed orchid (USFWS 2009).

In Iowa, southeastern Kansas, Missouri, and eastern Nebraska the species is now extirpated from a significant number of counties where it occurred historically (USFWS 2009). In eastern Nebraska they have been found in upland prairies and loess soils. In central Nebraska and northeast Nebraska they occur in wet prairies and meadows. Nebraska counties within the action area where historical populations have been previously reported include Sarpy, Otoe, Lancaster, Seward, Saline, Madison, and Pierce counties. In Iowa, extant populations have been reported in Pottawattamie and Mills counties and in Missouri, Atchison and Holt counties (USFWS 2009). According to coordination with USFWS during consultation for the Missouri River BiOp, there are no records or habitat for the western prairie fringed orchid in the Missouri River floodplain (USFWS 2018a).

4.9.2 Threats

Identified threats to the western prairie fringed orchid include conversion of habitat to cropland, overgrazing, invasive species, lack of management, drainage, and actions to control invasive species (USFWS 2009). The USFWS identified intensive hay mowing that may reduce primary productivity and reduce seed dispersal as a threat at the time of listing in 1989 and reconfirmed the importance of this threat in Nebraska in 2005, pointing specifically to annual mid-summer haying as a practice that is facilitating the long-term invasion of western prairie fringed orchid habitats by exotic cool season grasses (USFWS 2009).

5.0 Effects Analysis

This section discusses the effects of the proposed action on those species identified by the IPAC report to occur in the action area. This section provides a detailed description of the elements of the proposed action and the associated activities to determine what activities the species would be exposed to and if the exposure produced a likelihood of a response and effect, and if so, the magnitude or significance of that effect. Effects are described as direct or indirect effects. Direct effects include all immediate impacts (adverse and beneficial) from project-related actions. According to the ESA rules and regulations, direct effects occur at or very close to the time of

the action itself. Indirect effects are caused by or result from the proposed action, are later in time and are reasonably certain to occur. Indirect effects may occur outside of the area directly affected by the action. Only those activities that have been determined to have potential effects on a species are further discussed in this section.

USACE would coordinate with USFWS during site-specific project implementation to ensure impacts are avoided or minimized. Avoidance, minimization, and mitigation measures would be developed and implemented at the site-specific level when individual projects are implemented.

5.1 Interior Least Tern and Piping Plover

5.1.1 Direct and Indirect Effects

The interior least tern and piping plover nest along the Missouri River in the Northern Region and Southern Region (Figure 4-1) from mid-April through August. The reach of the Missouri River below Ponca, Nebraska defined as the BSNP does not typically support nesting of least terns and piping plovers. No piping plover nesting activity has been recorded on this reach of the Missouri River since the species was listed. Least terns have been observed nesting within the completed Deer Island "top width widening" habitat restoration project in Harrison County, IA and among the floodplain sand deposited that resulted from the 2011 flooding. Although the BSNP does not typically support nesting habitat, it is possible for least terns and piping plovers to nest on large sand deposits near or adjacent to the river as a result of the 2019 flood event. If levee repair or borrow activities were to occur during the nesting season at these sand deposits, direct effects may include minor and temporary physical disturbance from construction equipment, noise disturbance, and human present.

During the nesting season, it is likely that interior least terns and piping plovers would be present in the portion of the action area along the lower Platte and Elkhorn rivers. From mid-April through August terns and plovers may be found nesting on river sandbars, lakeshore housing developments, reservoirs, and sand and gravel mines located along these river reaches. If levee repair activities were to occur during this timeframe, direct effects may include minor and temporary physical disturbance from nearby construction equipment, noise disturbance, and human presence. No impacts to nesting habitat would occur as work would be located on levees that are manmade structures planted with grass species that are frequently mowed. No indirect effects are anticipated to occur to the least tern or piping plover as a result of the proposed action. After evaluation of the potential effects of the proposed action, the USACE concludes that the proposed action may affect, but will not likely adversely affect the least tern and piping plover.

In the event of a major levee setback project, USACE would coordinate with USFWS during site-specific project implementation to ensure impacts are avoided or minimized.

5.1.2 Conservation Measures

Surveys would be conducted if least terns and piping plovers are present within 0.25 miles of the proposed activities during the nesting period of April 15 – August 15. If at any time, a nest, nesting behavior, and/or chicks are observed within 0.25 miles of where construction activities will occur, work will cease and USFWS will be contacted immediately.

5.2 Piping Plover Critical Habitat

There is no piping plover critical habitat designated within the action area of the proposed action. The proposed action will have no effect on piping plover critical habitat as activities associated with the proposed action would not occur within the bounds of the designated critical habitat.

5.3 Whooping Crane

5.3.1 Direct and Indirect Effects

Whooping crane migration periods occur between March and May and September to November and would only likely be found in the action area as it is passing through. Migrating birds feed in croplands and roost in shallow, freshwater wetlands. It is not anticipated that whooping cranes would be negatively impacted by the proposed action as it is not likely they would be found in the action area. Habitats on levees are usually disturbed by manmade activities and often protect urban areas.

Levee setbacks would have long-term beneficial impacts on whooping cranes by restoring the floodplain or floodway which would create additional foraging and roosting habitat. Additionally, borrow material from BSNP fish and wildlife mitigation sites would create additional wetland habitat that would be beneficial for whooping cranes. As a result of the proposed action, no direct or indirect effects are anticipated to occur to the whooping crane. The proposed action would have no effect on the whooping crane.

5.4 Pallid Sturgeon

5.4.1 Direct and Indirect Effects

As noted in Section 4.4, pallid sturgeon are native to the Missouri and Mississippi Rivers and is adapted to large, free flowing, warm-water, turbid rivers with a high sediment load. Pallid sturgeon do occur in the action area within the lower Missouri River and lower reaches of the Platte River. Activities for in-line repairs that include mechanical fill would have no direct or indirect effects on pallid sturgeon as these activities would occur outside of the river channel on dry land.

Hydraulic dredging in the Missouri River for the use of emergency levee breach closure work has the potential to temporarily impact pallid sturgeon. Hydraulic dredging would only occur in the floodplain and/or in specified locations within river channel on the inside bends in between the dike fields. No dredging activities would occur in the thalweg of the main channel. Lower Missouri River pallid sturgeon have been documented to spawn in deep, turbulent, fast water on the outside of river bends, over revetted banks or bedrock (DeLonay et al. 2014; Jacobson et al. 2016). Because of this, pallid sturgeon eggs are not likely to be co-located with dikes, sills, and kickers and are therefore unlikely to be adversely affected by hydraulic dredging or the placement of hydraulic fill on levee breaches. Nearby dredging could result in localized increases in turbidity, however, the increases generated from this activity is likely to be well within pre-regulation turbidity levels of the Missouri River.

Placement of stone material into portions of the Missouri River, Platte River, Elkhorn River, Niobrara River, or their stream banks may be required as part of levee rehabilitation activities. This has the potential to negatively impact pallid sturgeon individuals or their habitat if

conducted during March 1 and June 30. Because of this, the Corps would seek to avoid construction activities that required placement of rock into these streams between March 1 and June 30. Therefore, rock placement in these stream may affect, but it not likely to adversely affect the pallid sturgeon.

The vast majority of pallid sturgeon free embryos drift in or adjacent to the thalweg where velocities are high. Although a few free embryos will drift into regions of lower velocity flow (for example, along inside bends), most will be concentrated in the higher velocity regions and adjacent to outside bends. Because of this, pallid sturgeon free embryo/larvae are not likely to be adversely affected by hydraulic dredging if dredging occurs within the specified channel locations and/or within the spawning season.

Juvenile and adult pallid sturgeon occur throughout the Missouri River so juvenile pallid sturgeon could be present in proximity to dikes, however the benthic nature of juvenile pallid sturgeon suggests the probability of pallid sturgeon occupying the actual physical structures is low and any effect would be discountable. Hydraulic dredging would result in short-term disturbance, localized increases in turbidity, and may generate unnatural noise levels. It is anticipated that juvenile pallid sturgeon would immediately move away from the dredging location once equipment was mobilized to the site and activities began to occur. Short-term and localized turbidity increases generated from dredging are likely to be well within historic high turbidity levels of the Missouri River. Noise attenuates through water and dissipates when it encounters land. Thus, in a meandering river, the distance that noise would travel is limited to the first bend upstream and downstream of the dredging area.

In 2015, USACE completed a biological assessment for commercial sand and gravel dredging on the lower Missouri River (USACE 2015). The risk of entrainment to juvenile pallid sturgeon within the lower Missouri River was thoroughly analyzed and USACE concluded "...the proposed action's potential to adversely affect the pallid sturgeon during the larval drift period is improbably low, thus minor and discountable. Concurrence from the USFWS was provided in a letter dated Nov. 20, 2015 that stated "The USACE Biological Assessment focuses much of the analyses on potential effects to the pallid sturgeon. The document included updated information on larval sturgeon," based on those analyses, the USFWS concurs with the USACE determination that the proposed permits, including the conservation measures incorporated as special conditions, may affect, but are not likely to adversely affect the pallid sturgeon." For more information regarding the analyses contained within the Biological Assessment and Letter of Concurrence from USFWS see http://www.nwk.usace.army.mil/Missions/Regulatory-Branch/Missouri-River-Commercial-Dredging/.

Levee setbacks would have negligible impacts on pallid sturgeon. Conversion of predominantly agricultural lands to native floodplain habitats may increase localized in-river primary and secondary productivity, which could provide a long-term, indirect benefit for pallid sturgeon. After evaluation of the potential effects of the proposed action, the USACE concludes that the proposed action may affect, but will not likely adversely affect the pallid sturgeon.

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Additionally, dredging within existing USACE created backwaters, chutes, or other off-channel aquatic habitat constructed under the Missouri River Recovery Program (shallow water habitat or SWH) may occur. Dredging in SWH would be conducted to restore the habitat project to its original design elevation and geometry, so would be akin to actions typically referred to as SWH operation and maintenance. This dredging would be expected to have similar impacts to the river dredging described above (temporary turbidity increases, etc.), but would result in the added benefit of hydrologically reconnecting the river to silted in SWH. Dredging of backwaters or chute entrances that have silted in would result in improved access for native fish, including the pallid sturgeon to these off-channel aquatic habitats. Opening up silted connections between SHW and the Missouri River would also be expected to result in improved exchange of nutrients and prey base species from the backwater to the mainstem, allowing the SWH-river interface to serve as more productive foraging areas for native fish.

5.4.2 Conservation Measures

Pallid sturgeon spawning locations on the lower Missouri River are monitored annually as part of the USACE-funded Comprehensive Sturgeon Research Project led by the U.S. Geological Survey. Individual pallid sturgeon of both sexes have been documented returning to the same section of river to spawn (DeLonay et al., 2010; DeLonay et al., 2012).

USACE would use the results of ongoing monitoring of pallid sturgeon spawning behavior on the lower Missouri River to evaluate if seasonal restrictions on the proposed activities are warranted. USACE would implement seasonal restrictions on proposed activities where appropriate.

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To be more explicit, there are specific conservation measures that would be implemented during Missouri River mainstem or off-channel aquatic habitat (ie, SWH) dredging. These include avoiding any dredging or rock placement in the river or SWH between March 1 and June 30. This avoidance timeframe varies state by state, but this is the widest window when considering NE, IA, and MO timeframe restrictions. Additionally, dredging operations in the mainstem would be expected to take place along inside bends of the river. By implementing these conservations measures, the USACE expects that dredging for the purpose of mining sand material for levee repairs "may affect, but is not likely to adversely affect" pallid sturgeon.

5.5 Topeka Shiner

5.5.1 Direct and Indirect Effects

In Nebraska only three streams are identified as potentially still harboring the Topeka shiner. Two streams, Taylor Creek and Union Creek are located within the Elkhorn River watershed in Madison County, and the other, Big Creek, is located within the North Loup River watershed in Cherry County. All three streams are located outside of the action area. Proposed work in Madison County will be located in northeastern Madison County on the North Fork Elkhorn River near Norfolk, Nebraska. Therefore, no direct effects to the Topeka shiner from the proposed action would occur.

Although the action area is in the same watershed as the streams inhabited by the Topeka shiner, the mouth of the North Fork Elkhorn River is upstream of the mouth of Union Creek. Any

temporary increase in turbidity from rehabilitation work would flow into the Elkhorn River and not into Union Creek. Therefore, no indirect effects to the Topeka shiner from the proposed action would occur. The proposed action will have no effect on the Topeka shiner as activities associated with the proposed action would not occur within the bounds of the streams identified as potentially harboring the Topeka shiner.

5.5.2 Topeka Shiner Critical Habitat

The IPAC reviewed for this species indicates that the designated critical habitat includes most of Madison County, Nebraska. However, according to the Federal Register, critical habitat is only designated in one stream segment, Taylor Creek, totaling six stream miles of the Elkhorn River watershed in Madison County (USFWS 2004). Therefore, according to the Federal Register, there is no Topeka shiner critical habitat designated within the action area of the proposed action. The proposed action will have no effect on Topeka shiner critical habitat as activities associated with the proposed action would not occur within the bounds of the designated critical habitat.

5.6 Indiana Bat, Endangered

5.6.1 Direct and Indirect Effects

During the summer months, it is likely that Indiana bats would be present in the portion of the action area along the lower river in Missouri. There are known maternity colonies in Missouri counties that are adjacent to the river. Indiana bats roost in large colonies underneath bark, in cavities, or in crevices of trees in areas along the river. This roosting habitat is essential for birthing and rearing young. Any clearing of trees and vegetation in the action area while these bats are roosting and rearing young has the potential to disrupt the females and their young. Clearing of vegetation or trees also has the potential to reduce the amount of foraging and roosting habitat available to bats present at the time or in the future. Noise and other physical disturbance would be temporary and localized and would not affect the availability of roosting areas or foraging opportunities for the Indiana bat. The proposed action may affect but will not likely adversely affect this species in the case of clearing and vegetation removal in roosting and foraging habitat areas. The implementation of conservation measures specifically to avoid disruption or removal of trees during the roosting season will be required to avoid effects to this species.

5.6.2 Conservation Measures

Site specific analysis would occur prior to project implementation to avoid effects to Indiana bat. To avoid impacts to Indiana bats clearing of trees greater than or equal to 5 inches in diameter will be restricted March 31 to October 15 unless it is determined that no hibernaculum exists within a 5-mile radius of the project site. If no hibernaculum exists within a 5-mile radius of the project area, then clearing of trees greater than or equal to 5 inches in diameter will be restricted from March 31 to November 15. On a site to site basis and when possible, clearing large trees with sluffing bark and snags will be avoided, even outside of clearing restriction timeframes. When necessary, bat surveys will be conducted to ensure effects are avoided to the extent possible.

5.7 Northern Long-eared Bat, Threatened

5.7.1 Direct and Indirect Effects

During the summer months, it is likely that northern long-eared bats would be present in the action area in forested areas along the rivers to roost, rear their young, and forage. Northern long-eared bats roost underneath bark, in cavities, or in crevices of trees. This roosting habitat is essential for birthing and rearing young. Any clearing of trees and vegetation in the action area while these bats are roosting and rearing young has the potential to disrupt the females and their young. Clearing of vegetation or trees also has the potential to reduce the amount of foraging and roosting habitat available to bats present at the time or in the future. Noise and other physical disturbance would be temporary and localized and would not affect the availability of roosting areas or foraging opportunities for the northern long-eared bat. The proposed action may affect but will not likely adversely affect this species in the case of clearing and vegetation removal in roosting and foraging habitat areas. The implementation of conservation measures specifically for the northern long-eared bat will avoid effects to this species.

5.7.2 Conservation Measures

Site specific analysis would occur prior to project implementation to avoid effects to the northern long-eared bat. Projects requiring clearing in the range of the northern long-eared bat will need to comply with the 4 (d) rule, and consultation with the appropriate USFWS office on each individual project will occur. Through consultation, each project location will be evaluated for its proximity to known hibernaculum, proximity to maternity roost trees, and whether the project is in the white nose syndrome zone or not. To avoid impacts to northern long-eared bats, cutting or removal of known roost trees or clearcut and other tree clearing methods within a 25-mile radius of a known roost tree between June 1 to July 31. On a site to site basis and when possible, clearing large trees with sluffing bark and snags will be avoided, even outside of clearing restriction timeframes. When necessary, bat surveys will be conducted to ensure effects are avoided to the extent possible.

5.8 Salt Creek Tiger Beetle

5.8.1 Direct and Indirect Effects

The Salt Creek tiger beetle is currently limited to segments of Little Salt Creek and adjacent remnant saline wetlands in northern Lancaster County, Nebraska (USFWS 2016d). No saline wetlands are present within the proposed action area. The proposed action area includes the levee along Salt Creek from approximately Van Dorn Street to Superior Street in Lincoln, Nebraska. Most levees are manmade structures and are devoid of trees, shrubs, and bushy vegetation. No project activities are expected to occur within the vicinity of suitable habitat. In addition, no designated critical habitat is present within the action area. As a result of the proposed action, no direct or indirect effects are anticipated to occur to the endangered Salt Creek tiger beetle. After evaluating the potential effects of the proposed action, the USACE concludes that the proposed action would have no effect on the Salt Creek tiger beetle or Salt Creek tiger beetle critical habitat on the premise that the action area is not located within suitable habitat for this species.

5.9 Western Prairie Fringed Orchid

5.9.1 Direct and Indirect Effects

Most levees proposed for rehabilitation occur within urban areas and not in western prairie fringed orchid habitat of wet prairies and meadows. The disturbance caused by associated factors with urbanization has likely diminished this species' ability to thrive within the action area. It is not expected that the western prairie fringed orchid would be found within the action area, therefore it is not expected there would be direct effects as a result of the proposed action. Most levees are manmade structures and are devoid of trees, shrubs, and bushy vegetation, and habitats on levees are usually disturbed by manmade activities. As per coordination with the USFWS during the 2018 BiOp consultation, no records of the western prairie fringed orchid or habitat occur in the Missouri River floodplain. As a result, no direct or indirect effects are anticipated to occur to the western prairie fringed orchid from hydraulic dredging in the Missouri River floodplain or obtaining borrow from MRRP lands. After evaluating the potential effects of the proposed action, the USACE concludes that the proposed action would have no effect on the western prairie fringed orchid.

5.10 Cumulative Effects

Cumulative effects under the ESA are defined as "...those effects of future State, or private activities, not involving federal activities that are reasonably certain to occur within the action area of the federal action subject to consultation" (50 CFR 402.02). Future federal activities that are not inter-related or interdependent to the proposed action are not considered because they would be subject to separate future consultation under the ESA. Many levees and structures within the action area are privately owned or do not fall under the PL 84-99 program. Repairs to these structures by other levee sponsors or private entities is reasonably certain to occur as a result of recent and potential future flood events.

Ongoing trends that are likely to occur include further expansion of commercial and residential areas, increased floodplain development (i.e., urban, industrial, commercial), management of flood control structures, continued depletions and return flows from municipal, industrial and agricultural uses on the Platte and lower Missouri Rivers, and ongoing construction and maintenance of bridges, highways, local roads, railways, and utility rights-of-way.

Increased water temperatures from outfalls and introduction of contaminants from industrial, agricultural, and municipal sources may contribute to lack of pallid sturgeon recruitment by reduced egg quality and fitness of offspring, but the levels of contaminants associated with diminished fitness in the laboratory are substantially higher than those documented in field data (Buckler 2011). Runoff from surrounding commercial, residential and agriculture developments may also continue to pose a threat to saline wetlands in which the salt creek tiger beetle inhabits. Terrestrial habitats would continue to be disturbed and degraded through removal of natural vegetation with ongoing development from a variety of sources. As floodplains become more developed, human disturbance will be a continuing and likely increasing threat to several listed species such as the piping plover (USFWS 2015). Human disturbance was identified as a continuing threat in the draft revised piping plover 5-year review conducted by the USFWS in 2015.

5.11 Influence of Climate Change on Effects of the Proposed Action

Across the Northern Great Plains, summer temperatures are projected to increase from 2.3°–6.7°F (1.3°–3.7°C) to more than 5.4°–11.0°F (3.0°–6.1°C) by the end of the century (Hayhoe et al. 2018). Northern areas of the Great Plains are projected to experience a wetter climate by the end of this century as precipitation increases of up to 20% are projected in winter and spring for the north central United States (Hayhoe et al. 2018). This shift in temperature and moisture could have potential effects to levee systems and flood control structures. Climate models project an increase in the number of heavy precipitation events, and these extreme precipitation events may lead to more severe floods and greater risk of infrastructure failure. Additionally, changing precipitation patterns in the Rocky Mountains would likely have potential effects on the amount of inflow into the Platte and Missouri River systems, also affecting listed species that inhabit these watersheds. Precipitation data from 1901 through 2012 show an increase in average precipitation over the time period (NRCS 2012).

The climate scenario described could influence the long-term availability of habitats used by ESA-listed species evaluated in this BA. An increase in the frequency of flooding that would inundate other habitat more frequently could cause changes in the acres of habitat classes with increases in wetter habitats (i.e., open water, emergent wetland, scrub shrub wetland, and riparian woodland/forested wetland) and decreases in drier habitats (i.e., forest and upland grassland) if precipitation and streamflow increase. Increased drought conditions could have the opposite effect (i.e., increases in drier habitats and decreases in wetter habitats). The influence of climate change is not expected to exacerbate the impacts of the Proposed Action on ESA-listed species evaluated in this BA.

6.0 Determination of Effects Summary and Conclusion

Table 6-1 summarizes USACE determination on the effects of the proposed action on the ESA-listed species analyzed in Section 5. The proposed action includes a range of O&M and structural repair activities that provide rehabilitation, advanced measures, and direct assistance to Federal and non-Federal levee sponsors along the Missouri, Platte, and Elkhorn Rivers in eastern Nebraska, western Iowa, and northern Missouri enrolled in the PL 84-99 Program. Under the proposed action, USACE concludes that the proposed action would have "no effect" on piping plover critical habitat, whooping crane, Topeka shiner, Topeka shiner critical habitat, Salt Creek tiger beetle, Salt Creek tiger beetle critical habitat, and western prairie fringed orchid. USACE concludes that the proposed action "may affect, but not likely to adversely affect" the least tern, piping plover, pallid sturgeon, Indiana bat, and northern long-eared bat.

Table 6-1. Effects Determination for ESA-listed Species in the Proposed Action Area

Common Name	Scientific Name	Determination of Effect	
Least Tern	Sternula antillarum	May Affect, Not Likely to Adversely Affect	
Piping Plover	Charadrius melodus	May Affect, Not Likely to Adversely Affect	
Piping Plover Critical Habitat		No Effect	
Whooping Crane	Grus americana	No Effect	
Pallid Sturgeon	Scaphirhynchus albus	May Affect, Not Likely to Adversely Affect	
Topeka Shiner	Notropis topeka (=tristis)	No Effect	
Topeka Shiner Critical Habitat		No Effect	
Indiana Bat	Myotis sodalis	May Affect, Not Likely to Adversely Affect	
Northern Long-eared Bat	Myotis septentrionalis	May Affect, Not Likely to Adversely Affect	
Salt Creek Tiger Beetle	Cicindela nevadica lincolniana	No Effect	

Salt Creek Tiger Beetle Critical		
Habitat		No Effect
Western Prairie Fringed Orchid	Platanthera praeclara	No Effect

7.0 Determination of Effects Summary under Emergency Consultation

Table 6-1 summarized USACE determination on the effects of the proposed action on the ESA listed species analyzed in Section 5. The proposed action includes actions that have occurred or are currently occurring in response of levee breach closures. These actions include tree clearing and hydraulic dredging in the Missouri River floodplain and in the inside bends of designated locations within the Missouri River. The USACE concludes that the proposed action "may affect, but not likely to adversely affect" the pallid sturgeon, Indiana bat, and northern long-eared bat.

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APPENDIX C – AGENCY COORDINATION AND DOCUMENTATION OF COMPLIANCE WITH ENVIRONMENTAL LAWS

Initial public and agency outreach

----Original Message-----

From: Crane, David J CIV USARMY CENWO (USA)

Sent: Thursday, January 23, 2020 1:05 PM

To: Crane, David J CIV USARMY CENWO (USA) < David.J.Crane@usace.army.mil> Subject: L-536 proposed levee setback - NEPA scoping period (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

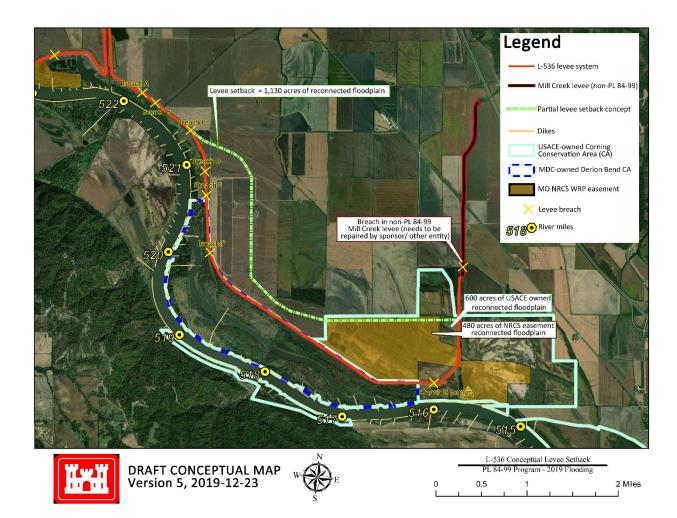
Dear Interested Party,

The U.S. Army Corps of Engineers Omaha District (NWO) is proposing to construct a large-scale levee setback along the L-536 levee system in Atchison and Holt Counties, Missouri. Due to the severe damage caused by the 2019 flooding, a levee setback along this system was determined to be the least cost, technically feasible alternative for levee rehabilitation under the Public Law 84-99 program (PL 84-99).

This email serves to announce a formal public scoping period for the proposed project. An environmental assessment (EA) will be prepared to document the environmental effects of this project and this EA will be tiered from the PL 84-99 programmatic EA for the 2019 flooding. The PL 84-99 programmatic EA for the 2019 flooding will be released for public review next week. As part of the NEPA public scoping effort for the L-536 project, the NWO is requesting that comments be submitted between now and February 23, 2020. Scoping comments should focus on the proposed implementation of in-line levee repairs and a large-scale levee setback as depicted in the attached map. Please provide comments as to the environmental, cultural, or socioeconomic effects of the proposed in-line repairs and large-scale levee setback construction work. In-line levee repair work is expected to begin in Mid-March 2020 (for the portion of the levee upstream of breach C), and work on the levee setback is expected to begin in mid-May. Real estate is still in the process of being acquired for the levee setback alignment. The NWO anticipates that that the large-scale levee setback will be constructed, but if for some reason the real estate cannot be acquired then the rest of the levee would be repaired in place.

Many agencies, Tribes, and surrounding land owners have already been working with the NWO during flood response and rehabilitation efforts. This NEPA effort is not meant to duplicate or serve as an alternative for future or ongoing coordination with the NWO regarding levee flood fighting or repair work under PL 84-99.

If you have any questions or require additional information, please contact me at (402) 995-2676 or at david.j.crane@usace.army.mil.



Thanks, Dave

Dave Crane (CENWO-PM-AC) Environmental Resources Specialist U.S. Army Corps of Engineers 1616 Capitol Ave. Omaha, NE 68102 T: (402) 995-2676 F: (402) 995-2758

david.j.crane@usace.army.mil

CLASSIFICATION: UNCLASSIFIED

----Original Message-----

From: Crane, David J CIV USARMY CENWO (USA) Sent: Tuesday, February 18, 2020 9:37 AM To: Morris Heitman

Subject: RE: Levee realignment (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Mr. Heitman,

Thank you for getting back to me. We are still in the process of designing the L-536 setback downstream tie-back, so the conceptual alignment on that map may change. We have begun coordination with the USACE Kansas City District and their efforts to rehabilitate and potentially setback the Corning levee. In coordinating our levee rehabilitation designs we will take into account the hydraulic effects that the L-536 levee and the Corning levee may have on each other and incorporate flood risk management features to address any potential negative effects. As we continue to coordinate L-536 levee rehabilitation with the L-536 levee sponsors and USACE Kansa City District, we can also continue to reach out to your levee district. In the meantime, please let me know if you have any other questions about the L-536 project. I might not be able to address them directly, but I can put you in touch with folks whom can.

Thanks, Dave

Dave Crane (CENWO-PM-AC) Environmental Resources Specialist U.S. Army Corps of Engineers 1616 Capitol Ave. Omaha, NE 68102 T: (402) 995-2676

F: (402) 995-2758

david.j.crane@usace.army.mil

-----Original Message-----From: Morris Heitman

Sent: Monday, February 17, 2020 4:26 PM

To: Crane, David J CIV USARMY CENWO (USA) < <u>David.J.Crane@usace.army.mil</u>>

Subject: [Non-DoD Source] Levee realignment

Dear Mr Crane

Your letter and accompanying diagram showing the possible set-back realignment of L-536 in southwest Atchison County Missouri has reached me as president of Corning Levee District.

This proposed realignment as shown would leave CLD in a very vulnerable position as CLD adjoins L-536 on the descending side of Mill Creek.

Any breech in the exposed area would then endanger most of the Mo River flood plain in the balance of Holt County

I highly recommend further study of the possible ramifications associated with the proposed change of location of L-536

CLD wishes to cooperate with adjoining districts to provide the utmost protection for all of our members

Please let me know if I may be of further service

Morris Heitman
President Corning Levee District,.

CLASSIFICATION: UNCLASSIFIED

Coordination with Missouri Department of Natural Resources and Permitting

L-536 Large-scale Levee Setback in Atchison and Holt Counties, Missouri PL 84-99 Levee Rehabilitation Program July 2020

SECTION 404(b)(1) EVALUATION

1. Introduction

This Section 404(b)(1) Guideline Evaluation is for Atchison and Holt Counties, Missouri as part of PL 84-99 levee rehabilitation efforts in response to the 2019 flooding (hereinafter known as the L-536 Large-scale Levee Setback) conducted by the U.S. Army Corps of Engineers (Corps) along the Missouri River (MoR). In 2019, river flows overtopped the L-536 levee, resulting in erosion of the levee crest, ramps, landward side slope, and the levee/berm toe. Flood damages caused five breaches (four inlet, one outlet) and additional reaches of critical section loss. The flooding event of 2019 was caused by rapid snowmelt due to warmer temperatures with increased amounts of rainfall all on top of frozen saturated lands. This in turn produced high runoff and increased flows and stages south of Omaha on the Missouri River in the proximity of and downstream of the confluence of the Platte River. The purpose of this evaluation is to address loss of wetland habitat associated with the construction of a large-scale levee setback. The purpose of the project along the Missouri River is to rehabilitate the flood –damaged L-536 levee system. Due to the severe damage caused by the 2019 flooding, a proposed levee setback along this system was determined to be the least cost, technically feasible alternative for levee rehabilitation under the Public Law 84-99 program (PL 84-99). The proposed levee setback footprint is approximately 160 acres. This evaluation is based on the regulations found at 40 CFR 230, Section 404(b)(1): Guidelines for Specification of Disposal Sites for Dredged and Fill Material.

A Programmatic Environmental Assessment for overall PL 84-99 activities associated with the 2019 flooding was prepared to evaluate the environmental impacts of the types of actions associated with this project. A tiered EA for the L-536-specific PL 84-99 is being prepared to document environmental effects of the different project alternatives, but is being completed under emergency NEPA provisions and is not yet available. The action alternatives evaluated for this project include:

- Alternative 1. In-Line Repairs, Sheet Pile Cutoff for Permanent Breach Repair
- Alternative 2. In-Line Repairs, Place Berms at Breach Repairs
- Alternative 3. System Levee Setback
- Alternative 4. Large-scale levee setback.

The Economic and Environmental Principals and Guidelines for Water and Related Land Resources Implementation Studies (P&Gs) (U.S. Water Resources Council 1983) establish the standards and procedures that the Corps and other Federal agencies use for planning and evaluating the merits of a water project. The Integrated Report evaluates, in detail, the environmental, social, and economic effects of the recommended alternatives.

An important aspect of the tiered EA is the evaluation of the recommended alternatives consistent with Section 404(b)(1) guidelines. Section 404(b)(1) guidelines are the substantive criteria used in evaluating discharges of dredged or fill materials in waters of the United States under Section 404 of the Clean Water Act. Fundamental to these guidelines is the precept that dredged or fill materials should not be discharged into an aquatic ecosystem unless it can be demonstrated that such discharges would not have unacceptable adverse impacts either individually or in combination with known or probable impacts of other activities affecting the ecosystem of concern. No materials associated with project construction are being proposed for discharge into a streams or wetlands a means of disposal, but the proposed project would involve the use of excavated or imported material as backfill for constructed project features.

The purpose of this analysis is to demonstrate that the recommended alternative (conduct a large-scale levee setback) would not have unacceptable adverse impacts either individually or in combination with known or probable impacts of other activities affecting the aquatic resources in the project area, thus satisfying compliance with Section 404(b)(1) guidelines.

As a matter of policy, the USACE Omaha District does not issue itself a permit for construction of civil works projects. For the L-536 Levee Setback, the Corps uses the PL84-99 Programmatic Environmental Assessment (PEA) and this 404(b)(1) report to document evaluation consistent with the requirements for coordinating a Clean Water Act permit.

2. Project Description

2.1. Project Location

The study area defined in the study's authorizing document includes the Missouri River and 104.3 acres of private, 46.6 acres of Natural Resources Conservation Service, and 8.0 acres of United States Army Corps of Engineers (USACE) lands in Atchison and Holt Counties, MO. The selected study reaches include:

- Between Missouri River mile marker 522 and MoR mile marker 516
- Breach A, Sta 520 to 525
- Between A and B, Sta 525 to 528
- Section loss B, Sta 528 to 536
- Between B and C, Sta 536 to 556
- Between C and D, Berms to Sta 558 to 572
- Between D and E, Sta 580 to 586
- Between E and F, Sta 600 to 626
- Breach E. Sta 593 to 600
- Breach F, Sta 626 to 636 (In vicinity of Deroin Chute)
- Between F and G, Sta 636-738
- Breach G, Sta 768-791

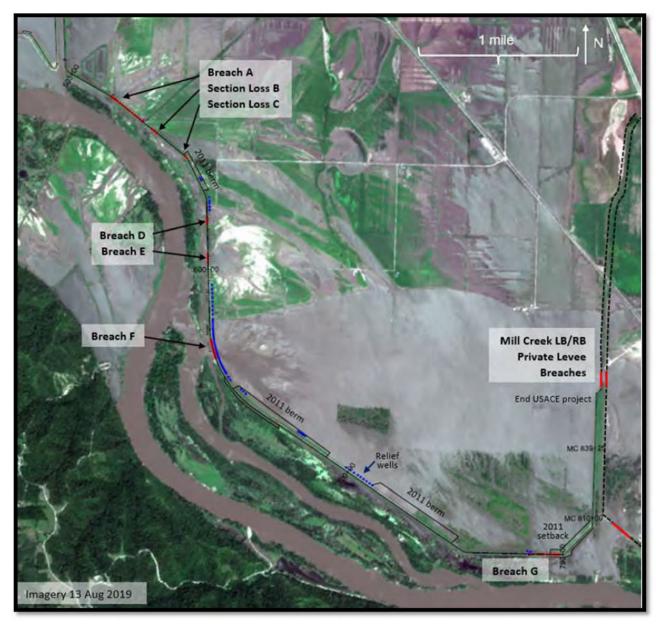


Figure 1. Overall Study Area

2.2. Alternatives Description:

2.2.1. Alternatives 1 and 2, in-line repairs:

Alternatives 1 and 2 both consist of repairing the levee in its current alignment, differing only by the method of repair at the breaches. Alternative 1 consists of fully in-line repairs, using sheet pile cutoff installation to repair levee breaches, while alternative 2 consists of rebuilding the levee around breach scours holes with wider (compared to alternative 1) landward seepage berms. The primary components of the repairs under both alternatives include:

- 2,300 ft in-line breach closures
 - 26,000 ft of erosion repair
 - 6,100 ft of critical section loss repair

- 7.700 ft of berm extensions
- 5,300 ft of rock revetments

Overtopping erosion damage at the levee crests and slopes would be addressed by placement of compacted cohesive fill to restore the levee to design grade. Landside seepage berms would need to be extended to address flood water scouring at the landward and riverward berm toes, increasing the footprint of the existing levee. Rock revetments would also need to be installed at identified locations of the levee where high-velocity flood waters would be anticipated to cause future erosion. Under alternative 1, the levee breaches would be repaired by installing sheet pile to help reduce seepage, lining the riverward side of the breach closure with rip rap, and constructing a 150 foot seepage berm on the landwards side. Under alternative 2, the levee breaches would be repaired by constructing new levee segments tying into unbreached levee alignments, lining the riverward side of the breach closure with rip rap, and constructing a 200 foot seepage berm on the landwards side. The breach closures would like be constructed on the landward side of the breach scour holes formed during the flood.

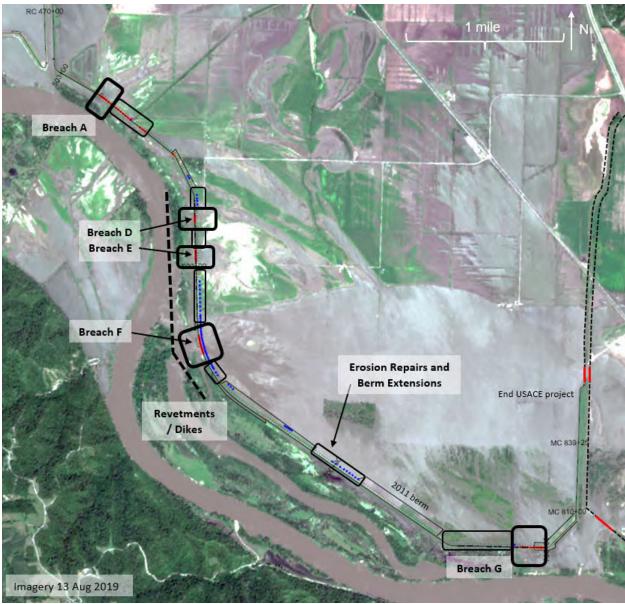


Figure 2. In-line Repairs map (Alternatives 1 and 2)

2.2.2. <u>Alternative 3, system setback:</u>

Alternative 3 consists of constructing a new levee alignment some distance landside of the existing levee. The setback levee section consists of constructing a 15 ft wide crest, 5H:1V landside slopes and a 150ft long seepage berm. Geotechnical investigations would need to be conducted to determine foundation suitability. The upstream tie-in design must consider the final alignment of the L-550 levee system which is located immediately upstream of L-536 and coordination would be required during repair of the two levee systems. This alignment maintains sufficient distance from the scour at breaches A through F, then follows the inland extent of government-owned habitat conservation lands to minimize the levee length and use of materials. Constructing a levee setback landward of the federal conservation land also incidentally provides floodplain habitat benefit to those conservation lands. The downstream tie-in is designed not to direct adverse flows into the left bank Mill Creek levee or downstream

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Corning Levee. The right bank Mill Creek levee would be kept in place with rock revetments placed along it, protecting the left bank levee. Coordination with the Mill Creek drainage district and other local stakeholders would be required. If the left bank levee is set back, the rock revetments may not be necessary and the right bank Mill Creek levee can be excavated for material borrow.

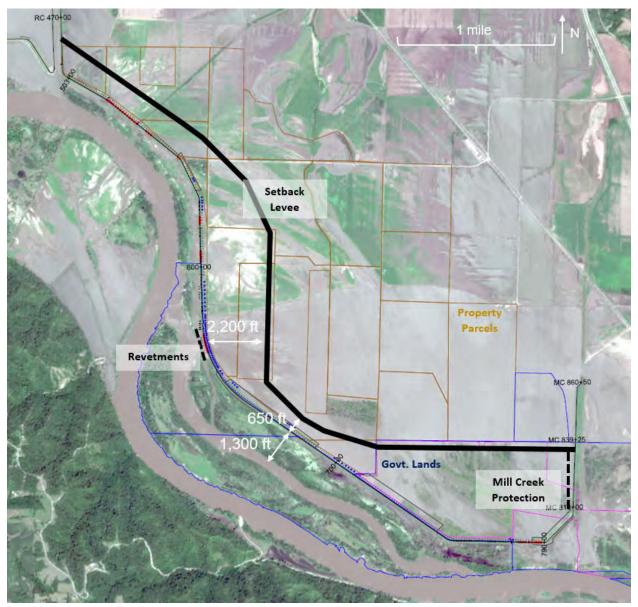


Figure 3. Alternative 3 Setback Alignment.

2.2.3. Alternative 4, partial levee setback:

Alternative 4 consists of constructing a new levee alignment some distance landside of the existing levee. The setback will begin near Section Loss C. This setback would be built with the same cross-section dimensions as would be constructed under alternative 3. The same level of geotechnical investigation will be conducted along the alignment as described in Alternative 3.

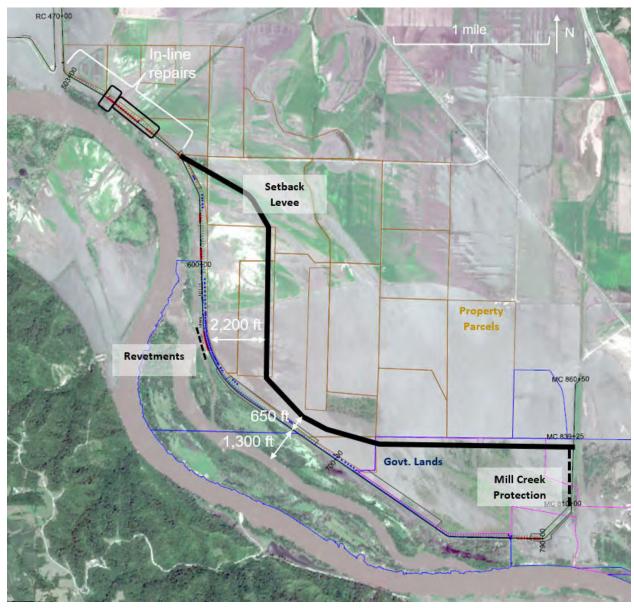


Figure 4. Alternative 4 Setback Alignment.

2.3. <u>Alternatives Comparison and Selection:</u>

Under PL 84-99, the alternatives are compared on a technical and economic cost basis. Additionally, consideration is made to the constructability of the alternatives and the risk to schedule and cost escalation. A driving risk for both alternative 1 and 2 is the long-term scour and underseepage concerns related to the damaged foundation caused by the flood. Despite repairs, there would still be permanent damage to the cohesive blanket relied upon for seepage control. This is a particular concern at Breach F where the primary Missouri River channel is in close proximity. In comparison, levee setbacks (alternatives 3 and 4) are more likely to result in a competent levee foundation by avoiding scour holes and confirming design with a new geotechnical investigation.

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Table 1. Alternative quantity, cost, and risk comparison

Alternative	1	2	3	4
Method	In-Line, Sheet Pile at Breaches	In-Line, Berms at Breaches	MR Segment Setback	Partial Setback
Relative cost	Highest	Medium	Medium	Lowest
Sand (Random) Fill (CY)	1,200,000	1,430,000	1,340,000	1,370,000
Cohesive Fill (CY)	320,000	360,000	830,000	770,000
Riprap (Ton)	58,000	51,000	22,000	22,000
Sheet pile (ft^2)	180,000	0	0	0
Cost & Schedule Risks	Placement in Flow, Long-term Erosion, Borrow Availability	Placement in Flow, Long-term Erosion, Borrow Availability	Real Estate, Interim Protection	Real Estate, Interim Protection

Alternative 4, partial levee setback, is recommended due to having the least-cost and least risk from an engineering perspective. However, acquisition and coordination of property must continue at an accelerated schedule. Alternatives 1 and 2 will continue to be developed as secondary options in case of a change in property coordination. Alternative 4 begins with in-line repair of breach A, critical section losses B and C, and a temporary ring levee around Breach F (to help minimize construction site flooding during construction) prior to all the real estate being acquired for the set-back levee. This provides a more flexible path to completed repairs depending on real estate acquisition. This is preferred over alternative 3, which requires acquisition of more real estate than alterative 4, which in turn was expected to lead to schedule delays.

2.4. Project General Description:

The Corps proposes to implement the Alternative 4, partial levee setback plan. This large-scale levee setback is necessary due to extensive levee damage that occurred along the L-536 system and is multiple miles in length. This system occurs along the Missouri River and encompasses 4 breaches. Although some habitat impacts will occur (e.g., tree removal, filling of wetlands), overall, large-scale levee setbacks are seen as having a positive environmental effect. This largescale levee setback is expected to have moderate, long-term beneficial effects to floodplain habitat by reconnecting over 1,000 landward floodplain acres to the riverward side of the levee. However, because this large-scale levee setback alignment spans many miles across the Missouri River floodplain, it can result in impacts to many different kinds of terrestrial and wetland habitats including forest, grasslands, emergent wetlands, and small creeks or ditches. As the levee is built, designated wetlands would become permanently converted to flood risk management features with upland characteristics. The Northwest Omaha District (USACE-NWO) is seeking water quality certification consistent with an individual permit in this situation with the potential for wetland impacts. The map below (Error! Reference source not found.) show the locations of construction associated with the recommended plan and the anticipated wetland impacts.

2.5. Authority:

Authority for the Emergency Levee Rehabilitation Program and the Advanced Measures Civil Emergency Management Program comes under the authorities of 33 U.S.C. 701n (commonly referred to as Public Law 84-99 or PL 84-99); Army Regulation 500-60, Disaster Relief; and Engineer Regulation 1130-2-530, Flood Control Operations and Maintenance Policies. These laws and authorities allow the USACE to provide a levee rehabilitation program for repairing levees after flood events and perform Advanced Measures prior to flooding or flood fighting to protect against loss of life and significant damages to urban and/or public facilities.

The potential environmental impacts of NWO's PL 84-99 levee rehabilitation program and Advanced Measure responses (including this proposed levee setback) to the 2019 flooding are addressed in the 2019 PEA, as required under the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S. Code [USC] 4321 et seq.); the President's Council of Environmental Quality (CEQ) Regulations (40 Code of Federal Regulations [CFR] 1500 – 1508) (CEQ, 1992); the US Army Corps of Engineers (USACE) Procedures for Implementing NEPA Engineer Regulation (ER) 200-2-2 (33 CFR 230); the Army Regulation 500-60, Disaster Relief; and Engineer Regulation 1130-2-530, Flood Control Operations and Maintenance Policies.

3. Fill Activities

3.1. General Description of Excavated and Fill Material:

Material would be used to fill flood-induced scours, artificially created wetlands (created in 2012 from borrow pits during 2011 flood levee repairs) and a drainage ditch along the proposed levee repair and setback footprint, which would allow for a foundation to be laid on which to construct the setback levee. These fill activities would be required in order to provide proper stability and increase levee resiliency and flood protection along the Missouri River. While work along the L-536 system would serve the purpose of flood risk management, the levee setback project will result in significant ecological benefits to the project area.

Fill material placed throughout the site would consist of material deposited from the 2019 flood, material mined from within the project area, material taken from the segments of levee to be degraded, or dredged from the Missouri River channel. Rock riprap would also be placed on the riverward side of F breach in order to armor the river bank that was breached during the 2019 flood.

3.2. Project specific actions of the preferred alternative:

Alternative 4 consists of constructing a new levee alignment up to 3,500 feet landward of the existing levee. The setback levee would be approximately 4.3 miles long, not including the 4,000 foot long trailing levee. The setback levee section consists of constructing a 15 ft wide crest, 5H:1V landside slopes and a 150ft long seepage berm. Approximately 68 relief wells would be abandoned and 3 drainage structures would be repaired or replaced. Geotechnical investigations would need to be conducted to determine foundation suitability. The upstream tie-in design must consider the final alignment of the L-550 levee system which is located immediately upstream of L-536 and coordination would be required during repair of the two levee systems. This alignment maintains sufficient distance from the scour at breaches A through F, then follows the inland extent of government-owned habitat conservation lands to

minimize the levee length and use of materials. Constructing a levee setback landward of the federal conservation land also incidentally provides floodplain habitat benefit to those conservation lands. The downstream trailing levee is designed not to direct adverse flows into the left bank Mill Creek levee or downstream Corning Levee. The right bank Mill Creek levee would be kept in place with rock revetments placed along it, protecting the left bank levee. Coordination with the Mill Creek drainage district and other local stakeholders would be required. If the left bank levee is set back, the rock revetments may not be necessary and the right bank Mill Creek levee can be excavated for material borrow.

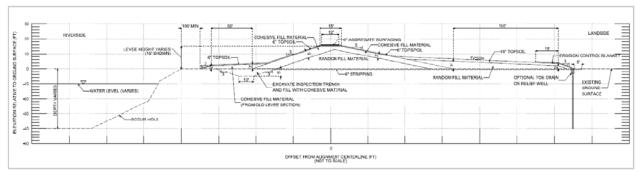


Figure 5. Setback levee section.



Figure 13. Plan view of riprap locations for setback alternative and rock bank location

Table 2. downstream trailing levee toe protection for Alternative 4 with calculations and quantities

D/S Trailing Levee							
Length (ft)	Height (ft)	Thickness (ft)	Slope	Slope Length (ft)	Rock Toe Length (ft)	tons/ft	Mass in Section (tons)
2200	8.50	2.00	3.00	26.88	8.00	4.26	9,379

Table 3. Hardened chute bank for Alternative 4 with calculations and quantities

Chute Bank							
Crown Width (ft)	Side Slope	Height (ft)	Length (ft)	Bottom Width (ft)	Volume (ft3)	Mass (tons)	
4	1.5	11	700	37	157850	9,646	

4. Environmental Consequences

4.1.Physical Substrate Determinations

4.1.1. Terrestrial and Aquatic habitat:

Approximately 8 acres of emergent wetland and 500 linear feet of drainage ditch would be permanently impacted by the construction of the levee setback (see Figure 7). The 8 acres of emergent wetland were constructed in 2012 by the USACE from borrow pits used to complete repairs to the L-536 after it was damaged by the 2011 flood. The drainage ditch is an unnamed ditch that drains the landward agricultural fields. The drainage ditch that would be bisected by the levee setback would be rerouted to run parallel to the setback levee and would drain out in the Mill Creek to the east of the L-536 levee.

Although this levee setback project would result in some minor wetland impacts, the project is considered self-mitigating. Any borrow pits established across the USACE owned MRRP land or the NRCS WRP/EWP-FPE program would be converted to emergent wetland habitat features. Even with the use of the material from the existing levee, a substantial amount of material is required to complete the setback and historically a significant amount of the material mined for levee setback construction comes from adjacent federal and state habitat conservation land. For example, the large-scale levee setback constructed near HWY-2 in Fremont County, IA along the L-575 Missouri River levee in 2013, a 4 mile long levee setback, resulted in the creation of over 230 acres of borrow pits being graded and seeded for wetland establishment. Also in 2013, an additional large-scale levee setback 3 miles downstream from the HWY-2 setback (also about 4 miles long) resulted in the creation of over 110 acres of wetlands from borrow pits. It is anticipated that dozens if not hundreds of acres of borrow pit wetlands would be created as part of the levee setback at L-536. See Figure 6 below for location of potential borrow areas. The borrow pits located on NRCS or USACE land would be converted to wetland or other habitat features.

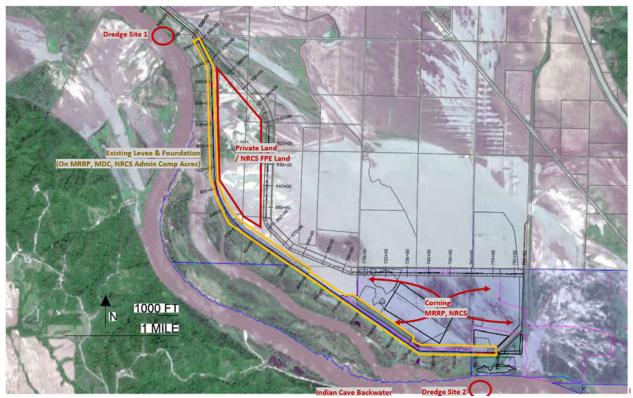


Figure 6. Potential borrow sites.

The drainage ditches that are currently landward, but would be riverward of the levee setback, on USACE owned conservation land are also anticipated to be modified and augmented to serve as more natural habitat as part of the levee setback. Spoil material from drainage ditch maintenance over the years is stockpiled along the banks of the ditches. This material is expected to be utilized for borrow in levee setback construction and the banks of the ditches themselves are expected to further excavated for borrow, allowing for the opportunity to incorporate sinuosity, gentle side slopes, and expanded areas for emergency wetland vegetation establishment. Some of the abandoned ditch remnants on the riverward side of the setback levee may also be plugged or modified in order to provide additional habitat features.

The levee setback itself will result in the reconnection of over 1,000 acres of floodplain habitat to the riverward side of the levee. This alone would result in significant ecological benefits within the project area. The entirety of the floodplain to be riverward of the setback levee would either be owned in fee title by the USACE, the state of Missouri, or have a conservation easement by the NRCS for the purposes of habitat restoration. Overall, large-scale levee setbacks increase the amount of shallow floodplain habitat accessible to aquatic wildlife during times of high water and floodplain inundation. By increasing the amount of floodplain acres riverward of a levee, this large-scale levee setback would be expected to improve conditions for fish and other aquatic wildlife requiring floodplain access for spring foraging and spawning. Land on the riverward side of a levee is also subject to the natural river forces that naturally develop habitat features over time, including new wetlands.

Figure 7 below depicts the location of the wetland impacts associated with the proposed action. These impacts would be mitigated through the creation of wetland borrow pits as described above, resulting in a self-mitigating project. This project would be in compliance with the 404(b)(1) guidelines.

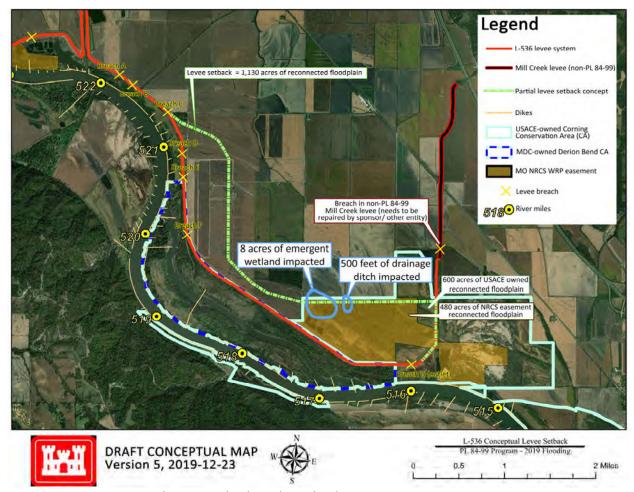


Figure 7. L-536 Conceptual Levee Setback, with wetland impacts

4.1.2. Sediment Type:

The Missouri River floodplain in Atchison and Holt County within the project area is generally comprised of Onawa silty clay, Percival silty clay, and Leta silty clay according to the USDA's web soil survey.

This soil composition has resulted from flood and drought cycles and historic changes in the river course and overall land use within the study area. Sediment that is excavated and then reused as project features along the creeks would be comparable to the existing Missouri River bedload and suspended sediment material and is in compliance with 404(b)(1) guidelines. No preconstruction soil type is expected to be left after proposed project.

4.1.3. Excavated/Fill Material Movement:

While much of the material required for the setback will come from the existing L-536 levee, some material will need to be excavated from the floodplain and dredged from the Missouri River. Approximately 500,000 CY of sand is expected to be dredged and piped to the project area from the Missouri River mainstem channel as well as from the Indian Cave State Park backwater project. Figure 6 above depicts the river channel and backwater locations for dredging. Figure 8 depicts the location that the dredged material would be pumped to and stockpiled. The backwater project was constructed in 2014 by the USACE as part of the Missouri River Recovery Program habitat creation efforts. Constructed backwaters periodically require operation and maintenance dredging to maintain design depth and a connection to the Missouri River so any dredging within this project would satisfy those maintenance needs. Coordination with Nebraska Game and Park Commission is ongoing, but they are supportive of the dredging effort at the backwater.

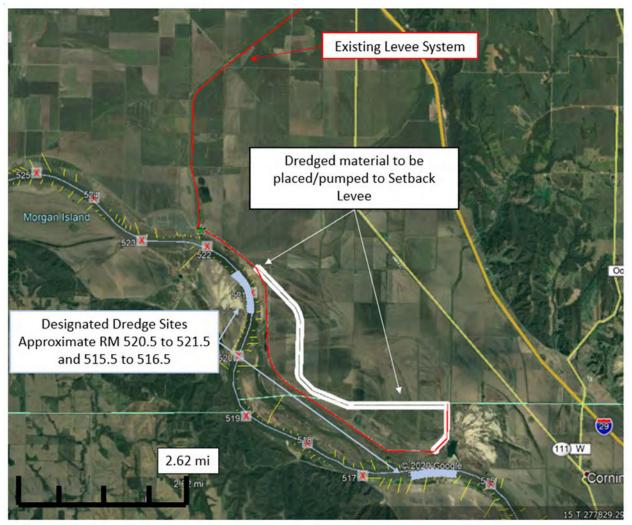


Figure 8. Missouri River dredge locations and material placement locations

A large amount of material is expected to be excavated from the Missouri River floodplain within the project area. As described above, dozens to hundreds of acres of borrow pits within

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USACE-owned land, State of Missouri-owned land, or land with NRCS conservation easements would be graded and seeded for wetland establishment. The material being placed as fill in the wetland expected to be impacted will likely come from cohesive sub-surface borrow mining on the floodplain. Mechanically excavated and stockpiled hydraulically dredged material would be transported and placed on site via heavy equipment (dozers, scrapers, dump trucks, etc.) during construction. The Corps will work to minimize excavated/fill material movement and the project is in compliance with the 404(b)(1) guidelines.

4.1.4. Physical Effects on Benthos:

Physical effects on benthic communities within the Missouri River is expected to be negligible or minor during dredging. The sand material would be dredged from the shifting sand bedload of the Missouri River and is not expected to result in long term impacts to river bed habitat. River channel dredging would be prohibited between March 1 and June 15th and would only occur on inside river bends in order to avoid potential impacts to spawning pallid sturgeon. Dredging of the backwater would result in temporary impacts to benthos, but would ultimately result in environmental benefits as the intended backwater depth and a hydrologic connection to the Missouri River main stem would be reestablished. Any benthic invertebrates, habitat, or other organisms in the wetlands or ditch portion to be filled by the setback alignment would be permanently impacted by construction, but the projects self-mitigating features would compensate for these impacts. The project is in compliance with the 404(b)(1) guidelines.

4.2. Water Circulation, Fluctuation, and Salinity Determinations

4.2.1. Water

4.2.1.1. Salinity:

No impacts are anticipated.

4.2.1.2. Water Chemistry:

No water quality standards are anticipated to be violated as part of this proposed project.

4.2.1.3. Clarity:

Construction and operation activities are not anticipated to adversely impact water quality standards in the project area.

4.2.1.4. Color:

No impacts are anticipated.

4.2.1.5. Odor:

No impacts are anticipated.

4.2.1.6. Taste:

No impacts are anticipated.

4.2.1.7. Dissolved Gas Levels:

No impacts are anticipated.

4.2.1.8. Temperature:

The proposed project is not anticipated to result in temperature changes along the Missouri River

4.2.1.9. Nutrients:

The proposed project is not anticipated to introduce nutrients to the Missouri River. The proposed activity is not anticipated to result in an increase or decrease in the amount of nutrients in the streams or those entering the streams within project areas or in areas downstream.

4.2.1.10. <u>Eutrophication:</u>

No negative impacts are anticipated.

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4.2.2. Current Patterns:

No impacts are anticipated.

4.2.3. Normal Water Level Fluctuations:

Normal water level fluctuations within the Missouri River are not anticipated to change as a result of the proposed project.

4.2.4. Salinity Gradients:

No impacts are anticipated.

4.3. Suspended Particulate/Turbidity Determination

4.3.1. Change at Placement Site:

Rock and soil placement associated with the project would primarily be within the Missouri River floodplain. Placement of stone as part of the rock revetments is not anticipated to affect particle suspension in the Missouri River. Operating a dredge in the Missouri River would likely induce some increased turbidity in the immediate dredging area, but would be expected to dissipate quickly downstream. The Missouri River was historically a much more turbid stream than it is today, with many fish species having evolved to take advantage of these conditions, so the temporary, localized increase in turbidity is not expected to result in environmental impacts. Because the dredged material is being pumped to the floodplain, the placement of the dredged material will have no turbidity impacts. The project is in compliance with the 404(b)(1) guidelines.

4.3.2. Effects on Chemical and Physical Properties of the Water Column:

The placement of excavated soil into wetlands onsite will be mitigated. Dredging within the Missouri River is not expected to affect the physical properties of the water column. Only 500,000 CY of sand is expected to be dredged from 3 different locations along the Missouri River. This is a small enough amount of material so as to not result in impacts to the Missouri River channel cross section, morphology, velocity, thalwag location, or other physical attributes of the channel. No adverse impacts to the chemical and physical properties of the water column are expected.

4.3.3. Effects on Biota:

Effects on biota would be similar to those described above in section 4.1.4. The sand material would be dredged from the shifting sand bedload of the Missouri River and is not expected to result in long term impacts to river bed habitat. River channel dredging would be prohibited between March 1 and June 15th and would only occur on inside river bends in order to avoid potential impacts to spawning pallid sturgeon. Dredging of the backwater would result in temporary impacts to benthos, but would ultimately result in environmental benefits as the intended backwater depth and a hydrologic connection to the Missouri River main stem would be reestablished. Any benthic invertebrates, habitat, or other organisms in the wetlands or ditch portion to be filled by the setback alignment would be permanently impacted by construction, but the projects self-mitigating features would compensate for these impacts. The self-mitigation nature of this project is expected to result in significant benefits to the local biota present within the setback project areas following construction. Dozens to hundreds of acres of borrow pit wetlands will be constructed and all of the disturbed areas within the 1,000+ riverward acres would be reseeded with native species following construction. This is the largest levee setback proposed to date along the Missouri River and will have long lasting benefits for native flora and fauna. The project is in compliance with the 404(b)(1) guidelines.

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4.4. Actions to Minimize Water Quality Impacts:

Erosion and sediment control measures and other BMPs would be implemented to ensure water quality impacts during construction are avoided. Erosion and sediment controls may include, but are not necessarily limited to:

- development of a Storm Water Pollution Prevention Plan (SWPPP)
- Acquisition of a National Pollution Discharge Elimination System (NPDES) Permit
- employment of stabilization practices to prevent sediment or pollutants from entering waterways or wetlands (e.g., stabilizing bare soil by mulching, erosion control blankets, preservation of mature vegetation where possible, etc.)
- employment of temporary structural practices (e.g., silt fences, earth dikes, spill containment, storm drain and culvert inlet protections, sediment traps, etc.)
- employment of nonstructural BMP's (e.g., keeping heavy construction equipment out of the waterway whenever possible, protecting construction materials from precipitation/flooding, and re-vegetating exposed soil)

4.5. <u>Contaminant Determination:</u>

4.5.1. Background on Contaminant USACE Policy:

Engineering Regulation (ER) 1165-2-132 (Hazardous, Toxic and Radioactive Waste (HTRW) Guidance for Civil Works Projects) provides guidance for consideration of issues and problems associated with HTRW substances which may be located within project boundaries or may affect or be affected by Corps Civil Works projects. HTRW, as defined in ER 1165-2-132, includes any material listed as a "hazardous substance" under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, also commonly referred to as "Superfund"). The common interpretation of ER 1165-2-132 is that the presence of a "hazardous substance" in the environment constitutes an area as an "HTRW site," even at levels that are too low to trigger a "response action" under CERCLA, or qualify HTRW-containing material as a "hazardous waste" under the Resource Conservation and Recovery Act (RCRA). This ER states that construction of USACE Civil Works projects in HTRW-contaminated areas should be avoided where practicable. Where HTRW-contaminated areas or impacts cannot be avoided, response actions must be performed by the project sponsor and be acceptable to EPA and applicable state regulatory agencies. USACE policy does not prohibit work within areas that contain non-HTRW solid wastes. No HTRW solid wastes are known to be present in the project area.

4.6. Aquatic Ecosystem and Organisms Determination:

Overall, the aquatic ecosystem within the L-536 project could be improved following the construction of the proposed project, despite wetland impacts. While this project is being constructed for the purpose of flood risk management under the PL 84-99 program, it will result in significant ecosystem restoration benefits. While the project would have the biggest effect on the floodplain habitat, the increased amount of land riverward of the L-536 levee would be accessible by and would provide benefit to fish and other aquatic organisms during times of high water. These aquatic organisms would be able to use the floodplain habitat for foraging, spawning, larval/young of year fish refuge, etc.

The maintenance dredging at the Indian Cave backwater would restore the project depth and hydrologic connection to the Missouri River and fish and other aquatic species would benefit from regaining access to this off-channel habitat feature. Overall, the project area (as well as surrounding wetland and riparian vegetation) would expected to exhibit improved habitat quality and quantity through the reconnection of 1,000+ acres of landward floodplain to the riverward side of the levee. Aquatic organisms present in intermittent wetlands during construction could be displaced or killed by construction activities if they are not able to flee the construction area. Immobile or slow moving benthic macroinvertebrates would likely not be able to completely flee impacted wetland areas prior to construction. Those organisms that were able to relocate could be more susceptible to predation. However construction along the L-536 area could improve habitat conditions for such aquatic species through restored wetlands from areas where borrow material was taken and so it is expected that overall there would be an ecological benefit resulting from the proposed project in the long term. Further, the localized construction areas in the L-536 project area would be expected to be rapidly repopulated from habitats in nearby undisturbed areas because the habitat quality in the project area would be higher quality than nearby floodplain areas.

4.7. <u>Determination of Cumulative Effects on the Aquatic Ecosystem:</u>

This project has synergistic effects to other habitat restoration projects in the area. Across the river from the project area, on the Nebraska side is the Indian Cave backwater which will be improved during construction of the levee setback. Directly adjacent to the setback project area are two Conservation Areas (CA)— the Deroin Bend CA with a large side channel chute and the Corning CA on which the levee setback will be constructed. All three of these sites will benefit from ecological improvements following construction. Additionally, the NRCS has facilitated this levee setbacks project through implementation of their Emergency Watershed Protection—Floodplain Easement Program which is expected to result in new easement enrollment across all of the private land that would be relocated to the riverward side of the levee. The cumulative effects of the backwater project, MDC's Deroin Bend chute, the new NRCS easements in the area, and the existing USACE—owned CA land will result in a new, large, truly unique habitat complex along the Missouri River.

Findings of Compliance or Non-compliance

- a. There are no less environmentally damaging practicable alternatives that would fulfill the overall purpose of the project.
- b. Our Review of Water Quality Standards established by the State of Missouri indicates that the proposed project would not violate any applicable state water quality standards.
- c. The proposed project would not result in significant adverse impacts to human health and welfare, including municipal and private water supplies, recreational and commercial fishing, plankton, fish, shellfish, wildlife or special aquatic sites.
- d. All appropriate steps to minimize adverse environmental impacts have been taken.

e. The Proposed Action would not jeopardize the existence of Federally listed endangered or threatened species or their habitat. The proposed project is intended to restore a level of flood risk management to a damaged levee along the Missouri River, but is expected to result in incidental ecological improvement of the area.

Conclusions

Based on all of the above, the Proposed Action is determined to be in compliance with the Section 404(b)(1) Guidelines.

September 9, 2020

David Crane Omaha District U.S. Army Corps of Engineers 1616 Capitol Avenue Omaha, NE 68102

RE: L-536 Levee Setback/CEK007379 in Atchison and Holt Counties

Dear David Crane:

The Missouri Department of Natural Resources' Water Protection Program has reviewed your request for Clean Water Act (CWA) Section 401 Water Quality Certification (WQC) for the U.S. Army Corps of Engineers' (USACE) project proposal for the L-536 large-scale levee setback, a part of PL 84-99 levee rehabilitation efforts in response to the 2019 flooding along the Missouri River.

The proposed project consists of constructing a new levee alignment up to 3,500 ft landward of the existing levee. The setback levee would be approximately 4.3 miles long, not including the 4,000-ft-long trailing levee, and consists of constructing a 15-ft-wide crest with 5H:1V landside slopes and a 150-ft-long seepage berm. Approximately 68 relief wells will be abandoned and 3 drainage structures would be repaired or replaced. The levee setback footprint is approximately 160 acres. The right bank Mill Creek levee would be kept in place with placement of rock revetments to protect the left bank levee.

Material will be used to fill flood-induced scours, artificially created wetlands, and a drainage ditch along the proposed levee repair and setback footprint. Fill material placed throughout the site would consist of material deposited from the 2019 flood, material mined from within the project area, material taken from the segments of levee to be degraded, and/or dredged from the Missouri River channel. Approximately 500,000 cubic yards of sand is expected to be dredged and piped to the project area from the Missouri River mainstem channel as well as from the Indian Cave State Park backwater project.

Approximately 8 acres of emergent wetland and 500 linear ft of drainage ditch would be permanently impacted by the proposed project. The 8 acres of emergent wetland were constructed in 2012 by the USACE from borrow pits used to complete repairs to the L-536 after it was damaged by the 2011 flood. An unnamed drainage ditch that will be bisected by the levee setback will be rerouted to Ditch 7 in the USACE's Corning Conservation Area.



The proposed project is located on 104.3 acres of private, 46.6 acres of Natural Resources Conservation Service, and 8.0 acres of USACE lands between approximate Missouri River Miles 516 to 522 in Sections 5, 6, 8, 9, 16, and 17, Township 63 North, Range 41 West; Sections 31, and 32, Township 4 North, Range 17 East; and Sections 3, 4, and 5, Township 3 North, Range 17 East in Atchison and Holt Counties, Missouri.

According to the Department's geospatial data, the Missouri River is classified in Missouri Water Quality Standards [10 CSR 20-7.031] with the following designated uses: protection and propagation of fish, shellfish and wildlife – warm water habitat; whole body contact – category B; secondary contact recreation; human health protection – fish consumption; irrigation; livestock and wildlife protection; drinking water supply; and industrial water supply. Additionally, the unnamed ditch is classified in the Missouri Use Designation Dataset [10 CSR 20-7.031(2)(E)] with the following designated uses: protection and propagation of fish, shellfish and wildlife – warm water habitat; whole body contact – category B; secondary contact recreation; human health protection – fish consumption; irrigation; and livestock and wildlife protection.

The Department's geospatial data is available upon request, and all published data is available on the Missouri Spatial Data Information Services website at msdis.missouri.edu/. Additional information to identify the project location, including stream reaches with listed impairments or special water designations, may be obtained from the Department's Water Protection Program by phone at 573-522-4502.

This WQC is being issued under Section 401 of Public Law 95-217, the CWA of 1977 and subsequent revisions. This office certifies the proposed project will not cause the general or numeric criteria to be exceeded nor impair beneficial uses established in the Water Quality Standards, 10 CSR 20-7.031, provided the following conditions are met:

- 1. Wetland and stream changes intended within the scope of the proposed project as designed and/or modeled are approved by the Department.
- 2. Due to the net benefits from the proposed reconnection of over 1,000 acres of floodplain habitat to the river side of the levee and creation of at least 100 acres of emergent wetlands from grading and native-seeding of borrow pits, the Department considers the proposed project to be self-mitigating. For this reason, compensatory mitigation for wetland and stream impacts from the proposed project will not be required. The Department reviews projects for WQC under Missouri Clean Water Law, which provides the Department authority to adopt remedial measures to prevent, control, or abate pollution [Chapter 644.026.1(26), RSMo] and approval authority for compensatory mitigation associated with WQCs [Chapter 644.026.1(9), RSMo].

- 3. Only clean, nonpolluting fill shall be used. The following materials are not suitable where contact with water is expected and shall not be used due to their potential to cause violations of the general criteria of Missouri's Water Quality Standards [10 CSR 20-7.031(4)(A)-(H)]:
 - a. Earthen fill, gravel, and broken concrete where the material does not meet the Suitable Material specifications stated in the "Missouri Nationwide Permit Regional Conditions" (https://usace.contentdm.oclc.org/digital/collection/p16021coll11/id/2662/) in locations where erosive flows are expected to occur on a regular basis, such as streambanks and/or lake shorelines.
 - b. Fragmented asphalt.
 - c. Concrete with exposed rebar.
 - d. Tires, vehicles or vehicle bodies, and construction or demolition debris are solid waste and are excluded from placement in the waters of the state.
 - e. Liquid concrete, including grouted riprap, if not placed in forms as part of an engineered structure.
 - f. Any material containing chemicals that would result in violation of Missouri Water Quality Standards general criteria [10 CSR 20-7.031(4)] or specific criteria [10 CSR 20-7.031(5)].
- 4. Waste concrete or concrete rinsate shall be disposed of in a manner that does not result in any discharge to any jurisdictional water ways. This will ensure compliance with the Missouri Water Quality Standards general criteria requiring waters be free from unsightly bottom deposits [10 CSR 20-7.031(4)(A)]; substances resulting in toxicity [10 CSR 20-7.031(4)(D)]; and physical, chemical, or hydrologic changes that would impair the natural biological community [10 CSR 20-7.031(4)(G)].
- 5. For projects that may impact aquatic resources, Missouri Water Quality Standards antidegradation requirements dictate all appropriate and reasonable Best Management Practices (BMPs) related to erosion and sediment control, project stabilization, and prevention of water quality degradation are applied and maintained [10 CSR 20-7.031(3)(B)]; for example, preserving vegetation, streambank stability, and basic drainage. BMPs shall be properly installed prior to conducting authorized activities and maintained, repaired and/or replaced as needed during all phases of the project to limit the amount of discharge of water contaminants to waters of the state. The project shall not involve more than normal stormwater or incidental loading of sediment caused by project activities so as to comply with Missouri's general water quality criteria [10 CSR 20-7.031(4)].
- 6. All efforts shall be made to minimize exposure of unprotected soils. To the best of the applicant's ability, project activity shall be conducted at times of little or no rainfall to limit the amount of overland flow and sediment disturbance caused by heavy equipment. This will ensure compliance with Missouri antidegradation requirements for BMPs [10 CSR 20-7.031(3)(B)].

- 7. Clearing of vegetation and trees shall be the minimum necessary to accomplish the activity except for the removal of invasive or noxious species and placement of ecologically beneficial practices. This will ensure compliance with Missouri antidegradation requirement regarding BMPs [10 CSR 20-7.031(3)(B)].
- 8. Disturbed areas shall be restored to a stable condition to protect water quality as soon as possible. Seeding, mulching, and needed fertilization should be within three days of final contouring. To ensure erosion and deposition of soil in waters of the state are not occurring from this project, onsite inspections of these areas should be conducted as necessary to ensure successful revegetation and stabilization. This will ensure compliance with Missouri antidegradation requirements regarding BMPs [10 CSR 20-7.031(3)(B)].
- 9. Care shall be taken to keep machinery out of the water way as much as possible. If work in the water way is unavoidable, it shall be performed in a way that minimizes the duration and amount of any disturbance to banks, substrate, and vegetation to prevent increases in turbidity. Project activity shall be conducted at low flows and water levels to limit the amount of sediment disturbance caused by the heavy equipment. This will ensure compliance with the Missouri Water Quality Standards antidegradation requirement for BMPs [10 CSR 20-7.031(3)(B]) and Missouri Water Quality Standards general criteria requiring waters be free from substances preventing beneficial uses [10 CSR 20-7.031(3)(A)]; substances causing unsightly color or turbidity 10 CSR 20-7.031(4)(C)]; and physical, chemical, or hydrologic changes that would impair the natural biological community [10 CSR 20-7.031(4)(G)].
- 10. Fuel, oil and other petroleum products, equipment, construction materials, and any solid waste shall not be stored below the ordinary high water mark at any time. All precautions shall be taken to avoid the release of wastes or fuel to streams and other adjacent waters as a result of this operation. This will ensure compliance with Missouri Water Quality Standards general criteria requiring waters be free from substances that prevent maintenance of beneficial uses; cause unsightly color, turbidity, or toxicity; and/or impair the natural biological community [10 CSR 20-7.031(4)(B)-(G)].
- 11. Petroleum products spilled into any water or on the banks where the material may enter waters of the state shall be cleaned up immediately and disposed of properly. Any such spills of petroleum shall be reported as soon as possible, but no later than 24 hours after discovery to the Department's Environmental Emergency Response phone line at 573-634-2436 or website at http://dnr.mo.gov/env/esp/esp-eer.htm. This will ensure compliance with Missouri Environmental Improvement Authority [Chapter 260.015, RSMo] to provide for the conservation of state air, land, and water resources by the prevention of pollution and proper methods of disposal and Missouri Water Quality Standards general criteria requiring waters be free from substances that prevent maintenance of beneficial uses; cause unsightly color, turbidity, or toxicity; and/or impair the natural biological community [10 CSR 20-7.031(4)(B)-(G)].

- 12. Acquisition of a WQC shall not be construed or interpreted to imply the requirements for other permits are replaced or superseded, including CWA Section 402 National Pollutant Discharge Elimination System Permits required under Missouri Clean Water Law [Chapter 644.026.1, RSMo]. Permits or any other requirements shall remain in effect. If the activity includes piling dredged material on land, the applicant may need a general permit for return water and stormwater from the dredged material. Information regarding permit requirements and applications may be directed to the Department's Kansas City Regional Office by phone at 816-251-0700.
- 13. Land disturbance activities disturbing one or more acres of total area for the entire project or less than one acre for sites that are part of a common promotional plan of development may require a stormwater permit. This will ensure compliance with CWA Section 402 National Pollutant Discharge Elimination System Permit requirements under Missouri Clean Water Law [Chapter 644.026.1, RSMo]. Instructions on how to apply for and receive the online land disturbance permit are located at www.dnr.mo.gov/env/wpp/epermit/help.htm. Questions regarding permit requirements may be directed to the Department's Land Disturbance phone line at 573-526-2082 or toll free at 855-789-3889.
- 14. The WQC is based on the plans as submitted. Should any plan modifications occur, please contact the Department to determine whether the WQC remains valid or needs to be amended or revoked.

Pursuant to Chapter 644, RSMo, commonly referred to as the Missouri Clean Water Law, and fee regulations under 10 CSR 20-6.011(2)(H)1., this WQC shall be valid only upon payment of a fee of \$150. The enclosed invoice contains the necessary information on how to submit your fee. Payment must be received within 15 business days of receipt of this WQC. Upon receipt of the fee, the applicable office of the USACE will be informed the WQC is now in effect and final.

If you were adversely affected by this decision, you may be entitled to an appeal before the Administrative Hearing Commission (AHC) pursuant to Section 621.250, RSMo. To appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed; if it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC. Contact information for the AHC is: Administrative Hearing Commission, United States Post Office Building, Third Floor, 131 West High Street, P.O. Box 1557, Jefferson City, MO 65102; phone: 573-751-2422; fax: 573-751-5018; and website: www.oa.mo.gov/ahc.

David Crane Page 6

This WQC is part of the USACE's permit. Water Quality Standards must be met during any operations authorized. If you have any questions, please contact Mike Irwin by mail at Department of Natural Resources, Water Protection Program, P.O. Box 176, Jefferson City, MO 65102-0176; by phone at 573-522-1131; and by email at mike.irwin@dnr.mo.gov. Thank you for working with the Department to protect our aquatic resources.

Sincerely,

WATER PROTECTION PROGRAM

Chie Williag Chris Wieberg

Director

CW:mip

Enclosure

c: Sherry Bell, Fiscal Management Section, Budget and Fees Unit Dru Buntin, Director's Office Bryan Hopkins, Water Resources Center John Horton, Water Resources Center Leigh Mitchell, Kansas City Regional Office Michael Weller, Water Resources Center Terrie Williams, Kansas City Regional Office October 1, 2020

T J Davey USACE 17180 E State Hwy E Rock Port, MO 64482

Dear Permittee:

Pursuant to the Federal Water Pollution Control Act, under the authority granted to the State of Missouri and in compliance with the Missouri Clean Water Law, we have issued and are enclosing General State Operating Permit MOG698106 for RDI2 MATOC L-536 Levee Repair Project.

Please review the requirements of your permit. Monitoring reports that may be required by this permit must be submitted on a periodic basis. Copies of the necessary report forms, if required, are enclosed and should be mailed to your regional office. Please contact that office for additional forms.

This permit may include requirements with which you may not be familiar. If you would like the Department to meet with you to discuss how to satisfy the permit requirements, an appointment can be set up by contacting your local regional office. These visits are called Compliance Assistance Visits and focus on explaining the requirements to the permit holder.

This General Permit is both your federal discharge permit and your new state operating permit and replaces all previous state operating permits and letters of approval for the discharges described within. In all future correspondence regarding this permit, please refer to your general permit number as shown on page one of your permit.

If you were adversely affected by this decision, you may be entitled to an appeal before the administrative Hearing Commission (AHC) pursuant to Sections 644.051.6 and 621.250, RSMo. To appeal, you must file a petition with the administrative hearing commission within thirty days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed; if it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the administrative hearing commission. Contact information for the AHC is as follows: Administrative Hearing Commission, Third Floor, 131 West High Street, Jefferson City, MO 65101 (Mailing address: PO Box 1557, Jefferson City, MO 65102-1557), Phone: 573-751-2422, Fax: 573-751-5018, Website: http://ahc.mo.gov/.

Please be aware that this facility may also be subject to any applicable county or other local ordinances or restrictions. Please note the expiration date of this permit. If your permit is issued within six months of the expiration date of the attached permit, this letter also serves as a notification to resubmit an application for renewal or termination.

If you have any questions concerning this permit, please do not hesitate to contact the Kansas City Regional Office at 500 NE Colbern Rd, Lee's Summit, MO 64086-4710, 816-251-0700, or KCRO@dnr.mo.gov. Thank you.

Sincerely,

KANSAS CITY REGIONAL OFFICE

Karen J. Rouse Regional Director

KJR/tw

Enclosure

c: JJ Johnson, David Crane, Corina Popescu, Mike Irwin

STATE OF MISSOURI DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION



MISSOURI STATE OPERATING PERMIT

General Operating Permit

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended,

MOG698106

17180 State Hwy E

USACE

Permit No:

Owner:

Address:

	Rock Port, MO 64482
Continuing Authority:	USACE
	17180 State Hwy E
	Rock Port, MO 64482
Facility Name:	RDI2 MATOC L-536 Levee Repair Project
Facility Address:	17180 State Hwy E
	Rock Port, MO 64482
Legal Description:	Sec. 03, T03N, R17E, Atchison County
UTM Coordinates:	287118.891/4458738.563
Receiving Stream:	Tributary to Missouri River (C)
First Classified Stream - ID#:	100K Extent-Remaining Streams (C) 3960.00
USGS# and Sub Watershed#:	10240005 - 0401
forth herein. FACILITY DESCRIPTION	All Outfalls SIC #1442 storm water and return water from aggregate dredging operations on the Missouri and
	, including storm water, discharges under the Missouri Clean Water Law and the National Pollutant not apply to other regulated areas. This permit may be appealed in accordance with RSMo Section 20, and 10 CSR 20-1.020.
October 01, 2020 Issue Date	Edward B. Galbraith, Director Division of Environmental Quality
July 31, 2024 Expiration Date	Karen J. Rouse, Regional Director Kansas City Regional Office

APPLICABILITY

- 1. This Missouri State Operating Permit (permit) authorizes the discharge of return water, wash water, and other process wastewater from maintenance dredging or commercial dredging operations to the Missouri and Mississippi Rivers as well as the discharge of stormwater to the Missouri River, Mississippi River, or tributaries to. The permit places effluent limitations on any process wastewater flowing from dredged sediment. This permit does not apply to process wastewater discharges to rivers, streams, or lakes other than the Missouri River or Mississippi Rivers. Facilities are authorized to discharge stormwater to tributaries of the Missouri or Mississippi Rivers, with adequate site controls to restrict sediment from entering the receiving stream.
- 2. A Missouri State Operating Permit specifically identifying the project must be issued before any dredging can occur. Permittees should be aware other state and federal permits may be needed. Compliance with the provisions of this permit does not supersede or remove liability for other federal, state, county, or any other local approval which may be required for this activity.
- 3. This permit does not cover land disturbance activities or construction of earthen basins.
 - (a) Land disturbance activities disturbing one or more acres of total area for the entire project or less than one acre for sites that are part of a common promotional plan of development may require a land disturbance permit. Instructions on how to apply for and receive the online land disturbance permit are located at www.dnr.mo.gov/env/wpp/epermit/help.htm. Questions regarding permit requirements may be directed to the Department's Land Disturbance phone line at 573-526-2082 or toll free at 855-789-3889, or by email at epermitting@dnr.mo.gov.
 - (b) Construction of an earthen basin or holding structure may require a construction permit. Instructions on how to apply for and receive a construction permit are located at https://dnr.mo.gov/env/wpp/permits/ww-construction-permitting.htm. Questions regarding permit requirements may be directed to Department's Water Protection Program phone line at 573-751-1300 or toll free at https://sraff.ntm.gov/env/wpp/permits/ww-construction-permitting.htm. Questions regarding permit requirements may be directed to Department's Water Protection Program phone line at 573-751-1300 or toll free at https://sraff.ntm.gov/env/wpp/permits/ww-construction-permitting.htm or toll free at 573-751-1300 or toll free at <a href="https://sraff.ntm.gov/env/wpp/permits/ww-constructio
- 4. For the purposes of this permit, <u>stormwater</u> is defined as rainfall runoff, runoff from frozen precipitation, and surface runoff which does not come in contact with process wastewater (as defined below). Processed or cleaned, stockpiled material, that is ready for delivery is considered a final product made to be outside. Stormwater or groundwater seepage that comes in contact with final product is considered stormwater.
- 5. For the purposes of this permit, <u>process wastewater</u> is defined as any water used in the slurry transport of dredged material, air emissions control, equipment or vehicle washing, separation processes (e.g., flotation, heavy media separation), return water, wash water, processing, or the discharge into the Mississippi or Missouri Rivers from the onshore processing of extracted dredged material. Process wastewater also includes any water (e.g., stormwater, groundwater seepage, etc.) which becomes commingled with such wastewater in a pond, lagoon, or other structure used for treatment of such wastewater. Such discharges are deemed to be process wastewater discharge even if it occurs during a precipitation event. Process wastewater discharges are subject to treatment, as necessary, to comply with the effluent limitations in this permit. This permit does not authorize the discharge of waters with added detergents, additives, cleaners, or solvents. For the purpose of this permit, coagulants and flocculants are not considered to be "additives" and may be added to wastewater in accordance with manufacturer's instructions in order to meet permit requirements.
- 6. This general permit does not authorize any discharge of sewage, or pollutants to waters of the state such as:
 - (a) Hazardous substances or oil and grease which may be contained in dredged sediment;
 - (b) Wastewater generated from air pollution control equipment or the containment of scrubber water in lined ponds;
 - (c) Domestic wastewater, including gray water; or
 - (d) Any other wastewater not specifically authorized in this permit.
- 7. The Department may require any facility authorized by a general permit to apply for a site-specific permit [10 CSR 20-6.010(13)(C)]. Cases where a site-specific permit may be required include, but are not limited to, the following:
 - (a) The discharge(s) is a significant contributor of a pollutant(s) which impairs the beneficial uses of the receiving stream;
 - (b) The discharger is not in compliance with the conditions of the general permit; or
 - (c) A Total Maximum Daily Load (TMDL) containing requirements applicable to the discharge(s) is approved.
- 8. If a facility covered under a current general permit desires to apply for a site-specific permit, the facility may do so by contacting the Department for application requirements and procedures.
- 9. Facilities covered under a current site-specific permit who desire to apply for inclusion under this general permit may contact the Department for application requirements and procedures.
- 10. The following are allowable non-stormwater discharges authorized under this permit:
 - (a) Discharges from fire-fighting activities;
 - (b) Potable water, including water line flushing (testing);

- (c) Uncontaminated condensate from air conditioners, coolers, and other compressors and from the outside storage of refrigerated gases or liquids;
- (d) Vehicle wash water where:
 - Detergents or solvents are not used,
 - 2) Volumes are less than 500 gallons per day in total, and
 - 3) Washing/Rinsing of vehicles are isolated from vehicle maintenance or other areas exposed to water quality pollutants.
- (e) Landscape watering, provided all pesticides, herbicides, and fertilizers have been applied in accordance with manufacturer's instructions;
- (f) Pavement wash waters where no detergents or acids are used and no spills or leaks of toxic or hazardous materials have occurred (unless all spilled material has been removed);
- (g) Routine external building wash down with uncontaminated water and no detergents;
- (h) Uncontaminated groundwater or spring water which has not contacted industrial materials or processes;
- (i) Foundation or footing drains where flows are not contaminated with process materials; and
- (j) Incidental windblown mist from cooling towers which collects on rooftops or adjacent portions of your facility, but not intentional discharges from the cooling tower (e.g., "piped" cooling tower blowdown or drains).

EXEMPTION

Facilities that discharge all runoff, stormwater, and process wastewater directly to a combined sewer system are exempt from permit requirements.

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

Table A	FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS							
The facility is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. These								
final effluent limitations shal and monitored by the facility			ter General Pe	rmit. Such dis	charges shall be co	ntrolled, limited,		
EFFLUENT PARAMETERS		FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS			
LIMIT SET MP	Units	DAILY	WEEKLY	MONTHLY	SAMPLING	SAMPLE		
ENVITI SET IVII		MAXIMUM	AVERAGE	AVERAGE	FREQUENCY	Түре		
Return Water and Wastewater Discharged To Missouri and Mississippi Rivers								
(See Note 1, Note 2, and Note 3) Limit Set: MP								
Flow	MGD	*		*	once/quarter	24 hr. estimate		
Settleable Solids	ml/L/hr	*		*	once/quarter	grab		
pH**	SU	6.5 - 9.0		-	once/quarter	grab		
Oil and Grease	mg/L	15		10	once/quarter	grab		
Total Suspended Solids	mg/L	*		*	once/quarter	grab		

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY VIA THE DEPARTMENT'S eDMR SYSTEM. SHOULD A WAIVER TO eDMR BE GRANTED BY THE DEPARTMENT, PAPER REPORTS SHALL BE SUBMITTED IN A TIMELY MANNER TO THE APPROPRIATE REGIONAL OFFICE. THE FIRST REPORT IS DUE JANUARY 28, 2021. IT IS A VIOLATION OF THIS PERMIT TO FAIL TO SAMPLE. THE DISCHARGE SHALL NOT CONTAIN FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

- Monitoring requirement only.
- ** pH is measured in pH units and is not to be averaged.
- Note 1 Samples shall be collected at least once per month and tested for the parameters listed in Table A. Report as no discharge if a discharge does not occur or if the facility is seasonally not in operation. Operation Shutdown can be coded 'AB' and No Discharge coded "C" in the eDMR system. Additional codes may be found in the eDMR system.
- Note 2 The monitoring requirements in Table A apply to land-based discharges at deposition sites only.
- Note 3 This limit set applies only to discharges returned to the Missouri and Mississippi Rivers.

PERMIT REQUIREMENTS

- Electronic Discharge Monitoring Report (eDMR) Submission System. Per 40 CFR Part 127 National Pollutant Discharge
 Elimination System (NPDES) Electronic Reporting Rule, reporting of effluent limits and monitoring shall be submitted by the
 permittee via an electronic system to ensure timely, complete, accurate, and nationally consistent set of data about the NPDES
 program. All general permit covered facilities under this master general permit shall comply with the Department's requirements
 for electronic reporting.
 - (a) Discharge Monitoring Reporting Requirements.
 - Registration to participate in the Department's eDMR system is required as part of the application for general permit
 coverage in order to constitute a complete permit application and may be accessed at dnr.ndm.gov/env/wpp/edmr.htm.

- 2) The permittee must electronically submit compliance monitoring data via the eDMR system. In regards to Standard Conditions Part I, Section B, #7, the eDMR system is currently the <u>only</u> Department approved reporting method for this permit.
- (b) Other actions. The following shall be submitted electronically after such a system has been made available by the Department:
 - 1) General Permit Applications/Notices of Intent to discharge (NOIs);
 - 2) Notices of Termination (NOTs);
 - 3) No Exposure Certifications (NOEs); and
 - 4) Low Erosivity Waivers and Other Waivers from Stormwater Controls (LEWs).
- (c) Electronic Submissions. To access the eDMR system, use the following link in your web browser: https://edmr.dnr.mo.gov/edmr/E2/Shared/Pages/Main/Login.aspx. If you experience difficulties with using the eDMR system you may contact edmr@dnr.mo.gov or call 573-526-2082 or toll free 855-789-3889 for assistance.
- (d) Waivers from Electronic Reporting.
 - 1) The permittee must electronically submit compliance monitoring data and reports unless a waiver is granted by the Department in compliance with 40 CFR Part 127.
 - 2) The permittee may obtain a temporary or permanent electronic reporting waiver by first submitting an eDMR Waiver Request Form (Form 780-2692): http://dnr.mo.gov/forms/780-2692-f.pdf, by contacting the appropriate permitting office or emailing edmr@dnr.mo.gov. The Department will either approve or deny this electronic reporting waiver request within 120 calendar days of receipt.
 - 3) Only permittees with an approved waiver request may submit monitoring data and reports on paper to the Department for the period that the approved electronic reporting waiver is effective.
- 2. Any discharge of fill or dredged material into or alterations of a jurisdictional water requires review by the United States Army Corps of Engineers (USACE) under Section 404 of the federal Clean Water Act (CWA) and by the Department under Section 401 of the federal CWA. USACE's Regulatory Branches may be contacted in the Kansas City District at (816) 389-3990, Little Rock District at (501) 324-5295, Rock Island District at (309) 794-5351, St. Louis District at (314) 331-8575, or Memphis District at (901) 544-3473. The Department's Section 401 staff may be reached at (573) 522-4502.
- 3. Facilities shall manage equipment and materials (deposited materials, trash bins, tools, stockpiles, etc.) to aid in the prevention of materials and other items being transported off-site or into a water of the state during a high water event.
- 4. Facilities shall manage final product or processed stockpiles to ensure materials do not migrate to waters of the state.
- 5. Process wastewater outfalls must be:
 - (a) Clearly marked in the field; the outfall signs must be clearly visible from land and water perspectives;
 - (b) Free of weeds, brush or obstructive vegetation;
 - (c) Above the ordinary high water mark of the waterbody to which it discharges; and
 - (d) Maintained so that a sample of the discharge can be obtained at a point after the final treatment process and before the discharge mixes with receiving waters.
- 6. Facility must be able to show in the field or on a map the location of the stormwater outfall(s).
- 7. The permittee shall furnish to the Department, within a reasonable timeframe, any information the Department requests to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine if the permittee is in compliance with this permit. The permittee shall also furnish to the Department upon request copies of records required to be kept by this permit.
- 8. The laboratory results of all samples from a discharge collected and analyzed must be retained with monitoring records and made available to the Department upon request.
- 9. The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility when:
 - (a) The alteration or addition could significantly change the nature or increase the quantity of pollutants in the discharge. This notification applies to pollutants subject to the effluent limitations of this permit as well as new pollutants different from pollutants listed in this permit; or
 - (b) The alteration or addition results in a significant change in disposal practices and may justify the application of permit conditions different from or absent in the current permit.
- 10. Before releasing water accumulated in petroleum secondary containment areas, it must be examined for hydrocarbon odor and presence of sheen to protect the general criteria found at 10 CSR 20-7.031(4). If odor or sheen is found, the water shall not be discharged without treatment and shall be disposed of in accordance with legally approved methods, such as being sent to a wastewater treatment facility. If the facility wishes to discharge the accumulated stormwater with hydrocarbon odor or presence

of sheen, the water shall be treated using an appropriate method. Following treatment and before release, the water shall be tested for oil and grease, benzene, toluene, ethylbenzene, and xylene using 40 CFR part 136 methods. All pollutant levels must be below the most protective, applicable standards for the receiving stream, found in 10 CSR 20-7.031 Table A before discharge is authorized. Records of all testing and treatment of water accumulated in secondary containment shall be stored in the SWPPP and be available on demand to the Department.

- It is a violation of the Missouri Clean Water Law to fail to pay fees associated with this permit (Section 644.055, RSMo). The fees can be found at 10 CSR 20-6.011.
- 12. The permittee shall at all times properly maintain and operate all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit.
- 13. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, termination, or notice to the Department of planned changes or anticipated non-compliance does not stay any permit condition.

BENCHMARKS FOR STORMWATER DISCHARGES

TABLE B	BENCHMARKS FOR STORMWATER						
The facility is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The benchmarks shall become effective upon issuance of the permit and remain in effect until the expiration of the permit. Such discharges shall be controlled, and limited, by the facility as specified below:							
DISCHARGE PARAMETER(S)		UNITS	BENCHMARK	SAMPLE TYPE			
LIMIT SET: SB							
Oil and Grease		mg/L	10	grab			
pH*		SU	6.5 - 9.0	grab			
Total Suspended Solids		mg/L	100	grab			

pH is measured in standard units and is not to be averaged.

STORMWATER REQUIREMENTS

- For purposes of this permit, stormwater discussed in this section is flow to the Mississippi or Missouri Rivers or tributaries to the Mississippi or Missouri Rivers.
- 2. No regular stormwater sampling is required in this permit. Benchmarks in Table B are to assist in the evaluation of stormwater BMPs. The Department may require sampling and reporting as a result of illegal discharges, compliance issues, complaint investigations, or evidence of off-site impacts from activities at the facility. If such an action is needed, the Department will specify in writing the sampling requirements, including such information as location and extent. It is a violation of this permit to fail to comply with said written notification to sample.
- 3. This permit stipulates pollutant benchmarks applicable to the facility's discharge. Benchmarks are considered necessary to determine BMP effectiveness and every effort should be made to meet benchmarks during discharges resulting from a precipitation event up to and including the 10-year, 24-hour rain event. Benchmarks do not constitute direct numeric effluent limitations; therefore, not meeting a benchmark is not a permit violation. Failure to address a benchmark exceedance with improved BMPs and failure to make tangible progress toward meeting benchmarks is a permit violation. The 10-year, 24-hour rain event information may be found at: http://www.nws.noaa.gov/oh/hdsc/PF documents/Atlas14 Volume8.pdf.
- 4. If the efforts taken by the facility are not sufficient and a benchmark cannot be met, the facility may demonstrate to the Department a benchmark value is not achievable. The demonstration must include rationale and supporting documentation and must show a benchmark value cannot be achieved through the application of BMPs representing available technology. Additionally, the demonstration must show the benchmark is not feasible because no further pollutant reductions are technologically available or economically practicable in light of best industry practices. This demonstration must be presented to the Department for review and approval.

- 5. If stormwater samples are collected, sample the stormwater after all BMPs (treatment), prior to leaving or at the property boundary or before the discharge enters waters of the state on the property. More information on stormwater sampling may be found in the following document: *Industrial Stormwater Monitoring and Sampling Guide* (Document number: EPA 832-B-09-003) published by the Environmental Protection Agency (EPA) in March 2009, https://www3.epa.gov/npdes/pubs/msgp_monitoring_guide.pdf.
- 6. If evaluating flow-through Best Management Practices (BMPs) by stormwater samples, samples should be collected within the first 60 minutes of discharge occurring as a result of precipitation events of 0.1 inches or greater within a 24-hour period. Samples should be collected from an active discharge and should not be taken from standing pools. Precipitation events include rainfall as well as run-off from the melting of frozen precipitation. Local weather stations and on-site gauges are two methods for obtaining local precipitation amounts.
- 7. The results of all samples from a stormwater discharge which are collected and analyzed must be retained for a period of five (5) years and made available to the Department upon request.
- 8. This permit requires the development and full implementation of a Stormwater Pollution Prevention Plan (SWPPP).
 - (a) If a SWPPP has not been developed, the SWPPP for the facility must be prepared within 60 days and implemented within 180 days of permit issuance.
 - (b) If a SWPPP has been developed prior to the issuance of this permit, the existing SWPPP for your facility must be reviewed, revised as necessary, and implemented within 30 days of reissuance of coverage.
 - (c) For new applicants, before dredging or submitting an application, the permittee shall develop a SWPPP that is specific to the dredging activities at the site. This plan must be developed before a permit can be issued and made available if requested by the Department. However, the SWPPP should not be submitted to the Department unless specifically requested.
- 9. The purpose of the SWPPP is to ensure the design, implementation, management, and maintenance of BMPs in order to reduce the amount of sediment and other pollutants in discharges associated with the dredging activities; comply with the Missouri Water Quality Standards; and ensure compliance with the terms and conditions of this general permit. A SWPPP that includes an Alternative Analysis of the Best Management Practices (BMPs) must be developed, implemented, and maintained at the facility. Failure to implement and maintain the chosen alternative, which can be revised and updated, is a permit violation. The Alternative Analysis is a structured evaluation of BMPs that are reasonable and cost effective. The analysis should include practices that are designed to be 1) non-degrading, 2) less degrading, or 3) degrading water quality. The chosen BMP will be the most reasonable and cost effective while ensuring that the highest statutory and regulatory requirements are achieved and the highest quality water attainable for the facility is discharged. The analysis must demonstrate why "no discharge" or "no exposure" are not feasible alternatives at the facility. This structured analysis of BMPs serves as the Antidegradation review, fulfilling the requirements of 10 CSR 20-7.015(9)(A)5 and 7.031(3).
- 10. The permittee shall select, install, use, operate, and maintain the BMPs prescribed in the SWPPP in accordance with the concepts and methods described in the following document: Developing Your Stormwater Pollution Prevention Plan, a Guide for Industrial Operators, (Document number EPA 833-B-09-002) published by the United States Environmental Protection Agency (EPA) in in June 2015. https://www.epa.gov/sites/production/files/2015-11/documents/swppp_guide_industrial_2015.pdf. (General information may also be found at https://www.epa.gov/npdes/industrial-stormwater-guidance.) The permittee is not limited to the use of these guidance and must be referenced in the SWPPP if used. In addition, the permittee is not limited to the use of BMPs identified in these guidance documents. However, alternative BMPs should be justified by site conditions and described in the updated SWPPP.
- 11. The SWPPP must be kept on-site (either electronically or paper copy), readily available upon request, and should not be sent to the Department unless specifically requested. Throughout coverage under this permit, the facility must perform ongoing SWPPP review and revision to incorporate any site condition changes.
 - (a) An assessment of all stormwater discharges associated with the facility, facility activities, and facility materials. This assessment must include a list of potential contaminants and an annual estimate of amounts used and/or produced in the described activities.
 - (b) A map of the location of all permitted features (e.g., outfalls) and structural BMPs.
 - (c) A listing of BMPs and a narrative explaining how the BMPs will be implemented to control and minimize the amount of potential contaminants entering stormwater.
 - (d) A schedule for monthly site inspections and a brief written report, which includes the name of the inspector, the signature of the inspector, and the date. The inspections must include observation and analysis of BMP effectiveness, deficiencies, and corrective action to be taken as well as, if relevant, the integrity of the petroleum containment structure(s) including but not limited to above ground tanks, secondary containment, external piping, etc. Deficiencies must be corrected within seven (7) days and must be documented in the inspection report. The facility may submit a written request to the Department justifying additional time, if necessary, to complete corrective action. The purpose of the SWPPP and the BMPs listed therein is to prevent pollution per 10 CSR 20-2.010(56) to waters of the state. A deficiency of a BMP means it was not effective in

preventing pollution of waters of the state or meeting benchmarks of this permit. Corrective action means the facility took steps to eliminate the deficiency. Inspection reports must be kept with the SWPPP and must be made available to the Department upon request.

- (e) Inspection reports must be kept with the SWPPP and must be made available to the Department upon request.
- (f) A provision for designating an individual to be responsible for environmental matters.
- (g) A provision for providing training to all personnel involved in material handling, material storage, and housekeeping of areas having materials exposed to stormwater. Proof of training must be made available to the Department upon request.
- (h) A provision or plan for meeting the benchmarks established in the permit.
- 12. The following minimum BMPs must be implemented at all facilities:
 - (a) Collection facilities shall be provided on-site, and arrangements made for proper disposal of waste products, including but not limited to petroleum waste products and solvents, which may be exposed to stormwater.
 - (b) Prevent the spillage or loss of fluids, oil, grease, fuel, etc. from vehicle maintenance, equipment cleaning, or warehouse activities and thereby prevent the contamination of stormwater from these substances.
 - (c) Store all paints, solvents, petroleum products, petroleum waste products, and storage containers (such as drums, cans, or cartons) so that these materials are not exposed to stormwater or provide other prescribed BMPs such as plastic lids and/or portable spill pans to prevent the commingling of stormwater with container contents. Commingled water may not be discharged under this permit. Provide spill prevention, control, and countermeasures to prevent any spill of these pollutants from entering waters of the state. Any containment system used to implement this requirement shall be constructed of materials compatible with the substances contained and shall prevent the contamination of groundwater.
 - (d) Provide sediment and erosion control sufficient to prevent sediment loss off of the property, pollution of waters of the state, and to comply with the conditions of this permit, Missouri Clean Water Law, and the CWA. This may require the use of straw bales, silt fences, sediment basins, or other treatment structures. This may require the construction of properly designed sediment basins or other treatment structures.
 - (e) Provide good housekeeping practices on-site to keep solid waste from entering waters of the state.
 - (f) Facilities shall manage materials and equipment (vehicles, trash bins, waste piles, etc.) to ensure these materials are not discharged off-site or into a water of the state during a high water event.
- 13. The permittee shall retain copies of this general permit, the SWPPP and all amendments for the site named in the State Operating Permit, results of any monitoring and analysis, and all site inspection records required by this general permit. The permittee shall retain these records at the permitted site or a site which is readily available from the permitted site. The records shall be made available to the Department upon request within 24 hours of the request.

OTHER DISCHARGES

In the event soil contamination or hazardous substances are discovered at the site during dredging activities, the permittee shall notify the Department as soon as possible, but within 24 hours from the time the permittee becomes aware of the circumstances. The permittee shall report to the appropriate Regional Office during normal business hours or the Environmental Emergency Response hotline at 573-634-2436 outside of normal business hours. Reporting may additionally be provided via the current electronic method approved by the Department. A written submission shall also be provided within five (5) business days of the time the permittee becomes aware of the circumstances in accordance with Standard Conditions, Part I.

STANDARD CONDITIONS

In addition to specified conditions stated herein, this permit is subject to Standard Conditions Part I dated <u>August 1, 2014</u>, and hereby incorporated as though fully set forth herein.

SPECIAL CONDITIONS

- 1. The full implementation of this operating permit, which includes implementation of any applicable schedules of compliance, shall constitute compliance with all applicable federal and state statutes and regulations in accordance with §644.051.16, RSMo, and the CWA section 402(k); however, this permit may be reopened and modified, or alternatively revoked and reissued to comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
 - (a) Contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
 - (b) Controls any pollutant not limited in the permit.
- 2. This permit may be reopened and modified, or alternatively, revoked and reissued, to:
 - (a) Incorporate new or modified effluent limitations or other conditions if the results of a waste load allocation study, toxicity test, or other information indicates changes are necessary to assure compliance with Missouri Water Quality Standards.

- (b) Incorporate new or modified effluent limitations or other conditions if, as the result of a watershed analysis, a Total Maximum Daily Load (TMDL) limitation is developed for the receiving waters which are currently included in Missouri's current 303(d) list.
- (c) Any other requirements of the Clean Water Act then applicable.
- 3. Changes in Discharges of Toxic Substances. In addition to the reporting requirements under §122.41(1), all existing manufacturing, commercial, mining, and silvicultural dischargers must notify the Director as soon as they know or have reason to believe:
 - (a) Activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if the discharge will exceed the highest of the following notification levels:
 - 1) One hundred micrograms per liter (100 μ g/L);
 - 2) Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile;
 - 3) Five hundred micrograms per liter (500 μg/L) for 2,4-dinitrophenol and for 2-methyl-4, 6-dinitrophenol;
 - 4) One milligram per liter (1 mg/L) for antimony;
 - 5) Five (5) times the maximum concentration value reported for the pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or
 - 6) The notification level established by the Department in accordance with 40 CFR 122.44(f).
 - (b) Any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if the discharge will exceed the highest of the following "notification levels:"
 - 1) Five hundred micrograms per liter (500 µg/l);
 - 2) One milligram per liter (1 mg/l) for antimony;
 - 3) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with §122.21(g)(7).
 - 4) The level established by the Director in accordance with §122.44(f).

4. Reporting of Non-Detects:

- (a) An analysis conducted by the permittee or their contracted laboratory shall be conducted in such a way that the precision and accuracy of the analyzed result can be enumerated.
- (b) The permittee shall not report a sample result as "Non-Detect" without also reporting the detection limit of the test. Reporting as "Non-Detect" without also including the detection limit will be considered failure to report, which is a violation of this permit.
- (c) The permittee shall report the "Non-Detect" result using the less than sign and the minimum detection limit (e.g., <10).
- (d) See Standard Conditions Part I, Section A, #4 regarding proper detection limits used for sample analysis.
- (e) When calculating monthly averages, one-half of the minimum detection limit (MDL) should be used instead of a zero. Where all data are below the MDL, the "<MDL" shall be reported as indicated in item 4.(c).

PERMIT RENEWAL

- 1. Unless terminated, the permittee shall submit an application for the renewal of this permit by submitting *Form E-Application for General Permit* http://dnr.mo.gov/forms/780-0795-f.pdf no later than thirty (30) days prior to the permit's expiration date if they wish to continue an activity regulated by this permit after permit expiration.
- 2. When a facility submits a timely and complete application in accordance with 10 CSR 20-6.010(5)(B), and (10)(E)1, as well as §644.051.10 RSMo 2015, and if the Department is unable through no fault of the permittee to issue a renewal prior to expiration of the previous permit, the terms and conditions of the expired permit are administratively continued and will remain fully effective and enforceable until such time when a permit action is taken. Failure to submit a renewal application for a facility that is still in operation is a violation of the Missouri Clean Water Law. Failure to apply for renewal of a permit may result in termination of this permit and enforcement action to compel compliance with this condition and the Missouri Clean Water Law.
- 3. As part of the complete application and as required by the federal NPDES eReporting rule, participation in the Department's Electronic Discharge Monitoring Report Submission System (eDMR) will be required. Facilities already participating in eDMR need not re-apply upon renewal. More information can be found at: http://dnr.mo.gov/env/wpp/edmr.htm.

PERMIT TRANSFER

- This permit may only be transferred to a new owner by submitting an *Application for Transfer of Operating Permit* http://dnr.mo.gov/forms/780-1517-f.pdf
 signed by the seller and buyer of the facility along with the appropriate modification fee.
 In some cases, revocation and reissuance may be necessary. Standard Condition Part 1, Subsection D.7 applies.
- 2. Facilities with transfers carried out without prior notice to the Department will be considered to be operating without a permit and may be assessed an administrative penalty.

PERMIT TERMINATION

- 1. The permittee shall apply for permit termination when activities covered by this permit have ceased and no significant materials as defined by 10 CSR 20-6.200(1)(C)27. remain on the property or if on the property are stored in such a way as to have no potential for pollution. Whenever a release or a potential for release from a permitted facility is permanently eliminated, the existing permit may be terminated.
- Prior to permit termination, ensure all regulated activities have ceased and no "significant materials" remain on site. Proper closure of any effluent storage structure is required prior to permit termination. See https://dnr.mo.gov/pubs/pub2568.htm for more information on closure.
- 3. Permits do not terminate automatically upon expiration. In order to terminate this permit, the permittee shall notify the Department's appropriate regional office by completing and submitting *Request for Termination of Operating Permit* http://dnr.mo.gov/forms/780-1409-f.pdf. The Department may require inspection of the premises prior to granting termination of a permit.

Missouri Department of Natural Resources Fact Sheet MO-G698000 Dredged Material Deposition

The Federal Water Pollution Control Act [Clean Water Act (CWA)] Section 402 of Public Law 92-500 (as amended) established the National Pollution Discharge Elimination System (NPDES) permit program. This program regulates the discharge of pollutants from point sources into the waters of the United States, and the release of stormwater from certain point sources. All such discharges are unlawful without a permit (Section 301 of the CWA). After a permit is obtained, a discharge not in compliance with all permit terms and conditions is unlawful. Missouri State Operating Permits (permit) are issued by the Missouri Department of Natural Resources (Department) under an approved program, operated in accordance with federal and state laws (Federal CWA and Missouri Clean Water Law Section 644 as amended). Master General Permits are issued for a period of no more than five (5) years.

Per 40 CFR 124.56, 40 CFR124.8, and 10 CSR 20-6.020(1)(A)2., a Fact Sheet shall be prepared to give pertinent information regarding the applicable regulations, rationale for the development of effluent limitations and conditions, and the public participation process for the permit. A Fact Sheet is not an enforceable part of a permit.

This Fact Sheet is for a

✓ Master General Permit

PART I - FACILITY INFORMATION

Facility Type: Industrial Facility SIC Code(s): 1442

Facility Description: Dredging return water and stormwater runoff from dredged material deposition sites and other disturbance

resulting from dredging of the Missouri or Mississippi Rivers.

CLARIFICATION:

While the focus of this permit is in controlling stormwater, return water, and wash water from dredged materials, it is helpful to note dredged aggregates have the potential to be a useful resource rather than a waste material. In Section 404 of the Clean Water Act (CWA), the Environmental Protection Agency (EPA) recognizes dredged material can be a valuable resource which can be used in environmentally beneficial ways. Such materials can be used in habitat restoration, agriculture, mine reclamation, or landfill daily cover, to name a few applications. More information regarding beneficial reuse can be found in *Identifying, Planning and Financing Beneficial Use Projects Using Dredged Material* (EPA 842-B-07-001) at https://www.epa.gov/sites/production/files/2015-08/documents/identifying_planning_and_financing_beneficial_use_projects.pdf.

This permit is for process wastewater discharged to the Missouri or Mississippi River and stormwater discharges to the Missouri River, Mississippi River, or tributaries thereto. If process wastewater from dredging of these rivers is returned to waters of the state other than the river it came from, the facility is not covered under this permit and must apply for coverage under either the permit MOG690000 or a site-specific permit. If this process wastewater is discharged to waters of the state, even as sheet flow, the facility is not covered under this permit. Processed or cleaned, stockpiled material, that is ready for delivery is considered a final product made to be outside. Stormwater or groundwater seepage that comes in contact with final product is considered stormwater.

SUMMARY OF CHANGES:

- Participation in the Department's Electronic Discharge Monitoring Report (eDMR) System is now required for all facilities which have required discharge monitoring and reporting.
- Language throughout the permit has been updated to reflect the most current permit language found in MGPs.
- Stormwater Pollution Prevention Plan (SWPPP) requirements have been added. Facilities should familiarize themselves with new SWPPP requirements. The previous permit required stormwater Best Management Practices (BMPs) and contained SWPPP Guidelines.
- Benchmarks have been added to this permit to assist facilities in determining the effectiveness of BMPs.

PART II - RECEIVING STREAM INFORMATION

APPLICABLE DESIGNATIONS OF WATERS OF THE STATE

Per Missouri Effluent Regulations (10 CSR 20-7.015), the waters of the state are divided into seven (7) categories. Each category lists effluent limitations for specific parameters, which are presented in each outfall's Effluent Limitation Table and further discussed in the Derivation and Discussion of Limits section. This permit applies to facilities discharging to the following water body categories:

- ✓ Missouri or Mississippi River [10 CSR 20-7.015(2)] process wastewater and stormwater discharges
- ✓ Lake or Reservoir [10 CSR 20-7.015(3)] stormwater discharges only
- ✓ Losing Streams [10 CSR 20-7.015(4)] stormwater discharges only

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- ✓ Metropolitan No-Discharge [10 CSR 20-7.015(5)] stormwater discharges only
- ✓ All Other Waters [10 CSR 20-7.015(8)] stormwater discharges only

Missouri Water Quality Standards (10 CSR 20-7.031) defines the Clean Water Commission water quality objectives in terms of "water uses to be maintained and the criteria to protect those uses." The receiving stream and/or 1st classified receiving stream's beneficial water uses shall be maintained in accordance with 10 CSR 20-7.031(4). The effluent limitations established by this permit are intended to be protective of all streams which fall within the categories of receiving water bodies indicated above. A general permit does not take into consideration site-specific conditions.

MIXING CONSIDERATIONS:

This permit covers industries with conventional pollutants. As such, no mixing is not applicable.

- ✓ Not Applicable: Mixing Zone [10 CSR 20-7.031(5)(A)4.B.(I)(a)]
- ✓ Not Applicable: Zone of Initial Dilution [10 CSR 20-7.031(5)(A)4.B.(I)(b)]

RECEIVING STREAM MONITORING REQUIREMENTS:

There are no receiving water monitoring requirements recommended at this time.

PART III - RATIONALE & DERIVATION OF EFFLUENT LIMITATIONS

ANTI-BACKSLIDING:

A provision in the Federal Regulations [CWA Section 303(d)(4); CWA Section 402(c); 40 CFR Part 122.44(I)] requires a reissued permit to be as stringent as the previous permit with some exceptions.

- ✓ Limitations in this operating permit for the reissuance conform to the anti-backsliding provisions of Section 402(o) of the Clean Water Act, and 40 CFR Part 122.44.
- ✓ The Department determined technical mistakes or mistaken interpretations of law were made in issuing the permit under section 402(a)(1)(b).
 - The previous permit contained a special condition which described a specific set of prohibitions related to general criteria found in 10 CSR 20-7.031(4). In order to comply with 40 CFR 122.44(d)(1), the permit writer has conducted reasonable potential determinations for each general criterion and established numeric effluent limitations where reasonable potential exists. While the removal of the previous permit special condition creates the appearance of backsliding, since this permit establishes numeric limitations where reasonable potential to cause or contribute to an excursion of the general criteria exists the permit maintains sufficient effluent limitations and monitoring requirements in order to protect water quality, this permit is equally protective as compared to the previous permit. Therefore, given this new information, and the fact the previous permit special condition was not consistent with 40 CFR 122.44(d)(1), an error occurred in the establishment of the general criteria as a special condition of the previous permit. Please see Reasonable Potential Analysis section below for more information regarding the reasonable potential determinations for each general criterion related to this facility.

ANTIDEGRADATION:

Antidegradation policies ensure protection of water quality for a particular water body on a pollutant by pollutant basis to ensure Water Quality Standards are maintained to support beneficial uses such as fish and wildlife propagation and recreation on and in the water. Antidegradation policies are adopted to minimize adverse effects on water. The Department has determined the best avenue forward for implementing the Antidegradation requirements into general permits is by requiring the appropriate development and maintenance of a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP must identify all Best Management Practices (BMPs) which are reasonable and effective, taking into account environmental impacts and costs. This analysis must document why no discharge or no exposure options are not feasible at the facility. This selection and documentation of appropriate control measures will then serve as the analysis of alternatives and fulfill the requirements of the Antidegradation Rule and Implementation Procedure 10 CSR 20-7.031(3) and 10 CSR 20-7.015(9)(A)5.

Any facility seeking coverage under this permit, which undergoes expansion or discharges a new pollutant of concern, must update their SWPPP and select new BMPs which are reasonable and cost effective. New facilities seeking coverage under this permit are required to develop a SWPPP which includes this analysis and documentation of appropriate BMPs. Renewal of coverage for a facility requires a review of the SWPPP to assure the selected BMPs continue to be appropriate.

✓ Applicable: The pollutants of concern in this permit are listed in Table A. Compliance with the effluent limitations established in this permit for the protection of General Criteria, along with the evaluation and implementation of BMPs as documented in the SWPPP, meets the requirements of Missouri's Antidegradation Review [10 CSR 20-7.031(3), 10 CSR 20-7.031 Table A, and 10 CSR 20-7.015(9)(A)5.].

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BENCHMARKS:

When a permitted feature or outfall consists of only stormwater, a benchmark may be implemented at the discretion of the permit writer. Benchmarks give the facility a means to measure the efficacy of BMPs and to replace and update stormwater control measures. Benchmark concentrations are not effluent limitations. A benchmark exceedance, therefore, is not a permit violation; however, failure to address a benchmark violation with improved BMPs is a permit violation. The 10-year, 24-hour rain event information may be found at: http://www.nws.noaa.gov/oh/hdsc/PF_documents/Atlas14_Volume8.pdf.

Benchmark data is used to determine the overall effectiveness of control measures and to assist the permittee in knowing when additional corrective actions may be necessary to comply with the limitations of the permit. This ensures water quality is protected without placing undue restriction on small businesses.

If data becomes available indicating existing water quality will be protected by alternative benchmarks or by adding sampling frequency specific to this industry, the Department will propose to incorporate those benchmarks into this general operating permit as part of a general operating permit modification. Such data must be approved by the Department as appropriate and representative before it can be considered.

✓ Applicable: This facility has stormwater-only outfalls with benchmark constraints. The benchmarks listed are consistently achieved in stormwater discharges by a variety of other industries with SWPPPs.

CHANGES IN DISCHARGES OF TOXIC POLLUTANT:

This special condition reiterates the federal rules found in 40 CFR 122.44(f) and 122.42(a)(1). In these rules, the facility is required to report changes in amounts of toxic substances discharged. Toxic substances are defined in 40 CFR 122.2 as "...any pollutant listed as toxic under section 307(a)(1) or, in the case of "sludge use or disposal practices," any pollutant identified in regulations implementing section 405(d) of the CWA." Section 307 of the clean water act then refers to those parameters found in 40 CFR 401.15. The permittee should also consider any other toxic pollutant in the discharge as reportable under this condition.

PUBLIC NOTICE OF COVERAGE FOR AN INDIVIDUAL FACILITY:

Public Notice of reissuance of coverage is not required unless the facility has been found to be in significant noncompliance [10 CSR 20-6.020(1)(C)4.]. The need for an individual public notification process shall be determined and identified in the permit [10 CSR 20-6.020(1)(C)5.].

✓ Not Applicable: Public Notice is not required for issuance of coverage under this permit to individual facilities.

GENERAL CRITERIA CONSIDERATIONS:

In accordance with 40 CFR 122.44(d)(1), effluent limitations shall be placed into permits for pollutants which have been determined to cause, have the reasonable potential to cause, or to contribute to an excursion above any State water quality standard, including State narrative criteria for water quality. The rule further states pollutants which have been determined to cause, have the reasonable potential to cause, or contribute to an excursion above a narrative criterion within an applicable State water quality standard, the permit shall contain a numeric effluent limitation protecting the narrative criterion. The previous permit included the narrative criteria as specific prohibitions placed upon the discharge. These prohibitions were included in the permit absent any discussion of the discharge's reasonable potential to cause or contribute to an excursion of the criterion.

In order to comply with this regulation, the permit writer has completed a reasonable potential determination on whether the discharge has reasonable potential to cause, or contribute to an excursion of the general criteria listed in 10 CSR 20-7.031(4). These specific requirements are listed below followed by derivation and discussion (the lettering matches the rule itself, under 10 CSR 20-7.031(4)). In instances where reasonable potential exists, the permit includes numeric limitations to address the reasonable potential. In instances where reasonable potential does not exist, the permit includes monitoring of the discharges potential to impact the receiving stream's narrative criteria. Finally, all of the previous permit narrative criteria prohibitions have been removed from the permit given they are addressed by numeric limits where reasonable potential exists. It should also be noted Section 644.076.1, RSMo as well as Section D – Administrative Requirements of Standard Conditions Part I of this permit state it shall be unlawful for any person to cause or permit any discharge of water contaminants from any water contaminant or point source located in Missouri which are in violation of sections 644.006 to 644.141 of the Missouri Clean Water Law or any standard, rule, or regulation promulgated by the commission.

- ✓ Conservative assumption: A Reasonable Potential Analysis was not conducted for this master general permit; however, staff did conduct a reasonable potential determination. A reasonable potential to violate water quality standards is assumed for the pollutants of concern due to the nature of the activities carried out under this permit, resulting in the effluent limits contained in the permit.
- (A) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits, or prevent full maintenance of beneficial uses.
 - The Department has determined there is no reasonable potential for activities covered under this general permit to contribute to putrescent, unsightly, or harmful bottom deposits which may prevent full maintenance of beneficial uses in the Mississippi or Missouri Rivers. These discharges flows into the Missouri or Mississippi Rivers. Because the discharge flow of is only a small fraction of the Missouri River flow, these discharges are not expected to cause any putrescent, unsightly or harmful deposits or prevent full maintenance of beneficial uses in these rivers at this time.

- (B) Waters shall be free from oil, scum, and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses
 - The Department has determined there is reasonable potential for activities covered under this general permit to cause oil, scum or floating debris in waters of the state due to the nature of the activities and the products found on site. Fueling activity, and mechanical equipment are used at these facilities. The oil and grease limitations from the previous permit have been continued to protect this general criterion.
- (C) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor, or prevent full maintenance of beneficial uses.
 - The Department has determined there is no reasonable potential for activities covered under this general permit to contribute contaminants which could cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses. These discharges flow into the Missouri or Mississippi Rivers. Because the discharge flow of is only a small fraction of the Missouri River flow, these discharges are not expected to cause any unsightly color or turbidity, offensive odor, or prevent full maintenance of beneficial uses.
- (D) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal, or aquatic life.
 - The permit writer considered the activities covered under this general permit to contribute contaminants which could cause toxicity to human, animal or aquatic life. The Department has determined the effluent limits for the pollutants identified in this permit are sufficient to protect humans, animals, and aquatic life.
- (E) There shall be no significant human health hazard from incidental contact with the water.
 - It is the permit writer's opinion that this criterion is the same as (D).
- (F) There shall be no acute toxicity to livestock or wildlife watering.
 - It is the permit writer's opinion that this criterion is the same as (D).
- (G) Waters shall be free from physical, chemical, or hydrologic changes which would impair the natural biological community.
 - The Department has determined there is no reasonable potential for activities covered under this general permit to contribute contaminants which could cause physical, or hydrologic changes which would impair the natural biological community. This permit does not authorize dredging activities. The discharges in this permit do not have reasonable potential for physical or hydrologic changes. Chemical changes are protected by limitations in this permit as discussed earlier in this section.
 - Facilities shall take precautions to ensure activities do not cause or contribute to an adverse alteration of a water. Any discharge of fill or dredged material into or alterations of a jurisdictional water requires review by the United States Army Corps of Engineers (USACE) under Section 404 of the federal Clean Water Act (CWA) and by the Department under Section 401 of the federal CWA. USACE's Regulatory Branches may be contacted in the Kansas City District at (816) 389-3990, Little Rock District at (501) 324-5295, Rock Island District at (309) 794-5351, St. Louis District at (314) 331-8575, or Memphis District at (901) 544-3473. The Department's Section 401 staff may be reached at (573) 522-4502. In addition, it is a violation of this permit to cause or contribute to an alteration of the stream channel. Stream channel alterations require review by the United States Army Corps of Engineers (USACE) under Section 404 of the federal Clean Water Act (CWA) and by the Department under Section 401 of the federal CWA.
- (H) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment, and solid waste as defined in Missouri's Solid Waste Law, Section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to Section 260.200-260.247, RSMo.
 - Based on the activities carried out by the facilities under this general permit, the Department has determined there is reasonable potential for the deposition of used tires, car bodies, appliances, demolition debris, used vehicles or equipment or solid waste into waters of the state. These facilities contain structures, equipment and stockpiles. Conditions were added in the requirements and SWPPP requirement to manage equipment and stockpiles to prevent migration of the items and materials during high water events.

SCHEDULE OF COMPLIANCE (SOC):

A schedule of remedial measures included in a permit, including an enforceable sequence of interim requirements (actions, effluent limits, operations, or milestone events) leading to compliance with the Missouri Clean Water Law, its implementing regulations, and/or the terms and conditions of an operating permit. SOCs are allowed under 40 CFR 122.47 providing certain conditions are met. A SOC is not allowed for effluent limitations based on technology-based standards established in accordance with federal requirements, if the deadline for compliance established in federal regulations has passed. 40 CFR § 125.3. In order to provide guidance in developing SOCs, and to attain a greater level of consistency, the Department issued a policy on development of SOCs on October 25, 2012. The policy provides guidance to permit writers on standard time frames for schedules for common activities, and guidance on factors to modify the length of the schedule.

✓ Not applicable; this permit does not contain a SOC.

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SPILL REPORTING:

Per 260.505 RSMo, any emergency involving a hazardous substance must be reported to the Department's 24 hour Environmental Emergency Response hotline at (573) 634-2436 at the earliest practicable moment after discovery. The Department may require the submittal of a written report detailing measures taken to clean up a spill. These reporting requirements apply whether or not the spill results in chemicals or materials leaving the permitted property or reaching waters of the state. This requirement is in addition to the noncompliance reporting requirement found in Standard Conditions Part I. http://dnr.mo.gov/env/esp/spillbill.htm

STANDARD CONDITIONS:

The standard conditions Part I attached to this permit incorporate all sections of 40 CFR 122.41(a) through (n) by reference as required by law. These conditions, in addition to the conditions enumerated within this permit should be reviewed by the permittee to ascertain compliance with this permit, state regulations, state statues, federal regulations, and the Clean Water Act.

STORMWATER POLLUTION PREVENTION PLAN (SWPPP):

In accordance with 40 CFR 122.44(k) Best Management Practices (BMPs) must be used to control or abate the discharge of pollutants when: (1) Authorized under section 304(e) of the Clean Water Act (CWA) for the control of toxic pollutants and hazardous substances from ancillary industrial activities; (2) Authorized under section 402(p) of the CWA for the control of stormwater discharges; (3) Numeric effluent limitations are infeasible; or (4) the practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA.

In accordance with the *Developing Your Stormwater Pollution Prevention Plan, a Guide for Industrial Operators*, (EPA 833-B-09-002) published by the United States Environmental Protection Agency (EPA) in June 2015 (https://www.epa.gov/npdes/industrial-stormwater-guidance), BMPs are measures or practices used to reduce the amount of pollution entering waters of the state from a permitted facility. BMPs may take the form of a process, activity, or physical structure. Additionally in accordance with the Stormwater Management, a SWPPP is a series of steps and activities to (1) identify sources of pollution or contamination, and (2) select and carry out actions which prevent or control the pollution of storm water discharges.

Areas which should be included in the SWPPP are identified in 40 CFR 122.26(b)(14). Once the potential sources of stormwater pollution have been identified, a plan should be formulated to best control the amount of pollutant being released and discharged by each activity or source. This should include, but is not limited to, minimizing exposure to stormwater, good housekeeping measures, proper facility and equipment maintenance, spill prevention and response, vehicle traffic control, and proper materials handling. Once a plan has been developed the facility will employ the control measures which have been determined to be adequate to achieve the benchmark values discussed above.

The facility will evaluate and inspect the BMPs to ensure they are working properly and re-evaluate any BMP not achieving compliance with permitting requirements. For example, if sample results from an outfall show values of TSS above the benchmark value, the BMP being employed is deficient in controlling stormwater pollution. Corrective action should be taken to repair, improve, or replace the failing BMP. This internal evaluation should be done at least once per month but should be conducted more frequently if BMPs continue to fail. If failures do occur, continue this trial and error process until appropriate BMPs have been established.

If failures continue to occur and the permittee feels there are no practicable or cost-effective BMPs which will sufficiently reduce a pollutant concentration in the discharge to the benchmark values established in the permit, the permittee can submit a request to reevaluate the benchmark values. This request needs to include 1) a detailed explanation of why the facility is unable to comply with the permit conditions and unable to establish BMPs to achieve the benchmark values; 2) financial data of the company and documentation of cost associated with BMPs for review and 3) the SWPPP, which should contain adequate documentation of BMPs employed, failed BMPs, corrective actions, and all other required information. This will allow the Department to conduct a cost analysis on control measures and actions taken by the facility to determine cost-effectiveness of BMPs. The request shall be submitted in the form of an operating permit modification; the application is found at: http://dnr.mo.gov/forms/index.html.

✓ Applicable: A SWPPP shall be developed and implemented for each site and shall incorporate required practices identified by the Department with jurisdiction, incorporate erosion control practices specific to site conditions, and provide for maintenance and adherence to the plan.

WASTELOAD ALLOCATIONS (WLA) FOR EFFLUENT LIMITATIONS:

Per 10 CSR 20-2.010(78), the allotment of pollutant each discharger is allowed by the Department to release into a given stream after the Department has determined the maximum amount of pollutant which may be discharged into the stream without endangering its water quality.

✓ Not Applicable: WLA are not calculated for a general permit. Site-specific conditions are not considered.

WATER QUALITY STANDARDS:

Per 10 CSR 20-7.031(4), General Criteria shall be applicable to all waters of the state at all times including mixing zones. Additionally, 40 CFR 122.44(d)(1) directs the Department to include in each NPDES permit conditions to achieve water quality established under Section 303 of the CWA, including state narrative criteria for water quality.

WHOLE EFFLUENT TOXICITY (WET) TEST:

Per 10 CSR 20-7.031(1)(FF), a toxicity test conducted under specified laboratory conditions on a specific indicator organism; and per 40 CFR Section 122.2, the aggregate toxic effect of an effluent measured directly by a toxicity test. A WET test is a quantifiable method of determining if a discharge from a facility may be causing toxicity to aquatic life by itself, in combination with, or through synergistic responses when mixed with receiving stream water.

✓ Not Applicable: At this time, the facility is not required to conduct a WET test.

Part IV - Effluent Limitation Determination

Effluent limitations derived and established in the below Effluent Limitations Table are based on current operations of the facility. Future permit action due to facility modification may contain new permit terms and conditions which supersede the terms and conditions, including effluent limitations, of this permit

EFFLUENT LIMITATIONS TABLE FOR TABLE A:

Applies only to return water and process wastewater discharged to the Missouri and Mississippi rivers.

PARAMETER	Unit	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	PREVIOUS PERMIT LIMITATIONS
FLOW	MGD	*		*	SAME
SETTLEABLE SOLIDS	ML/L/HR	*		*	SAME
pH**	SU	6.5-9.0		-	SAME
OIL & GREASE	MG/L	15		10	SAME
TOTAL SUSPENDED SOLIDS	MG/L	*		*	SAME

^{*} Monitoring requirement only

DERIVATION AND DISCUSSION OF LIMITS:

The CWA requires all NPDES discharges to Waters of the U.S. contain technology-based or water-quality based effluent limitations, whichever is more stringent. When the EPA has not established industry specific technology based Effluent Limitation Guidelines, Missouri uses EPA's *Technical Support Document for Water Quality Based Toxics Control* (TSD) method for calculating site-specific water-quality based effluent limitations. The TSD method is based on assumptions and statistics which apply to continuous discharges, not intermittent stormwater discharges, and therefore do not apply to this permit. Thus, it is the Department's policy to consult the EPA's *Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity* (MSGP) or other applicable documents for guidance.

<u>Flow</u>

In accordance with 40 CFR Part 122.44(i)(1)(ii), the volume of effluent discharged from each outfall is needed to assure compliance with permitted effluent limitations. If the facility is unable to obtain effluent flow, then it is the responsibility of the facility to inform the Department.

Settleable Solids & Total Suspended Solids

Monitoring only is continued from the previous permit. Data will be used to evaluate contributions of solids from these facilities to the Missouri & Mississippi Rivers. The wastewater at these facilities is usually either associated with direct return water from the source, or water which has percolated through the waste mass. Because dredging is the removal of sediment from the bottom of these rivers, this sediment can be carried in process wastewater.

pΗ

pH will be maintained in the range of 6.5-9.0 SU per the water quality standards found at 10 CSR 20-7.031 Table A1. pH is a conventional pollutant. pH is not to be averaged. pH is often used as an indicator of general water quality. These limits are met at various industrial sites across a number of industries, and are considered to be achievable.

Oil and Grease

Daily maximum limit of 15 mg/L, with a monthly average limit of 10 mg/L is continued from the previous permit. Heavy machinery is common for these types of facilities and is a potential source of oil and grease from the outfalls. Oil and grease is a comprehensive test which measures for gasoline, diesel, crude oil, creosote, kerosene, heating oils, heavy fuel oils, lubricating oils, waxes, and some asphalt and pitch. The test can also detect some volatile organics such as benzene, toluene, ethylbenzene, or toluene, but these constituents are often lost during testing due to their boiling points. Results do not allow for separation of specific pollutants within the test, they are reported, totaled, as "oil and grease." Per 10 CSR 20-7.031 Table A1: Criteria for

^{**} pH is measured in pH units and is not to be averaged.

Designated Uses; 10 mg/L is the standard for protection of aquatic life. This standard will also be used to protect the general criteria found at 10 CSR 20-7.031(4). The daily maximum was calculated using the *Technical Support Document for Water Quality-Based Toxics Control* (EPA/505/2-90-001). Section 5.4.2 indicates the waste load allocation can be set to the chronic standard. When the chronic standard is multiplied by 1.5, the daily maximum can be calculated. Hence, 10 * 1.5 = 15 mg/L for the daily maximum. Ten mg/L is the level at which sheen is estimated to form on receiving waters. Oils and greases of different densities will possibly form sheen or unsightly bottom deposits at levels which vary from 10 mg/L. To protect the general criteria, it is the responsibility of the permittee to visually observe the discharge and receiving waters for sheen or bottom deposits.

SAMPLING FREQUENCY:

Sampling frequency is established in accordance with Department policy. Effluent limitations are expressed in a daily maximum and a monthly average. Monitoring is required only when there is a discharge. Results from samples may be submitted as both the daily maximum and the monthly average and shall be reported quarterly. If the facility collects multiple samples during any month, the permit requires the facility to submit a monthly average. If no discharges occur during a sampling period, the facility is directed to report "no discharge."

Part V- Benchmarks

BENCHMARKS FOR TABLE B

PARAMETER	Unit	BENCHMARK	PREVIOUS PERMIT BENCHMARK
Oil & Grease	mg/L	10	NEW
pH*	SU	6.5 - 9.0	NEW
Total Suspended Solids	mg/L	100	NEW

• pH is measured in pH units and is not to be averaged.

NEW Parameter is new in this permit

DERIVATION AND DISCUSSION OF BENCHMARKS

Benchmark concentrations are not effluent limitations; therefore, not meeting a benchmark is not a permit violation. Failure to modify BMPs and make tangible progress toward meeting the benchmark is a permit violation. Benchmark exceedance which causes degradation to an ONRW [10 CSR 20-7.031(3)(C)] may be in violation of water quality standards. Benchmark evaluation is used to determine the overall effectiveness of control measures and to assist the facility in knowing when additional corrective action(s) may be necessary. These TBELs are addressed through the implementation of the SWPPP and associated BMPs. If the facility fails to adequately protect water quality through monitoring benchmarks to ensure compliance with the SWPPP and BMPs, the Department may require the facility to more actively monitor the benchmarks and/or update their SWPPP and BMPs. Failure to take corrective action is a violation of the permit.

<u>Oil and Grease</u>: This permit has a benchmark of 10 mg/L, which has been determined to be feasible, affordable, and protective of water quality using best professional judgment. This value is consistently achieved in stormwater discharges by a variety of other industries with SWPPPs and is deemed protective of instream water quality. Due to machinery and vehicles on these types of facilities, there is potential for oil and grease to enter the stormwater. This can be managed with proper BMPs.

<u>**pH**</u>: The range is 6.5 - 9.0 Standard pH Units (SU). pH is not to be averaged. pH can be used to determine is there have been spills, or other addition to the stormwater on the site.

<u>Total Suspended Solids</u>: This permit has a benchmark of 100 mg/L, which has been determined to be feasible and affordable. This value is consistently achieved in stormwater discharges by a variety of other industries with SWPPPs. Due to the nature of the activities there is potential for solids to enter the stormwater. This can be managed with proper BMPs. Facilities with well-maintained BMPs should be able to meet the 100 mg/L benchmark.

Part VI - Administrative Requirements

On the basis of preliminary staff review and applicable standards and regulations, the Department, as administrative agent for the Missouri Clean Water Commission, proposes to issue a permit(s) subject to certain effluent limitations, schedules, and special conditions contained herein and within the permit. The proposed determinations are tentative pending public comment.

PUBLIC NOTICE:

The Department shall give public notice when a draft permit has been prepared and its issuance is pending. Additionally, public notice will be issued if a public hearing is to be held because of a significant degree of interest or because of water quality concerns related to a draft permit. No public notice is required when a request for a permit modification or termination is denied; however, the requester and facility must be notified of the denial in writing.

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The Department must give public notice of a pending permit or of a new or reissued Missouri State Operating Permit. The public comment period is a length of time not less than thirty (30) days following the date of the public notice, during which interested persons may submit written comments about the proposed permit.

For persons wanting to submit comments regarding this proposed permit, please refer to the Public Notice page located at the front of this draft permit. The Public Notice page gives direction on how and where to submit appropriate comments.

✓ The Public Comment period for this permit is was 6/18/2019 to 7/18/2019. No comments were received.

DATE OF FACT SHEET: March 7, 2019, Updated June 4, 2019

COMPLETED BY:
SARAH WRIGHT-AHOLT
ENVIRONMENTAL SPECIALIST
MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
OPERATING PERMITS SECTION-STORMWATER AND CERTIFICATION UNIT



STANDARD CONDITIONS FOR NPDES PERMITS ISSUED BY

THE MISSOURI DEPARTMENT OF NATURAL RESOURCES MISSOURI CLEAN WATER COMMISSION REVISED AUGUST 1, 2014

These Standard Conditions incorporate permit conditions as required by 40 CFR 122.41 or other applicable state statutes or regulations. These minimum conditions apply unless superseded by requirements specified in the permit.

Part I – General Conditions Section A – Sampling, Monitoring, and Recording

1. Sampling Requirements.

- Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
- b. All samples shall be taken at the outfall(s) or Missouri Department of Natural Resources (Department) approved sampling location(s), and unless specified, before the effluent joins or is diluted by any other body of water or substance.

2. Monitoring Requirements.

- Records of monitoring information shall include:
 - i. The date, exact place, and time of sampling or measurements;
 - ii. The individual(s) who performed the sampling or measurements;
 - iii. The date(s) analyses were performed;
 - iv. The individual(s) who performed the analyses;
 - v. The analytical techniques or methods used; and
 - vi. The results of such analyses.
- b. If the permittee monitors any pollutant more frequently than required by the permit at the location specified in the permit using test procedures approved under 40 CFR Part 136, or another method required for an industry-specific waste stream under 40 CFR subchapters N or O, the results of such monitoring shall be included in the calculation and reported to the Department with the discharge monitoring report data (DMR) submitted to the Department pursuant to Section B, paragraph 7.
- Sample and Monitoring Calculations. Calculations for all sample and monitoring results which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in the permit.
- Test Procedures. The analytical and sampling methods used shall conform to the reference methods listed in 10 CSR 20-7.015 unless alternates are approved by the Department. The facility shall use sufficiently sensitive analytical methods for detecting, identifying, and measuring the concentrations of pollutants. The facility shall ensure that the selected methods are able to quantify the presence of pollutants in a given discharge at concentrations that are low enough to determine compliance with Water Quality Standards in 10 CSR 20-7.031 or effluent limitations unless provisions in the permit allow for other alternatives. A method is "sufficiently sensitive" when; 1) the method minimum level is at or below the level of the applicable water quality criterion for the pollutant or, 2) the method minimum level is above the applicable water quality criterion, but the amount of pollutant in a facility's discharge is high enough that the method detects and quantifies the level of pollutant in the discharge, or 3) the method has the lowest minimum level of the analytical methods approved under 10 CSR 20-7.015. These methods are also required for parameters that are listed as monitoring only, as the data collected may be used to determine if limitations need to be established. A permittee is responsible for working with their contractors to ensure that the analysis performed is sufficiently sensitive.
- 5. Record Retention. Except for records of monitoring information required by the permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five (5) years (or longer as required by 40 CFR part 503), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the application for the permit, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Department at any time.

Illegal Activities.

- a. The Federal Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under the permit shall, upon conviction, be punished by a fine of not more than \$10,000, or by imprisonment for not more than two (2) years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than \$20,000 per day of violation, or by imprisonment of not more than four (4) years, or both.
- b. The Missouri Clean Water Law provides that any person or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained pursuant to sections 644.006 to 644.141 shall, upon conviction, be punished by a fine of not more than \$10,000, or by imprisonment for not more than six (6) months, or by both. Second and successive convictions for violation under this paragraph by any person shall be punished by a fine of not more than \$50,000 per day of violation, or by imprisonment for not more than two (2) years, or both.

Section B – Reporting Requirements

1. Planned Changes.

- a. The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility when:
 - The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR 122.29(b); or
 - ii. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR 122.42(a)(1);
 - iii. The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan;
- iv. Any facility expansions, production increases, or process modifications which will result in a new or substantially different discharge or sludge characteristics must be reported to the Department 60 days before the facility or process modification begins. Notification may be accomplished by application for a new permit. If the discharge does not violate effluent limitations specified in the permit, the facility is to submit a notice to the Department of the changed discharge at least 30 days before such changes. The Department may require a construction permit and/or permit modification as a result of the proposed changes at the facility.

2. Non-compliance Reporting.

a. The permittee shall report any noncompliance which may endanger health or the environment. Relevant information shall be provided orally or via the current electronic method approved by the Department, within 24 hours from the time the permittee becomes aware of the circumstances, and shall be reported to the appropriate Regional Office during normal business hours or the Environmental Emergency Response hotline at 573-634-2436 outside of normal business hours. A written submission shall also be provided within five (5) business days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.



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- b. The following shall be included as information which must be reported within 24 hours under this paragraph.
 - Any unanticipated bypass which exceeds any effluent limitation in the permit.
 - ii. Any upset which exceeds any effluent limitation in the permit.
 - Violation of a maximum daily discharge limitation for any of the pollutants listed by the Department in the permit required to be reported within 24 hours.
- c. The Department may waive the written report on a case-by-case basis for reports under paragraph 2. b. of this section if the oral report has been received within 24 hours.
- Anticipated Noncompliance. The permittee shall give advance notice to the
 Department of any planned changes in the permitted facility or activity
 which may result in noncompliance with permit requirements. The notice
 shall be submitted to the Department 60 days prior to such changes or
 activity.
- 4. Compliance Schedules. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of the permit shall be submitted no later than 14 days following each schedule date. The report shall provide an explanation for the instance of noncompliance and a proposed schedule or anticipated date, for achieving compliance with the compliance schedule requirement.
- 5. Other Noncompliance. The permittee shall report all instances of noncompliance not reported under paragraphs 2, 3, and 6 of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph 2. a. of this section.
- 6. Other Information. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or information.

7. Discharge Monitoring Reports.

- a. Monitoring results shall be reported at the intervals specified in the
- b. Monitoring results must be reported to the Department via the current method approved by the Department, unless the permittee has been granted a waiver from using the method. If the permittee has been granted a waiver, the permittee must use forms provided by the Department.
- Monitoring results shall be reported to the Department no later than the 28th day of the month following the end of the reporting period.

Section C – Bypass/Upset Requirements

1. **Definitions.**

- a. Bypass: the intentional diversion of waste streams from any portion of a treatment facility, except in the case of blending.
- b. Severe Property Damage: substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
- c. Upset: an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

2. Bypass Requirements.

Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs 2. b. and 2. c. of this section.

b. Notice.

- Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least 10 days before the date of the bypass.
- ii. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Section B – Reporting Requirements, paragraph 5 (24-hour notice).

c. Prohibition of bypass.

- i. Bypass is prohibited, and the Department may take enforcement action against a permittee for bypass, unless:
 - Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
 - 2. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
 - The permittee submitted notices as required under paragraph 2.
 b. of this section.
- ii. The Department may approve an anticipated bypass, after considering its adverse effects, if the Department determines that it will meet the three (3) conditions listed above in paragraph 2. c. i. of this section.

3. Upset Requirements.

- a. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph 3. b. of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.
- b. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
 - An upset occurred and that the permittee can identify the cause(s) of the upset;
 - ii. The permitted facility was at the time being properly operated; and
 - iii. The permittee submitted notice of the upset as required in Section B Reporting Requirements, paragraph 2. b. ii. (24-hour notice).
 - iv. The permittee complied with any remedial measures required under Section D – Administrative Requirements, paragraph 4.
- Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

Section D – Administrative Requirements

- Duty to Comply. The permittee must comply with all conditions of this
 permit. Any permit noncompliance constitutes a violation of the Missouri
 Clean Water Law and Federal Clean Water Act and is grounds for
 enforcement action; for permit termination, revocation and reissuance, or
 modification; or denial of a permit renewal application.
 - a. The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Federal Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.
 - b. The Federal Clean Water Act provides that any person who violates section 301, 302, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any such sections in a permit issued under section 402, or any requirement imposed in a pretreatment program approved under sections 402(a)(3) or 402(b)(8) of the Act, is subject to a civil penalty not to exceed \$25,000 per day for each violation. The Federal Clean Water Act provides that any person who negligently violates sections 301, 302, 306, 307, 308, 318, or 405 of the Act, or any condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, or any requirement



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imposed in a pretreatment program approved under section 402(a)(3) or 402(b)(8) of the Act, is subject to criminal penalties of \$2,500 to \$25,000 per day of violation, or imprisonment of not more than one (1) year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than \$50,000 per day of violation, or by imprisonment of not more than two (2) years, or both. Any person who knowingly violates such sections, or such conditions or limitations is subject to criminal penalties of \$5,000 to \$50,000 per day of violation, or imprisonment for not more than three (3) years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than \$100,000 per day of violation, or imprisonment of not more than six (6) years, or both. Any person who knowingly violates section 301, 302, 303, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than \$250,000 or imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than \$500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in section 309(c)(3)(B)(iii) of the CWA, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than \$1,000,000 and can be fined up to \$2,000,000 for second or subsequent convictions.

- c. Any person may be assessed an administrative penalty by the EPA Director for violating section 301, 302, 306, 307, 308, 318 or 405 of this Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of this Act. Administrative penalties for Class I violations are not to exceed \$10,000 per violation, with the maximum amount of any Class II penalty assessed not to exceed \$25,000. Penalties for Class II violations are not to exceed \$10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed \$125,000.
- It is unlawful for any person to cause or permit any discharge of water contaminants from any water contaminant or point source located in Missouri in violation of sections 644.006 to 644.141 of the Missouri Clean Water Law, or any standard, rule or regulation promulgated by the commission. In the event the commission or the director determines that any provision of sections 644.006 to 644.141 of the Missouri Clean Water Law or standard, rules, limitations or regulations promulgated pursuant thereto, or permits issued by, or any final abatement order, other order, or determination made by the commission or the director, or any filing requirement pursuant to sections 644.006 to 644.141 of the Missouri Clean Water Law or any other provision which this state is required to enforce pursuant to any federal water pollution control act, is being, was, or is in imminent danger of being violated, the commission or director may cause to have instituted a civil action in any court of competent jurisdiction for the injunctive relief to prevent any such violation or further violation or for the assessment of a penalty not to exceed \$10,000 per day for each day, or part thereof, the violation occurred and continues to occur, or both, as the court deems proper. Any person who willfully or negligently commits any violation in this paragraph shall, upon conviction, be punished by a fine of not less than \$2,500 nor more than \$25,000 per day of violation, or by imprisonment for not more than one year, or both. Second and successive convictions for violation of the same provision of this paragraph by any person shall be punished by a fine of not more than \$50,000 per day of violation, or by imprisonment for not more than two (2) years, or both.

2. Duty to Reapply.

- a. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit.
- b. A permittee with a currently effective site-specific permit shall submit an application for renewal at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Department. (The Department shall not grant permission

- for applications to be submitted later than the expiration date of the existing permit.)
- c. A permittees with currently effective general permit shall submit an application for renewal at least 30 days before the existing permit expires, unless the permittee has been notified by the Department that an earlier application must be made. The Department may grant permission for a later submission date. (The Department shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)
- Need to Halt or Reduce Activity Not a Defense. It shall not be a defense
 for a permittee in an enforcement action that it would have been necessary to
 halt or reduce the permitted activity in order to maintain compliance with the
 conditions of this permit.
- 4. Duty to Mitigate. The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.
- 5. Proper Operation and Maintenance. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

6. Permit Actions.

- Subject to compliance with statutory requirements of the Law and Regulations and applicable Court Order, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:
 - i. Violations of any terms or conditions of this permit or the law;
 - Having obtained this permit by misrepresentation or failure to disclose fully any relevant facts;
 - A change in any circumstances or conditions that requires either a temporary or permanent reduction or elimination of the authorized discharge; or
 - iv. Any reason set forth in the Law or Regulations.
- b. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

7. Permit Transfer.

- a. Subject to 10 CSR 20-6.010, an operating permit may be transferred upon submission to the Department of an application to transfer signed by the existing owner and the new owner, unless prohibited by the terms of the permit. Until such time the permit is officially transferred, the original permittee remains responsible for complying with the terms and conditions of the existing permit.
- b. The Department may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Missouri Clean Water Law or the Federal Clean Water Act.
- c. The Department, within 30 days of receipt of the application, shall notify the new permittee of its intent to revoke or reissue or transfer the permit.
- 8. Toxic Pollutants. The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Federal Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the Federal Clean Water Act within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.
- Property Rights. This permit does not convey any property rights of any sort, or any exclusive privilege.



STANDARD CONDITIONS FOR NPDES PERMITS ISSUED BY

THE MISSOURI DEPARTMENT OF NATURAL RESOURCES MISSOURI CLEAN WATER COMMISSION REVISED AUGUST 1, 2014

- 10. Duty to Provide Information. The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Department upon request, copies of records required to be kept by this permit.
- 11. Inspection and Entry. The permittee shall allow the Department, or an authorized representative (including an authorized contractor acting as a representative of the Department), upon presentation of credentials and other documents as may be required by law, to:
 - Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the permit;
 - Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
 - Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
 - d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Federal Clean Water Act or Missouri Clean Water Law, any substances or parameters at any location.

12. Closure of Treatment Facilities.

- a. Persons who cease operation or plan to cease operation of waste, wastewater, and sludge handling and treatment facilities shall close the facilities in accordance with a closure plan approved by the Department.
- b. Operating Permits under 10 CSR 20-6.010 or under 10 CSR 20-6.015 are required until all waste, wastewater, and sludges have been disposed of in accordance with the closure plan approved by the Department and any disturbed areas have been properly stabilized. Disturbed areas will be considered stabilized when perennial vegetation, pavement, or structures using permanent materials cover all areas that have been disturbed. Vegetative cover, if used, shall be at least 70% plant density over 100% of the disturbed area.

13. Signatory Requirement.

- All permit applications, reports required by the permit, or information requested by the Department shall be signed and certified. (See 40 CFR 122.22 and 10 CSR 20-6.010)
- b. The Federal Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than six (6) months per violation, or by both.
- c. The Missouri Clean Water Law provides that any person who knowingly makes any false statement, representation or certification in any application, record, report, plan, or other document filed or required to be maintained pursuant to sections 644.006 to 644.141 shall, upon conviction, be punished by a fine of not more than ten thousand dollars, or by imprisonment for not more than six months, or by both.
- 14. Severability. The provisions of the permit are severable, and if any provision of the permit, or the application of any provision of the permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of the permit, shall not be affected thereby.

MISSOURI DEPARTMENT OF NATURAL RESOURCES NPDES MONITORING REPORT FOR WASTEWATER AND/OR STORM WATER DISCHARGES

Kansas City Regional Office Submit via eDMR system 500 NE Colbern Road or return form to: Lee's Summit, MO 64086-4710

Facility Name	RDI2 MATOC L-536 Levee Repair Project	Current Address:	Owner Billing	Address Change For: Owner □ Billing □	
Permit Number	#MO-G698106				
County	Atchison County				
	Aggregate dredging operations with return waters to the Missouri and Mississippi Ri	ivers			
SIGNATURE AND TITLE OF AUTH	HORIZED INDIVIDUAL, IN ACCORDANCE WITH 10 CSR 20-6.010(2)(C) DATE		PHONE NUMBER	E-MAIL ADDRESS (Optional)	
COMMENTS:					This report covers the period of: 1st 2nd 3rd 4th Quarter 20
DEDMIT I IMPATIONS AND MO					

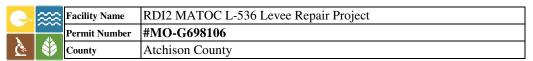
PERMIT LIMITATIONS AND MONITORING REQUIREMENTS

	Outfall #001			Final Permit Limitations			Monitoring Requirement		
	Parameter	Units	Daily Maximum	Weekly Average	Monthly Average	Frequency	Sample Type	Due Date	
	Flow		*		*	once/quarter	24 hr estimate		
1, 2, & 3)	Oil & Grease	mg/L	15		10.0	once/quarter	grab	The 28th day	
Effluent (Notes 1, 2,	pH **	SU	6.5-9.0			once/quarter	grab	following the end of the	
Effluen	Settleable Solids (SS)	mL/L/hr	*		*	once/quarter	grab	quarter	
	Total Suspended Solids (TSS)	mg/L	*		*	once/quarter	grab		
	MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY. THE FIRST REPORT IS DUE January 28, 2021.								

DMR SAMPLING SUMMARY							
(Outfall #001	LIMIT	SET MP	NO DISCHARGE			
	Parameter		Daily Maximum	Weekly Average	Monthly Average		
	Flow						
(Oil & Grease						
	pН						
Settle	Settleable Solids (SS)						
Total	Total Suspended Solids (TSS)						
	If a discharge occurs during the reporting period, samples shall be collected and tested for the parameters listed in Table A. Report as no discharge when a discharge does not occur during the reporting period. If multiple samples are collected and analyzed during a quarter, the multiple samples are not to be averaged at intervals exceeding one						

IF A VIOLATION OCCURRED, PLEASE ATTACH THE FOLLOWING: AN EXPLANATION OF POSSIBLE CAUSE, EXACT DATE OF NON-COMPLIANCE, DATE ANTICIPATED TO RETURN TO COMPLIANCE, AND WHAT STEPS YOUR OPERATION WILL TAKE TO PREVENT A REOCCURRENCE OF THE VIOLATION.

- * Monitoring requirement only
- ** pH is measured in pH units and is not to be averaged. The pH is limited to the range of 6.5-9.0 pH units.
- Note 1 Sample discharge at least once per quarter: 1st Quarter (Jan, Feb, March); 2nd Quarter (April, May, June); 3rd Quarter (July, Aug, Sept); 4th Quarter (Oct, Nov, Dec) and tested for the parameters listed in Table A. Report as no discharge if a discharge does not occur or if the facility is seasonally not in operation. Operation Shutdown can be coded 'AB' and No Discharge coded "C" in the eDMR system. Additional codes may be found in the eDMR system.
- Note 2 The monitoring requirements in Table A apply to land-based discharges at deposition sites only.
- Note 3 This limit set applies only to discharges returned to the Missouri and Mississippi Rivers.



Data Page 1 of	1
Month:	
Year:	

Outfall #001	PROCESS WASTEWATER - LIMIT SET MP Please note the month and year sample was taken above and write the results on the date the sample was taken below.						ken below.	This report covers the period of:	
	Flow MGD	Oil & Grease	pH SU	Settleable Solids (SS) mL/L/hr	Total Suspended Solids (TSS)			1st 2nd 3rd 4th Quarter	
DATE 1	MGD	mg/L	SU	ML/L/NF	mg/L				
2									
3									
4									
5									
6									
7									
8								ement tion: s; rents;	
9								For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information: (i) the date, exact place, and time of sampling or measurements; (ii) the individual(s) who performed the sampling or measurements; (iii) the date(s) analyses were performed; (iv) the individual(s) who performed the analyses; (v) the analytical techniques or methods used; and (vi) the results of such analyses.	
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12								pursu I the f Inpling S samp d; e anal s used	
13								For each measurement or sample taken pursuant to f this permit, the permittee shall record the follow (i) the date, exact place, and time of sampling or m (ii) the individual(s) who performed the sampling (iii) the date(s) analyses were performed; (iv) the individual(s) who performed the analyses; (v) the analytical techniques or methods used; and (vi) the results of such analyses.	
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MAXIMUM WEEKLY								ral Cl with, d d requ n, be]	
AVERAGE MONTHLY AVERAGE								The Fede ampers v or metho conviction for not m	

U.S. Fish and Wildlife Coordination

----Original Message-----

From: Kelly, Kaitlyn J <kaitlyn_kelly@fws.gov>

Sent: Friday, August 21, 2020 2:29 PM

To: Crane, David J CIV USARMY CENWO (USA) < David.J.Crane@usace.army.mil>; Hentges, Valerie A

<valerie_hentges@fws.gov>

Cc: Herrington, Karen < Karen_herrington@fws.gov>; Crabill, Trisha L < Trisha_Crabill@fws.gov>

Subject: [Non-DoD Source] Re: [EXTERNAL] L-536 bat and pallid effects determination

Good afternoon Dave,

The U.S. Fish and Wildlife Service has reviewed your August 21, 2020 email requesting consultation on the proposed L-536 levee setback project in Atchison and Holt counties, Missouri and submits these comments pursuant to the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1544).

Based on the habitat information and survey results, the Service concurs with your determinations that the proposed work is not likely to affect the Indiana bat and the northern long-eared bat. Based on the information in your email and because you indicated that work will avoid the spring spawning season and dredging operations will not occur between river miles 517 and 516, the Service concurs with your determinations that the proposed work is not likely to affect the pallid sturgeon.

If project plans change or portions of the proposed project were not evaluated, please contact our office with these changes.

Thank you for your interest in the conservation of threatened and endangered species.

If you have any questions or comments please contact me.

Kaitlyn Kelly

Fish and Wildlife Biologist U.S. Fish & Wildlife Service Missouri Ecological Services Field Office Office phone: (573) 234-5012

From: Crane, David J CIV USARMY CENWO (USA) < David.J.Crane@usace.army.mil>

Sent: Friday, August 21, 2020 1:53 PM

To: Kelly, Kaitlyn J <kaitlyn kelly@fws.gov>; Hentges, Valerie A <valerie hentges@fws.gov>

Subject: [EXTERNAL] L-536 bat and pallid effects determination

This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.

Katie and Valerie,

BAT DETERMINATION:

Based on our conversations, the environmental conditions at the proposed tree removal area, and the results of the bat survey, the USACE has determined that the L-536 levee setback project may affect, but is not likely to adversely affect the Indiana bat or the northern long eared bat. First and foremost, the sparsely forested area within the Corning Conversation Area (CA) does not appear to contain suitable roosting habitat and may only contain marginal bat foraging habitat. The Corning CA contains only young, dead trees that were recently killed by the 2019 flooding. These trees do not contain sloughing bark, cavities, or other features generally conducive to bat roosting. The absence of foliage on the dead trees results in the production of far less macroinvertebrates that would be expected from tree with foliage, thereby rendering this area as likely low quality for bat foraging. In light of your further vetting of 5he bat survey data, it is unlikely that bats would be using the dead trees on site for foraging and highly unlikely that trees are used for maternity roosts.

PALLID STURGEON DETERMINATION:

Based on the conservation measures discussed, the USACE has determined that the L-536 levee setback project dredging activities may affect, but are not likely to adversely affect the pallid sturgeon. We will avoid dredging in the Missouri River mainstem and Indian Cave backwater during the spring spawning timeframe. We will only purse dredging along the inside bends of the Missouri River mainstem. As requested, we will avoid dredging operations between river miles 517 and 516. These actions are being taken in order to minimize or attempt to completely avoid any impacts to the pallid sturgeon. Additionally, the dredging work associated with the Indian Cave backwater will reestablish the hydrologic connection with the Missouri River mainstem, presumably providing long term benefit to the pallid sturgeon in the project area.

Please let me know if you have any questions or need more information.

Thanks,
Dave
Dave Crane (CENWO-PMA-C)
Environmental Resources Specialist
U.S. Army Corps of Engineers
1616 Capitol Ave.
Omaha, NE 68102
O: (402) 995-2676

O: (402) 995-2676 C: (402) 971-9041

david.j.crane@usace.army.mil <mailto:david.j.crane@usace.army.mil>

From: Crane, David J CIV USARMY CENWO (USA)

Sent: Wednesday, July 29, 2020 1:53 PM

To: 'Hentges, Valerie A' <valerie_hentges@fws.gov>; Harms, Robert <robert_harms@fws.gov>; Kelly,

Kaitlyn J <kaitlyn_kelly@fws.gov>

Cc: Bentzinger, Ruth E CIV USARMY CENWO (USA) <Ruth.E.Bentzinger@usace.army.mil>; Dague,

Amanda L CIV (USA) < Amanda.L. Dague@usace.army.mil>

Subject: RE: [Non-DoD Source] Re: [EXTERNAL] Section 7 informal consultation - Dredging associated

with the L-536 large-scale levee setback project (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Valerie,

I think you have it marked up accurately. We don't intend to obtain borrow from the NE side of the floodplain (the northern white hatches on your map below). while we haven't identified all sub-surface borrow pits, we would generally be looking to use the areas between the new and old levee that you marked out below. any sub-surface borrow pits on NRCS or USACE land would be converted to wetlands or other habitat features.

However, regarding the sand material needed, our team has identified that there is not enough within the floodplain to construct the levee and that there is a definite need to dredge sand from the Missouri River. I'm glad to hear that you don't have concerns with the northern dredge location and the Indian Cave backwater, but I'd like to know more about the concerns with the proposed southern dredge area. If that based on previous pallid sturgeon captures? If the team still needs to use that location for dredging, what kind of guidance or restrictions would you or the NE USFWS office provide? The BA I provided for this effort indicated that the project "may affect, but is not likely to adversary affect the pallid sturgeon" if we keep to the inside bends and avoid the March 1 to June 30 timeframe. Do you think this determination would not be applicable for the dredge area near RM 516? I'm anticipating a need to be able to dredge in the southern area ID'ed, so please help walk me through what it'll take to have your concurrence on that site.

Thanks, Dave

From: Hentges, Valerie A [mailto:valerie hentges@fws.gov]

Sent: Tuesday, July 28, 2020 9:26 AM

To: Crane, David J CIV USARMY CENWO (USA) < <u>David.J.Crane@usace.army.mil</u>>; Harms, Robert

<robert harms@fws.gov>; Kelly, Kaitlyn J <kaitlyn kelly@fws.gov>

Cc: Bentzinger, Ruth E CIV USARMY CENWO (USA) < Ruth.E.Bentzinger@usace.army.mil; Dague, Amanda L CIV (USA) < Amanda.L.Dague@usace.army.mil>

Subject: [Non-DoD Source] Re: [EXTERNAL] Section 7 informal consultation - Dredging associated with the L-536 large-scale levee setback project (UNCLASSIFIED)

Hi David,

I will be working on this (L-536) project for the dredging/pallid sturgeon concerns, while Katie will be working on the other aspects of the project for our/Missouri's office.

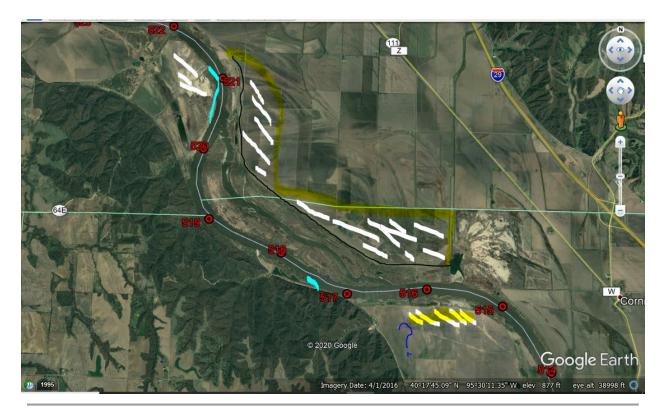
Typically, work/project occurring during the pallid sturgeon spawning period (March - June 30) is the greatest concern. For this particular project where dredging will occur in two proposed locations within the River, we have a concern with the area around RM 516. The below image with my very rough freehand colors added is what I will be referencing: Roughly, the yellow highlight is the proposed levee setback, with the black line as the current levee. The below image is from 2016 Google Earth, while your last image in the PDF you sent us looks to be more current therefore if I am seeing/reading the image/aerial wrong please let me know. The white hatched marks on the inside bend of RM 521 that field appears to have some sediment that could be utilized for this project. The white hatched marks in the area between the existing levee and the proposed setback levee, could also some of this area (even the existing levee) be utilized for the material needed for the new setback levee? Then the third area, outside the River channel, is on the inside bend by RM 516 and 515 in the field again where it looks like from your aerial could be recently deposited material that may be able to be utilized in this farm field. The "aqua" color/bright blue-ish colors on the map is the Corps proposed locations of in-stream dredging. At RM 521, we do not have any major concerns with this location as well as on the NE side (between RM 518 and 517) removing the "plug" here for the backwater area is fine as well. These are our two preferred in-stream locations for dredging. We are concerned with the in-stream dredging work around RM 517 and 516.

As a recap: In the white hatched areas, can the farm field be used for the majority of the material (?); then the aqua colored areas have low concerns from our perspective for pallid sturgeons; concerned with the area around RM 517 and 516.

Please contact me if you would like to discuss to make sure we are looking at the image below and relating it to the explanation above.

Valerie

Fish and Wildlife Biologist U.S. Fish and Wildlife Service Missouri Ecological Services Field Office 101 Park DeVille Drive Suite A Columbia, Missouri 65203



From: Crane, David J CIV USARMY CENWO (USA) < David.J.Crane@usace.army.mil>

Sent: Tuesday, July 21, 2020 11:19 AM

To: Hentges, Valerie A <<u>valerie hentges@fws.gov</u>>; Harms, Robert <<u>robert harms@fws.gov</u>>; Kelly, Kaitlyn J <<u>kaitlyn kelly@fws.gov</u>>

Cc: Bentzinger, Ruth E CIV USARMY CENWO (USA) < <u>Ruth.E.Bentzinger@usace.army.mil</u>>; Dague, Amanda L CIV (USA) < <u>Amanda.L.Dague@usace.army.mil</u>>

Subject: [EXTERNAL] Section 7 informal consultation - Dredging associated with the L-536 large-scale levee setback project (UNCLASSIFIED)

This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.

CLASSIFICATION: UNCLASSIFIED

Valerie,

I have spoken with you and others on the phone regarding potential dredging associated with the L-536 levee setback project, but wanted to provide you with some materials to document the consultation.

While the levee setback project is in Atchison/ Holt Counties, MO, some MoR dredging is being proposed along the NE side of the river. This would include 2 in-channel locations near RM 521 and RM 516 as well as some dredging within the Indian Cave backwater (see attached map). Also attached is

a version of the BA developed for the Programmatic EA (for all 2019 flood PL 84-99 work) updated to provide slightly more specific evaluation of the dredging being proposed for the L-536 project. By incorporating conversation measures (avoidance timeframes and using inside bends only), I believe the proposed dredging may affect, but is not likely to adversely affect the pallid sturgeon. No other aquatic species show up in the IPaC system for these areas of the Missouri River.

I request that your office review this determination, let me know if you concur, if you have any questions, and let me know if you have any additional comments or conservation measures I should be incorporating. Bob Harms of the NE ESO would like you to provide input to his office regarding the dredging since the majority of the L-536 project is in MO.

Thanks, Dave

Dave Crane (CENWO-PM-AC)
Environmental Resources Specialist
U.S. Army Corps of Engineers
1616 Capitol Ave.
Omaha, NE 68102
T: (402) 995-2676
F: (402) 995-2758
david.j.crane@usace.army.mil

CLASSIFICATION: UNCLASSIFIED

CLASSIFICATION: UNCLASSIFIED

CLASSIFICATION: UNCLASSIFIED

(attachments from this email are provided below)

L-536 Dredge Potential

Missouri River Miles 515 to 522

Project Location

Approximately 10 Miles Southwest of Rock Port, MO

Missouri River Mile 515 to 522



Project Overview

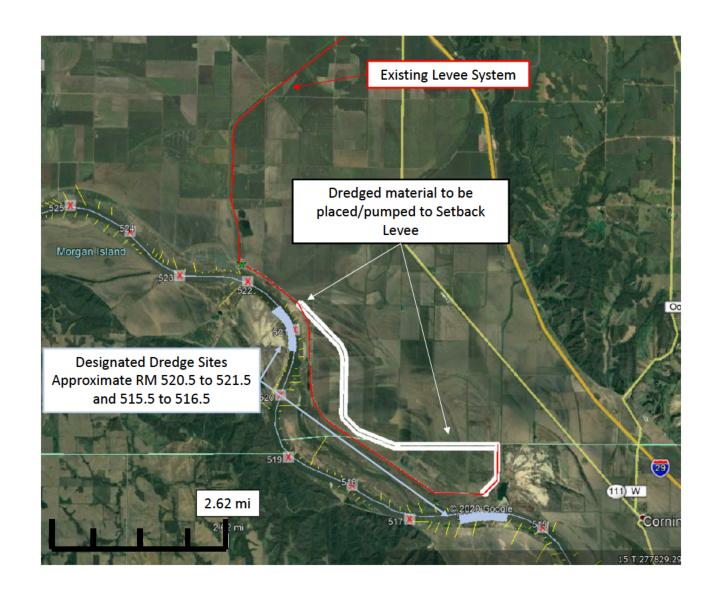
Two designated borrow/dredge sites in the Missouri River Channel

Site 1: Approximate RM 520.5 to 521.5

Site 2: Approximate RM 515.5 to 516.5

Dredged material to be placed on approximately 5 miles of setback levee

Estimated 300,000 – 500,000+ cubic yards of material needed

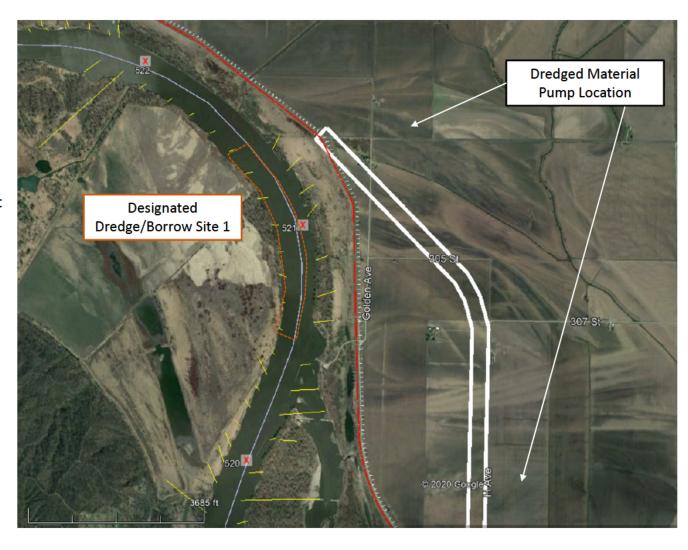


Dredge/Borrow Site 1

Approximate River Mile 520.5 to 521.5

Max Pump Distance of Approximately 9,500ft

River structures shown in yellow

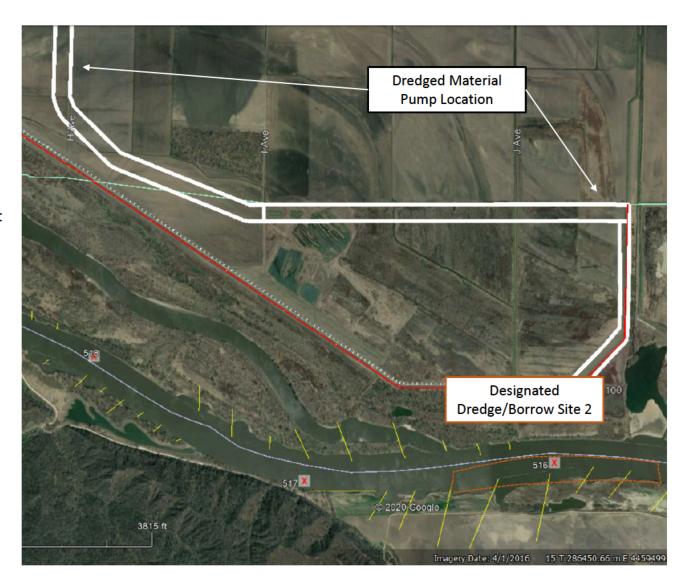


Dredge/Borrow Site 2

Approximate River Mile 516.5 to 515.5

Max Pump Distance of Approximately 9,500ft

River structures shown in yellow



Current Image of Levee System

Photo taken on 13 Jun 2020



Dredging Within the Missouri River

- Main channel operation
- Maintain clearance from dikes / revetments
- Borrow area operation crosses Navigation channel
- Repetitive Navigation channel surveys during dredge operation
- 2020 lower Missouri River flow than 2019 will reduce sediment load
- Care of water for return flow from placement area
- Minimum production rate of 15,000 cu yds/day placed

Tribal and MO State Historic Preservation Office Coordination



CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

March 13, 2020

Planning, Programs, and Project Management Division

Ms. Halona Cabe Tribal Historical Preservation Officer Ponca Tribe of Indians of Oklahoma 20 White Eagle Drive Ponca City, OK 74601

Dear Ms. Cabe:

The US Army Corps of Engineers (Corps) is proposing to conduct levee rehabilitation along the L-536 levee system under Public Law 84-99 for the repair of damages caused by flood waters during the March 2019 flood event in Atchison and Holt Counties, MO. The rehabilitation efforts are expected to be conducted in two phases, an in-line phase and a large-scale levee setback phase. Construction of in-line repairs will begin in April from the upstream end of the levee system down to the "C inlet" breach (as indicated on the attached map). Construction would begin on the setback in mid-May starting just downstream of the C breach and extend to the downstream end of the levee.

Borrow material for levee repairs would come from multiple sources, some of which have yet to be identified. Sand deposited on the floodplain from the 2019 flooding would be scraped up and used for levee repairs. Material from the existing, damaged levee would be utilized to build the setback levee. Recent alluvial deposits within the Rock Creek "bench" would be excavated down to the original ditch design elevation as a means of conducting ditch maintenance as well as sourcing borrow material for levee repairs. All sub-surface borrow areas have yet to be identified, but could be located on surrounding private land, surrounding government owned land, or off-site commercial borrow areas. We will follow up with your office when sub-surface borrow areas have been identified to discuss potential effects.

The Corps requests any input your agency might have on the proposed undertaking. If you have any questions please contact Sandra Barnum at (402) 995-2674, or via email at sandra.v.barnum@usace.army.mil.

Sincerely,

Eric Laux, PMP

Chief, Environmental & Cultural Resources



CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

March 13, 2020

Planning, Programs, and Project Management Division

Mr. Lance Foster Tribal Historical Preservation Officer Iowa Tribe of Nebraska And Kansas 3345 B Thrasher Rd. White Cloud, KS 66094

Dear Mr. Foster:

The US Army Corps of Engineers (Corps) is proposing to conduct levee rehabilitation along the L-536 levee system under Public Law 84-99 for the repair of damages caused by flood waters during the March 2019 flood event in Atchison and Holt Counties, MO. The rehabilitation efforts are expected to be conducted in two phases, an in-line phase and a large-scale levee setback phase. Construction of in-line repairs will begin in April from the upstream end of the levee system down to the "C inlet" breach (as indicated on the attached map). Construction would begin on the setback in mid-May starting just downstream of the C breach and extend to the downstream end of the levee.

Borrow material for levee repairs would come from multiple sources, some of which have yet to be identified. Sand deposited on the floodplain from the 2019 flooding would be scraped up and used for levee repairs. Material from the existing, damaged levee would be utilized to build the setback levee. Recent alluvial deposits within the Rock Creek "bench" would be excavated down to the original ditch design elevation as a means of conducting ditch maintenance as well as sourcing borrow material for levee repairs. All sub-surface borrow areas have yet to be identified, but could be located on surrounding private land, surrounding government owned land, or off-site commercial borrow areas. We will follow up with your office when sub-surface borrow areas have been identified to discuss potential effects.

The Corps requests any input your agency might have on the proposed undertaking. If you have any questions please contact Sandra Barnum at (402) 995-2674, or via email at sandra.v.barnum@usace.army.mil.

Sincerely,

Eric Laux, PMP

Chief, Environmental & Cultural Resources



CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

March 13, 2020

Planning, Programs, and Project Management Division

Mr. W. Bruce Pratt President Pawnee Nation of Oklahoma P.O. Box 470 Pawnee, OK 74058

Dear Mr. Pratt:

The US Army Corps of Engineers (Corps) is proposing to conduct levee rehabilitation along the L-536 levee system under Public Law 84-99 for the repair of damages caused by flood waters during the March 2019 flood event in Atchison and Holt Counties, MO. The rehabilitation efforts are expected to be conducted in two phases, an in-line phase and a large-scale levee setback phase. Construction of in-line repairs will begin in April from the upstream end of the levee system down to the "C inlet" breach (as indicated on the attached map). Construction would begin on the setback in mid-May starting just downstream of the C breach and extend to the downstream end of the levee.

Borrow material for levee repairs would come from multiple sources, some of which have yet to be identified. Sand deposited on the floodplain from the 2019 flooding would be scraped up and used for levee repairs. Material from the existing, damaged levee would be utilized to build the setback levee. Recent alluvial deposits within the Rock Creek "bench" would be excavated down to the original ditch design elevation as a means of conducting ditch maintenance as well as sourcing borrow material for levee repairs. All sub-surface borrow areas have yet to be identified, but could be located on surrounding private land, surrounding government owned land, or off-site commercial borrow areas. We will follow up with your office when sub-surface borrow areas have been identified to discuss potential effects.

The Corps requests any input your agency might have on the proposed undertaking. If you have any questions please contact Sandra Barnum at (402) 995-2674, or via email at sandra.v.barnum@usace.army.mil.

Sincerely,

Eric Laux, PMP

Chief, Environmental & Cultural Resources



CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

March 13, 2020

Planning, Programs, and Project Management Division

Dr. Toni M. Prawl Deputy State Historic Preservation Officer Missouri Department of Natural Resources 1101 Riverside Drive Jefferson City, MO 65101

Dear Dr. Prawl:

The US Army Corps of Engineers (Corps) is proposing to conduct levee rehabilitation along the L-536 levee system under Public Law 84-99 for the repair of damages caused by flood waters during the March 2019 flood event in Atchison and Holt Counties, MO. The rehabilitation efforts are expected to be conducted in two phases, an in-line phase and a large-scale levee setback phase. Construction of in-line repairs will begin in April from the upstream end of the levee system down to the "C inlet" breach (as indicated on the attached map). Construction would begin on the setback in mid-May starting just downstream of the C breach and extend to the downstream end of the levee.

Borrow material for levee repairs would come from multiple sources, some of which have yet to be identified. Sand deposited on the floodplain from the 2019 flooding would be scraped up and used for levee repairs. Material from the existing, damaged levee would be utilized to build the setback levee. Recent alluvial deposits within the Rock Creek "bench" would be excavated down to the original ditch design elevation as a means of conducting ditch maintenance as well as sourcing borrow material for levee repairs. All sub-surface borrow areas have yet to be identified, but could be located on surrounding private land, surrounding government owned land, or off-site commercial borrow areas. We will follow up with your office when sub-surface borrow areas have been identified to discuss potential effects.

The Corps requests any input your agency might have on the proposed undertaking. If you have any questions please contact Sandra Barnum at (402) 995-2674, or via email at sandra.v.barnum@usace.army.mil.

Sincerely,

Eric Laux, PMP

Chief, Environmental & Cultural Resources



CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

March 13, 2020

Planning, Programs, and Project Management Division

Mr. Matt Reed Tribal Historical Preservation Officer Pawnee Nation of Oklahoma P.O. Box 470 Pawnee, OK 74058

Dear Mr. Reed:

The US Army Corps of Engineers (Corps) is proposing to conduct levee rehabilitation along the L-536 levee system under Public Law 84-99 for the repair of damages caused by flood waters during the March 2019 flood event in Atchison and Holt Counties, MO. The rehabilitation efforts are expected to be conducted in two phases, an in-line phase and a large-scale levee setback phase. Construction of in-line repairs will begin in April from the upstream end of the levee system down to the "C inlet" breach (as indicated on the attached map). Construction would begin on the setback in mid-May starting just downstream of the C breach and extend to the downstream end of the levee.

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The Corps requests any input your agency might have on the proposed undertaking. If you have any questions please contact Sandra Barnum at (402) 995-2674, or via email at sandra.v.barnum@usace.army.mil.

Sincerely,

Eric Laux, PMP

Chief, Environmental & Cultural Resources



CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

March 13, 2020

Planning, Programs, and Project Management Division

Chairman Douglas Rhodd Ponca Tribe of Indians of Oklahoma 20 White Eagle Drive Ponca City, OK 74601

Dear Chairman Rhodd:

The US Army Corps of Engineers (Corps) is proposing to conduct levee rehabilitation along the L-536 levee system under Public Law 84-99 for the repair of damages caused by flood waters during the March 2019 flood event in Atchison and Holt Counties, MO. The rehabilitation efforts are expected to be conducted in two phases, an in-line phase and a large-scale levee setback phase. Construction of in-line repairs will begin in April from the upstream end of the levee system down to the "C inlet" breach (as indicated on the attached map). Construction would begin on the setback in mid-May starting just downstream of the C breach and extend to the downstream end of the levee.

Borrow material for levee repairs would come from multiple sources, some of which have yet to be identified. Sand deposited on the floodplain from the 2019 flooding would be scraped up and used for levee repairs. Material from the existing, damaged levee would be utilized to build the setback levee. Recent alluvial deposits within the Rock Creek "bench" would be excavated down to the original ditch design elevation as a means of conducting ditch maintenance as well as sourcing borrow material for levee repairs. All sub-surface borrow areas have yet to be identified, but could be located on surrounding private land, surrounding government owned land, or off-site commercial borrow areas. We will follow up with your office when sub-surface borrow areas have been identified to discuss potential effects.

The Corps requests any input your agency might have on the proposed undertaking. If you have any questions please contact Sandra Barnum at (402) 995-2674, or via email at sandra.v.barnum@usace.army.mil.

Sincerely,

Eric Laux, PMP

Chief, Environmental & Cultural Resources



CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

March 13, 2020

Planning, Programs, and Project Management Division

Chairman Timothy Rhodd Iowa Tribe of Nebraska And Kansas 3345 B Thrasher Rd. White Cloud, KS 66094

Dear Chairman Rhodd:

The US Army Corps of Engineers (Corps) is proposing to conduct levee rehabilitation along the L-536 levee system under Public Law 84-99 for the repair of damages caused by flood waters during the March 2019 flood event in Atchison and Holt Counties, MO. The rehabilitation efforts are expected to be conducted in two phases, an in-line phase and a large-scale levee setback phase. Construction of in-line repairs will begin in April from the upstream end of the levee system down to the "C inlet" breach (as indicated on the attached map). Construction would begin on the setback in mid-May starting just downstream of the C breach and extend to the downstream end of the levee.

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The Corps requests any input your agency might have on the proposed undertaking. If you have any questions please contact Sandra Barnum at (402) 995-2674, or via email at sandra.v.barnum@usace.army.mil.

Sincerely,

Eric Laux, PMP

Chief, Environmental & Cultural Resources



CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

March 13, 2020

Planning, Programs, and Project Management Division

Chairman John Shotton Otoe-Missouria Tribe 8151 Hwy 77 Red Rock, OK 74651

Dear Chairman Shotton:

The US Army Corps of Engineers (Corps) is proposing to conduct levee rehabilitation along the L-536 levee system under Public Law 84-99 for the repair of damages caused by flood waters during the March 2019 flood event in Atchison and Holt Counties, MO. The rehabilitation efforts are expected to be conducted in two phases, an in-line phase and a large-scale levee setback phase. Construction of in-line repairs will begin in April from the upstream end of the levee system down to the "C inlet" breach (as indicated on the attached map). Construction would begin on the setback in mid-May starting just downstream of the C breach and extend to the downstream end of the levee.

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The Corps requests any input your agency might have on the proposed undertaking. If you have any questions please contact Sandra Barnum at (402) 995-2674, or via email at sandra.v.barnum@usace.army.mil.

Sincerely,

Eric Laux, PMP

Chief, Environmental & Cultural Resources

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

March 13, 2020

Planning, Programs, and Project Management Division

Mr. Randy Teboe Tribal Historical Preservation Officer Winnebago Tribe of Nebraska P.O. Box 687 Winnebago, NE 68071

Dear Mr. Teboe:

The US Army Corps of Engineers (Corps) is proposing to conduct levee rehabilitation along the L-536 levee system under Public Law 84-99 for the repair of damages caused by flood waters during the March 2019 flood event in Atchison and Holt Counties, MO. The rehabilitation efforts are expected to be conducted in two phases, an in-line phase and a large-scale levee setback phase. Construction of in-line repairs will begin in April from the upstream end of the levee system down to the "C inlet" breach (as indicated on the attached map). Construction would begin on the setback in mid-May starting just downstream of the C breach and extend to the downstream end of the levee.

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The Corps requests any input your agency might have on the proposed undertaking. If you have any questions please contact Sandra Barnum at (402) 995-2674, or via email at sandra.v.barnum@usace.army.mil.

Sincerely,

Eric Laux, PMP

Chief, Environmental & Cultural Resources

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CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

March 13, 2020

Planning, Programs, and Project Management Division

Chairman Frank White Winnebago Tribe of Nebraska P.O. Box 687 Winnebago, NE 68071

Dear Chairman White:

The US Army Corps of Engineers (Corps) is proposing to conduct levee rehabilitation along the L-536 levee system under Public Law 84-99 for the repair of damages caused by flood waters during the March 2019 flood event in Atchison and Holt Counties, MO. The rehabilitation efforts are expected to be conducted in two phases, an in-line phase and a large-scale levee setback phase. Construction of in-line repairs will begin in April from the upstream end of the levee system down to the "C inlet" breach (as indicated on the attached map). Construction would begin on the setback in mid-May starting just downstream of the C breach and extend to the downstream end of the levee.

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The Corps requests any input your agency might have on the proposed undertaking. If you have any questions please contact Sandra Barnum at (402) 995-2674, or via email at sandra.v.barnum@usace.army.mil.

Sincerely,

Eric Laux, PMP

Chief, Environmental & Cultural Resources



CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

March 13, 2020

Planning, Programs, and Project Management Division

Ms. Elsie Whitehorn Tribal Historical Preservation Officer Otoe-Missouria Tribe 8151 Hwy 77 Red Rock, OK 74651

Dear Ms. Whitehorn:

The US Army Corps of Engineers (Corps) is proposing to conduct levee rehabilitation along the L-536 levee system under Public Law 84-99 for the repair of damages caused by flood waters during the March 2019 flood event in Atchison and Holt Counties, MO. The rehabilitation efforts are expected to be conducted in two phases, an in-line phase and a large-scale levee setback phase. Construction of in-line repairs will begin in April from the upstream end of the levee system down to the "C inlet" breach (as indicated on the attached map). Construction would begin on the setback in mid-May starting just downstream of the C breach and extend to the downstream end of the levee.

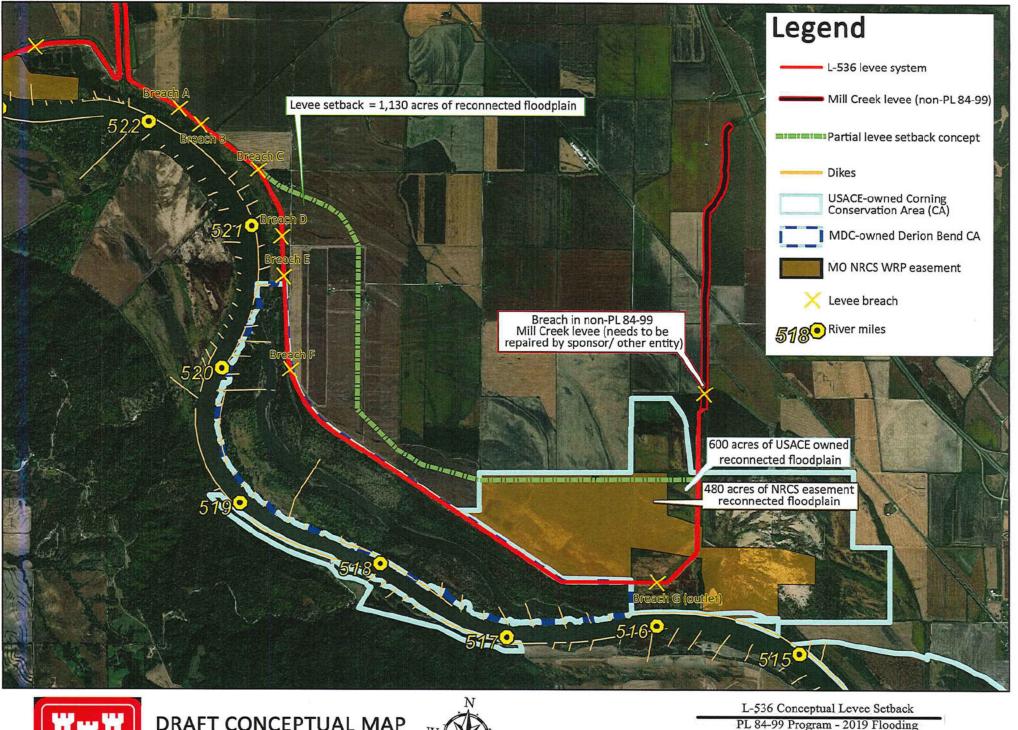
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The Corps requests any input your agency might have on the proposed undertaking. If you have any questions please contact Sandra Barnum at (402) 995-2674, or via email at sandra.v.barnum@usace.army.mil.

Sincerely,

Eric Laux, PMP

Chief, Environmental & Cultural Resources





DRAFT CONCEPTUAL MAP Version 5, 2019-12-23



0 0.5 1 2 Miles

April 22, 2020

Department of the Army Corps of Engineers, Omaha District Attn: Sandra Barnum 1616 Capitol Ave. Omaha, NE 68102-4901

RE: SHPO Number: 022-MLT-20 - Rehabilitation of L-536 Levee System, Atchison and

Holt Counties, Missouri

Dear Ms. Barnum:

Thank you for submitting information about the above-referenced project for our review pursuant to Section 106 of the National Historic Preservation Act (P.L. 89-665, as amended) and the Advisory Council on Historic Preservation's regulation 36 CFR Part 800, which require identification and evaluation of cultural resources.

Based on the information provided, we concur with your determination that the proposed portion of the project will have no adverse effect on historic properties. We look forward to continuing consultation with your office when the necessary borrow areas have been identified.

Please be advised that, if the project area is increased, cultural materials are encountered during construction or adjacent areas that may contain significant cultural resources may be adversely impacted, appropriate information must be provided to this office for further review and comment.

If you have any questions please write Missouri Department of Natural Resources, State Historic Preservation Office, Attn: Review and Compliance, P.O. Box 176, Jefferson City, Missouri 65102, or call Amy Rubingh (573) 751-4589. Please be sure to include the SHPO Project Number (022-MLT-20) on all future correspondence relating to this project.

Sincerely,

STATE HISTORIC PRESERVATION OFFICE

Joni m. Drawe

Toni M. Prawl, PhD Director and Deputy State Historic Preservation Officer



CULTURAL RESOURCE ASSESSMENT Section 106 Review

CONTACT PE	ERSON/ADDRESS		C:	
U.S. Army Co Attn: Sandra E 1616 Capitol A Omaha, NE 6	Avenue			
PROJECT:				
L-561 Levee S	System Repairs and borrow areas	<u> </u>		
FEDERAL AC	GENCY		COUNTY:	
COE	-		Atchison	
	istoric Preservation Office ha sed on this review, we have n After review of initial submission resources. A cultural resource s	nade the following det	ermination:	
X	Adequate documentation has b properties affected by the curre		ection 800.11). The	ere will be "no historic
	An adequate cultural resource s been determined that for the pro			

For the above checked reason, the State Historic Preservation Office has no objection to the initiation of project activities. PLEASE BE ADVISED THAT, IF THE CURRENT PROJECT AREA OR SCOPE OF WORK ARE CHANGED, A BORROW AREA IS INCLUDED IN THE PROJECT, OR CULTURAL MATERIALS ARE ENCOUNTERED DURING CONSTRUCTION, APPROPRIATE INFORMATION MUST BE PROVIDED TO THIS OFFICE FOR FURTHER REVIEW AND COMMENT. Please retain this documentation as evidence of compliance with Section 106 of the National Historic Preservation Act, as amended.

By: June 10, 2020

Toni M. Prawl, Ph.D., Deputy State Historic Preservation Officer

Date

MISSOURI DEPARTMENT OF NATURAL RESOURCES
STATE HISTORIC PRESERVATION OFFICE
P.O. Box 176, Jefferson City, Missouri 65102
For additional information, please contact Amy Rubingh, (573) 751-4589.
Please be sure to refer to the project number: 008-AT-20



CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102

August 5, 2020

Planning, Programs and Project Management

Dr. Toni M. Prawl Deputy State Historic Preservation Officer Missouri Department of Natural Resources 1101 Riverside Drive Jefferson City, MO 65101

Dear Dr. Prawl:

The US Army Corps of Engineers (Corps) is conducting levee rehabilitation along the L-536 levee system under Public Law 84-99 for the repair of damages caused by flood waters during the March 2019 flood event in Atchison and Holt Counties, MO. The Area of Potential Effect for the levee setback construction footprint was investigated and resulted in a determination of No Historic Properties Affected in a letter to your office dated March 13, 2020. Your office concurred in a letter dated April 22, 2020.

Our March letter also stated that "All sub-surface borrow areas have yet to be identified, but could be located on surrounding private land, surrounding government owned land, or off-site commercial borrow areas. We will follow up with your office when sub-surface borrow areas have been identified to discuss potential effects." All subsurface borrow areas described below would be excavated to a depth no greater than 7 feet, but in most cases no greater than 4 feet. Following material excavation the borrow pits would be graded and seeded to facilitate development of wetland habitat features. Excavations of 7 feet deep would probably be rare and only required when attempting to connect to the water table.

The Atchison County Levee District No. 1 has requested to use the Corning Conservation Area (CCA) for the sub-surface borrow. A file search coordinated with Kansas City District revealed no recorded sites in the CCA (the closest site is six miles away). The 1879 and 1894 Missouri River maps show that the CCA was partly in the river channel. The 1915 USGS topographic maps reveal that the entire CCA was submerged in the Missouri River. By the time of the 1939/1941 topographic maps the channel has again shifted and the land may have been farmed. The 1955 topographic map shows the newly constructed L-536 - Missouri River LB & Mill Creek RB levee segments, and the area appears to have been under cultivation until acquired for the CCA under the Missouri River Recovery Program.

Three additional tracts have been identified as possible borrow areas: Heartland, Peeler, and a portion of federal land just north of the CCA. The 1879 and 1894 Missouri River maps show that these areas were also within the river channel. The federal land was also still submerged in the 1915 topographic map. Later shifting channels allowed the locations to be periodically cultivated.



Land beneath the original levee alignment has also been identified as a potential source of subsurface borrow excavation. There are no recorded sites, and this area is included in the historically inundated areas.

All areas were subsurface tested on July 29, 2020. No historic or prehistoric cultural resources were observed in any of the units (see enclosed map of borrow candidates and test locations). We believe that the use of these borrow locations will result in No Historic Properties Affected and request your concurrence with this determination. If you have any questions please contact Sandra Barnum, Regional Archaeologist, at (402) 995-2674, or via email at sandra.v.barnum@usace.army.mil.

Sincerely,

Tiffany K. Vanosdall Chief, Environmental & Cultural Resources

CULTURAL RESOURCE ASSESSMENT Section 106 Review

CONTACT PERSON/ADDRESS:	C:
U.S. Army Corps Engineers, Omaha District Attn: Sandra Barnum 1616 Capitol Avenue Omaha, NE 68102-4901	
PROJECT:	
Rehab to Levee L-536 – Proposed Borrow Areas	
FEDERAL AGENCY:	COUNTY:
USACE – Omaha District	Atchison and Holt
the initial submission, the project for the occurrence of cultural Properties Affected. An adequate cultural resource	en provided as outlined in 36 CFR Section 800.11. After review of area has no known historic properties present and a low potential resources. We concur with a determination of No Historic survey of the project area has been previously conducted; ur determination of No Historic Properties Affected.
	urvey has been conducted for this project titled, , by . egative findings, SHPO concurs with your determination of No
activities. PLEASE BE ADVISED THAT, IF TH BORROW AREA IS INCLUDED IN THE PRO CONSTRUCTION, APPROPRIATE INFORMAT	toric Preservation Office has no objection to the initiation of project HE CURRENT PROJECT AREA OR SCOPE OF WORK CHANGES, A DJECT, OR CULTURAL MATERIALS ARE ENCOUNTERED DURING TON MUST BE PROVIDED TO THIS OFFICE FOR FURTHER REVIEW Intation as evidence of compliance with Section 106 of the National

MISSOURI DEPARTMENT OF NATURAL RESOURCES STATE HISTORIC PRESERVATION OFFICE

Toni M. Prawl, Ph.D., Deputy State Historic Preservation Officer

P.O. Box 176, Jefferson City, Missouri 65102 For additional information, please contact Amy Rubingh, (573) 751-4589.

September 15, 2020

Date

Please be sure to refer to the project number: 022-MLT-20



DEPARTMENT OF THE ARMY CORPS OF ENGINEERS, OMAHA DISTRICT

1616 CAPITOL AVENUE OMAHA, NEBRASKA 68102-4901

September 21, 2020

Planning, Programs, and Project Management Division

Dr. Toni M. Prawl Deputy State Historic Preservation Officer Missouri Department of Natural Resources 1101 Riverside Drive Jefferson City, MO 65101

Dear Dr. Prawl:

The US Army Corps of Engineers (Corps) is conducting levee rehabilitation along the L-536 levee system under Public Law 84-99 for the repair of damages caused by flood waters during the March 2019 flood event in Atchison and Holt Counties, MO. The Area of Potential Effect for the levee setback construction footprint was investigated and resulted in a determination of No Historic Properties Affected in a letter to your office dated March 13, 2020. Your office concurred in a letter dated April 22, 2020.

Our March letter also stated that "All sub-surface borrow areas have yet to be identified, but could be located on surrounding private land, surrounding government owned land, or off-site commercial borrow areas. We will follow up with your office when sub-surface borrow areas have been identified to discuss potential effects." All subsurface borrow areas described below would be excavated to a depth no greater than 7 feet, but in most cases no greater than 4 feet. Following material excavation the borrow pits would be graded and seeded to facilitate development of wetland habitat features. Excavations of 7 feet deep would probably be rare and only required when attempting to connect to the water table.

The determination of No Historic Properties Affected for the borrow areas identified in our letter of August 5, 2020 received concurrence from your office on September 15, 2020. An additional adjacent tract has been identified as a possible borrow area (enclosure), as detailed in an e-mail to your office on September 17, 2020. The area was subsurface tested on September 5, 2020. No historic or prehistoric cultural resources were observed in any of the units.

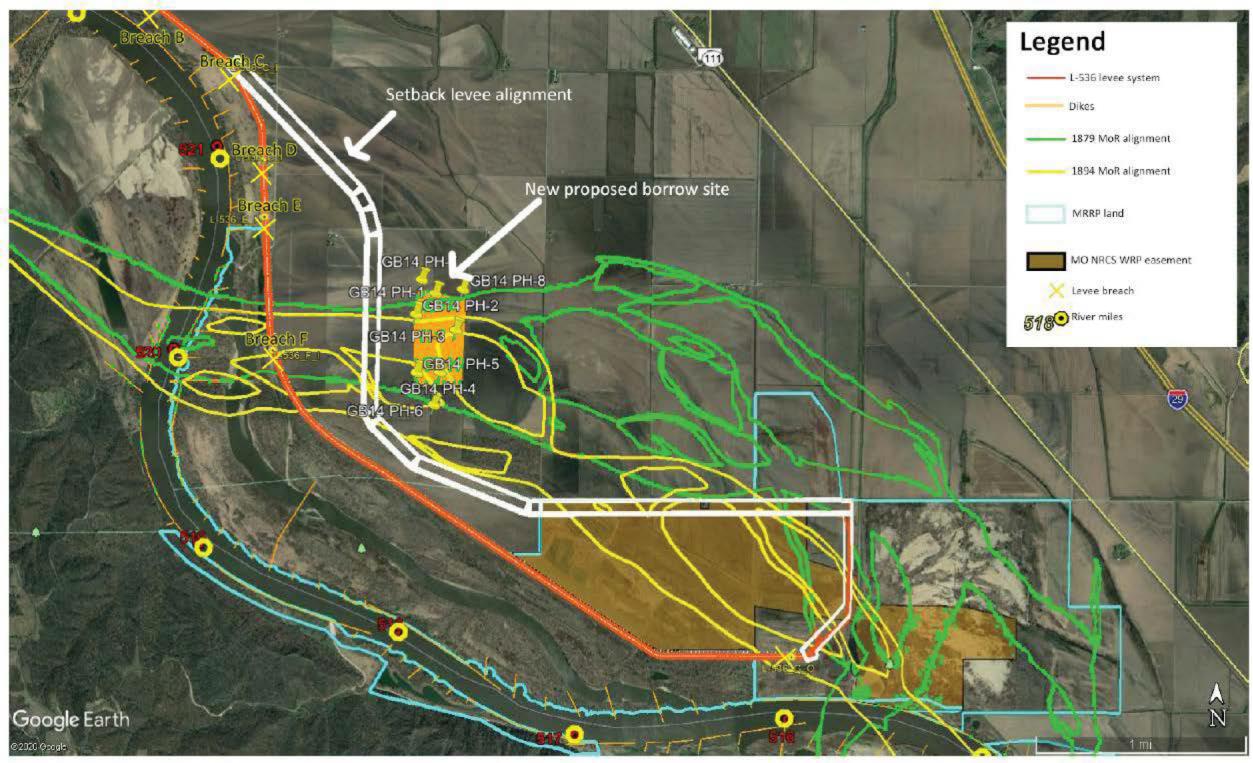
Again, we believe that the use of this borrow location will result in No Historic Properties Affected and request your concurrence with this determination. If you have any questions please contact Sandra Bamum, Regional Archaeologist, by phone at (402) 995-2674, or via email at sandra.v.barnum@usace.armv.mil.

Sincerely.

Tiffany K. Vanosdall

Chief, Environmental & Cultural Resources

Enclosure



CULTURAL RESOURCE ASSESSMENT Section 106 Review

CONTACT	PERSON/ADDRESS:	C:
	Corps Engineers, Omaha District	
Attn: Sandra	Sec. 10. 10. 10. 10. 10. 10. 10. 10. 10. 10	
1616 Capito Omaha, NE	68102-4901	
PROJECT:		
	evee L-536 – Additional Proposed Borrow Area	
FEDERAL A	AGENCY:	COUNTY:
	Omaha District	Atchison and Holt
X	the initial submission, the project area has no	as outlined in 36 CFR Section 800.11. After review of known historic properties present and a low potential We concur with a determination of No Historic
	An adequate cultural resource survey of therefore, SHPO concurs with your determina	the project area has been previously conducted; ation of No Historic Properties Affected.
	An adequate cultural resource survey has b Based on this survey and its negative find Historic Properties Affected.	een conducted for this project titled, , by . ings, SHPO concurs with your determination of No

For the above checked reason, the State Historic Preservation Office has no objection to the initiation of project activities. PLEASE BE ADVISED THAT, IF THE CURRENT PROJECT AREA OR SCOPE OF WORK CHANGES, A BORROW AREA IS INCLUDED IN THE PROJECT, OR CULTURAL MATERIALS ARE ENCOUNTERED DURING CONSTRUCTION, APPROPRIATE INFORMATION MUST BE PROVIDED TO THIS OFFICE FOR FURTHER REVIEW AND COMMENT. Please retain this documentation as evidence of compliance with Section 106 of the National Historic Preservation Act, as amended.

By: Joni M. Grawl

October 16, 2020

Date

Toni M. Prawl, Ph.D., Deputy State Historic Preservation Officer

MISSOURI DEPARTMENT OF NATURAL RESOURCES
STATE HISTORIC PRESERVATION OFFICE
P.O. Box 176, Jefferson City, Missouri 65102
For additional information, please contact Amy Rubingh, (573) 751-4589.

Please be sure to refer to the project number: 022-MLT-20



Osage Nation Historic Preservation Office

Date: April 4, 2022 File: 2122-5518MO-3

Dave Crane 1616 Capitol Ave Omaha, NE 68102

Email: David.J.Crane@usace.army.mil

RE: USACE, Omaha District, PL 84-99, L-536 Levee Rehabilitation and Realignment, Atchison

and Holt Counties, Missouri.

SENT VIA EMAIL

Dear Mr. Crane,

The Osage Nation Historic Preservation Office has received notification and accompanying information for the proposed project listed as USACE, Omaha District, PL 84-99, L-536 Levee Rehabilitation and Realignment, Atchison and Holt Counties, Missouri. Due to the presence of mounds and archaeological sites within one mile of the established Project Location, the Osage Nation requests that a cultural resources survey be conducted for the entire area of potential effects (APE) for this project. Levees should be tested to ensure they were not built with fill from burial mounds.

In accordance with the National Historic Preservation Act, (NHPA) [54 U.S.C. § 300101 et seq.] 1966, undertakings subject to the review process are referred to in 54 U.S.C. § 302706 (a), which clarifies that historic properties may have religious and cultural significance to Indian tribes. Additionally, Section 106 of NHPA requires Federal agencies to consider the effects of their actions on historic properties (36 CFR Part 800) as does the National Environmental Policy Act (43 U.S.C. 4321 and 4331-35 and 40 CFR 1501.7(a) of 1969).

The Osage Nation has a vital interest in protecting its historic and ancestral cultural resources. The Osage Nation anticipates reviewing and commenting on the planned Phase I cultural resources survey report for the proposed USACE, Omaha District, PL 84-99, L-536 Levee Rehabilitation and Realignment, Atchison and Holt Counties, Missouri.

OSAGE NATION HISTORIC PRESERVATION OFFICE WAIAIE KOSY KYJEVA



The Osage Nation Historic Preservation Office S106 Procedures and Survey Standards can be accessed at the web address listed in the footnote of this letter. Should you have any questions or need any additional information please feel free to contact me at the number listed below. Thank you for consulting with the Osage Nation on this matter.

Andrea A. Hunter, Ph.D. Director, Tribal Historic Preservation Officer

Caitlin Eileen Nichols, MA, RPA Archaeologist



Osage Nation Historic Preservation Office

Date: October 27, 2022 File: 2223-1755MO-10

Omaha District, USACE Dave Crane 1616 Capitol Ave. Omaha, NE 68102

Email: David.J.Crane@usace.army.mil

RE: USACE, Omaha District, PL 84-99, L-536 Levee Rehabilitation and Realignment, Atchison and Holt Counties, Missouri

SENT VIA EMAIL

Dear Mr. Crane.

The Osage Nation Historic Preservation Office has evaluated your submission regarding the proposed USACE, Omaha District, PL 84-99, L-536 Levee Rehabilitation and Realignment, Atchison and Holt Counties, Missouri and determined that the proposed project most likely will not adversely affect any sacred properties and/or properties of cultural significance to the Osage Nation. For direct effect, the finding of this NHPA Section 106 review is a determination of "No Properties" eligible or potentially eligible for the National Register of Historic Places.

The Osage Nation would like to make the following comments regarding the draft report submitted for review to be applied to future reports:

- The report provided was incredibly short, particularly the Environmental and Historic context sections. The environmental context section briefly discussed soils, and the historic context only discussed previously recorded sites. The Environmental section should have included more in depth discussion of soils as well as the landform, vegetation, hydrology, and other environmental aspects of the APE, prehistorically as well as current conditions. The historic context section should have given an in depth discussion of the cultural occupation of the region as well, including tribal as well as colonial presence. Sections such as these demonstrate to the Osage Nation that the investigating archaeologists understand the regional context of the APE which is crucial to identifying cultural resources. This report did not demonstrate the investigating archaeologists understood the region they were investigating and therefore did not sufficiently demonstrate they had the ability to identify cultural resources for this investigation.
- While the map provided in Appendix B and the amount of tests completed in the Terracon Testing Samples Excel shows that an extensive amount of testing had been completed, this report did not sufficiently demonstrate that the chosen methodology was adequate for the purposes of identifying cultural resources. For example, it is clear that different types of subsurface testing took place, including taking samples, trenching, potholes, and hand augers. However, there was no discussion as to why these different testing methods were all used, why they were applied to some areas but not all, etc. Additionally, it is stated in the text that photographs, profiles, and depths were taken at the test locations, however this report does not provide those profiles or depths and the photographs presented are limited to one (Figure 8). More representation of the work completed was needed in order for any reviewing parties to adequately

OSAGE NATION HISTORIC PRESERVATION OFFICE



understand whether enough work was done. Last, Appendix B was not a sufficient testing location map; since it only displays a general overview of the entire APE, all 300 tests were crammed together making it impossible for a reviewer to differentiate locations for each test. Multiple maps which would show the individual testing locations more adequately would have been more appropriate.

- It is troubling that the bibliography of this report only consisted of six sources. In addition, these sources were incredibly general; none were specific to the region investigated. This further demonstrates to the Osage Nation that the investigating archaeologists do not understand the region they were investigating nor did they understand what to expect as far as cultural resources in the region. Additionally, it demonstrates that the investigating archaeologist did not adequately attempt to research the region they were investigating in order to fill those gaps in their knowledge. The Osage Nation Historic Preservation Office expects professionally written reports with proficient research completed to be submitted to our office; this report did not meet those requirements.
- The Osage Nation would like to again reiterate the importance of sufficient archaeological work needed for projects surrounding levees. As we noted in our original correspondence, there were multiple mounds and archaeological sites near the APE, some of which had reported human remains. Levees have historically been built with mound and burial fill; as a result, a good faith effort needs to be made to investigate for any cultural resources when ground disturbing activities are planned for levee projects. While it is demonstrated in this report that a sufficient number of tests were completed to cover the APE, the report did not adequately demonstrate the results of those tests, why the tests used were adequate for the study completed, or that the investigating archaeologist had adequate knowledge or experience to investigate the region the APE is located. Good faith effort needs to be a requirement for the report as well as the investigation.
- As a note for future reference, Terracon is on the Osage Nation's list of Not-Preferred contractors for issues
 such as the ones listed above as well as more egregious behavior in the field. Typically, we reject their
 reports upon receipt due to repeated instances where issues like these and worse will continue to arise even
 after the Osage Nation has made comment on previous projects.

In accordance with the National Historic Preservation Act, (NHPA) [54 U.S.C. § 300101 et seq.] 1966, undertakings subject to the review process are referred to in 54 U.S.C. § 302706 (a), which clarifies that historic properties may have religious and cultural significance to Indian tribes. Additionally, Section 106 of NHPA requires Federal agencies to consider the effects of their actions on historic properties (36 CFR Part 800) as does the National Environmental Policy Act (43 U.S.C. 4321 and 4331-35 and 40 CFR 1501.7(a) of 1969). The Osage Nation concurs that the U.S. Army Corps of Engineers fulfilled NHPA compliance by consulting with the Osage Nation Historic Preservation Office in regard to the proposed project referenced as USACE, Omaha District, PL 84-99, L-536 Levee Rehabilitation and Realignment, Atchison and Holt Counties, Missouri.

The Osage Nation has vital interests in protecting its historic and ancestral cultural resources. We do not anticipate that this project will adversely impact any cultural resources or human remains protected under the NHPA, NEPA, the Native American Graves Protection and Repatriation Act, or Osage law. If, however, artifacts or human remains are discovered during project construction, we ask that work cease immediately and the Osage Nation Historic Preservation Office be contacted.

Should you have any questions or need any additional information please feel free to contact me at the number listed below. Thank you for consulting with the Osage Nation on this matter.

Andrea A. Hunter, Ph.D. Director, Tribal Historic Preservation Officer Caitlin Eileen Nichols, MA, RPA Archaeologist

Other Agency Coordination

Jeannette,

BLUF: I believe your concern will be addressed by the fact that the ~30 acre landward wetland complex will be connected to surface waters, a ditch that runs through the levee to the Missouri River. So this would result in 5 acres of filled emergent wetland (requiring mitigation), 15 acres of untouched emergent wetlands now connected to the riverward side of a levee and allowed to function more naturally, and 30 acres of emergent wetlands created on the landward side of the levee connected to a surface water ditch that runs into the Missouri River. From my standpoint, this is a 6:1 mitigation ratio (not counting the other 300 acres of wetlands created) and an overall net gain in quality and quantity of wetland habitat in the project area.

Regarding your original concern with NWPR and the severing of jurisdiction, I did check with folks internally and there are a few items I want to provide a response to:

1. Wetland impacts for the regulated public vs USACE Civil Works projects:

The matter of wetland jurisdiction applies to projects proposed by the regulated public. The Omaha District does not issue itself a 404 permit for our Civil Works projects. 40 CFR 230.2 explains this distinction and that there are different guidelines for fill specified through the USACE Regulatory Program, the USACE Civil Works Program, etc. For USACE Civil Works projects, we don't follow the Regulatory process of determining the least damaging practicable alternative and we don't only mitigate for jurisdictional wetlands. We follow our Planning Guidance Notebook (ER 1002-5-100), the Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies (P&G), and we use a functional assessment to determine how mitigation is to be completed for any habitat type impact, including non-jurisdictional wetlands. USACE Civil Works projects like L-536 are not burdened with the jurisdictional distinction when it comes to wetland impacts or mitigation. In my opinion, we hold ourselves to a higher standard and truly achieve a no net loss of wetlands through our Civil Works projects. We do comply with the Clean Water Act (as well as all other environmental laws) in our preparation of a NEPA document, a 404b1 analysis, the planning and construction of mitigation, and we do obtain water quality certification from the state. The functional assessment in our NEPA document helps determine the appropriate degree of mitigation when needed. For the L-536 project, we are essentially achieving a mitigation ratio of approximately 66:1 due to the creation of approximately 330 acres of emergent wetlands, we are reconnecting 1,040 acres of floodplain to the riverward side of a levee, and there is no further mitigation required following construction. I'll share the tiered Environmental Assessment with you and your agency when it's ready for public review. Due to emergency construction conditions, the EA was prepared concurrently with construction, as per ER 200-2-2.

2. Do mitigation wetlands need to be jurisdictional?:

I think the short answer is no. As I've stated above, our Civil Works projects don't follow the Regulatory process, but I was able to get some insight from Regulatory I thought would be helpful to share. Our Regulatory office would not require mitigation wetlands to be jurisdictional for private applicants. This is based on a couple of factors. Firstly, many wetland banks are non-jurisdictional and nothing in our regulations prohibits this. Secondly, they understand that sometimes a project changes the landscape, may sever jurisdiction, and that on-site mitigation would not be denied because the jurisdiction was

severed. The purpose and success of mitigation is still based on wetland functions. Our Civil Works project stance on mitigation shares this functional perspective.

3. Does severing jurisdiction prompt mitigation?:

Again, I think the short answer is no, from a Civil Works and Regulatory perspective. Our Regulatory office points to 33 CFR 320.4(r)(2) to support the fact that compensatory mitigation needs to be directly related to wetland impacts of a proposed project. Severed jurisdiction is not directly related to a project's actual impacts to wetlands, but could be secondarily related. They state that our regulations do not allow the USACE to require applicants to conduct compensatory mitigation for severing jurisdiction. As with your HQ, our Regulatory Office doesn't have definitive clarification from USACE HQ on this, but not requiring mitigation is the long standing precedent. Therefore, I appears that our Regulatory office would take the same stance as I have laid out above that only the 5 acres directly being filled would require mitigation, if this was a permittable project.

I hope this addresses the questions you originally brought up, but I'm happy to continue discussing with you if you'd like. I want to make sure I'm clear that I'm coming at this from the Civil Works perspective. I don't work in Regulatory and the topic of jurisdiction doesn't typically come into play on USACE Civil Works projects I work on. But please let me know if you've got any other questions about the L-536 project.

Thanks, Dave

Dave Crane (CENWO-PMA-C) **Environmental Resources Specialist** U.S. Army Corps of Engineers 1616 Capitol Ave. Omaha, NE 68102 O: (402) 995-2676

C: (402) 971-9041

david.j.crane@usace.army.mil

----Original Message----

From: Schafer, Jeannette <schafer.jeannette@epa.gov>

Sent: Wednesday, March 17, 2021 4:56 PM

To: Crane, David J CIV USARMY CENWO (USA) < David.J.Crane@usace.army.mil>

Cc: DuPree, Gabriel dupree.gabriel@epa.gov; Kensinger, Justin Kensinger, Justin Kensinger.Justin.R@epa.gov>

Subject: RE: [Non-DoD Source] FW: FYI FW: DRAFT Programmatic Environmental Assessment - 2019

Omaha District flooding levee rehabilitation (UNCLASSIFIED)

David,

I wanted to get back with you to find out if you found any answers. How is that going? We receive requests on a regular basis to review Corps' levee projects along the MS and MO Rivers so we are curious what you found out.

At the same time, I raised this question to our HQs office. I didn't have any luck there except to take each project review on a case-by-case basis and to clarify that it is the NWPR that is severing jurisdiction and not the levees themselves. As I'm guessing you know, there is an Executive Order for us to review the NWPR but we have been told to expect it will be in effect for a while.

We look forward to hearing from you, Jeannette

Jeannette Schafer Meramec River/ Big River UWFP EPA Lead Regional Coordinator for Jurisdictional Determinations Life Scientist

U.S. EPA, WD/WAG | 11201 Renner Blvd., Lenexa, KS 66219 | 913-551-7297 Winner on Urban Waters Team for Service to America's Medals' 2017 Peoples Choice Award for UWFP

Original Message-----

From: Crane, David J CIV USARMY CENWO (USA) < <u>David.J.Crane@usace.army.mil</u>>

Sent: Thursday, February 11, 2021 12:23 PM

To: Schafer, Jeannette <schafer.jeannette@epa.gov>; DuPree, Gabriel <dupree.gabriel@epa.gov>

Cc: R7-CWA404 < R7-CWA404@epa.gov>

Subject: RE: [Non-DoD Source] FW: FYI FW: DRAFT Programmatic Environmental Assessment - 2019 Omaha District flooding levee rehabilitation (UNCLASSIFIED)

Jeannette,

I appreciate the clarification. This isn't something I have a lot of experience with so I do appreciate you bringing this up. Please give me some time to ask a few questions internally and I'll get back to you. Depending on what I find I might look to set up a call to discuss more in-depth.

Thanks, Dave

----Original Message-----

From: Schafer, Jeannette < schafer.jeannette@epa.gov >

Sent: Thursday, February 11, 2021 11:26 AM

To: Crane, David J CIV USARMY CENWO (USA) < David.J.Crane@usace.army.mil>; DuPree, Gabriel

<dupree.gabriel@epa.gov>

Cc: USEPA Region 7 < r7-cwa404@epa.gov>

Subject: RE: [Non-DoD Source] FW: FYI FW: DRAFT Programmatic Environmental Assessment - 2019 Omaha District flooding levee rehabilitation (UNCLASSIFIED)

Hi Dave,

First, let me say I'm excited about having the levee set-back and the creation of additional floodplain. I'm also aware that as federal agencies we abide by the EO on no wetland loss, so that's a good thing. You bring up, "At least 200 acres of new depressional wetland habitat will be constructed on the landward and riverward side of the setback levee, 30 of which would be on the LW side of the new levee alignment." So you're talking about at least 170 wetland acres LW of the levee.

My role perspective on projects is from the jurisdictional WOTUS side, so I wanted to make sure our staff keep this in mind whenever they are looking at levee projects. I'm guessing you already know this, but one huge change with the NWPR is that levees without a surface water connection severs federal jurisdiction. So if the new levee design removes (any) surface water connection, then all WOTUS behind the levee becomes non-jurisdictional - streams and wetlands. That creates a higher mitigation burden than under Rapanos and historically because levees in the past did not sever jurisdiction. It also means if you are intending for those LW wetlands to be mitigation, you have to recognize they are also non-jurisdictional under NWPR unless you design some type of surface connection through the levee to the river side.

This is a new reg twist that I have not seen or heard how the Corps planning side is dealing with, so I wanted to bring it up directly. Given the past administration, status of engineering levees, etc., I am terribly unclear how this regulatory policy change is going to be handled.

If you have any clarification, thoughts or received any direction on this, that would certainly help me and our staff when looking at these types of projects. If this would be easier to discuss over a phone call, let us know and I'd be happy to have a conversation about it.

Thank you both for reaching out. Jeannette

Jeannette Schafer Meramec River/ Big River UWFP EPA Lead Regional Coordinator for Jurisdictional Determinations Life Scientist

U.S. EPA, WD/WAG | 11201 Renner Blvd., Lenexa, KS 66219 | 913-551-7297 Winner on Urban Waters Team for Service to America's Medals' 2017 Peoples Choice Award for UWFP

-----Original Message-----

From: Crane, David J CIV USARMY CENWO (USA) < David.J.Crane@usace.army.mil>

Sent: Thursday, February 11, 2021 9:50 AM

To: DuPree, Gabriel < dupree.gabriel@epa.gov >; Schafer, Jeannette < schafer.jeannette@epa.gov >

Cc: R7-CWA404 < R7-CWA404@epa.gov>

Subject: RE: [Non-DoD Source] FW: FYI FW: DRAFT Programmatic Environmental Assessment - 2019

Omaha District flooding levee rehabilitation (UNCLASSIFIED)

Thanks for reaching out, Gabriel.

Jeannette, it looks like you are referring to wetlands that were landward of a levee prior to a setback and then became part of the floodplain that was reconnected to the riverward side of the levee, is that correct? The L-536 levee setback will result in this scenario. However, this is a USACE Civil Works project, so whether or not a wetland is considered jurisdictional, we mitigate for any fill-related impacts regardless. This project is considered to be a self-mitigating project and I've laid out some details below.

About 20 acres of wetlands that were previously on the LW side of the levee will now be on the RW side. Additionally, about 5 acres associated with that complex will be permanently filled by the new levee footprint itself. At least 200 acres of new depressional wetland habitat will be constructed on the landward and riverward side of the setback levee, 30 of which would be on the LW side of the new levee alignment. These new wetlands started as borrow pits for levee repair, but were designed and constructed to achieve a diversity of depths up to 4 feet, gentle side slopes up to 100H:1V, irregular and undulating bank lines, and would be seeded with native wetland and upland buffer native species. Over 1,000 acres of previously protected floodplain will now be reconnected to the riverward side. These newly connected floodplain and wetland acres will be able to more naturally interact with the Missouri River, the project results in substantial (albeit, indirect) ecological benefit to the area. The project is still under construction and we are wrapping up the draft tiered EA for public and agency review. I'll make sure you get a copy when that is published.

Does this address your question? Please let me know if you'd like to discuss this more before the tiered EA is ready for review.

Thanks, Dave

Dave Crane (CENWO-PMA-C) Environmental Resources Specialist U.S. Army Corps of Engineers 1616 Capitol Ave. Omaha, NE 68102 O: (402) 995-2676

O: (402) 995-2676 C: (402) 971-9041

david.j.crane@usace.army.mil

----Original Message-----

From: DuPree, Gabriel < dupree.gabriel@epa.gov >

Sent: Thursday, February 11, 2021 9:13 AM

To: Crane, David J CIV USARMY CENWO (USA) < <u>David.J.Crane@usace.army.mil</u>>

Cc: Schafer, Jeannette < schafer.jeannette@epa.gov >; USEPA Region 7 < r7-cwa404@epa.gov >

Subject: [Non-DoD Source] FW: FYI FW: DRAFT Programmatic Environmental Assessment - 2019 Omaha

District flooding levee rehabilitation (UNCLASSIFIED)

David,

Per our phone discussion, our Regional Jurisdiction Coordinator is Jeannette Schafer. I understand the L-536 is a levee setback project. She is concerned that if levee repairs or relocations at any of the projects under this programmatic EA cut off wetlands or WOTUS behind them, those waters may become non-jurisdictional and should be considered for mitigation. Can you provide some insight?

Thank you,

Gabriel DuPree

U.S. Environmental Protection Agency, Region 7 Water Division Watersheds and Grants Branch 11201 Renner Blvd.

Lenexa, KS 66219 Office: 913-551-7751

Other Project Correspondence

STATE CAPITOL 201 W. CAPITOL AVENUE, ROOM 216 JEFFERSON CITY, MISSOURI 65101



(573) 751-3222 WWW.GOVERNOR.MO.GOV

Michael L. Parson

GOVERNOR STATE OF MISSOURI

January 9, 2020

Brigadier General D. Peter Helmlinger Commander, Northwest Division U.S. Army Corps of Engineers P.O. Box 2870 Portland, Oregon 97208-2870

RE: Levee Segments L-550/L-536 in Atchison County, Missouri

Dear General Helmlinger:

We have all experienced the impacts of the prolonged flooding during 2019. My administration and cabinet acted promptly and decisively to respond to Missouri's citizens to ease the impacts. Additionally, I have been clear in my direction from the start that we must look at doing things differently than we have in past floods if we expect better protection and mitigation of impacts in the future. In July, through Executive Order 19-14, I formed the Flood Recovery Advisory Working Group to provide input on the state's short-, medium-, and long-term flood recovery priorities, and feedback on the state's current levee system with suggested changes to benefit Missouri and its citizens.

I have met and communicated several times with Governors Reynolds, Kelly, and Ricketts of Iowa, Kansas, and Nebraska respectively to ensure that we are working together to coordinate our efforts in order to bring a better level of protection to the entire Lower Missouri River. I recently signed a Memorandum of Agreement with the other three governors to ensure that our state agencies continue to look for innovative flood response that ensures the most effective systemic outcomes in the future.

One recovery effort I have been following particularly closely is progress to repair and improve two levee segments in Atchison County, L-550 and L-536. Atchison County Levee District 1 is represented on my Advisory Working Group, and the group has heard from your staff on progress by the Omaha District. We have learned from recent examples, such as the setback of L-575 in Iowa, that reducing constriction points can provide critical additional protection for landowners upstream of these "pinch points". A few inches of freeboard on a levee may mean the difference for a farmer trying to save a home and livelihood, and farmers in the L-550 and L-536 areas are asking us to help give them that protection by setting back those levees.

While I appreciate the Corps' efforts toward recovery, I also understand that authorities, particularly in the PL 84-99 program, are prescriptive about how levee repair is completed. I am offering my strong support for the farmer-led initiative to set back both L-550 and L-536. I understand that securing real estate is one of the most significant hurdles to effecting a setback. Several state agencies have already been working with the levee district and the Nature Conservancy to chart a successful path forward. Though the Omaha District has participated in discussion, I would like to see greater involvement between District staff and my administration working toward the same end goal of levee setback.

As leaders who must consider our higher charge to improve the lives of the citizens we serve, I ask you to join me in finding innovative solutions for providing increased protection from future flooding. A levee setback that will provide added protection for citizens, their livelihoods, and our vital infrastructure will also result in lower future recovery costs. I believe that has to be taken into account when determining the best course of action. Additionally, I believe you have the creative thinking and authority to direct your staff toward an action that provides a significantly better future outcome and I look forward to working with you on this project.

Sincerely,

Michael L. Parson

Governor

cc: COL John L. Hudson, Commander

US Army Corps of Engineers, Omaha District

1616 Capitol Avenue

Omaha, Nebraska 68102-4901



P.O. Box 440400 St. Louis, Missouri 63144

February 5, 2020

Tel (314) 968-1105

Brigadier General D. Peter Helmlinger Commander, Northwest Division U.S. Army Corps of Engineers P.O. Box 2870 Portland, Oregon 97208-2870

RE: Levee Segments L-550/L-536 in Atchison County, Missouri

Dear General Helmlinger:

As we are all aware, the prolonged large-scale flooding along the Missouri River in 2019 has had devastating consequences for many communities. As more frequent and severe flooding disasters occur, the Nature Conservancy is committed to helping communities deploy nature-based solutions to promote resilience for people while providing benefits to nature. Flooding in Atchison County in 2019 impacted 166 homes and 1295 agricultural buildings, forced 278 citizens to evacuate, destroyed 121 miles of road, and closed the US Hwy 136 bridge to Nebraska for 216 days. The proposed levee setback projects at L-550 and L-536 in Atchison County Missouri requested by the Atchison County Levee District to help their community is the type of project that provides benefits to people and nature at a significant scale. The Nature Conservancy has been actively working with and supporting the Levee District's efforts to find innovative solutions for these projects.

We would like to echo Missouri's Governor Parson's urging of the Corp to find innovative solutions to enable both L-550 and L-536 levee setback projects that will provide significant protection and resilience from future floods at these pinch points along the Missouri River. Though perhaps not used previously, PL84-99 Title 33 CFR 203\\$203.50 Nonstructural alternatives to rehabilitation of flood control works, does have provisions that could be used for these levee setback projects. Two provisions that would be helpful for these projects are section (g)(1) 33 CFR 203\\$203.50 which allows for acquisition of land and section (c) of 33 CFR 203\\$203.50 which allows the Director of Civil Works or the Chief, Operations Division, Directorate of Civil Works to waive the limitation on Corp expenditures.

We have been very encouraged by the selection of a levee setback as the preferred alternative for L-536 and commend the Corp staff for their innovative and supportive work. However, there are still hurtles to overcome to ensure that the L-536 setback is completed, and we urge the Corp to work to ensure the project's success.

Now, there is a need to shift the focus back to L-550. Our current understanding is that the Corp may not be pursuing a setback at L-550 despite the strong support of the Levee District and willing sellers of real estate. We believe this would be a significant missed opportunity to improve community resilience by substantially improving flood water capacity along 15 miles of



The Nature Conservancy P.O. Box 440400 St. Louis, Missouri 63144

the Missouri River with stage reduction potential up to nearly 2 feet at a pinch point location which has repetitively breached. In addition, this is the site of the US Hwy 136 bridge to Nebraska that was closed for 216 days preventing Missouri community members from getting to their jobs across the river in Nebraska.

We urge the Corp to explore the potential of PL84-99 Title 33 CFR 203§203.50 as well as any other applicable programs to enable both L-536 and L-550 projects to move forward.

The Nature Conservancy looks forward to continuing to work with the Omaha District, the Levee District and other state and federal partners to innovate and support this community's efforts to be more resilient. Thank you for your consideration.

Sincerely,

Adam McLane

Director

The Nature Conservancy-

Missouri

Holly Neill

Hollyhell

Director of External Affairs

The Nature Conservancy-

Missouri

Barbara Charry

Strategy Manager-Floodplains

The Nature Conservancy-

Butan Chang

Missouri

CC: Colonel John Hudson Omaha District

Governor Michael Parson Congressman Sam Graves

Atchison County Levee Board



DEPARTMENT OF THE ARMY

CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

MAR 2 5 2019

CENWO-PMA-C

MEMORANDUM FOR District Commander, Colonel John L. Hudson

SUBJECT: Public Law (PL) 84-99 Levee Repairs Emergency Provision for Compliance with National Environmental Policy Act (NEPA)

- 1. This memorandum is to request your approval to complete PL 84-99 emergency levee repairs in the Omaha District using the emergency provision of Engineering Regulation (ER) 200-2-2 Procedures for Implementing the NEPA. The March 2019 flood event was declared for the Missouri River and its tributaries due to rapid snowmelt and heavy rains in the region.
- 2. The emergency provision of ER 200-2-2 allows NEPA documentation to be accomplished after completion of emergency work. The provision will allow us to move forward with construction of repairs while we complete our NEPA compliance. The ER specifically states that emergency actions are to include flood risk management activities pursuant to PL 84-99. This ER also states that emergency actions include responding to situations to prevent or reduce imminent risk of life, health, property, or severe economic losses.
- 3. We are considering these repairs to be emergency actions because of the following:
- a. The need to complete construction of repairs as soon as possible and prior to potential additional flooding. There are numerous levee sections on the Missouri River and its tributaries such as the Platte and Elkhorn Rivers that are in need of immediate emergency repair.
- b. The risk of economic loss from potential additional flooding along rivers within the Omaha District.
 - c. The risk to life, health, and safety.
- 4. The emergency levee repairs are interim measures taken to reduce the imminent risk of flooding over the next several months. These repairs are not anticipated to have significant environmental impacts as they are intended to restore the function of already existing flood risk reduction structures. NEPA documentation will be initiated concurrent with and/or after the emergency action is taking place. We anticipate additional more-comprehensive repairs scheduled after the emergency phase later this year will follow typical NEPA and other environmental compliance procedures.
- 5. If you have any questions, please contact Mr. Aaron Quinn of my staff at (402) 995-2669, or aaron.t.quinn@usace.army.mil.

Bradley E. Thompson, PMP Chief, Planning Branch

CENWO-PMA-C SUBJECT: Public Law (PL) 84-99 Levee Repairs Emergency Provision for Compliance with National Environmental Policy Act (NEPA)
National Environmental Folicy Act (NEFA)
I approve disapprove this request to complete PL 84-99 emergency levee repairs in the Omaha District using the emergency provision of Engineering Regulation (ER 200-2-2 Procedures for Implementing the NEPA.
OHN L. HUDSON, P.E. Colonel, EN Commanding

APPENDIX D – NRCS COOPERATING AGENCY CORRESPONDENCE AND ASSESSMENTS COMPLETED BY NRCS STAFF

Cooperating Agency Invitation



DEPARTMENT OF THE ARMY

CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

District Commander

1 4 FEB 2020

Mr. Grover DePriest
Acting State Conservationist
Natural Resource Conservation Service
Parkade Center, Suite 250
601 Business Loop 70 West
Columbia, Missouri 65203-2546

Dear Mr. DePriest:

Pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended, The U.S. Army Corps of Engineers, Omaha District (Omaha District), is initiating the development of an Environmental Assessment (EA) evaluating the environmental and socioeconomic effects of levee rehabilitation along the L-536 levee system in Atchison and Holt Counties, Missouri. The EA is being tiered to the *Draft Programmatic EA and Finding of No Significant Impact, Public Law 84-99 Emergency Levee Rehabilitation Program & Advanced Measures, Civil Emergency Management Program for 2019 Flooding in the Omaha District, which we intend to finalize in early March 2020. We invite the Natural Resource Conservation Service, Missouri office (MO NRCS) to participate as a Cooperating Agency, in accordance with the Council on Environmental Quality (CEQ) final implementing regulations for NEPA 40 Code of Federal Regulations (CFR) § 1501.6. As defined in 40 CFR 1508 et.seq, your agency possesses jurisdictional authority and/or special expertise in the area of various conservation easement programs that will interact with the proposed project, habitat restoration, and agricultural programs.*

The L-536 levee rehabilitation project is authorized under Omaha District emergency management authority Public Law 84-99, and includes proposed construction of a large-scale levee setback through property owned in fee title by U.S. Army Corps of Engineers for the purposes of the Missouri River Recovery Program (Corning Wildlife Management Area). A portion of that site overlaps with a previously established NRCS Wetlands Reserve Program (WRP) conservation easement. As such, the project is expected to require an easement administrative action on a portion of the Corning WMA. It is also our understanding that MO NRCS is currently processing EWP-FPE applications for a portion of the floodplain between the existing L-536 levee and the setback alignment.

The Omaha District is requesting that a single point of contact and alternate representing the MO NRCS be appointed to continue our close coordination on this project as cooperators under NEPA. This will greatly enhance the design of site restoration features and overall implementation of this levee rehabilitation project. By working together throughout the project, we can achieve a truly collaborative process which supports both of our decision making requirements, while also developing a successful project that can be

supported by both of our agencies, as well as other local, state, federal, and Tribal stakeholders.

The Omaha District requests your assistance and participation in the NEPA process in the following ways:

- a. Attendance at and input during agency coordination meetings, including scoping;
- b. Comment and feedback on the tiered EA schedule, overall scope of the document, significant issues to be evaluated, and proposed site restoration techniques;
- c. Identification of issues related to your agency's jurisdiction by law and special expertise;
- d. Participation, as appropriate, at public meetings and hearings, and provide liaison across involved agencies:
- e. Review of the administrative and public drafts of the Draft and Final EA; and f. Adoption of the Omaha District's Final EA, when needed to fulfill your independent NEPA obligations related to your Federal action and to reduce duplication with other Federal, State, Tribal and local procedures.

Our staff has been coordinating closely since August 2019 and we encourage you to respond to our request at your earliest convenience. My goal is to receive your written response by February 28, 2020. By participating with the Omaha District, you can help ensure successful implementation of this proposed levee setback project. In responding affirmatively, we ask for your confirmation of the MO NRCS's commitment, as well as the appointment of one representative and one alternate. We estimate that levee rehabilitation construction at L-536 would be substantially complete by March 1, 2021, however activities such as native vegetation planting, wetland fine grading, and other site restoration may continue beyond March 1, 2021.

A copy of this letter has been furnished to Ms. Nell Fuller, Director of Environmental Activities Division, Farm Production and Conservation Business Center. If you require any further information or assistance, please contact Mr. Dave Crane of my staff at 402-995-2676 or david.j.crane@usace.army.mil.

Sincerely,

John L. Hudson, P.E.

Colonel, Corps of Engineers

District Commander

CC:

Nell Fuller, Director
Environmental Activities Division, Farm Production and Conservation Business Center
U.S. Department of Agriculture
1400 Independence Ave., SW, Office 4704-S
Washington, DC 20250-0513



United States Department of Agriculture



February 25, 2020

John L. Hudson, P.E. Colonel, Corps of Engineers District Commander 1616 Capitol Avenue Omaha, Nebraska 68102-4901

Dear Colonel Hudson:

This letter is regarding your letter dated February 14, 2020, extending an invitation to the Missouri Natural Resources Conservation Service (NRCS) to participate as a Cooperating Agency in the development of an Environmental Assessment (EA) evaluating the environmental and socioeconomic effects of levee rehabilitation along the L-536 levee system in Atchison and Holt Counties, Missouri.

Missouri NRCS accepts your invitation to participate as a Cooperating Agency. As such, we are willing to provide assistance and participation in the NEPA process. The points of contact for Missouri NRCS are as follows:

Primary:

Chris Hamilton

Assistant State Conservationist for Water Resources/Easements

573/876-9416

Chris.Hamilton@usda.gov

Alternate:

Tracey Wiggins

Natural Resources Specialist

573/876-9406

Tracey.Wiggins@usda.gov

Sincerely,

GROVER DEPRIEST

Acting State Conservationist

CC:

Nell Fuller, Director EAD, FPAC Business Center, Washington, D.C. Wayne van Rooyen, National Realty Specialist, NRCS, Washington, D.C. Chris Hamilton, Assistant State Conservationist WR/E, NRCS, Columbia, MO Tracey Wiggins, Natural Resources Specialist, NRCS, Columbia, MO

NRCS-Completed Easement Administrative Action Environmental Evaluation



Leves Section

Rev. 4/21/2010 File Code: Coop Folder Sheet 1 of 2

MISSOURI - WETLAND EVALUATION TECHNIQUE - BIOLOGICAL VALUE

Landowner	L536/COE Date	7/8/2020	Acr	es of We	tland 52	
County	Atchison , Missouri Appraiser	Ritchhart/Mc	Clure			
	Old Levee Tract# Field#		We	tland#	32ac of the	e 52 ac
	Characteristic	Value	Existing Sc	ore	Mitigated	Score
	Water Present March-October Consecutive Days					
	m average)	40				United States
1.	> 3 months per year	10		336	0	100
2.	2-3 months per year	8	0 1		<u> </u>	
3.	1-2 months per year	6		10		8
4.	15-30 days per year	4		-		
5.	< 15 days per year	1	0		0	
	Nater Conditions (Frequency) on ALL or Portion of the Wetland for 5 Consecutive Days					
1.	Annually (100%)	10	•	7.00	0	
2.	3 out of 5 years (60%)	8	0		©	
3.	1 out of 2 years (50%)	6	0 1	10	0	8
4.	2 out of 5 years (40%)	4	0		0	35.00
5.	< 2 out of 5 years (< 40%) or < 15 consecutive days	1	0		0	27 113
	Vegetation and Facultative Wet) Good overstory and understory plant diversity, subcanopy usually present,		-50-	Scall Ad	-	
1.	herbaceous vegetation usually present	10	0	200	0	to be all
2.	> 25% woody overstory canopy coverage with limited overstory and good understory plant diversity	8	0		0	
3.	> 25% woody overstory canopy coverage with limited overstory and limited understory plant diversity; or emergent with good plant diversity	6	0	4	•	6
4.	< 25%woody overstory canopy coverage with limited overstory and understory plant diversity; or emergent with poor plant diversity	4	•		0	
	Reed canary grass other cool-season or warm-season grasses, agricultural			-		
5.	crops; or primarily non-wetland species	1	0		0	
Size Total ac	res of wetland evaluation)					
	< 0.5 Ac. or primarily non-wetland species					
1.	(i.e. fescue, timothy, alfalfa, etc.)	1	0		0	
2.	0.5 - 1 Ac.	5	0	-	O	
3.	1 - 3 Ac.	10		20 -	0	20
4.	3 - 5 Ac.	15	0	-	0	1
5.	> 5 Ac.	20	•	138	©	

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MISSOURI - WETLAND EVALUATION TECHNIQUE - BIOLOGICAL VALUE

Landowner	downer L536/COE Appraiser Ritchhart/McClure						
		Characteristic	Value	Existin	ng Score	Mitigate	d Score
(Acres of		cluding Appraised Wetland ction as wetlands and farmed we wetlands)	etlands not				
1.		on land use as wetland	10	0	THE WAY	0	
2.	25-50 acres of secti	ion land use as wetland	8	Ö		0	45.50
3.	50-100 acres of sec	tion land use as wetland	6	0	1	0	1
4.	100-160 acres of se	ection land use as wetland	4	0		0	
5.	> 160 acres of secti	on land use as wetland	1	•		•	12 100
Distance	to Ungrazed Wo	odland or Woody Cover				I	
1.		of section as cropland	1	•	2.7.39	•	
2.	250-660 ft.		4	0	-	0	
3.	660 ft1/4 mile		7	0	- 1	0	. 1
4.	> 1/4 mile		10	0	27.00	0	
	nent Cover wetland with den	se woody or herbaceous cover					
1.	Zero; or agricultura	al crops; or grazed	1	0	10	0	(F 17)
2.	<1%		4	0	The state of the	0	
3.	1-5%		6	O	10	0	10
4.	5-10%		8	0		0	
5.	> 10%		10	•	34,03	•	14,25
	ystem Interaction	n je from adjacent upland Drainag	е)				
1.	Subject to recharge	from channel at full bank flow	10	0	19219	•	THE RE
2.	Recharge from char	nnel at over bank flow twice or more		0	PHEE	0	
3.	Recharge from char	nnel at over bank flow once per year	4	0	_ 1	0	10
		nnel at over bank flow less than annua	1				1
4.	nondepressional wi	thout water storage	1	•		0	
			Total Score =		57		64
			Maximum Score Possible =		90		90
			Fish and Wildlife Index =		0.63]	0.71
		Action	Score for Existing Condition =			63	
			Action =		Mitigation	Require	d
		///	Action Scale				
	Score	0.00 - 0.35	0.36 - 0.75		0.76 -	1.00	
	Action	Minimal Effect	Mitigation Required	Consul	t with NRC	S State Of	fice

Livez Section

Rev. 4/21/2010 File Code: Coop Folder Sheet 1 of 1

MISSOURI - WETLAND EVALUATION TECHNIQUE - HYDROLOGICAL VALUE

Landowner	L536/COE Appraiser	Appraiser Ritchhart/McClure				
	Characteristic	Value Existing Score M				
	System Interaction					
	ot include recharge from adjacent upland drainage)					
1.	Subject to recharge from channel at full bank flow	10	0		•	
2.	Recharge from channel at over bank flow twice or more per year	7	0	A STATE OF	0	
3.	Recharge from channel at over bank flow once per year	4	0	_ 1	0	. 10
	Recharge from channel at over bank flow less than annually; or					
4 .	nondepressional without water storage	1	•	9.5±39.5	0	102.23
	ment Cover wetland with dense woody or herbaceous cover)					
1.	Trees and shrubs (>25% canopy coverage of overstory trees with herbaceous and woody understory)	10	0		0	
2.	Trees and shrubs (>25% canopy coverage of overstory trees) with little herbaceous and woody understory	8	0	4	•	8
3.	Woody and herbaceous (10 - 25% canopy coverage of overstory trees)	6	0	10000	0	
4.	Primarily herbaceous (10% overstory canopy coverage)	4	•	The state of	0	
5.	Cropped (agricultural crops)	1	0		0	
Size (acr	res)	****	T			
1.	< 2 Ac.	1	0	3 37 7	0	100
2.	2 - 5 Ac.	5	Ö		0	•
3 .	5 - 10 Ac.	10	0	20	0	20
4.	10 - 15 Ac.	15	0		0	
5.	> 15 Ac.	20	•		(
Frosion	and Sediment Control		Г		Г	
1.	Stabilizes ephemeral, gully, scour channel or streambank erosion	10	0	TENTO LE	0	130,000,00
			 	-13		
2.	Traps sheet and rill sediment; or effective in trapping sediment at high flows (Connected with stream system at high flows)	5	0	1	•	5
	(Connected with stream system at high hows)	<u>-</u>	 			-
3.	Provides little erosion or sediment control (adjacent area adequately protected)	1	•		0	14.1 %
	Wetland as Herbaceous Emergent Hydrophytic Vegetation coverage of cattails, rushes, sedges, smartweeds)					
	< 5%	1	0	F2 344	0	100
2.	5 - 10%	4	0	-	(-
3.	10 - 25%	6	0	10	0	4
4.	25 - 50%	8	0		0	-
5.	> 50%	10	•	201920	0	13-0-0
		Total Score =	•	36		47
	Maximum Sco			60	-	60
	Fish and W	ildlife Index =	:	0.60]	0.78
	Action Score for Existing	Condition =	:	0	.60	
		Action =		Mitigation	n Requir	ed
	Action Scale					

Score	0.00 - 0.35	0.36 - 0.75	0.76 - 1.00
Action	Minimal Effect	Mitigation Required	Consult with NRCS State Office

HEART LAND

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MISSOURI - WETLAND EVALUATION TECHNIQUE - BIOLOGICAL VALUE

Landowner	L536/COE Da	te 7/8/2020	4	Acres of V	Vetland 52	Market .
County	Atchison , Missouri Appraise	er Ritchhart/Mo	Clure			
Farm#	Heartland Tract# Field	#		Wetland#	20ac of	the 52 ac
	Characteristic	Value	Existin	g Score	Mitigate	ed Score
Surface \	Water Present March-October Consecutive Days					
THE RESERVE AND ADDRESS OF THE PERSON NAMED IN	rm average)					
1.	> 3 months per year	10	0		•	
2.	2-3 months per year	8	•		0	
3.	1-2 months per year	6	0	8	0	10
4.	15-30 days per year	4	0	1	0	
5.	< 15 days per year	1	0		0	
	Water Conditions (Frequency) on ALL or Portion of the Wetland for 5 Consecutive Days	r				
1.	Annually (100%)	10	•		0	-
2.	3 out of 5 years (60%)	8	0		0	
3.	1 out of 2 years (50%)	6	0	10	0	10
4.	2 out of 5 years (40%)	4	0		0	
5.	< 2 out of 5 years (< 40%) or < 15 consecutive days	1	0		0	
	Vegetation e and Facultative Wet)					
1.	Good overstory and understory plant diversity, subcanopy usually present, herbaceous vegetation usually present	10	0		0	
2.	> 25% woody overstory canopy coverage with limited overstory and good understory plant diversity	8	0		0	
3.	> 25% woody overstory canopy coverage with limited overstory and limited understory plant diversity; or emergent with good plant diversity	6	0	4	•	6
4.	< 25%woody overstory canopy coverage with limited overstory and understort plant diversity; or emergent with poor plant diversity	7y 4	•		0	_
5.	Reed canary grass other cool-season or warm-season grasses, agricultural crops; or primarily non-wetland species	1	0		0	
Size	res of wetland evaluation)	T				
(TOTAL AC			-		_	
4	< 0.5 Ac. or primarily non-wetland species	1 1	0		0	
1. 2.	(i.e. fescue, timothy, alfalfa, etc.) 0.5 - 1 Ac.	5				-
		10		- 20		- 20
3.	1 - 3 Ac.		1	· Fileda Je	0	- 1990
<u>4</u> .	3 - 5 Ac.	15	·			-
5.	> 5 Ac.	20			•	AND DESCRIPTION OF THE PARTY OF

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MISSOURI - WETLAND EVALUATION TECHNIQUE - BIOLOGICAL VALUE

Landowner	andowner L536/COE Appraiser Ritchhart/McClure							
		Characteristic		Value	Existin	ng Score	Mitigat	ed Score
(Acres o		cluding Appraised Wetland ction as wetlands and farmed we wetlands)	etlands not					
1.		on land use as wetland		10	0	THE REAL PROPERTY.	0	The The
2.		on land use as wetland		8	0	VEES !	0	
3 .		tion land use as wetland		6	0	1	0	10
4.	100-160 acres of se	ection land use as wetland		4	0	- 2010	0	
5 .		on land use as wetland		1	O	-	0	-
Distance	to Ungrazed Woo	odland or Woody Cover						
1.	< 250 ft. or > 95%	of section as cropland		1	•		0	
2.	250-660 ft.			4	0	_ 1	0	10
3.	660 ft1/4 mile			7	0	- 1	0	10
4.	> 1/4 mile			10	0		•	
	ment Cover wetland with den	se woody or herbaceous cover)						
1.	Zero; or agricultura			1	0		0	
2.	<1%			4	0	_	0 .	-
3 .	1-5%			6	0	10	Ö	10
4 .	5-10%			8	0	-	0	-
5 .	> 10%			10	• • • • • • • • • • • • • • • • • • •		•	
	System Interaction of include recharge	n le from adjacent upland Drainag	re)					
1.		from channel at full bank flow		10	0	F-85-19	0	
2.		nnel at over bank flow twice or more	per year	7	0	1 M	0	-
3.		nnel at over bank flow once per year		4	0	1	0	1
		nnel at over bank flow less than annua	ally or			-		-
4.	nondepressional wi			1	•		•	
				otal Score =		55		77
			Maximum Scor	e Possible =	=	90		90
			Fish and Wi	Idlife Index =	=	0.61	1	0.86
		Action	Score for Existing	Condition :			61	
		Addon		Action =		Mitigation		ed
				2020 MATERIA (2010)				
			Action Scale	***				
	Score	0.00 - 0.35		0.75		0.76 -	1.00	
	Action Minimal Effect Mit			guired	Consu	It with NRC	S State O	ffice



Rev. 4/21/2010 File Code: Coop Folder Sheet 1 of 1

MISSOURI - WETLAND EVALUATION TECHNIQUE - HYDROLOGICAL VALUE

Landowner	towner L536/COE Appraiser Ritchhart/McClure					
	Characteristic	Value	Existi	ng Score	Mitigate	ed Score
	System Interaction					
	ot include recharge from adjacent upland drainage)	10			_	
1.	Subject to recharge from channel at full bank flow	10	0	-	<u> </u>	
2.	Recharge from channel at over bank flow twice or more per year	77	0	4	<u> </u>	- ,
3.	Recharge from channel at over bank flow once per year	4	0	1	0	1
4 .	Recharge from channel at over bank flow less than annually; or nondepressional without water storage	1	•		•	
	ment Cover wetland with dense woody or herbaceous cover)					
1.	Trees and shrubs (>25% canopy coverage of overstory trees with herbaceous and woody understory)	10	0	_	•	
2.	Trees and shrubs (>25% canopy coverage of overstory trees) with little herbaceous and woody understory	8	0	4	0	10
3.	Woody and herbaceous (10 – 25% canopy coverage of overstory trees)	6	0		0	-
4.	Primarily herbaceous (10% overstory canopy coverage)	4	•		0	
5.	Cropped (agricultural crops)	1	0		0	
Size (acr	rac)				Г	
1.	<2 Ac.	1	0		0	
2.	2 - 5 Ac.	5			0	-
3.	5 - 10 Ac.	10	0	20	0	20
4 .	10 - 15 Ac.	15	0		0	20
5.	> 15 Ac.	20	<u> </u>		<u> </u>	-
	and Sediment Control	- 10				
1.	Stabilizes ephemeral, gully, scour channel or streambank erosion	10	0		0	
2.	Traps sheet and rill sediment; or effective in trapping sediment at high flows (Connected with stream system at high flows)	5	0	1	0	1
3.	Provides little erosion or sediment control (adjacent area adequately protected)	1	•		•	
	Wetland as Herbaceous Emergent Hydrophytic Vegetation					
	coverage of cattails, rushes, sedges, smartweeds)	1	0		0	
1. 2.	5 - 10%	4	0			
3.	10 - 25%	6		10		10
4.	25 - 50%	8	0	10	0	10
5.	> 50%	10	<u> </u>		<u> </u>	-
0.	7 3070					
		Total Score =		36	_	42
	Maximum Sc	ore Possible =		60		60
	Fish and V	Vildlife Index =		0.60]	0.70
	Action Score for Existing	g Condition =	<u> </u>	0.	.60	12
		Action =		Mitigation	Require	ed
_	A-0 01-					—
	Action Scale					1

Score	0.00 - 0.35	0.36 - 0.75	0.76 - 1.00
Action	Minimal Effect	Mitigation Required	Consult with NRCS State Office

USACE-NRCS Regional MOU

MEMORANDUM OF UNDERSTANDING AMONG

U.S. DEPARMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE – CENTRAL REGION AND

U.S. DEPARTMENT OF ARMY U.S. ARMY CORPS OF ENGINEERS – NORTHWESTERN DIVISION

This Regional Memorandum of Understanding (MOU) is between the U.S. Department of Agriculture, Natural Resources Conservation Service - Central Region (NRCS-CR) and the U.S. Department of Army, U.S. Army Corps of Engineers - Northwestern Division (USACE-NWD), collectively "the Agencies." In furtherance of the May 26, 2011 Partnership Agreement between the U.S. Department of Agriculture, Natural Resources Conservation Service and the U.S. Department of the Army, Office of the Assistant Secretary of the Army (Civil Works), the Agencies enter into this MOU to promote the long-term working relationship between the Agencies as it pertains to executing their respective missions on shared lands in the Missouri River Basin.

I. PURPOSE

The purpose of this MOU is to promote the effective coordination and communication between the Agencies within the Missouri River Basin (Basin) geographic area were their regional boundaries overlap, as depicted in **Attachment 1**. This area includes lands where both Agencies own a property interest in the name of the United States of America. For purposes of this MOU, "shared lands" is defined as locations within the Basin where both Agencies have an active programmatic or operational presence. This includes project land provided by a cost-share sponsor under the USACE-NWD Civil Works Program.

II. AUTHORITIES

Each Agency's activities within the Basin has been authorized by Congress through legislation. NRCS authorities include the Wetlands Reserve Program (WRP) (16 U.S.C. § 3837 and note, 3837a-3837f; 7 CFR Part 1467), the Agricultural Conservation Easement Program (16 U.S.C. §3865 et seq.; 7 CFR Part 1468), and the Emergency Watershed Protection Program (EWPP) (16 U.S.C. § 2203; 7 CFR § 624.10). Authorities used by USACE-NWD of particular importance are the Rivers and Harbors Act of 1935, Flood Control Act of 1944 (Section 9), Endangered Species Act (ESA) of 1973, Water Resources Development Act (WRDA) of 1986 (Section 601(a)), WRDA 1999 (Section 334), WRDA 2007 (Section 3176), Public Law 84-99, Public Law 95-625 (amended Section 707, and Section 3(a)), and 40 U.S. Code § 3111(b)(1) for Approval of Sufficiency of Title Prior to Acquisition (including DOJ 2016 Regulations of the Attorney General Governing the Review and Approval of Title for Federal Land Acquisitions). These authorities are further detailed in **Attachment 2**. Those noted here in Section II and on

Attachment 2 are not intended to be an all-inclusive list of applicable authorities for the Agencies.

As agreed to by the Agencies' Senior Leaders, and documented in their Key Points Summary of December 8, 2017 and provided as **Attachment 3**:

- Both Agencies will work within the scope of existing Congressional authorities to establish terms that can be accomplished. Outcomes should not require one Agency to do something that it is not authorized to do.
- This MOU does not seek to resolve differences of opinion between the Agencies on its respectively federally-held real estate interests and associated "Merger of Title" opinions.
- To the extent possible when planning for future project actions in the Basin, there is agreement for the Agencies to seek to avoid each other and not have to call upon the use of the same piece of property to fulfill each Agency's needs / mission purposes.

III. RESPONSIBILITIES

When planning any future acquisition of property interests or actions that may be potentially incompatible to objectives or policies of either Agency, the Agencies agree to make a demonstrated effort to avoid any lands where the other Agency has an active programmatic or operational presence.

On existing shared lands, the Agencies, having the following objectives, will utilize collaborative Land Management Guidelines ("Guidelines") to:

- Restore, protect, manage, maintain, and enhance the functional values of floodplains, wetlands, riparian areas, and other lands;
- Support conservation purposes for fish and wildlife and their habitat, endangered species, water quality improvement, flood water retention, groundwater recharge, open space, soil health, aesthetic values, and environmental education;
- Safeguard lives and property from floods, drought, and the products of erosion.

A Management Plan as necessary will be developed and agreed upon by the Agencies, to supplement this MOU with Guidelines addressing how the land will be cooperatively operated and managed in support of the Agencies' objectives. It is envisioned that a Management Plan will, through its collaborative framework, assist with situations where execution of these objectives by the Agencies pose conflict. A Management Plan may take the form of other mutually acceptable documentation, such as a Compatible Use Agreement, which fulfills the same intent. See **Attachment 4** – "Cooperative Undertaking Actions", for those management plans and actions currently underway or being completed between the Agencies, in conjunction with this MOU.

The following are an initial set of Guidelines, to facilitate cooperation between the Agencies:

A. Third-Party Agreements

• <u>Intent:</u> It is the intent of the Agencies to coordinate with each other on actions involving shared lands, which may result in agreements made with another party involving land management /

land use conditions or practices. These land use practices may be made in the form of contracts, licenses, Memorandum of Agreements, or other methods.

- <u>Pre-Existing Agreements</u>: The Agencies recognize that already-established agreements between one Agency and another entity not party to this MOU, involving land management / land use activities on shared lands, may exist. Situations include agreements with other federal and state organizations, where both Agencies may not be party to the agreement. These already-established agreements will be provided to the other Agency for information purposes. To the extent practical, any agreement requiring changes to ensure conformity with policy or law will be updated in coordination with the other Agency.
- New Agreements: In instances where an Agency intends to enter into a new formal agreement with a third-party entity involving land management / land use conditions or practices on shared lands, both Agencies will be given the opportunity to participate in discussions before finalizing the agreement. Where agreed, portions of a completed agreement with a third-party entity that are determined to not have impact to the other Agency's land use objectives, do not require ongoing coordination.

B. Land Management / Land Use Changes

- When planning any future land management or land use actions (including those involving construction) that may potentially be incompatible to objectives of either Agency, the Agencies agree to make a demonstrated effort to avoid any shared lands area.
- The Agency considering construction activities will make an intentional effort to fulfill these activities on lands where the Agencies do not co-exist.
- When one Agency is considering to undertake a change in land management or land use conditions or practices on shared lands, the Agency proposing the action ("Proposing Agency") will provide information to the other Agency ("Coordinating Agency") detailing the contemplated change(s) and requesting the Coordinating Agency's concurrence. An example would be a proposed construction project that would result in changed land conditions or land management practices at the site. **Attachment 5** is a template form ("Form"), to use for this correspondence.
 - Agency may proceed. For documentation of the coordinated arrangements: A designated representative for the Coordinating Agency signs the Form and returns it to the Proposing Agency. The Form and associated correspondence will then become a logged enclosure to the MOU in **Attachment 6** for documentation purposes, with copies having been furnished to and retained by the Agencies. Any deviation to terms of the agreed-upon scope would require additional coordination between the Agencies in order to reach mutual agreement on those changes.
 - If the Coordinating Agency does not concur with the proposed alteration, the Proposing Agency will assess whether the purpose can only be fulfilled at the requested location and that taking the action is essential for the Agency's mission objectives.

- In those instances where the Proposing Agency is a District Office of **USACE-NWD (District Office)** and elects to proceed, the Proposing Agency / District Office must identify lands to make available to the Coordinating Agency for use in offset to the impact that the Coordinating Agency will incur. Land identified for use must provide same or better characteristics (e.g. same or greater wetlands functions and values) in accordance to applicable mission objective requirements and result in a "no-net-loss" of acres enrolled in the Coordinating Agency's programs. Approval by the Coordinating Agency must be obtained prior to the Proposing Agency / District Office proceeding with the proposed action. Any alternative lands identified for use by both Agencies will be memorialized through appropriate documentation, with corresponding update to Attachment 6 as necessary. As made available, the Agencies will provide additional guidance and specifics on an alternative lands "offset approach", which will allow both Agencies to meet their respective regulatory, programmatic, and operational requirements. In accordance with DOJ title standards, this may involve establishing shared administrative controls that allows for joint use of an alternative land location by both Agencies.
- In those instances where the Proposing Agency is a State Office of NRCS-CR (State Office) and elects to proceed, the Proposing Agency / State Office would coordinate with the Coordinating Agency to address compliance with USACE due diligence requirements as provided by applicable laws and regulations (e.g. National Environmental Policy Act (NEPA)). Action taken must result in a "no-net-loss" impact of acres to the Coordinating Agency's programs.
- Actions with anticipated agency concurrence include (but are not limited to):
 - Chute habitat construction
 - Backwater habitat construction
 - Wetland excavation and construction
- One of the methods for documenting Agency approved changes could involve the use of Compatible Use Authorization (CUA) correspondence in conjunction with the Form **Attachment 5**.

C. Consider application of Administrative Controls / Collaborative Land Management Guidelines

- Delegated Management, Monitoring, and Enforcement Authority (NRCS)
 - When determined as useful by both Agencies: NRCS may utilize Title 400 Conservation Program Manual, Part 528, Subpart K, 528.100 D. as amended in May 2017 and CFR ACEP-WRE 7 CFR part 1468- Subpart A §1468.2 (c). The management of NRCS lands may be delegated from NRCS-CR to USACE-NWD through a Memorandum of Understanding or other appropriate agreement. USACE-NWD, through a designated USACE-NWD District office, would perform delegated land management responsibilities on behalf of both Agencies. NRCS monitoring, financial accountability reporting and enforcement are excluded from this delegation tool.

IV. EMERGENCY ACTIONS

In responding to emergency situations (state or federally declared) to prevent or reduce imminent risk of life, health, property, or severe economic losses, USACE-NWD may proceed with activities addressing the emergency without specific documentation and procedural requirements of this MOU. If later determined that NRCS-CR lands are impacted in the course of response and rehabilitation, USACE-NWD will coordinate with NRCS-CR in a timely manner to pursue mutually-acceptable resolution of those impacts. See **Attachment 4 - "Cooperative Undertaking Actions"** for more details.

V. ENVIRONMENTAL COMPLIANCE

The Proposing Agency is responsible for conducting any necessary environmental compliance studies, including NEPA, associated with proposed construction or land use changes. The Proposing Agency shall engage the Coordinating Agency prior to undertaking a NEPA study and will offer the Coordinating Agency the opportunity to engage in the process as Cooperating Agency status per the President's Council on Environmental Quality (CEQ) guidance and the requirements of 40 C.F.R. § 1501.6.

VI. COMMUNICATIONS

Frequent communication should be encouraged at all levels between NRCS and USACE. At a minimum, the Designated Contacts listed below should meet and confer regarding this MOU at least once every calendar year.

The NRCS State Conservationists and USACE District Engineers (Kansas City and Omaha Districts) offices should be the primary conduit through which field coordination should take place. For regional level coordination, the primary conduits will be the NRCS Central Region Regional Conservationist and the USACE Northwestern Division Commander offices.

Each agency is responsible for ensuring that personnel are aware of the MOU. Each agency will issue guidance from its regional headquarters, through the Central Region Conservationist to NRCS State Conservationists and through the USACE Northwestern Division Commander to USACE District Engineers, addressing the existence and acceptance of this MOU. Additionally, each agency will review their written policies and make changes as necessary to adopt the provisions of this MOU.

VII. GENERAL PROVISIONS

This MOU is neither a fiscal nor funds obligating document. Any endeavor by an Agency that involves the reimbursement, contribution of funds, or transfer of anything of value between the Agencies will be handled in accordance with all applicable laws, regulations, and procedures. Such endeavors shall be outlined in separate agreements, shall be made in writing by

representatives of all agencies involved, and shall be independently authorized by appropriate statutory authority. This MOU does not provide such authority. Negotiation, execution, and administration of any such agreements and expenditure of funds in support of this MOU must comply with all applicable statutes, regulations, policies, and procedures, including the Anti-Deficiency Act (31 U.S.C. § 1341).

This MOU in no way restricts any of the agencies from participating in similar activities with other public or private agencies, organizations, and individuals.

Each Agency agrees that it will be responsible for its own acts and results thereof and shall not be responsible for the acts of the other agency and the results thereof. Each Agency, therefore, agrees that it assumes all risk and liability to itself, its agents or employees, for any injury to persons or property resulting in any manner from the conduct of its own operations, and the operations of its agents or employees, under this MOU; and for any loss, cost, damage, or expense resulting at any time from failure to exercise proper precautions, of or by itself, or its own agents or its own employees, while occupying or visiting the projects under and pursuant to this MOU. The Federal Government's liability shall be governed by the provisions of the Federal Tort Claims Act (28 U.S.C. § 2671-80).

This MOU is not intended to, and does not create, any right, benefit, or trust responsibility, substantive or procedural, enforceable at law or equity, by a party against the United States, its agencies, its officers, or any person.

VIII. TERM

This MOU shall become effective on the date of the last signature and continue until modified or terminated. This MOU may be amended upon written request of NRCS-CR or USACE-NWD and the subsequent written concurrence of the other. Modifications to this MOU must be made in writing and must be signed and dated by both NRCS-CR and USACE-NWD. Any agency may withdraw from this MOU after 60 days written notice to the other agency.

IX. SUMMARY OF ATTACHMENTS

- 1. Map of USACE-NWD and NRCS-CR Regional Footprints Overlap
- 2. Applicable Authorities Information
- 3. NRCS Central Region / USACE Northwestern Division, September 29, 2017 Co-Hosted Senior Leaders Call with Staff, Key Points Summary UPDATED FINAL 8 Dec 2017
- 4. Cooperative Undertaking Actions
- 5. Form for Proposed Land Management / Land Use Changes
- 6. Catalog of Approved Land Management / Land Use Changes

X. DESIGNATED CONTACTS

For the U.S. Department of Agriculture- Natural Resources Conservation Service –

Central Region

PRIMARY

NRCS Deputy Chief of Programs Attention: Mr. Jimmy Bramblett 1400 Independence Ave SW Washington DC 20250

Phone: 202-720-4783

Jimmy.Bramblett@wdc.usda.gov

SECONDARY

NRCS Missouri River Basin Coordinator

Attention: Mr. Verlon Barnes

1616 Capitol Avenue Omaha, NE 68102 Phone: 402-995-2467

For the U.S. Department of Army – U.S. Army Corps of Engineers - Northwestern Division

PRIMARY

NWD Chief of Real Estate

Attention: Mr. Todd L. Czarnecki 1201 NE Lloyd Blvd, Suite 400

Portland, OR 97232 Phone: 503-808-3873

todd.1.czarnecki@usace.army.mil

SECONDARY

NWD Real Estate Planning Branch Chief

Attention: Ms. Kimberly Ohman 1201 NE Lloyd Blvd, Suite 400

Portland, OR 97232 Phone: 503-808-3871

kimberly.h.ohman@usace.army.mil

USACE Omaha District – Environmental Resources

Attention: Mr. Dave Crane 1616 Capitol Avenue Omaha, NE 68102 Phone: 402-995-2676

David.j.crane@usace.army.mil

XI. REGIONAL MOU SIGNATORIES

For the U.S. Department of Agriculture - Natural Resources Conservation Service - Central Region

Digitally signed by KEVIN

WICKEY WICKEY

KEVIN WICKEY
Date: 2019.03.29 07:21:19
-04'00'

Mr. Kevin Wickey
Regional Conservationist, Central Region

For the U.S. Department of Army — U.S. Army Corps of Engineers - Northwestern Division

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HELMLINGER.DARIEN
Division

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Date

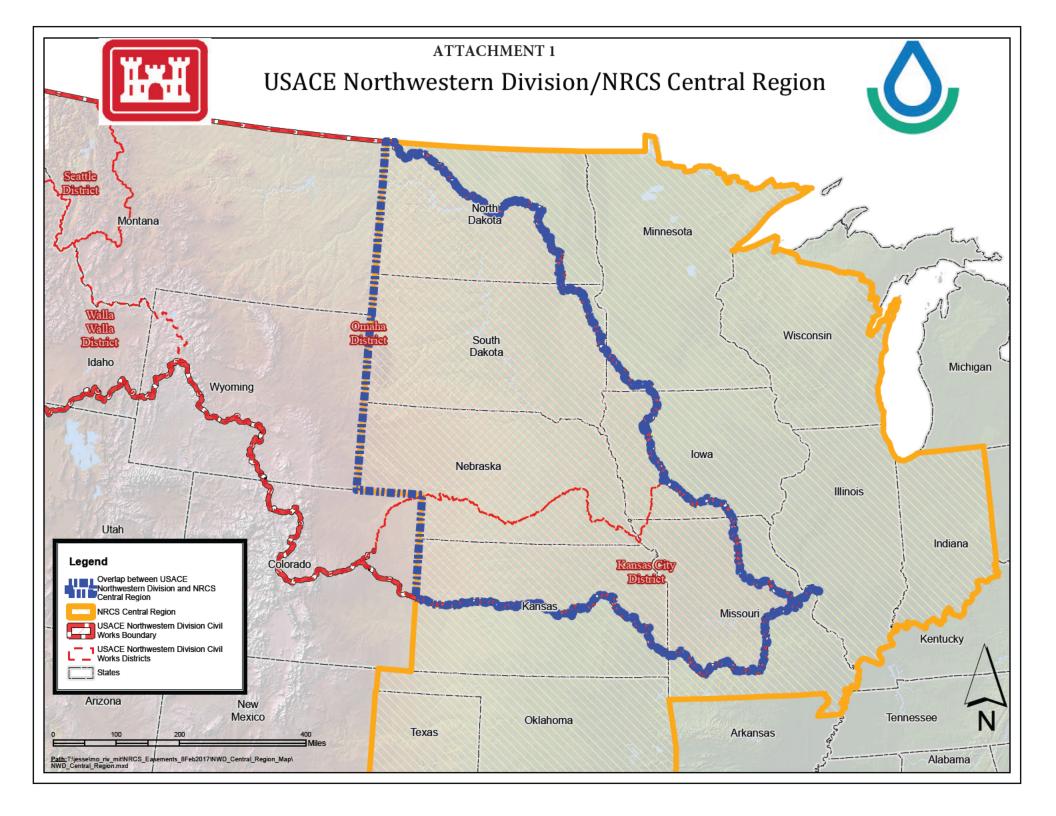
BG D. Peter Helmlinger

Date

BG D. Peter Helmlinger Commanding General

THIS MOU IS EFFECTIVE AS OF THE LATTER-OCCURRING DATE FROM THE ABOVE SIGNATORIES

LEAVE BLANK



NRCS – Central Region / USACE – Northwestern Division Copeland Bend Pilot Location Agreement

Applicable Agency Authorities

NRCS-CR:

- Wetlands Reserve Program (16 U.S.C. § 3837 and note, 3837a-3837f; 7 CFR Part 1467);
- <u>Agricultural Conservation Easement Program</u> (16 U.S.C. §3865 et seq.; 7 CFR Part 1468);
- Emergency Watershed Protection Program (16 U.S.C. § 2203; 7 CFR § 624.10).

USACE-NWD:

- Rivers and Harbors Act of 1935;
- Flood Control Act of 1944 (Section 9);
- Endangered Species Act (ESA) of 1973;
- Water Resources Development Act (WRDA) of 1986 (Section 601(a)), WRDA 1999 (Section 334), WRDA 2007 (Section 3176);
- Public Law 84-99;
- Public Law 95-625 (amended Section 707, and Section 3(a)).

NRCS – Central Region / USACE – Northwestern Division September 29, 2017 Co-Hosted Senior Leaders Call with Staff Key Points Summary UPDATED FINAL 8 Dec 2017

This paper intends to summarize key points provided by Mr. Bramblett / Mr. Wickey and Major General (MG) Spellmon / Mr. Ponganis, on highlights and direction going forward to staff from their meeting held on September 14, 2017.

1. Memorandum of Understanding (MOU)

- The desired MOU will be a regional document for NRCS and USACE, signed by Mr.
 Wickey or whomever NRCS determines as the appropriate representative for NRCS –
 Central Region (NRCS-CR), and by MG Spellmon for USACE Northwestern Division (NWD).
- The initial term of the MOU can be shorter in length at first, as opposed to being openended / long-term. Exact term to be discussed / determined during MOU drafting.
- The NRCS-CR and NWD Team will seek to memorialize agreement for cooperative use at up to 2 "pilot sites", while continuing work on drafting a single regional MOU. Lessons learned from the agencies' efforts to coordinate their real estate interests, and from work achieved through the "pilot sites" exercise, are intended to help with the MOU drafting. These coordination efforts will recognize the limitations of the statutory parameters for each agency in providing permissions to proceed forward with planned projects.

2. Relationship of Federally-Held Estates by NRCS and USACE

- The team will seek to achieve a cooperative approach in the terms and business practices to be established by the MOU, without bringing in or seeking to resolve the differences of opinion between the agencies on its respective federally-held real estate interests. The MOU will remain silent on the "Merger of Title" issue, and differing perspectives on real estate interests. The MOU will outline steps to cooperate on lands where both Agencies could administratively co-exist and cooperate on the same piece of property, recognizing the statutory limitations that exist for each agency.
- To the extent possible when planning for future project actions in the Missouri River Basin (Basin), there is agreement for the Agencies to seek to avoid each other and not have to call upon the use of the same piece of property to fulfill each Agency's needs / mission purposes.

3. Restore the Cooperative Land Use Option Involving USACE-Held Lands

- In a scenario where an alternative location is needing to be established to achieve a "nonet-loss" impact outcome to NRCS-CR, cooperative use at NWD-held fee lands in the Basin can be an acceptable outcome to NRCS.
- Focus is on the mutually-recognized administrative controls to be memorialized on federally-held property, for cooperative use between NRCS-CR and NWD.

Attachment 3

4. Existing Authorities

• In working through the details for a MOU, both Agencies will work within the scope of existing authorities to establish terms that can be accomplished. Outcomes should not require one Agency to do something that it is not authorized to do.

5. MOU Completion Plan

• NWD (Todd) will coordinate with NRCS-CR on a milestone plan to chart MOU completion in the Spring 2018 timeframe.

NRCS – Central Region / USACE – Northwestern Division Regional Memorandum of Understanding Cooperative Undertaking Actions

[1] Resolution to Relocated 185th Avenue:

In conjunction with the signing of this PLA, USACE-NWD will be surveying lands mutually confirmed to resolve NRCS concerns associated with USACE's levee and road setback work performed in the area identified.

[2] Levee Lands:

Local NRCS and USACE offices have recognized that a portion of USACE's L-575 levee system is located within the Copeland Bend PLA Lands. An agreement between these offices is being finalized to document the mutual determination that the L-575 levee system should not be subject to NRCS easement policy restrictions, and to allow for USACE Levee Sponsor routine operation and maintenance activities to occur. The activities include mowing to maintain vegetation height and avoid establishment of woody vegetation that may impact the integrity of the system. Mowing involves haying in the summer months.

[3] Iowa Department of Natural Resources (IDNR) Lands:

IDNR, through a license agreement with USACE, is responsible for conducting routine operation and maintenance activities on portions of the Copeland Bend PLA Lands. These duties and expectations are documented in 5-Year and Annual Management Plans transacted between USACE and IDNR, and which NRCS will be included in the course of business in conjunction with this PLA.

NRCS – Central Region / USACE – Northwestern Division Regional Memorandum of Understanding

Form for Proposed Land Management / Land Use Change(s)

From:	Submission Date:
То:	
Location / Area*:	
Description of Proposed Change(s)*:	
Intended Accomplishments:	
Impacts of Proposed Change(s):	
Acknowledged and Accepted by:	
Date:	

^{*}Attach plans as needed to depict scope

NRCS - Central Region / USACE - Northwestern Division Regional Memorandum of Understanding

Catalog of Decisions Reached between the Agencies

Record decisions coordinated between the Agencies, made in the course of addressing Land Management / Land Use Changes

1. [Date]: Source Decision Document Description:

2.



DEPARTMENT OF THE ARMY

CORPS OF ENGINEERS, OMAHA DISTRICT 1616 CAPITOL AVENUE OMAHA NE 68102-4901

August 28, 2020

District Commander

Mr. Jimmy Bramblett
Deputy Chief, Programs
United States Department of Agriculture
Natural Resources Conservation Service
1400 Independence Ave SW
South Building, Room 5113
Washington, DC 20250

Dear Mr. Bramblett:

On May 20, 2019, the President of the United States of America declared a national disaster in the State of Missouri in response to the Missouri River flooding. In mid-2019, my staff coordinated with the Missouri Natural Resources Conservation Service (NRCS) office in invoking the emergency provision of the Memorandum of Understanding signed March 29, 2019 between the U.S. Army Corps of Engineers (USACE) Northwestern Division and the NRCS Central Region (Regional MOU) for the L-536 levee rehabilitation project. As per the Regional MOU, the emergency provision allows the USACE to move forward with emergency levee rehabilitation activities within conservation easements administered by NRCS in order to prevent or reduce imminent risk of life, health, property, or severe economic losses.

Under the Public Law 84-99 Program, which is the authorization that allows the USACE to complete emergency levee rehabilitation, the USACE partners with a non-federal sponsor to complete levee repairs. The Atchison County Levee District No. 1 is the levee sponsor for the L-536 levee rehabilitation. Due to the extent of the damage to the levee, and in following PL 84-99 implementation policy, the lowest cost, technically feasible repair is an alternative alignment that sets the levee section set back from the original alignment. The setback allows the construction of the levee to provide risk reduction while avoiding significantly damaged foundation materials and/or significant scour holes caused by the flood. The levee sponsor's responsibility, pursuant to 33 U.S.C. § 701n and 33 CFR 203.14, is to provide all lands, easements, rights-of-way, relocations, and suitable borrow and dredged or excavated material, and disposal areas. This responsibility includes any real estate costs, borrow material costs, surveys, title searches, or Phase 1 environmental assessment costs in completing the easement administration action (EAA) process.

The USACE acknowledges that by invoking the emergency provision of the Regional MOU that we commit to meeting all of the requirements of NRCS' EAA process. NRCS' EAA process requires a finding that any project that affects a Wetland Reserve Program (WRP) easement will result in no net loss of easement acreage, and that any impacts to the easement functions and values or economic value area will be mitigated by the enrollment of replacement acreage. The Nature Conservancy (TNC) is partnering with the levee sponsor to secure replacement acres and has agreed to provide the necessary mitigation to NRCS specifications. If the TNC cannot

secure the required replacement acres or mitigation, then the USACE will enter into discussions with NRCS, the levee sponsor, and other entities as required to determine mutually acceptable resolution for any impacts to NRCS easements in a timely manner.

As your staff is aware, the levee sponsor has been working with TNC, Missouri Department of Conservation, the Economic Development Administration, and several other entities to ensure that NRCS real estate compensation occurs for any unavoidable easement impacts caused by the levee setback project. I look forward to our continued collaboration on this significant project. If you have any questions please contact Dave Crane, Environmental Resource Specialist, at (402) 995-2676 or david.j.crane@usace.army.mil.

Sincerely,

Mark R. Himes, P.E.

Colonel, Corps of Engineers

District Commander

CC:

Grover DePriest, NRCS MO Scott Edwards, NRCS MO Chris Hamilton, NRCS MO Carrie Lindig, NRCS DC Wayne van Rooyen, NRCS DC Tracey Wiggins, NRCS MO

<u>APPENDIX E – Geotechnical and Archaeological Survey</u> <u>Report</u>

Cultural Resources Investigation of for the L-536 Repair Borrow Locations, Atchison County, Missouri



Prepared by

Sandra V. Barnum, RPA United States Army Corps of Engineers, Omaha District

June 2022



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Abstract:

The purpose of this inventory was to aid in the assessment of the proposed L-536 levee setback and attendant borrow areas along the Missouri River to meet USACE's obligations under Section 106 of the National Historic Preservation Act. No potential historic properties were identified, and it is recommended that no further cultural resources investigation is necessary.

Introduction:

The purpose of this study was to identify potential historic properties within the repair, setback and proposed borrow areas for of the L-536 Levee (Figures 1 and 2).

Environmental and Geomorphological Context

The NRCS classifies the soils of the APE as primarily Leta silty clays (40.2%) Haney silt loam (12.6%), and Onawa silty clay (11.1%), with additional smaller amounts of other soils. The soils search report is in Appendix A.

There is no Township or Range data for the area centered approximately around 40°15'36.58"N, 95°31'53.71"W. BLM GLO records indicate that the original survey of T63N, R41W was approved on April 27, 1843, and did not include the Area of the APE, and no land patents were issued. The Sanborn Fire Insurance Maps available at the Library of Congress do not include the APEs.

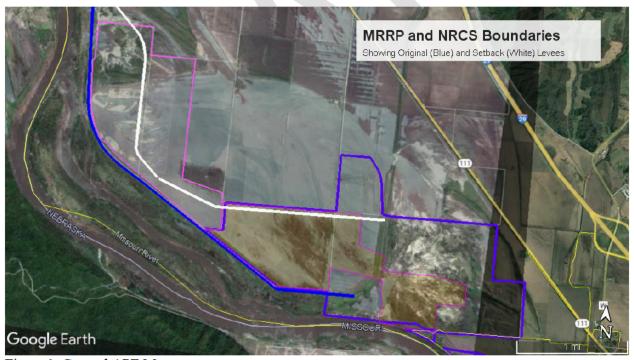


Figure 1. General APE Map

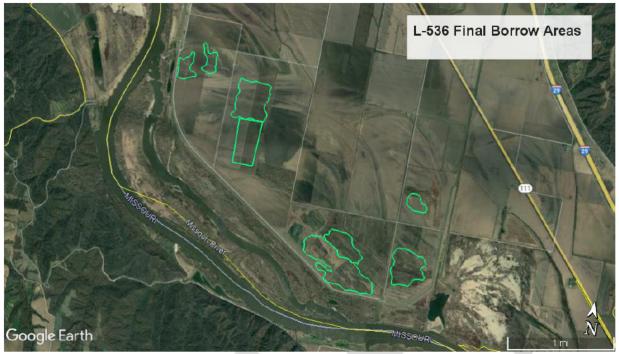


Figure 2. Borrow APE Map.

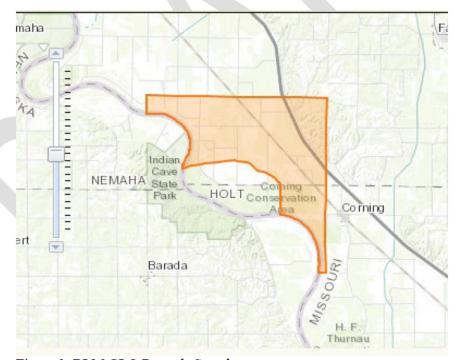


Figure 3. BLM GLO Records Search



Figure 4. BLM Township and Range Search

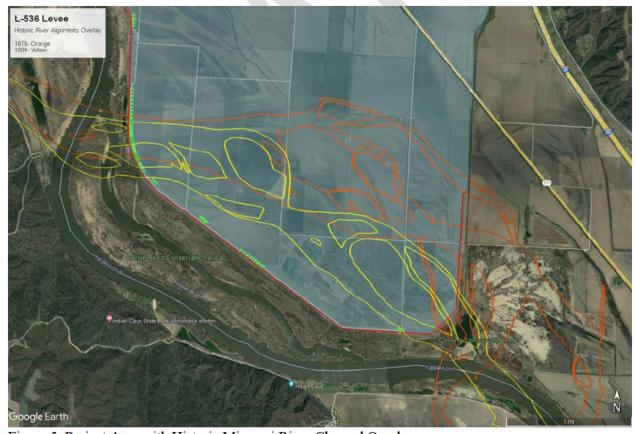


Figure 5. Project Area with Historic Missouri River Channel Overlays

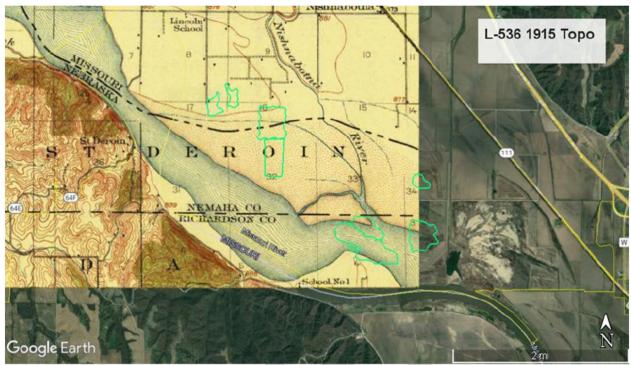


Figure 6. View of the Project Area Borrow Sites with Partial 1915 Topo Overlay

Cultivated at times in the recent past, the observed landscape was nearly flat, sloping very gently toward the west. The APE visibility varied from 40-100% depending on vegetation, which was mixture of forbs and grasses.

Historic Context

A cultural resources files search was conducted for the repair Areas of Potential Effect (APE). Within or near the 1-mile radius of the APE are two recorded shipwreck locations: the St. Mary side-wheel steamer that was snagged, and the Dallas, also a side-wheel steamer that was snagged- both total losses. No historic properties have been recorded on the Missouri side of the river within that radius. Based on aerial photographs, known sites, and the land use history discussed above, the potential historic-period archaeological sites expected were small trash scatters containing agricultural and household debris.

As the purpose of an historic context is to evaluate the significance of potential historic property and no historic property was identified, no historic context is presented in this report.

Photos and notes are on file at the Planning Section of the USACE Omaha District Office. Access to these records, as well as this report may be restricted from the public if the release of this information would result in threat to an identified resource in accordance with 54 U.S.C. § 100707; 54 U.S.C. § 307103; and 36 CFR 800.6(a)(5).

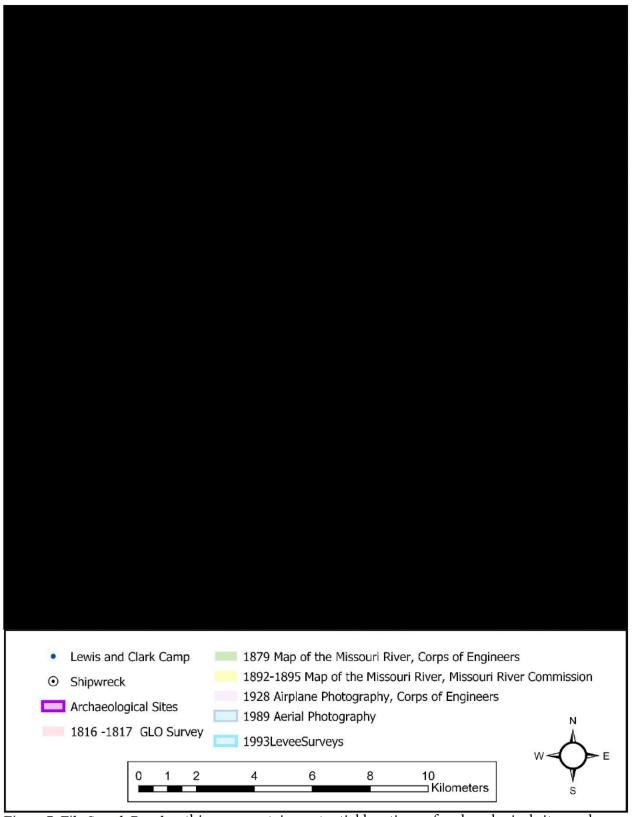


Figure 7. File Search Results - this map contains potential locations of archaeological sites and therefore has been redacted as per the Archaeological Resources Protection Act

Methods

During the interim and final repairs to L-536, the soil deposition was tested for both repair material suitability, and the presence of buried cultural features. The table below summarizes the total number and type of levee and subsurface investigations. See Appendix B for the location map and a detailed list.

Table 1: Levee and Subsurface Repair Material Testing

	Various Samples	Trench	Pothole	Hand Auger
Various Stockpiles	51			
Landside Existing Levee			44	
Riverside Existing Levee			33	
Setback Levee Inspection Trench		27		
Rock Creek Borrow			39	
Heartland/Peeler Borrow			6	16
Corning Borrow GB 11, 12, 13			35	26
Government Borrow GB1-10			36	
Government Borrow Expansion GB 14, 15,				
16, 18			48	4
Totals	51	27	241	46

The test locations were either monitored onsite or the field reports, which included depths, profiles and photographs were reviewed by a Corps archaeologist. No subsurface cultural materials were observed.



Figure 8. Typical pothole examples

Results

No potential historic properties were identified during this survey. Subsurface testing consisted of over 300 hand auger tests, potholes, and trenches (Table 1). No cultural material was identified within any of the test pits. This was not unexpected given the land-use history. The overall results of this study conform to the pre-field expectations. It is the professional opinion of the P.I. that this is due to the absence of any significant deposits within the APE rather than irregular inventory conditions. Further subsurface testing and additional pedestrian survey are unlikely to identify any potential historic properties. Therefore, no further cultural resources work for the APE is recommended.

A reasonable and good faith effort has been made to identify historic properties that may be affected by the proposed undertaking and a finding of No Historic Properties Affected was recommended for the proposed undertaking. Finally, despite a reasonable and good faith effort at the identification of historic properties, there remains a non-zero chance that historic properties may exist. It is recommended that no excavation take place without a plan to address inadvertent discoveries in accordance with 36 CFR 800.13(b) and Missouri law.

Bibliography

https://glorecords.blm.gov/

https://www.loc.gov/collections/sanborn-maps/

https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx

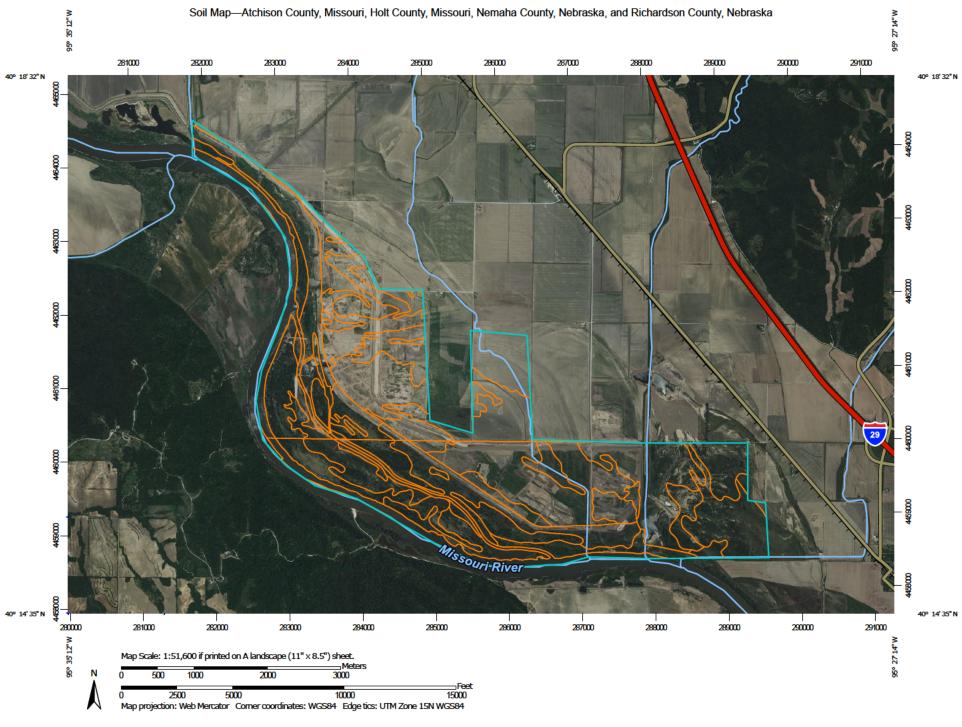
https://www.topozone.com/

NRB (National Register Bulletin) 15

1997 How to Apply the National Register Criteria for Evaluation. National Park Service. Washington, DC.

US Army Corps of Engineers GIS database layers (recorded properties, riverboats, Lewis & Clark, historic river alignments)





MAP LEGEND

Spoil Area

Stony Spot

Wet Spot

Other

Rails

US Routes

Major Roads

Local Roads

ක

Δ

Water Features

Transportation

Background

Very Stony Spot

Special Line Features

Streams and Canals

Interstate Highways

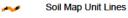
Aerial Photography

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons



Soil Map Unit Points

Special Point Features

(o) Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

A Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

+ Saline Spot

Sandy SpotSeverely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at scales ranging from 1:20,000 to 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Atchison County, Missouri Survey Area Data: Version 24, Aug 27, 2021

Soil Survey Area: Holt County, Missouri Survey Area Data: Version 24, Sep 1, 2021

Soil Survey Area: Nemaha County, Nebraska Survey Area Data: Version 21, Sep 14, 2021

Soil Survey Area: Richardson County, Nebraska Survey Area Data: Version 20, Sep 14, 2021

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 25, 2021—Jun 10, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
13524	Haynie silt loam, sandy substratum, 0 to 2 percent slopes, frequently flooded	14.4	0.4%
13543	Leta silty clay, 0 to 2 percent slopes, frequently flooded	41.0	1.0%
13544	Leta silty clay, 0 to 2 percent slopes, rarely flooded	270.2	6.7%
13550	Luton silty clay, 0 to 2 percent slopes, rarely flooded	2.4	0.1%
13557	Moville silt loam, 0 to 2 percent slopes, rarely flooded	2.7	0.1%
13567	Onawa silty clay, 0 to 2 percent slopes, frequently flooded	264.3	6.6%
13568	Onawa silty clay, 0 to 2 percent slopes, rarely flooded	182.1	4.5%
13573	Paxico silt loam, 0 to 2 percent slopes, rarely flooded	349.6	8.7%
13574	Percival silty clay, 0 to 2 percent slopes, rarely flooded	187.2	4.6%
13580	Sarpy loamy fine sand, 0 to 2 percent slopes, frequently flooded	75.5	1.9%
13631	Haynie silt loam, deep loess, 0 to 2 percent slopes, rarely flooded	55.4	1.4%
66010	Sarpy fine sand, 0 to 2 percent slopes, frequently flooded	213.2	5.3%
99001	Water	163.3	4.1%
Subtotals for Soil Survey A	Area	1,821.5	45.2%
Totals for Area of Interest		4,029.7	100.0%

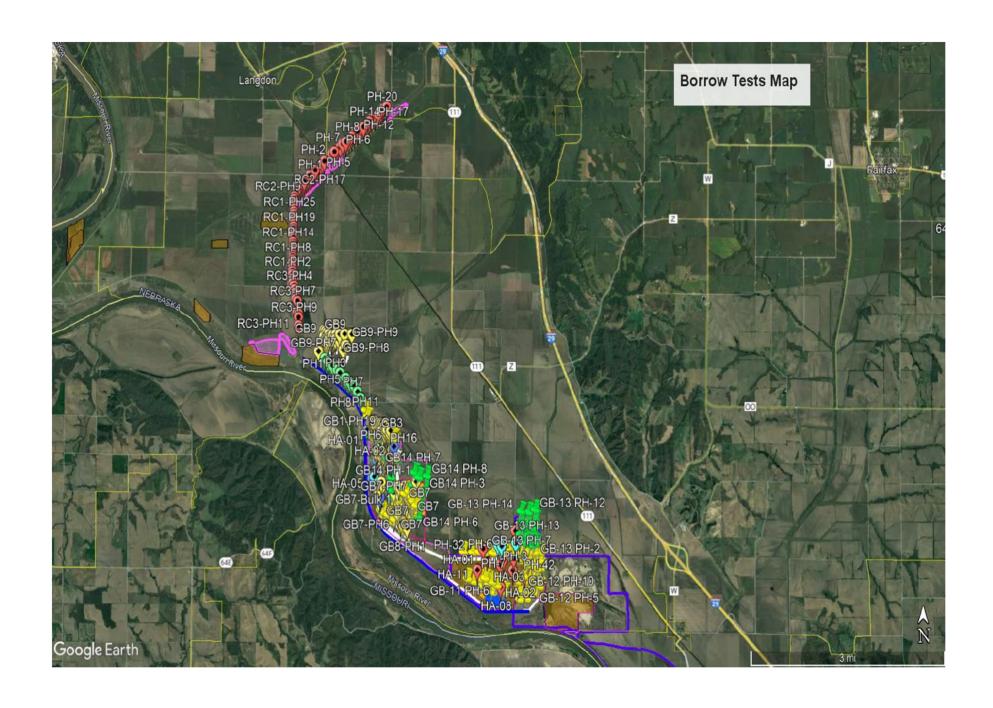
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
13517	Gilliam silt loam, 0 to 2 percent slopes, rarely flooded	57.4	1.4%
13521	Grable very fine sandy loam, 0 to 2 percent slopes, rarely flooded	9.9	0.2%
13543	Leta silty clay, 0 to 2 percent slopes, frequently flooded	330.5	8.2%
13544	Leta silty clay, 0 to 2 percent slopes, rarely flooded	616.6	15.3%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
13545	Leta silty clay, sandy substratum, 0 to 2 percent slopes, rarely flooded	93.4	2.3%
13578	Sarpy loamy fine sand, 0 to 2 percent slopes, rarely flooded	31.3	0.8%
13631	Haynie silt loam, deep loess, 0 to 2 percent slopes, rarely flooded	436.4	10.8%
66010	Sarpy fine sand, 0 to 2 percent slopes, frequently flooded	273.0	6.8%
66020	Haynie silt loam, 0 to 2 percent slopes, frequently flooded	181.3	4.5%
99001	Water	167.6	4.2%
Subtotals for Soil Survey A	rea	2,197.4	54.5%
Totals for Area of Interest		4,029.7	100.0%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
9999	Water	6.4	0.2%
Subtotals for Soil Survey Area	l	6.4	0.2%
Totals for Area of Interest		4,029.7	100.0%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
9999	Water	4.3	0.1%
Subtotals for Soil Survey Area	l	4.3	0.1%
Totals for Area of Interest		4,029.7	100.0%





Project: L-536 Final Repairs Location: Atchison & Holt Counties, MO

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Description	AECOM Sample I.D. Collected By	Date Sample Collected	Terracon Sample I.D.	Terracon Sample No.	Terracon Report Notes
Stockpile	05205002.0001 S Existing Sand Stockpile R Density 05205002.0002Rev1 S Existing Stockpile SP-SM R Density	6/22/2020 6/22/2020	South ext stockpile South ext stockpile	1 2	2
Stockpile I GB1	05205002.0003Rev1 N Existing Sand Stockpile SP-SM R Density GB-1 PH-1	6/22/2020 6/23/2020	North ext stockpile GB-1 PH-1	3 4	3 4
GB1	GB-1 PH-6 GB-1 PH-8	6/23/2020 6/24/2020	GB-1 PH-6 GB-1 PH-8	5 6	5
GB1	GB-1 PH-10 GB-1 PH-17	6/24/2020 6/24/2020	GB-1 PH-10 GB-1 PH-17	7 8	9 10
Stockpile	GB-1 PH-18 05205002.0025 Existing Stockpile Breach F SM Procto	6/24/2020 6/24/2020	GB-1 PH-18 Existing Stockpile at Breach F	9 10.a	11 25
RC1	RC-1 PH-5 RC-1 PH-8	6/25/2020 6/25/2020	RC-1 PH-5 RC-1 PH-8	12	20
RC1	RC-1 PH-12 RC-1 PH-15	6/25/2020 6/25/2020	RC-1 PH-12 RC-1 PH-15 GB-3 PH-5	14 15 16	21 22
GB3	05205002.0023 GB3 PH-5 SM R Density 05205002.0027Rev1 GB3 PH-14	6/25/2020 6/26/2020	GB-3 PH1-4	17	23 Should be GB-3 PH-5 27 Should be GB-3 PH-14 28
Stockpile	05205002.0028Rev1 Existing Stockpile A Breach F SP R Densit\ 05205002.0029Rev1 Existing Stockpile Breach F SP R Densit\ RC-1 PH-1	6/26/2020 6/26/2020 6/29/2020	Stockpile A Breach F Stockpile B Breach F RC-1 PH-1	18 19 10.1	29 29 18
RC1	RC-1 PH-17 RC-1 PH-22	6/29/2020 6/29/2020	RC-1 PH-17 RC-1 PH-22	21	33 34
RC1	RC-1 PH-26	6/29/2020	RC-1 PH-26	23	35
	RC-1 PH-31 (1-5)	6/29/2020	RC-1 PH-31 (1-5)	24	36
RC2	05205002.0037 RC2 PH-10 CL Proctor	6/29/2020	RC-2 PH-10	25	37
	05205002.0038 RC2 PH-6 CL Proctor	6/29/2020	RC-2 PH-6	26	38
RC2	05205002.0039 RC2 PH-16 2'-4' CL Atterberg	6/29/2020	RC-2 PH-16 (2-4)	27	39
	RC-1 PH-19 (2-5)	6/29/2020	RC-1 PH-19 (2-5)	28	40 Missing Log
RC2	05205002.0041 RC2 PH-16 1'-2' CL Atterberg	6/29/2020	RC-2 PH-16 (1-2)	29	41
RC2	05205002.0042 RC2 PH-3 3'-5' ML Atterberg	6/29/2020	RC-2 PH-3 (3-5)	30	42
RC2	05205002.0043 RC2 PH-10 2.5'-4' CL Atterberg	6/29/2020	RC-2 PH-10 (2.5-4)	31	43 Should be 2.5-4
	05205002.0044 RC2 PH-3 1'-3' ML Atterberg	6/29/2020	RC-2 PH-3 (1-3)	32	44
GB4	RC-1 PH-24 (1-2.5) 05205002.0032 GB4 PH-1 R Density	6/29/2020 6/30/2020	RC-2 PH-24 (1-2) GB-4 PH-1	33	45 Should be RC-1 PH-24 (1-2.5
GB5	05205002.0047 GB4 PH-6 R Density	6/30/2020	GB-4 PH-6	34	47
	05205002.0048 GB5 PH-3 R Density	6/30/2020	GB-5 PH-3	35	48
GB5	05205002.0049 GB5 PH-6 R Density	6/30/2020	GB-5 PH-6	36	49
	05205002.0051 GB5 PH-10 R Density	7/2/2020	GB-5 PH-10	37	51
GB7	05205002.0052 GB5 PH-12 R Density 05205002.0054 GB7 PH-1 R DEN Sample 39 05205002.0055 GB7 PH-2 R DEN Sample 40	7/2/2020 7/3/2020	GB-5 PH-12 GB-7 PH-1 GB-7 PH-2	38 39 40	52 54
GB7	05205002.0055 GB7 PH-2 R DEN Sample 40	7/3/2020	GB-7 PH-2	40	55
	05205002.0056 GB7 PH-3 R DEN Sample 41	7/3/2020	GB-7 PH-3	41	56
	05205002.0057 GB6 PH-1 R DEN Sample 57	7/3/2020	GB-6 PH-1	42	57
GB7	05205002.0057 GB6 PH-1 R DEN Sample 67 05205002.0059 GB7 PH-4 R Density Sample 43 05205002.0060 GB7 PH-5 R Density Sample 44	7/3/2020 7/3/2020 7/3/2020	GB-7 PH-4 GB-7 PH-5	42 43 44	57 59 60
GB8	05205002.0063 GB8 PH-1 RDEN 05205002.0063 GB8 PH-1 RDEN 05205002.0064 GB8 PH-2 RDEN	7/7/2020 7/7/2020	GB-8 PH-1 GB-8 PH-2	45 46	63 64
GB8	05205002.0065 GB8 PH-3 RDEN	7/7/2020	GB-8 PH-3	47	65
	05205002.0066 GB8 PH-4 RDEN	7/7/2020	GB-8 PH-4	48	66
GB8	05205002.0067 GB8 PH-5 RDEN	7/7/2020	GB-8 PH-5	49	67
	05205002.0068 GB6 Bulk 1 R DEN Sample 50	7/7/2020	GB-6 Bulk 1	50	68
GB6	05205002.0069 GB6 Bulk 2 R Density	7/7/2020	GB-6 Bulk 2	51	69
	RC-3 PH-2	7/9/2020	RC-3 PH-2	52	72
RC3	RC-3 PH-5	7/9/2020	RC-3 PH-5	53	73
RC3	RC-3 PH-9	7/9/2020	RC-3 PH-9	54	74
GB9	RC-3 PH-11	7/9/2020	RC-3 PH-11	55	86
	05205002.0077Rev1 GB9 PH-2 R DEN	7/10/2020	GB-9 PH-2	56	77
GB9	05205002.0078 GB9 PH-5 R DEN	7/10/2020	GB-9 PH-5	57	78
	05205002.0079 GB9 PH-8 R DEN	7/10/2020	GB-9 PH-8	58	79
GB7	05205002.0081 GB7 PH-6 R DEN Sample 59	7/13/2020	GB-7 PH-6	59	81
	05205002.0082 GB7 PH-7 Sample 60	7/13/2020	GB-7 PH-7	60	82
	05205002.0083 Breach A S Tie In Bench 2 05205002.0083 Breach A S Tie In Bench 3	7/14/2020 7/14/2020	Breach A South Tie in Bench 2 Breach A South Tie in Bench 3	61 62 63	83 Do not know what these were 84 Do not know what these were 87
GB7	205002.0087 GB6 Bulk 3 SP with ML Sample 65 05205002.0088 GB7 Bulk 1 Sample 64 05205002.0089 GB10 PH-1 CL	7/23/2020 7/23/2020 7/23/2020	GB-6 Bulk 3 GB-7 Bulk 1 GB-10 PH-1	64 65	88 88 89
GB10	05205002.0090 GB10 PH-2 CH 05205002.0090 GB10 PH-2 CH 05205002.0091 PH-1 STA532 CH	7/23/2020 7/23/2020 7/23/2020	GB-10 PH-2 PH-1 STA 532	66 67	90
Existing Levee	05205002.0092 PH-2 STA537 CH 05205002.0092 PH-2 STA537 CH	7/23/2020 7/23/2020 7/23/2020	PH-2 STA 537 PH-3 STA 540	68 69	92
Existing Levee	05205002.0094 PH-4 STA546 CH	7/23/2020	PH-4 STA 546	70	94
	05205002.0095 PH-5 STA550 CH	7/23/2020	PH-5 STA 550	71	95
Existing Levee	05205002.0096 PH-6 STA555 CH	7/23/2020	PH-6 STA 555	72	96
	05205002.0097 PH-7 STA560 CL	7/23/2020	PH-7 STA 560	73	97
Existing Levee	05205002.0099 PH-8 STA565 CL	7/24/2020	PH-8 STA 565	74	99
	05205002.0102 PH-9 STA570 CL	7/24/2020	PH-9 STA 570	75	102
	05205002.0103 PH-10 STA575 CL with Sand	7/24/2020	PH-10 STA 575	76	103
	05205002.0104 PH-11 STA580 CH	7/24/2020	PH-11 STA 580	77	104
Existing Levee Existing Levee	05205002.0105 PH-12 STA584 CH	7/24/2020	PH-12 STA 584	78	105
	05205002.0106 PH-13 STA589 CL	7/24/2020	PH-13 STA 589	79	106
Existing Levee	05205002.0110 PH-14 STA600 CH	7/26/2020	PH-14 STA 600	80	110
	05205002.0111 PH-15 STA605 CL	7/26/2020	PH-15 STA 605	81	111
Existing Levee	05205002.0112 PH-16 STA610 CL with F Sand	7/26/2020	PH-16 STA 610	82	112
	05205002.0113 PH-17 STA615 CL with F Sand	7/26/2020	PH-17 STA 615	83	113
Existing Levee	05205002.0114 PH-18 STA620 CL with F Sand 05205002.0115 PH-19 STA627+20 CH	7/26/2020 7/26/2020	PH-18 STA 620 PH-19 STA 627+20 PH-20 STA 640 2-4'	84 85	114 115 Missing Log
Existing Levee	05205002.0144 PH-20 STA640 2-4* CL with sand Proctor 05205002.0145 PH-20 STA640 6.5*-8* CL Proctor	8/5/2020 8/5/2020 8/5/2020	PH-20 STA 640 6.5-8'	95 96 97	144 145 146
Existing Levee	05205002.0146 PH-22 STA650 CL with sand Proctor 05205002.0153 PH-21 STA645 2-4' Sieve SM 05205002.0131 PH-23 STA655 CL	8/5/2020 8/6/2020	PH-22 STA 650 L536 PH-21 2-4' PH-23 STA 655	104 86	153 131
Existing Levee	05205002.0131 PH-23 STA655 CL	8/6/2020	PH-23 STA 655	86	131
	05205002.0140 PH-24B STA660 CL Atterberg	8/6/2020	PH-24B STA 660	87	140
	05205002.0141 PH-25 STA665 CL Atterberg	8/6/2020	PH-25 STA 665	88	141
Existing Levee	05205002.0141 PH-25 STA605 CL Alterberg 05205002.0132 PH-26 STA670 ML with Sand Proctor 05205002.0133 PH-27 STA675 ML with Sand R Density	8/6/2020 8/6/2020	PH-25 STA 600 PH-26 STA 670 PH-27 STA 675	89 90	132 133
Existing Levee	05205002.0134 PH-29 STA685 CL Proctor	8/6/2020 8/6/2020	PH-29 STA 685 PH-31 STA 695	91 92	134 135
Existing Levee	05205002.0139 PH-33 STA705 CL Proctor	8/6/2020	PH-33 STA 705	93	139
	05205002.0143 PH-21 0.5-1.5' Atterberg CL	8/6/2020	L536 PH-21 0.5-1.5'	94	143
Existing Levee	05205002.0147 PH-35 STA715 CL	8/7/2020	PH-35 STA 715	98	147
Existing Levee	05205002.0148 PH-36 STA720 CL	8/7/2020	PH-36 STA 720	99	148
Existing Levee	05205002.0149 PH-38 STA730 CL	8/7/2020	PH-38 STA 730	100	149
	05205002.0150 PH40 STA740 R Density	8/7/2020	PH-40 STA 740	101	150
Existing Levee Setback Levee Inspection Trench	05205002.0151 PH-41 STA745 Proctor CH	8/7/2020	PH-41 STA 745	102	151
	05205002.0154 SL PH-1 STA575 Sieve SM	8/7/2020	SL STA 575 PH-1	105	154
Existing Levee	05205002.0157 SL PH-2 STA580 Sieve SM,SC	8/7/2020	SL STA 580 PH-2	106	157
	05205002.0158 PH39B STA735 R Density	8/7/2020	STA 735 PH-39B	107	158
Setback Levee Inspection Trench	05205002.0152 SL PH-4 STA590 Proctor CL	8/8/2020	SL PH-4 STA 590	103	152
	05205002.0171 SL PH-6 STA600 Proctor CH	8/8/2020	SL STA 600 PH-6	108	171
Setback Levee Inspection Trench	05205002.0172 SL PH-7 STA605 Proctor CL	8/8/2020	SL STA 605 PH-7	109	172
	05205002.0173 SL PH-8 STA612+50 R Density	8/8/2020	SL STA 612+50 PH-8	110	173
Setback Levee Inspection Trench	05205002.0164 SL STA614+55 PH-9 Proctor CH	8/10/2020	SL STA 614+55 PH-9	111	164
	05205002.0165 SL STA623 PH-10 Proctor CL	8/10/2020	SL STA 623 PH-10	112	165
	05205002.0166 SL STA625 PH-11 Proctor CH	8/10/2020	SL STA 625 PH-11	113	166
Setback Levee Inspection Trench	05205002.0166 SL STA625 PH-11 Proctor CH	8/10/2020	SL STA 625 PH-11	113	166
	05205002.0163 SL STA634 PH-13 R Density	8/10/2020	SL STA 634 PH-13	114	163
	05205002.0167 SL STA641+50 PH-15 Proctor CH	8/10/2020	SL STA 641+50 PH-15	115	167
Setback Levee Inspection Trench	US2USUU2:U167 SL STA641+SD PH-15 PROCOF CH 052US002.0176 SL STA654 PH-20 Proctor CL 052U5002.0177 SL STA669 PH-23 0.5-1.5' Proctor CL	8/11/2020 8/11/2020 8/11/2020	SL STA 641+50 PH-15 SL STA 654 PH-20 SL STA 669 PH-23	115 116 117	167 176 177
Setback Levee Inspection Trench	US2US0U2:U177 SL STA669 PH-23 0.5-1.5: Proctor CL 052U50U2:U178 SL STA669 PH-23A 1.5-5' Proctor CL-ML 052U50U2:U178 SL STA674+04 PH-24 Proctor CH	8/11/2020 8/11/2020 8/11/2020	SL STA 669 PH-23 SL STA 669 PH-23A SL STA 674+04 PH-24	117 118 119	177 178 179
Setback Levee Inspection Trench	05205002.0179 SL STAG74704 PH-24 PROCOF CH 05205002.0175 SL STAG79400 PH-25 R Density 05205002.0180 LS Existing STA750 PH-42 Proctor CL	8/11/2020 8/11/2020 8/11/2020	SL STA 674+04 PH-24 SL STA 679 PH-25 LS Existing STA 750 PH-42	120 121	179 175 180
Existing Levee	05205002.0180 LS Existing STA750 PH-42 Proctor CL 05205002.0181 LS Existing STA760 PH-44 Proctor CL-ML 05205002.0182 LS Existing STA775 PH-47 Proctor CL	8/11/2020 8/11/2020 8/11/2020	LS Existing STA 750 PH-42 LS Existing STA 760 PH-44 LS Existing STA 775 PH-47	122 123	181 182
RC3	RCSR PH-2	8/11/2020 8/11/2020	RC3R PH-1 RC3R PH-2	124 125	183 184
RC3	RCSR PH-3	8/11/2020	RC3R PH-3	126	185
	RCSR PH-4	8/11/2020	RC3R PH-4	127	186
	05205002.0223 LS Existing R.S. PH-2 STA645 Proctor CL	8/11/2020	LS Existing R.S. PH-2 STA 645	154	223
	05205002.0211 HA-4 2'-3' CH Atterberg	8/12/2020	HA-1 0-2'	128	203
H.P. Hand Auger					
H.P. Hand Auger	05205002.0204 HA-1 3.5'-4.5' ML Atterberg	8/12/2020	HA-1 3.5-4.5'	129	204
H.P. Hand Auger	05205002.0205 HA-2 0'-2' CL Atterberg	8/12/2020	HA-2 0-2'	130	205
H.P. Hand Auger	05205002.0206 HA-2 3'-4.5' CL Atterberg	8/12/2020	HA-2 3-4.5'	131	206

H.P. Hand Auger H.P. Hand Auger	05205002.0210 HA-3 7'-7.5' CL Atterberg 05205002.0211 HA-4 2'-3' CH Atterberg		8/12/2020 8/12/2020	HA-3 7-7.5' HA-4 2-3'	135 136	210 211	
H.P. Hand Auger H.P. Hand Auger H.P. Hand Auger	05205002.0212 HA-4 3.5'-5' CL Atterberg 05205002.0213 HA-4 5'-6.5' ML Atterberg 05205002.0214 HA-5 2-2.5' CL-ML Atterberg		8/12/2020 8/12/2020 8/12/2020	HA-4 3.5-5' HA-4 5-6.5' HA-5 2-2.5'	137 138 139	212 213 214	
H.P. Hand Auger H.P. Hand Auger	05205002.0215 HA-5 4-5' CL Atterberg 05205002.0216 HA-5 5'-6.5' CH Atterberg		8/12/2020 8/12/2020	HA-5 4-5' HA-5 5-6.5'	140 141	215 216	
H.P. Hand Auger H.P. Hand Auger Stockpile	05205002.0217 HA-5 7.5'-8.5' CL Atterberg 05205002.0218 HA-6 1'-2.5' CH Atterberg 05205002.0202 Cohesive StockpileRiverside Proctor Cl		8/12/2020 8/12/2020 8/12/2020	HA-5 7.5-8.5' HA-6 1-2.5' Cohesive Stockpile/Riverside	142 143 144	217 218 202	
RC4 RC4 RC4	RC4L PH-1 RC4L PH-2 RC4L PH-3		8/12/2020 8/12/2020 8/12/2020	RC4L PH-1 RC4L PH-2 RC4L PH-3	145 146 147	192 193 194	
RC4 RC4	RC4L PH-6 RC4L PH-8		8/12/2020 8/12/2020	RC4L PH-6 RC4L PH-8	148 149	195 196	
RC4 RC4 RC4	RC4L PH-9 RC4L PH-10 RC4L PH-13		8/12/2020 8/12/2020 8/12/2020	RC4L PH-9 RC4L PH-10 RC4L PH-13	150 151 152	199 197 198	
RC4 Riverside Existing Levee Riverside Existing Levee	RC4L PH-14 05205002.0224 LS Existing R.S. PH-3 STA650 Proctor CL 05205002.0225 LS Existing R.S. PH-4 STA655 Proctor CL		8/12/2020 8/13/2020 8/13/2020	RC4L PH-14 LS Existing R.S. PH-3 STA 650 LS Existing R.S. PH-4	153 155 156	200 224 225	
RC4 RC4	RC4L PH-18 STA 293 RC4L PH-16 STA 299		8/13/2020 8/13/2020	RC4L PH-18 STA 293 RC4L PH-16 STA 299	157 158	227 229	
RC4 RC4 Riverside Existing Leves	RC4L PH-20 STA 287 RC4L PH-19 STA 290 05205002.0226 LS Existing R.S. PH-5 STA660+30 Proctor CL-ML		8/13/2020 8/13/2020 8/13/2020	RC4L PH-20 STA 287 RC4L PH-19 STA 290 LS Existing R.S. PH-5 STA 660+30	159 160 161	230 222 226	
Riverside Existing Levee Riverside Existing Levee Riverside Existing Levee	05205002.0236 LS Existing R.S. PH-6 STA665 Proctor CL-ML 05205002.0239 LS Existing R.S. PH-7 STA670 Proctor ML 05205002.0241 LS Existing R.S. PH-10 STA685 Proctor ML		8/13/2020 8/13/2020 8/13/2020	LS Existing R.S. PH-6 STA 665 LS Existing R.S. PH-7 STA 670 LS Existing R.S. PH-10 STA 685	162 163 165	236 239 241	
Riverside Existing Leves Riverside Existing Leves	05205002.0235 LS Existing R.S. PH-12 STA695 Proctor CL 05205002.0237 LS Existing R.S. PH-9 STA680 0.5-4.5' Proctor CL-ML		8/13/2020 8/13/2020	LS Existing R.S. PH-12 STA 695 LS Existing R.S. PH-9 STA 680	171 164A	235 237	
Riverside Existing Levee Riverside Existing Levee Riverside Existing Levee	05205002.0238 LS Existing R.S. PH-9 STA680 4.5-6' Proctor CL-ML 05205002.0240 LS Existing R.S. PH-11 STA690 2.5-6' Proctor CL 05205002.0228 LS Existing R.S. PH-11 STA690 1-2.5' Proctor CL-ML		8/13/2020 8/13/2020 8/13/2020	LS Existing R.S. PH-9 STA 680 LS Existing R.S. PH-11 STA 690 LS Existing R.S. PH-11 STA 690	164B 166A 166B	238 240 228	
Riverside Existing Levee Riverside Existing Levee	05205002.0247 Existing R.S. PH-13 STA700 Proctor CI. 05205002.0248 Existin R.S. PH-14 STA705 Proctor CI. Sample 173 05205002.0249 Existing R.S. PH-15 STA710 Proctor CH		8/14/2020 8/14/2020 8/14/2020	PH-13 STA 700 PH-14 STA 705	172 173 174	247 248 249	
Riverside Existing Levee Riverside Existing Levee Riverside Existing Levee	05205002.0250 Existing R.S. PH-17 STA720 CL 05205002.0251 Existing R.S. PH-18 STA725 CL		8/14/2020 8/14/2020	PH-15 STA 710 PH-17 STA 720 PH-18 STA 725	175 176	250 251	
Riverside Existing Leves Riverside Existing Leves Stockpile	05205002.0252 Existing R.S. PH-19 STA730 CL 05205002.0253 Existing R.S. PH-20 STA735 CH 05205002.0330 SL STA660 Landside Stockpile R Density		8/14/2020 8/14/2020 8/15/2020	PH-19 STA 730 PH-20 STA 735 SL STA 660 Landside	177 178 179	252 253 330	
Stockpile Stockpile Riverside Existing Levee	05205002.0331 SL STA650 Landside Stockpile R Density 05205002.0332 SL STA645 Landside Stockpile Proctor Cl 05205002.0333 EL PH-26 STA740 Riverside Stockpile Proctor Ch		8/15/2020 8/15/2020 8/15/2020	SL STA 650 Landsind SL STA 645 Landside PH-26 STA 740 Riverside	180 181 182	331 332 333	
Riverside Existing Leves Riverside Existing Leves	05205002.0334 EL PH-28 STA750 Riverside Stockpile Proctor CL 05205002.0335 EL PH-30 STA760 Riverside Stockpile Proctor Ch		8/15/2020 8/15/2020	PH-28 STA 750 Riverside PH-30 STA 760 Riverside	183 184	334 335	
Riverside Existing Leves Riverside Existing Leves Riverside Existing Leves	05205002.0336 EL PH-32 STA770 Riverside Stockpile Proctor CL 05205002.0336 EL PH-32 STA770 Riverside Stockpile Proctor CL 05205002.0336 EL PH-32 STA770 Riverside Stockpile Proctor CL		8/15/2020 8/15/2020 8/15/2020	PH-32 STA 770 Riverside PH-28 STA 593 PH-29 STA 589	185 194 195	336 352 353	
Riverside Existing Leves Riverside Existing Leves	05205002.0336 EL PH-32 STA770 Riverside Stockpile Proctor CL 05205002.0336 EL PH-32 STA770 Riverside Stockpile Proctor CL		8/15/2020 8/15/2020 8/15/2020	PH-30 STA 584 PH-31 STA 580 PH-32 STA 575	196 197 198	354 355 356	
Riverside Existing Levee Riverside Existing Levee Riverside Existing Levee	05205002.0336 EL PH-32 STA770 Riverside Stockpile Proctor CL 05205002.0336 EL PH-32 STA770 Riverside Stockpile Proctor CL 05205002.0336 EL PH-32 STA770 Riverside Stockpile Proctor CL		8/15/2020 8/15/2020	PH-33 STA 570 PH-35 STA 605	199 200	357 358	
Riverside Existing Leves Setback Levee Inspection Trenct Setback Levee Inspection Trenct	05205002.0336 EL PH-32 STA770 Riverside Stockpile Proctor CL 05205002.0336 EL PH-32 STA770 Riverside Stockpile Proctor CL 05205002.0336 EL PH-32 STA770 Riverside Stockpile Proctor CL		8/15/2020 8/16/2020 8/16/2020	PH-36 STA 610 PH-26 SL STA 684 PH-28 SL STA 694	201 186 187	359 337 338	
Setback Levee Inspection Trenct Stockpile Stockpile	05205002.0336 EL PH-32 STA770 Riverside Stockpile Proctor CL 05205002.0336 EL PH-32 STA770 Riverside Stockpile Proctor CL 05205002.0336 EL PH-32 STA770 Riverside Stockpile Proctor CL		8/16/2020 8/16/2020 8/16/2020	PH-29 SL STA 700 Random Stockpile Riverside S end STA 595 Random Stockpile Riverside N end STA 595+0*	188 189 190	339 340 341	
GB 12 Hand Augers GB 12 Hand Augers	05205002.0298 HA-2 Corning Borrow 1'-5 05205002.0299 HA-2 Corning Borrow 2'-2.5		8/19/2020 8/19/2020	HA-2 Corning Borrow 1 to 5 HA-2 Corning Borrow 2 to 2.5'	206 207	298 299	
GB 12 Hand Augers GB 12 Hand Augers GB 12 Hand Augers	05205002.0300 HA-2 Corning Borrow 3.5-4' Atterberç 05205002.0301 HA-3 Corning Borrow 1.5-2' Atterberç 05205002.0302 HA-3 Corning Borrow 2-2.5' Atterberç		8/19/2020 8/19/2020 8/19/2020	HA-2 Corning Borrow 3.5 to 4 HA-3 Corning Borrow 1 to 2' HA-3 Corning Borrow 2 to 2.5	208 209 210	300 301 302	
GB 12 Hand Augers GB 12 Hand Augers GB 12 Hand Augers	05205002.0303 HA-3 Corning Borrow 3.5-4' Atterbers 05205002.0304 HA-4 Corning Borrow 1' to 1.5 05205002.0305 HA-4 Corning Borrow 2'-2.5' At		8/19/2020 8/19/2020 8/19/2020	HA-3 Corning Borrow 3.5 to 4' HA-4 Corning Borrow 1 to 1.5 HA-4 Corning Borrow 2 to 2.5'	211 212 213	303 304 305	
GB 12 Hand Augers GB 11,12 Hand Augers	05205002.0307 HA-5 Corning Borrow 1-1.5' Atterberç		8/19/2020 8/19/2020	HA-4 Corning Borrow 3 to 3.3 HA-5 Corning Borrow 1 to 1.5	214 215	Missing Lab data 307	
GB 11,12 Hand Augers GB 11,12 Hand Augers GB 11 Hand Augers	05205002.0308 HA-5 Corning Borrow 2-2.5' Atterbers 05205002.0309 HA-5 Corning Borrow 3-3.5' Atterbers 05205002.0310 HA-6 Corning Borrow 1-1.5' Atterbers		8/19/2020 8/19/2020 8/19/2020	HA-5 Corning Borrow 2 to 2.5' HA-5 Corning Borrow 3 to 3.5 HA-6 Corning Borrow 1 to 1.5	216 217 218	308 309 310	
GB 11 Hand Augers GB 11 Hand Augers	05205002.0311 HA-6 Corning Borrow 2-2.5' Atterberg 05205002.0312 HA-6 Corning Borrow 3-3.5' Atterberg		8/19/2020 8/19/2020 8/20/2020	HA-6 Corning Borrow 2 to 2.5 HA-6 Corning Borrow 3 to 3.5	219 220 223	311 312 431	
GB 11 Hand Augers GB 11 Hand Augers GB 11 Hand Augers	GB-11,12,13 HA-7 (2-3.5) GB-11,12,13 HA-7 (1-2) GB-11,12,13 HA-8 (3.5-4.5)		8/20/2020 8/20/2020	HA-07 HA-07 HA-08	224 225	432 433	
GB 11 Hand Augers GB 11 Hand Augers GB 11 Hand Augers	GB-11,12,13 HA-8 (2-3) GB-11,12,13 HA-8 (1-2) GB-11,12,13 HA-9 (4.5-5)		8/20/2020 8/20/2020 8/20/2020	HA-08 HA-08 HA-09	226 227 228	434 435 436	
GB 11 Hand Augers GB 11 Hand Augers GB 11 Hand Augers	GB-11,12,13 HA-9 (2-3) GB-11,12,13 HA-9 (1-2) GB-11,12,13 HA-10 (3-4)		8/20/2020 8/20/2020 8/20/2020	HA-09 HA-09 HA-10	229 230 231	437 438 439	
GB 11 Hand Augers GB 11 Hand Augers	GB-11,12,13 HA-10 (1-2) GB-11,12,13 HA-11		8/20/2020 8/20/2020	HA-10 HA-11	232 233	440 441	
Construction Testing Sample Stockpile Setback Levee Inspection Trench	Breach BC BC Trench Excavation Stockpile Setback Levee Inspection Trench STA 725 PH-31	Raphael Raphael	8/21/2020 8/21/2020 8/25/2020	Breach BC BC Trench Excavation Stockpil∈ Setback Levee PH-31	239 241 248	318 319 465	
	Setback Levee Inspection Trench STA 730 PH-3; Setback Levee Inspection Trench STA 734+50 PH-3; Setback Levee Inspection Trench STA 750 PH-3;		8/25/2020 8/25/2020 8/25/2020	Setback Levee PH-32 Setback Levee PH-33 Setback Levee PH-36	249 250 251	466 467 468	
Setback Levee Inspection Trench Setback Levee Inspection Trench	Setback Levee Inspection Trench STA 770 PH-4(8/25/2020 8/25/2020	Setback Levee PH-37 Setback Levee PH-40	252 253	469 470	
	Setback Levee Inspection Trench STA 775 PH-41 Setback Levee Inspection Trench STA 780 PH-42 GB-11 PH-1		8/25/2020 8/25/2020 8/26/2020	Setback Levee PH-41 Setback Levee PH-42 Potential Clay Borrow PH-1	254 255 259	472 471 381	
GB11 GB11 GB11	GB-11 PH-2 GB-11 PH-3 GB-11 PH-4		8/26/2020 8/26/2020 8/26/2020	Potential Clay Borrow PH-2 Potential Clay Borrow PH-2 Potential Clay Borrow PH-4	260 261 262	382 383 384	
GB11 GB11	GB-11 PH-5 S-1		8/26/2020 8/26/2020	Potential Clay Borrow PH-5 Potential Clay Borrow PH-5A	263 264	385 386	
GB11	GB-11 PH-5 S-2			Detectic Class Demonstration			
GB11 H.P. Potholes	GB-11 PH-6 GB-11 PH-7 Heartland/Peeler Potholes PH-1		8/26/2020 8/26/2020 8/27/2020	Potential Clay Borrow PH-6 Potential Clay Borrow PH-7 PH-1	265 266 267	387 388 396	
GB11 H.P. Potholes H.P. Potholes	GB-11 PH-6 GB-11 PH-7 Heartland/Peeler Potholes PH-/ Heartland/Peeler Potholes PH-/ Heartland/Peeler Potholes PH-/		8/26/2020 8/26/2020	Potential Clay Borrow PH-6 Potential Clay Borrow PH-7	265 266 267 268 269	388	
GB11 H.P. Potholes	GB-11 PH-6 GB-11 PH-6 GB-11 PH-7 Heartland/Peeler Potholes PH-8 Heartland/Peeler Potholes PH-		8/26/2020 8/26/2020 8/27/2020 8/27/2020 8/27/2020 8/27/2020 8/27/2020 8/27/2020 8/27/2020	Potential Clay Borrow PH-E Potential Clay Borrow PH-7 PH-1 PH-2 PH-4 PH-7 PH-8 1.5-3* PH-8 0.5-1.5*	265 266 267 268 269 270 271 272	388 396 397 398 399 400 401	
GB11 H.P. Potholes GB11 GB11 GB11	GB-11 PH-6 GB-11 PH-7 Heartland/Peeler Potholes PH-8 Heartland/Peeler Potholes PH-8 Heartland/Peeler Potholes PH-8 Heartland/Peeler Potholes PH-8 GB-11 PH-9 GB-11 PH-10 S-1		8/26/2020 8/26/2020 8/26/2020 8/27/2020 8/27/2020 8/27/2020 8/27/2020 8/27/2020 8/27/2020 8/27/2020 8/27/2020 8/27/2020 8/27/2020	Potential Clay Borrow PH-E Potential Clay Borrow PH-7 PH-1 PH-1 PH-4 PH-4 PH-7 PH-8 1.5-3' PH-8 0.5-1.5' PH-9 PH-10 5.5-7 PH-10 5.5-7	265 266 267 268 269 270 271 272 273 274 275	388 395 397 398 399 400 401 402 403 404	
GB11 GB11 GB11 GB11 GB11 GB11 GB11 GB11	GB-11 PH-6 GB-11 PH-6 GB-11 PH-7 Heartland/Peeler Potholes PH-7 Heartland/Peeler Potholes PH-7 Heartland/Peeler Potholes PH-7 Heartland/Peeler Potholes PH-8 Heartland/Peeler Potholes PH-8 Heartland/Peeler Potholes PH-8 Heartland/Peeler Potholes PH-8 GB-11 PH-10 GB-11 PH		8/26/2020 8/26/2020 8/26/2020 8/27/2020 8/27/2020 8/27/2020 8/27/2020 8/27/2020 8/27/2020 8/27/2020 8/27/2020	Potential Clay Borrow PH-E Potential Clay Borrow PH-7 PH-1 PH-1 PH-2 PH-4 PH-7 PH-8 1.5-3 PH-9 PH-9 PH-10.5-7	265 266 267 268 269 270 271 271 272 273 274	388 396 397 388 399 400 401 402 402	
GB11 H.P. Potholes GB11 GB11 GB11 GB11 GB11 GB12 GB12 GB12	GB-11 PH-6 GB-11 PH-6 GB-11 PH-7 Heartland/Peeler Potholes PH-7 Heartland/Peeler Potholes PH-7 Heartland/Peeler Potholes PH-7 Heartland/Peeler Potholes PH-8 Heartland/Peeler Potholes PH-8 Heartland/Peeler Potholes PH-8 Heartland/Peeler Potholes PH-8 GB-11 PH-10 GB-11 PH-10 GB-11 PH-10 GB-11 PH-11 GB-12 GB-11 PH-11 GB-12 GB-12 PH-1 GB-12 GB-12 GB-13 GB-13 GB-13 GB-14 GB-		8/26/2020 8/26/2020 8/27/2020 8/28/2020	Potential Clay Borrow PH-E Potential Clay Borrow PH-7 PH-1 PH-1 PH-2 PH-4 PH-8 PH-8 PH-8 PH-8 PH-9 PH-10 S-7 PH-10 S-7 PH-10 PH-11 PH-12 PH-13 Potential Clay Borrow PH-14 Potential Clay Borrow PH-16 Potential Clay Borrow PH-16	265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280	388 396 397 388 399 400 401 401 402 403 405 605 407 414 415	
GB11 H.P. Potholes GB11 GB11 GB11 GB11 GB12 GB12 GB12 GB12	GB-11 PH-6 GB-11 PH-6 GB-11 PH-7 Heartland/Peeler Potholes PH-8 Heartland/Peeler Potholes PH-8 Heartland/Peeler Potholes PH-8 GB-11 PH-10 S-2 GB-11 PH-10 S-2 GB-11 PH-10 S-1 GB-1		8726/2020 8726/2020 8727/2020 8727/2020 8727/2020 8727/2020 8727/2020 8727/2020 8727/2020 8727/2020 8727/2020 8727/2020 8727/2020 8727/2020 8727/2020 8727/2020 8727/2020 8727/2020 8728/2020 8728/2020 8728/2020 8728/2020 8728/2020 8728/2020 8728/2020 8728/2020	Potential Clay Borrow PH-E Potential Clay Borrow PH-7 PH-1 PH-1 PH-1 PH-8 1.5-3' PH-8 0.5-1.5' PH-9 0.5-5.7 PH-9 0.5-5.7 PH-10 2.4' PH-11 PH-11 PH-10 2.4' PH-11 PH-11 PH-13 Potential Clay Borrow PH-14 Potential Clay Borrow PH-16 Potential Clay Borrow PH-17	265 266 267 267 267 267 270 271 272 273 274 275 276 277 278 279 280 281 282 283 283	388 396 397 398 399 400 401 402 403 404 405 406 407 414 415 416 417 413	
GB11 H.P. Potholes GB11 GB11 GB11 GB11 GB12 GB12 GB12 GB12	GB-11 PH-6 GB-11 PH-6 GB-11 PH-7 Heartland/Peeler Potholes PH-7 Heartland/Peeler Potholes PH-7 Heartland/Peeler Potholes PH-7 Heartland/Peeler Potholes PH-8 Heartland/Peeler Potholes PH-8 Heartland/Peeler Potholes PH-8 Heartland/Peeler Potholes PH-8 GB-11 PH-10 GB-11 PH-10 GB-11 PH-10 GB-12 PH-10 GB-12 PH-1		876/2020 872/2020 872/2020 872/7/2020	Potential Clay Borrow PH-F Potential Clay Borrow PH-7 PH-1 PH-1 PH-1 PH-8 PH-8 PH-8 PH-8 PH-8 PH-8 PH-9 PH-9 PH-9 PH-9 PH-9 PH-9 PH-10 S-7 PH-10 S-7 PH-10 S-7 PH-10 PH-13 Potential Clay Borrow PH-16 Potential Clay Borrow PH-17 Potential Clay Borrow PH-16 Potential Clay Borrow PH-15	265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282	388 386 397 397 397 397 397 397 397 397 397 397	
GB11 H.P. Potholes GB11 GB11 GB11 GB11 GB12 GB12 GB12 GB12	GB-11 PH-6 GB-11 PH-6 GB-11 PH-7 Heartland/Peeler Potholes PH-7 Heartland/Peeler Potholes PH-7 Heartland/Peeler Potholes PH-7 Heartland/Peeler Potholes PH-8 Heartland/Peeler Potholes PH-8 Heartland/Peeler Potholes PH-8 Heartland/Peeler Potholes PH-8 GB-11 PH-10 GB-11 PH-10 GB-11 PH-10 GB-11 PH-10 GB-12 PH-1 GB-13 PH-1		876/2020 872/2020	Potential Clay Borrow PH-1 PH-1 PH-1 PH-1 PH-2 PH-3 PH-4 PH-4 PH-4 PH-4 PH-8 PH-8 PH-8 PH-9 PH-9 PH-9 PH-1 PH-1 PH-10 PH-11 POtential Clay Borrow PH-14 Potential Clay Borrow PH-17 Potential Clay Borrow PH-22 Potential Clay Borrow PH-22 Potential Clay Borrow PH-22 Potential Clay Borrow PH-23 Potential Clay Borrow PH-24 Potential Clay Borrow PH-25 Potential Clay Borrow PH-25	265 266 267 267 267 268 269 269 270 271 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288	388 396 397 398 399 400 401 402 403 404 405 406 407 414 415 416 417 413	
GB11 H.P. Potholes GB11 GB11 GB11 GB12 GB12 GB12 GB12 GB12	GB-11 PH-6 GB-11 PH-6 GB-11 PH-7 Heartland/Peeler Potholes PH-7 Heartland/Peeler Potholes PH-7 Heartland/Peeler Potholes PH-7 Heartland/Peeler Potholes PH-8 Heartland/Peeler Potholes PH-8 Heartland/Peeler Potholes PH-8 Heartland/Peeler Potholes PH-8 GB-11 PH-10 S-1 GB-11 PH-10 S-2 GB-11 PH-10 S-1 GB-1	Tony California	876/2020 8727/2020	Potential Clay Borrow PH-E Potential Clay Borrow PH-7 PH-1 PH-1 PH-1 PH-1 PH-1 PH-8 PH-8 PH-8 PH-8 PH-9 PH-10-5-7 PH-9 PH-10-5-7 PH-9 PH-10-5-7 PH-9 PH-10-5-7 PH-9 PH-10-5-7 PH-10-4 PH-11 PH-13 PH-11 PH-13 POtential Clay Borrow PH-14 Potential Clay Borrow PH-14 Potential Clay Borrow PH-17 Potential Clay Borrow PH-12 Potential Clay Borrow PH-22 Potential Clay Borrow PH-24 Potential Clay Borrow PH-24 Potential Clay Borrow PH-24 Potential Clay Borrow PH-24 GB-13 PH-6	265 266 267 267 267 268 269 269 269 269 271 271 273 274 275 276 277 277 278 279	388 389 389 399 399 399 399 399 399 399	
GB11 H.P. Potholes GB11 GB11 GB11 GB11 GB12 GB12 GB12 GB12	GB-11 PH-6 GB-11 PH-6 GB-11 PH-7 Heartland/Peeler Potholes PH-8 Heartland/Peeler Potholes PH-8 Heartland/Peeler Potholes PH-8 GB-11 PH-10 GB-11 PH-10 GB-11 PH-11 GB-11 PH-11 GB-12 PH-1 GB-12 PH-1 GB-12 PH-1 GB-12 PH-1 GB-12 PH-1 GB-12 PH-1 GB-13 PH-1	Tony California Tony California	876/2020 8727/2020 8728/2020 8728/2020 8728/2020 8728/2020 8728/2020 8728/2020 8728/2020 8728/2020 8728/2020 8728/2020 8728/2020 8728/2020 8728/2020 8728/2020 8728/2020 8728/2020	Potential Clay Borrow PH-F Ph-F Ph-F Ph-F Ph-F Ph-F Ph-F Ph-F Ph	265 265 266 267 268 269 267 268 269 267 267 267 267 267 267 267 267 267 267 276 277 278 279 260 267 268 268 268 268 268 268 268 268 268 269	388 396 397 388 399 400 401 402 403 404 405 406 407 414 415 416 417 418 418 419 419 419 419 419 419 419 419 419 419	
GB11 H.P. Potholes GB11 GB11 GB11 GB11 GB12 GB12 GB12 GB12	GB-11 PH-6 GB-11 PH-6 GB-11 PH-6 Heartland/Peeler Potholes PH-1 Heartland/Peeler Potholes PH-8 Heartland/Peeler Potholes PH-8 GB-1 Heartland/Peeler Potholes PH-8 GB-1 H-10 GB-1 GB-1 GB-1 GB-1 GB-1 GB-1 GB-1 GB-1	Tony California Tony California Tony California Tony California Tony California	876/2020 8727/2020 8728/2020 8738/2020 8738/2020 8738/2020	Potential Clay Borrow PH-E Potential Clay Borrow PH-7 PH-1 PH-1 PH-2 PH-4 PH-8 0.5-1.5' PH-8 0.5-1.5' PH-10 5.5-7 PH-10 5.5-7 PH-11 2 PH-11 PH-11 PH-11 PH-12 PH-13 Potential Clay Borrow PH-14 Potential Clay Borrow PH-16 Potential Clay Borrow PH-17 Potential Clay Borrow PH-18 Potential Clay Borrow PH-19 Potential Clay Borrow PH-19 Potential Clay Borrow PH-22 Potential Clay Borrow PH-24 Potential Clay Borrow PH-25 Potential Clay Borrow PH-26 SP-1 S1-1 - Random SP-1 S2-2 - Random SP-1 S2-3 - Random SP-1 S2-3 - Random SP-1 S2-4 - Random	265 265 266 267 267 268 269 269 269 269 277 277 278 277 278 279 280 281 282 283 284 285 286 286 289	388 396 397 398 399 400 401 402 403 404 405 406 407 414 415 416 417 418 418 420 421 422 422 423 424 435 446 455	
GB11 H.P. Potholes GB11 GB11 GB11 GB11 GB12 GB12 GB12 GB12	GB-11 PH-6 GB-11 PH-6 GB-11 PH-6 Heartland/Peeler Potholes PH-1 Heartland/Peeler Potholes PH-8 Heartland/Peeler Potholes PH-8 GB-1 HPH-10 GB-1 GB-11 PH-10 GB-1 GB-11 PH-10 GB-1 GB-11 PH-10 GB-1 GB-12 PH-1 GB-13 PH-1 G	Tony California	876/2020 8727/2020	Potential Clay Borrow PH-1 PH-1 PH-1 PH-1 PH-1 PH-2 PH-4 PH-4 PH-4 PH-4 PH-8 PH-8 1.5-3 PH-8 0.5-1.5' PH-8 0.5-1.5' PH-10 0.5-1.5' PH-10 1.5-7' PH-11 1.5-7' POLITIAL Clay Borrow PH-14 Potential Clay Borrow PH-17 Potential Clay Borrow PH-17 Potential Clay Borrow PH-18 Potential Clay Borrow PH-18 Potential Clay Borrow PH-25 Potential Clay Borrow PH-26 GB-13 PH-4 GB-13 PH-4 GB-13 PH-6 SP-1 S-3 - Random SP-1 S-3 - Random SP-3 S-2 - Random SP-3 S-3 - Random SP-3 S-3 - Landom SP-3 S-3 - Landom SP-2 S-3 - Lando Pile of Random SP-20 S-3 - Lange Pile of Random SP-20 S-3 - Lange Pile of Random SP-20 S-3 - Lange Pile of Random	265 266 267 267 268 269 260	388 396 397 388 399 400 401 402 403 404 405 406 407 407 408 407 408 408 409 409 409 409 409 409 409 409 409 409	
GB11 HP, Potholes GB11 GB11 GB11 GB11 GB12 GB12 GB12 GB12	GB-11 PH-6 GB-11 PH-6 GB-11 PH-6 Heartland/Peeler Potholes PH-1 Heartland/Peeler Potholes PH-8 Heartland/Peeler Potholes PH-8 GB-1 Heartland/Peeler Potholes PH-8 GB-1 H-10 GB-1 GB-1 GB-1 GB-1 GB-1 GB-1 GB-1 GB-1	Tony California	876/2020 8727/2020 8728/2020 8738/2020 8738/2020 8738/2020 8738/2020 8738/2020 8738/2020 8738/2020 8738/2020 8738/2020 8738/2020 8738/2020	Potential Clay Borrow PH-E Potential Clay Borrow PH-7 PH-1 PH-1 PH-1 PH-1 PH-1 PH-8 1.5-3' PH-8 0.5-1.5' PH-9 0.5-1.5' PH-9 0.5-1.5' PH-9 0.5-1.5' PH-9 0.5-1.5' PH-9 0.5-1.5' PH-10 2.4' PH-11 PH-10 2.4' PH-11 PH-113 Potential Clay Borrow PH-14 Potential Clay Borrow PH-16 Potential Clay Borrow PH-17 Potential Clay Borrow PH-18 Potential Clay Borrow PH-19 Potential Clay Borrow PH-19 Potential Clay Borrow PH-19 Potential Clay Borrow PH-22 Potential Clay Borrow PH-22 Potential Clay Borrow PH-24 Potential Clay Borrow PH-25 Potential Clay Borrow PH-26 SP-13 S-1 - Random SP-3 S-2 - Random SP-3 S-2 - Random SP-3 S-3 - Random SP-5 S-2 - Random SP-5 S-2 - Random SP-5 S-2 - Random SP-5 S-2 - Large Pile of Random SP-20 S-2 - Large Pile of Random	265 265 267 267 268 269 269 269 269 269 277 277 278 277 278 279 280 283 284 285 286 289	388 396 397 398 399 400 401 402 403 404 405 406 407 414 415 416 417 418 418 422 422 422 422 422 425 434 455 456 455 455	

Stockpile SP- Stockpile SP- Construction Testing Sample 052	i205002.0336 EL PH-32 STA770 Riverside Stockpile Proctor CL P-22, SB STA 636 S-1 P-2, SB STA 593 S-1	Raphael Raphael	9/3/2020 9/4/2020			
Stockpile SP- Construction Testing Sample 052	P-2, SB STA 593 S-1					
Construction Testing Sample 052		Raphael	9/4/2020			
	5205002.0336 EL PH-32 STA770 Riverside Stockpile Proctor CL	Salvador	9/6/2020			
	205002.0336 EL PH-32 STA770 Riverside Stockpile Proctor CL	Salvador	9/6/2020			
	FA 655 Landside Stockpile 1000 feet from CL Random Fil	Raphael	9/7/2020			
	FA 655 Landside Stockpile 500 feet from CL Random Fil	Raphael	9/7/2020			
	205002.0233 SL Random Stockpile W Side STA641 Proctor Cl			SL Random Stockple West Side STA 641	167	233
	205002.0234 SL Random Stockpile E Side STA641 Proctor Cl			SL Random Stockpile East Side STA 641	168	234
Stockpile 052	205002.0232 SL Random Stockpile W Side STA647 Proctor CI			SL Random Stockpile West Side STA 647	169	232
Stockpile 052	205002.0231 SL Random Stockpile E Side STA647 Proctor CL			SL Random Stockpile East Side STA 647	170	231
Construction Testing Sample 052	205002.0336 EL PH-32 STA770 Riverside Stockpile Proctor CL			RC-3 Breach A Construction STA 522+50	191	342
	205002.0336 EL PH-32 STA770 Riverside Stockpile Proctor CL			RC3 Breach A Sample 3 Construction	192	350
Construction Testing Sample 052	5205002.0336 EL PH-32 STA770 Riverside Stockpile Proctor CL			RC3 STA 525	193	351
052	205002.0285 Corning Brrow Hole 1 Sample 1 CL Atterber			Corning Borrow Hole 1 - Sample 1	202	285
052	5205002.0285 Corning Brrow Hole 1 Sample 2 CL Atterber			Corning Borrow Hole 1 - Sample :	203	286
052	205002.0285 Corning Brrow Hole 1 Sample 3 ML Atterber			Corning Borrow Hole 1 - Sample :	204	287
	205002.0285 Corning Brrow Hole 1 Sample 4 ML Atterber			Corning Borrow Hole 1 - Sample 4	205	288
Construction Testing Sample 052	5205002.0297 SL STA626+40 Landside			SL STA 626+40	221	297
	5205002.0336 EL PH-32 STA770 Riverside Stockpile Proctor CL			SL Riverside STA 573-57	222	430 Should be STA 573+59
Construction Testing Sample 052	205002.0336 EL PH-32 STA770 Riverside Stockpile Proctor CL			SL Riverside STA 589+50	234	442
Construction Testing Sample 052	5205002.0336 EL PH-32 STA770 Riverside Stockpile Proctor CL			Breach A STA 522+80	235	443
Construction Testing Sample 052	5205002.0336 EL PH-32 STA770 Riverside Stockpile Proctor CL			Breach A STA 525	236	444
Construction Testing Sample 052	5205002.0336 EL PH-32 STA770 Riverside Stockpile Proctor CL			SL STA 601+50	237	445
Construction Testing Sample 052	5205002.0336 EL PH-32 STA770 Riverside Stockpile Proctor CL			Setback Levee Landside/Riverside	238	322
Stockpile Sar	and Pile at Breach A for Breach /			Sand Pile at Breach A for Breach A	240	
Stockpile BC	C Existing Levee Excavation Stockpile			BC Existing Levee Excavation Stockpile	242	320
	kisting Levee Seepage Berm STA 665			Existing Levee Seepage Berm STA 665	243	344
Stockpile Exi:	kisting Levee Seepage Berm STA 675			Existing Levee Seepage Berm STA 675	244	345
Stockpile Exi:	risting Levee GB-5 STA Stock 590			Existing Levee GB-5 STA Stock 590	245	346
Stockpile Exi:	risting Levee GB-5 Screened Material ST/			Existing Levee GB-5 Screened Material ST/	246	347
Construction Testing Sample 052	5205002.0336 EL PH-32 STA770 Riverside Stockpile Proctor CL			STA 640+653	247	446
				GB-13 PH-12		474
				GB-12 PH-14		475
				GB-12 PH-19		476
				GB-12 PH-19A		477
				Existing Levee RS - STA 567		482
				Existing Levee RS - STA 572		483
				Existing Levee RS - STA 577		484
				Existing Levee Mixed Random STA 563+00		497
				Existing Levee Mixed Random STA 669+00		500
				Existing Levee, STA 580+00 at 2'-4		506

EL - Existing Levee; GB - Government Borrow; HA - Hand Auger; H.P. - private land owner; LS - Land Side; PH - Pothole; RC - Rock Creek; RS - River Side; SB - ; SL - Setback Levee;