US Army Corps of Engineers®
St. Paul District

Draft Environmental Assessment

Highway 75 Drawdown
Lac qui Parle County, Minnesota
2025

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Draft Environmental Assessment

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1 Introduction

1.1 Background

The original Big Stone Lake project at the outlet of Big Stone Lake (about 8 miles upstream) was constructed in 1937 by the State of Minnesota. The original project was designed to restore a desirable conservation level on Big Stone Lake, to provide downstream flood protection, and to provide low flows during drought conditions. Undesirable (high) lake levels, acceleration of silt deposit in the lower end of the lake, and aggravation of downstream flood damages since 1937 justified additional improvements downstream from the outlet of Big Stone Lake.

Highway 75 Dam and Reservoir, which is part of the Big Stone Lake-Whetstone River Project, was authorized by the Flood Control Act of 1965. The project consisted of redirecting the Whetstone River to the Minnesota River to decrease sediment buildup in Big Stone Lake, reduce flood damages, provide more desirable water levels on Big Stone Lake, and enhance fish and wildlife resources, particularly for migrating waterfowl. The project also included a Federally-constructed dam and reservoir at Highway 75 near Odessa, Minnesota.

USACE owns approximately 254 acres encompassing the Highway 75 embankment, main service spillway, emergency spillway, and low flow outlet works. The Corps has also acquired about 105 acres of easements within the reservoir that includes right of way access to the trans-basin channel. The Highway 75 Dam and Reservoir is within the Big Stone National Wildlife Refuge, which is administered by the US Fish and Wildlife Service (USFWS). The USFWS owns approximately 10,540 acres of project lands and waters just upstream of Highway 75 Dam. USFWS coordinates the operation of the Highway 75 Dam with the Corps to utilize the reservoir as a wildlife refuge. During periods of flooding on the upper Minnesota River, the reservoir is designed to provide up to 45,300 acre-feet of storage above the normal conservation pool, elevation 952.3 (All elevations are referenced to 1929 U.S. Geological Survey datum). This storage provides for the reduction of damages to downstream areas and sustained open-water areas for waterfowl use in the national wildlife refuge established as part of the project.

In 1974, USACE finished constructing the dam at Highway 75, located on the Minnesota River at the eastern edge of the Refuge (Figure 1 and Figure 2). The land was then transferred to USFWS, except for property containing the dam, trans-basin channel, and water control structures located on the 75 dam (Figure 2, USFWS 2012 & 2021). To avoid confusion between the State-constructed Big Stone Lake structures and the Federally constructed Big Stone Lake-Whetstone River Project, the Federally constructed project will be referred to in this document by the location of the dam.

Approximately 10,100 acres of project land and water are managed by the USFWS as the Big Stone National Wildlife Refuge (Refuge) under a cooperative agreement with USACE. The Refuge is split across two counties, Big Stone County and Lac Qui Parle County. Located in west-central Minnesota on the border with South Dakota, the Refuge was established in

1975, after the land transfer with the USACE. The name of the Refuge, Big Stone, refers to the large granite boulders found throughout the area.

The reservoir created by the Highway 75 Dam, known as East Pool (Figure 2), is the furthest downstream pool in the Refuge. The Refuge is located roughly two miles downstream of Big Stone Lake and consists of a complex of wetlands and several pools. The West and East Pools are the primary impoundments and are separated by a dike and water control structure that allows them to be managed independently. East Pool elevation is controlled by the Highway 75 Dam gates which are operated to maintain the reservoir pool at the conservation pool elevation of 947.3 - 952.3. During drawdowns, the low-flow outlet can drop the pool elevation as much as five feet to 942.3.

The Refuge is made up of primarily grassland, wetlands, and some woodlands, which occur mostly along the rivers. The Refuge lies within the Upper Minnesota watershed and has about 4,500 acres of wetlands within its boundaries and receives drainage from multiple river systems including the Minnesota, Little Minnesota, Whetstone, and Yellow Bank Rivers. The Minnesota River flows through the Refuge along its northern boundary and exits via the Highway 75 Dam. The Minnesota River and the Refuge's wetlands are highly influenced by the Big Stone Lake and Highway 75 Dams. The Big Stone Lake Dam, managed by the Upper Minnesota River Watershed District, regulates the Minnesota River streamflow entering the Refuge, and the Highway 75 Dam, managed by the USACE, regulates the streamflow leaving the Refuge. The Refuge works with USACE on water management, but flood control is the main objective. Consequently, the Refuge can be inundated during times of high water.

The Refuge has a series of water control structures managed by USFWS. About 3,500 acres of the Refuge's wetlands are controlled by one of these structures which allows Refuge staff to manipulate a series of wetland pools to enhance the habitat for waterfowl, other migratory birds, and resident wildlife (USFWS 2012 & 2021). The principle objective of the Refuge is to provide optimum nesting cover for ground nesting waterfowl production by maintaining and restoring native prairie grassland habit. It is also a major migratory stopover for 21 species of waterfowl. The Refuge has several impoundments that enable management of over 2,000 acres of marsh and open water habit. The annual operating plan as jointly developed by USACE and USFWS provide specific emphasis on waterfowl production and management. The Refuge has several sub-impoundments that allow management of 300 acres independently from any flood control needs. Other primary Refuge purposes stated in authorizing documents include flood control, recreation, and fish and wildlife conservation.

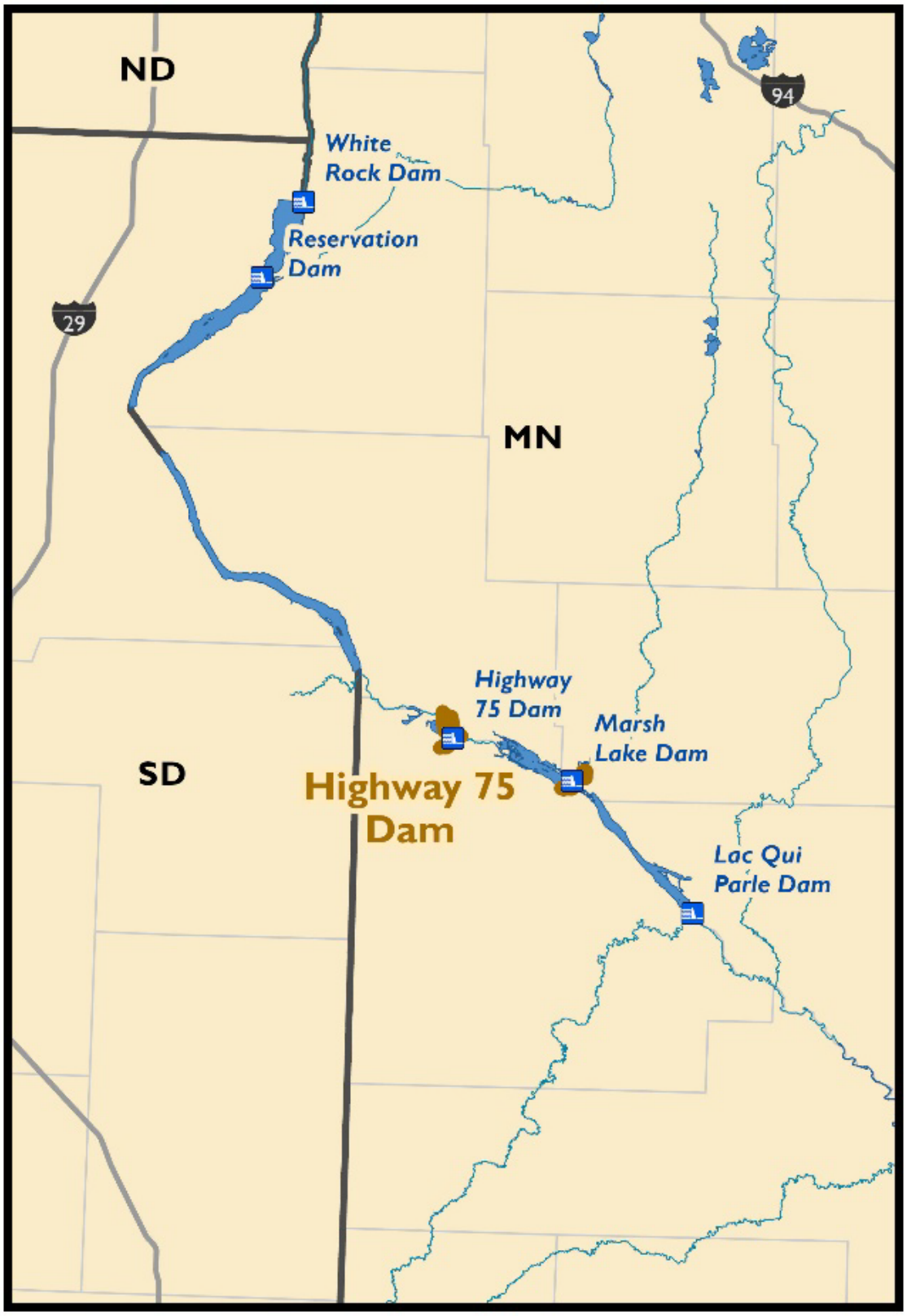


Figure 1. Location of the Highway 75 Dam Project

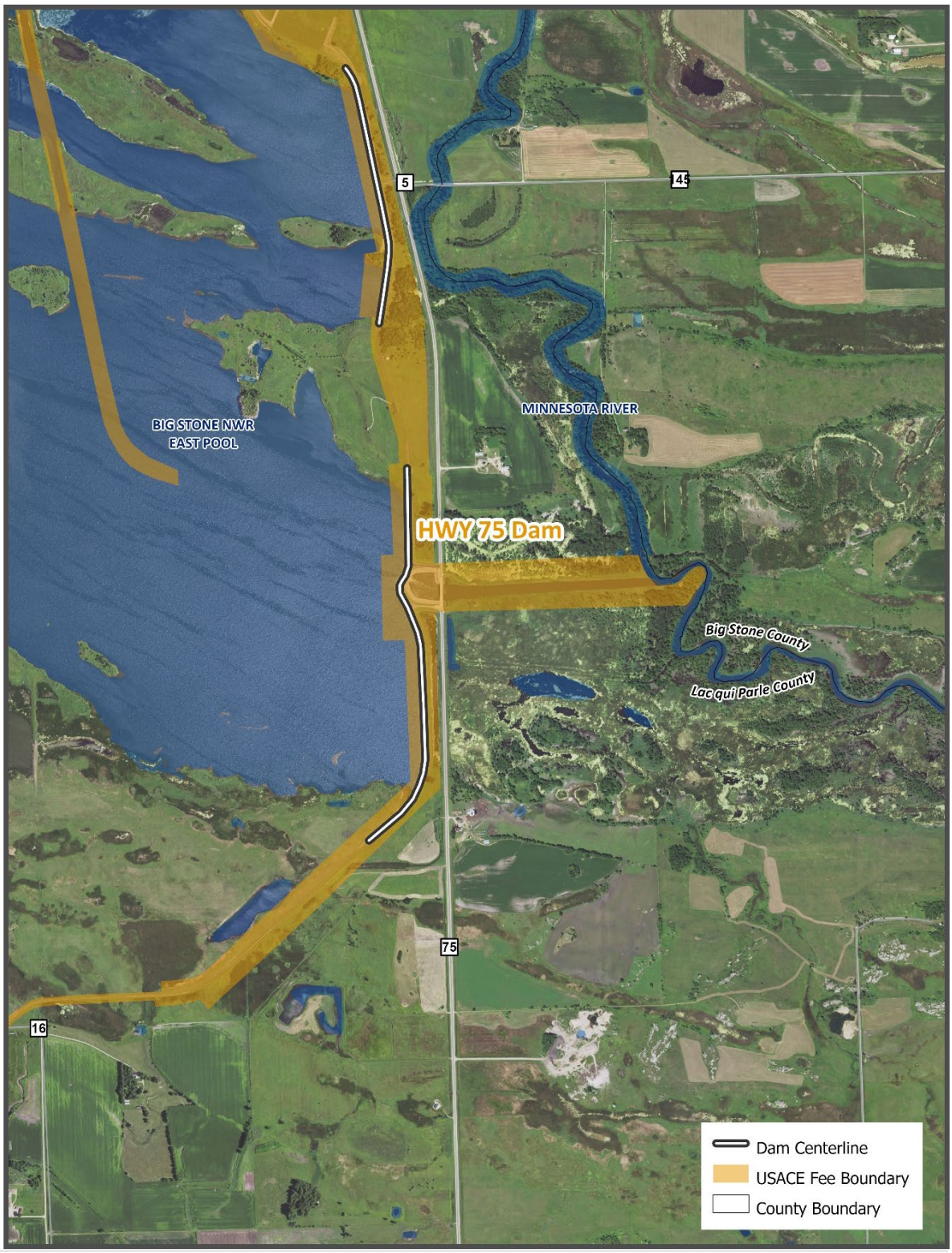


Figure 2. Location of Highway 75 Dam and East Pool.

1.2 Purpose and Need

The purpose of the proposed project is to improve wildlife conservation and habitat within the East Pool of the Refuge. Currently, the East Pool provides limited habitat values as the large expanse of open water promotes wave action that creates turbid waters, blocking sunlight and preventing submerged aquatic vegetation from growing. The water is also too shallow to provide year-round fish habitat, as most fish species will either winter-kill or summer-kill due to low dissolved oxygen levels. Carp are one of the most abundant species within the project area adding to high turbidity levels and uprooting submerged aquatic vegetation.

The proposed gradual drawdowns by USACE in East Pool every few years would provide additional management capabilities for the Refuge by drawing down the Highway 75 project area during the growing season to 1) promote shorebird habitat, 2) promote the growth of desirable wetland vegetation, 3) reduce invasive carp abundance, and 4) improve habitat conditions for an abundance of wetland dependent species. The proposed dredging (and associated dredge material disposal) of the 7,000 linear foot trans-basin channel by USFWS would similarly maximize the net benefit of the drawdowns, thus enhancing the Refuge. However, any potential operating changes to the Highway 75 Dam would need to be consistent with current flood risk management and other authorized purposes of the Highway 75 Project.

1.3 What are Shorebirds?

Shorebirds have long legs in relation to their body size and are known for their long-haul migrations between wintering and breeding sites. In North America, shorebirds migrate between arctic nesting grounds and Central and South America. For example, the red knot flies approximately 9,300 miles each spring and fall. Long distance migration requires large energy reserves, so shorebirds spend a large portion of their time foraging (Colwell 2010). Shorebirds forage on soft-bodied invertebrates such as worms, insects, and small crustaceans in open, unvegetated habitats. Along their migration routes, shorebirds use a variety of habitats including sandy beaches, intertidal mudflats, freshwater wetlands, grasslands, flooded agricultural lands, rocky coastlines, and plowed fields (USFWS 2023a). Shorebirds migrate through the Upper Midwest from mid-July through late-September with the peak being September 1 – 30.

Shorebird populations have declined approximately 37 percent, the second largest decline of any bird group (grassland birds have had the largest decline). Threats to shorebirds include predation, human disturbance, limited habitat, and finding sufficient food sources to fuel their long-distance migrations (USFWS 2023a).

1.3.1 Shorebird Conservation via Moist Soil Management

Due to the high number of shorebirds noted in the previous drawdowns, the St. Paul District is proposing to manage East Pool as a moist soil management unit. Wetlands are dynamic, highly productive systems. The availability and rapid turnover of nutrients in shallow wetland basins are the basis of their high primary productivity. High biomass production and rapid decomposition of aquatic macrophytes fuel secondary production in the form of aquatic invertebrates. However, according to Norrgard (2010), the wetland types experiencing the greatest loss in Minnesota are seasonal and temporary wetlands. Due to their small size and shallow depth, they are easily converted to agriculture. The loss in both quantity and quality of these wetlands in Minnesota has been detrimental to both waterfowl and shorebirds that depend on them for survival. Conducting moist soil management on East Pool would

simulate seasonal wetland hydrology and maximize food production for waterfowl and shorebirds.

The Natural Resource Conservation Service (Nelms 2007) defines moist soil management as the "drawdown of water to promote germination of native plants on exposed mudflats and the subsequent reflooding of same areas." East Pool could be gradually drawn down to allow the lake to be drier during the summer, thus encouraging the growth of seed-producing annual wetland plants. East Pool could also be re-flooded later in the growing season.

1.4 Authority

The Big Stone Lake – Whetstone River Project was authorized by the October 27, 1965, Flood Control Act (Public Law 89-298), to be constructed substantially as recommended by the Chief of Engineers in House Document No. 579, 87th Congress, 2nd Session. House Document No. 193, 88th Congress, 2nd Session, contains Supplementing information related to land acquisition for the National Wildlife Refuge System. Public Law 89-72 (1965) added recreation as a specific purpose to be considered at all Federal reservoir projects.

USACE operates and maintains the Highway 75 Dam near Odessa, Minnesota in coordination with the U.S. Fish and Wildlife Service pursuant to a water control manual, which includes a cooperative agreement, a general plan and 1975 Memorandum of Understanding (MOU) between the two agencies. The dam is integral to the Big Stone National Wildlife Refuge and was completed in 1974. Improvements to the upstream Minnesota River channel and modification to the existing Big Stone Lake outlet control structure were completed in 1987. The project was designed to be multipurpose in that it not only provides flood control, but also a means for the enhancement of migratory wildlife.

1.5 Sustainable Rivers Program

The proposed project is funded by the Sustainable Rivers Program (SRP). SRP is a nation-wide initiative and partnership between the Corps and The Nature Conservancy (a global environmental nonprofit) that looks at various watersheds and is focused on enhancing the environment through coordinated Corps-managed reservoir operations modifications. The SRP began in 2002, as an effort to find more sustainable ways to manage river infrastructure to maximize benefits for people and nature. The focus of the SRP is determining unique flow requirements for rivers and then creating operating plans for dams that achieve environmental flows to revive and sustain critical ecological functions and habitat for species.

Science from SRP sites is proving that re-operating dams and modernizing other river infrastructure as part of whole-river system increases the benefits they provide, particularly when done in coordination with stakeholders and Tribal partners.

2 Alternatives

2.1 No Action Alternative

The Highway 75 Structure is operated by USACE in accordance with a USACE water control manual and July 16, 1975 MOU with the U.S. Fish and Wildlife Service (USFWS). The Highway 75 Reservoir and surrounding lands are part of the Big Stone National Wildlife Refuge.

- During the critical waterfowl use period, May through October, the Highway 75 Dam gates are operated to maintain the reservoir pool at the conservation pool elevation between 947.3 and 952.3 (based on a request by the USFWS prior to spring runoff). If heavy flows occur during this period, the reservoir is operated for flood control and the conservation elevation may be exceeded.
- During low flow periods small releases are made through the gated low flow conduit provided in the dam as required.
- Spring Runoff: Prior to spring runoff, the pool is lowered to elevation 947.3, providing five feet of flood storage below the top of conservation level.
- Summer Floods: If a summer flood should occur conservation elevation may not be able to be held. The reservoir will be operated for flood control.
- Water Storage Strategy: Under normal conditions, the pool at the Highway 75 Dam will be maintained at conservation pool level, elevation 947.3-952.3, during late spring, summer, and early winter, with drawdown to elevation 947.3 in late fall or early winter. Minimum flow at Highway 75 Dam is two cubic feet per second (cfs). The total inflow into the Highway 75 Reservoir is the sum of the flows of the Minnesota River at Ortonville and the Yellow Bank River near Odessa.

2.2 Proposed Alternative

The Proposed Alternative is to conduct a gradual growing season drawdown of East Pool every few years. The gradual drawdown, which will be performed by USACE, would expose mudflats across several hundred acres for the primary benefit of providing shorebird habitat and reducing invasive carp numbers. The existing dam infrastructure would be utilized to target the shorebird migration period from mid-July through late-September. The proposed drawdown would begin following spring runoff (estimated around beginning of May) and run through approximately the end of October. A full drawdown is defined as reaching a target elevation of 942.3 feet. Modeling has shown that with an average inflow, elevation 943.8 could be reached, but in a dry year elevation 942.3 could be reached.

If the leaf gate is not set at 947.3' following spring runoff, it will be slowly lowered over approximately three weeks, with a maximum of 1-ft change in gate elevation for each movement. At the same time, the low-flow structure will slowly be opened. Example: Assuming a starting leaf gate elevation of 952.3', the leaf gate would be fully lowered to 947.3' as shown in Table 1. The low flow structure would be left closed for the first two movements, and gradually opened during the last three movements (Table 1). By the end of these five movements, both the leaf gate and low flow structure would be fully open. Table 1 is just a suggested guide. Actual movements and number of movements would depend on the starting elevation and inflows; however, movements would be made in small increments.

Table 1. Gate Movements During Drawdown.

	Movement	Leaf Gate	Low Flow Structure
May	1	951.3’	Closed
	2	950.3’	Closed
	3	949.3’	1.0’
	4	948.3’	2.0’
	5	947.3’	3.0’
October	6	947.3’	0.5’

During an average year, the maximum discharge would be approximately 1,200 cfs and a full drawdown expected to be reached by mid-August. If a full drawdown is not reached by the end of September, then a full drawdown would not be possible that year. The leaf gate and low flow structure would remain fully open until the end of October, unless flood conditions require a different operating plan. Once the drawdown time frame is complete, the leaf gate would remain open, and the low flow structure would be closed to 0.5’ to maintain the minimum discharge of 2 cfs.

2.2.1 Channel Dredging

A survey of the trans-basin channel leading from the Minnesota River to the interior of the Highway 75 Reservoir (Figure 3) shows that sedimentation has accumulated in the decades since construction. To maximize the drawdown and wildlife habitat values, the 7,000 linear foot trans-basin channel would be dredged by US Fish and Wildlife Service to the as-built dimensions of elevation 942.0’, a 45-foot bottom width and 3:1 side slopes.

The dredging requires that approximately ~60,000 cubic yards (cy) of material be removed. Prior to dredging, the dredged material would be tested by USFWS and if clean, the material would be mechanically placed by USFWS in five upland areas (32 acres) adjacent to the trans-basin channel (Figure 3). These five areas were chosen due to their close proximity to the dredged areas. The five areas are predominately covered in smooth brome, were heavily disturbed prior to and during the construction of the Hwy 75 Project and were farmed prior to construction and are therefore not remnant prairie. Dredged material would not be placed in a wetland or other Waters of the United States (WOTUS). If the dredged material is contaminated, USFWS would need to dispose the material in an approved offsite location and will prepare any necessary supplemental National Environmental Policy Act (NEPA) documentation.

Dredged material would be placed over 32 acres and spread to an average depth of one foot. A seed mix would be spread over the material to stabilize the soils and to prevent it from washing back into the reservoir. The seed mix would include forbs and legumes favorable to pollinators, monarchs, and grassland birds.

2.2.2 Monitoring, Adaptive Management and Agency Coordination

Prior to a drawdown being initiated, USFWS would coordinate with the Minnesota Department of Natural Resources (MNDNR), Lac qui Parle Wildlife Management Area (WMA). The Lac qui

Parle WMA manages Marsh Lake, a 5,000-acre shallow reservoir along the Minnesota River in Big Stone, Chippewa, Lac qui Parle, and Swift Counties. The Marsh Lake Project, described in Section 3.5.1 and shown in Figure 1, includes a water control/drawdown structure. If MNDNR determines a drawdown on Marsh Lake is needed, then no drawdown would occur within East Pool. USFWS would also coordinate their yearly drawdown plan with USACE each year.

The primary purpose of the Highway 75 Project is flood control. Therefore, if a heavy rainfall event occurs where the Highway 75 Dam cannot evacuate the inflow quickly enough to maintain the drawdown, then water would be held in East Pool. The drawdown would start over once water could be released, potentially not again until the following year.

Bird monitoring, conducted by USFWS, would occur to determine the effect the drawdown has on shorebird use as well as for any sign of a botulism outbreak. If there were signs of an outbreak, water levels would be stabilized or the reservoir would be refilled to control the outbreak.

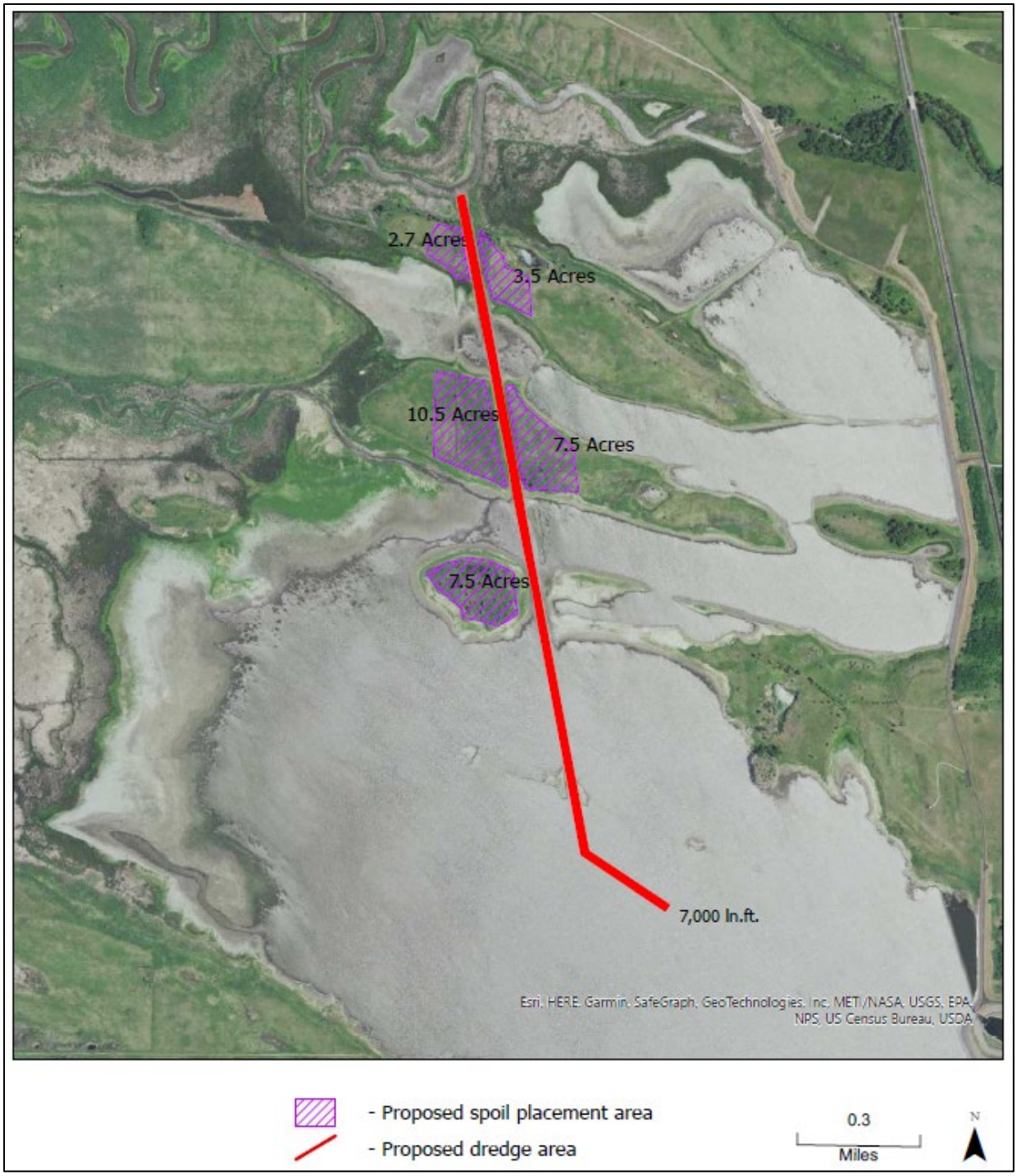


Figure 3. Location of Trans Basin Channel and Dredged Material Placement Sites.

2.3 Other Alternatives Considered

2.3.1 Artificial nesting cover

The use of dredged material to create nesting islands has become important to establishing new nesting habitat for birds, as natural habitats have been lost or degraded. This alternative would encourage nesting on created islands; however, during a flood event, water levels on East Pool would be raised and nests could be washed away. Therefore, this alternative was removed from further consideration due to the potential to destroy shorebird nests.

3 Affected Environment and Environmental Consequences

Straddling the headwaters of the Minnesota River in extreme west-central Minnesota, Big Stone National Wildlife Refuge is within the heart of the tallgrass prairie's historic range. Today, less than one-percent of tallgrass prairie remains. The Refuge is located near the Lac qui Parle State Wildlife Management Area, Lac qui Parle County Waterfowl Production Area, and Bucholz Waterfowl Production Area – Big Stone County.

3.1 Natural Resources

3.1.1 Air Quality

The U.S. Environmental Protection Agency is required by the Clean Air Act to establish air quality standards that primarily protect human health. These National Ambient Air Quality Standards (NAAQS) regulate six major air contaminants across the U.S. When an area meets criteria for each of the six contaminants, it is called an “attainment area” for the contaminant; those areas that do not meet the criteria are called “nonattainment areas.” Lac qui Parle County, Minnesota is classified as an attainment area for each of the six contaminants and is therefore not a region of impaired ambient air quality (U.S. Environmental Protection Agency 2023). This designation means that the project area has relatively few air pollution sources of concern.

No Action Alternative – The No Action Alternative would have no effect on air quality.

Proposed Alternative – The Proposed Alternative would have a minor, temporary effect on air quality while the channel is being dredged due to the operation of heavy equipment such as excavators, graders, and dump trucks. Dredging would occur over one week and would be conducted once. The drawdown would have no effect on air quality as the dam gates are operated manually.

3.1.2 Water Quality

The amount of water quality data collected from East Pool is limited, but like the downstream reservoirs (Lac Qui Parle and Marsh Lake) the impoundment is characterized by hard, nutrient-rich water and frequently suspended sediments. Currently, the Minnesota River delivers water and transports sediments, with the potential to carry contaminants into the Refuge (Tangen et al 2019). In addition to this sediment loading, nutrients and heavy metals are suspected of affecting one or more pools on the Refuge and the Minnesota Pollution Control Agency has listed the Minnesota River reach between Big Stone Lake and Marsh Lake Dam as impaired for aquatic life (MPCA 2024).

No Action Alternative – The No Action Alternative would have no effect on water quality beyond existing conditions.

Proposed Alternative – The drawdown would have a minor positive effect on water quality by temporarily reducing the carp population which would decrease turbidity levels. Additionally, drawdown periods would result in the settling of sediments due to reduced deep water wave action and would allow for the establishment of vegetation to further stabilize sediments. However, in years where no drawdown occurs, carp populations and turbidity levels would likely return to pre-drawdown levels. The slow rate of the drawdown as well as dilution from other incoming waters would not result in nutrient loading downstream. Dredging the channel would result in a temporary, minor increase in turbidity in the immediate area; however, turbidity levels would return to baseline conditions following dredging. Dredged material placed in uplands would be seeded to prevent material from running off into East Pool.

3.1.3 Wetland and Lacustrine Habitat

The Refuge historically offered a combination of small wetlands and abundant prairie – both critical to waterfowl breeding and nesting. Small wetlands – some temporary and some permanent - provided not only nesting habitat, but also food and shelter for egrets, herons, and other waterbirds. The Highway 75 Dam created two impoundments, referred to as the West and East Pools, that added an additional 4,250 acres of wetlands to the Refuge. Water levels in these two pools can be managed to provide the right mix of plants and water during different seasons. Refuge wetlands support a diversity of wildlife by providing resting, feeding, and nesting habitat for birds.

West Pool consists of approximately 2,067-acres of wetlands (1,921 acres of permanent and semi-permanent wetlands and 146-acres of seasonal and temporary flooded wetlands) and is reported to be the most productive pool on the Refuge. The western third of the pool is covered by a dense stand of cattail and willow with some moist soil plants (e.g., smartweed, beggarticks and grasses) along the backwater edges. The eastern two thirds of the pool is open water with robust submerged aquatic vegetation. Presumably due to water depths and velocity, it maintains a good mix of open, shallow water and emergent vegetation in the middle third of the pool.

East Pool receives water from both the Minnesota River (that West Pool outlets into) and the Yellow Bank River. It consists of approximately 1,794-acres of wetland (1,679 acres of permanent and semi-permanent wetlands and 115-acres of seasonal and temporary flooded wetlands). Wetland substrate on the west side of East Pool is mudflat that, when exposed, provides high quality feeding habitat for shorebirds.

The remaining six pools (Pools 3, 3b, 4, 4a, 5, and 6) are much smaller and collectively encompass approximately 292 acres of permanent and semi-permanent wetland and 40 acres of seasonal and temporary wetlands.

Pools 3 and 3b are composed of approximately 15 acres of permanent and semi-permanent wetland and eight acres seasonal and temporary wetlands. Because of a lack of adequate water supply and control, Pools 3 and 3b are susceptible to narrow-leaved cattail domination.

Pool 4 lies adjacent to the Minnesota River and East Pool. The water control structure on the wetland basin essentially acts as an inlet and/or outlet depending on water conditions and water level management objectives. Its water level management capabilities depend mainly on backflowing water from East Pool. As a result of having to back flow water from downstream, rather than capturing it from upstream, Pool 4 has difficulty with source water supply and therefore with cattails.

Pool 6 is typically backfilled from West Pool through a half-round riser stoplog water control structure. If the water levels recede, mudflats become available. The backwater area of this wetland is dominated by cattail, hardstem bulrush, and smartweed.

No Action Alternative – The No Action Alternative would have no effect to wetland and lacustrine habitat beyond existing conditions. Carp would continue to inhabit East Pool creating turbidity and retarding aquatic vegetation growth.

Proposed Alternative – Under the Proposed Alternative, the Highway 75 Reservoir would be managed closer to a moist soil unit as described in Section 1.3.1 versus the current open water areas. Management of water levels in this fashion would increase the establishment of moist soil wetland plants and provide water depths attractive to feeding waterfowl and shorebirds (Norrgard 2010). Managing East Pool by drawing water down during the growing season would re-establish a wetland plant community. The long- and short-term fluctuations in water levels would influence plant succession and maintain wetland productivity. Plant species associated with moist soil/mud flat conditions provide high energy food resources for both shorebirds and waterfowl. Decomposing plants can provide habitat for aquatic invertebrates, particularly in the spring when shorebirds and waterfowl require this important source of nutrition. Seed producing annual plants growing during the summer dry period provide excellent brood habitat for pheasants as well as food for other bird species. When flooded in early fall, seeds would be available for migrating birds. Reflooding vegetation established during the drawdown would also create an abundant food base that would stimulate the production of invertebrates (Norrgard 2010). Overall, the Proposed Alternative would have a beneficial effect on wetland and lacustrine habitat. Currently, a significant portion of the area is open water without submerged aquatic vegetation or emergent vegetation. The drawdown will promote the growth of vegetation which will provide habitat for numerous species of wildlife.

3.1.4 Terrestrial Habitat

Grasslands

Abundant grasslands that once covered west-central Minnesota were critical for nesting waterfowl and a variety of other birds. This is typical tallgrass prairie country where only occasional oak trees can be found. The refuge is fortunate to have 1,245 acres of remnant or unplowed tallgrass prairie. Remnant tallgrass prairie once covered more than 25 million acres of Minnesota and Iowa. The original tallgrass prairie is mostly gone now with 1-4 percent remaining and is arguably the rarest habitat in North America. There are no remnant prairies within the project area, as it was either farmed before the construction of the reservoir or construction of the reservoir would have destroyed the remnants. The areas that are now peninsulas or islands mainly consist of smooth brome.

Grasslands on the Refuge consist of both remnant prairie and restored grasslands. Both contain a gradient of wet, mesic, and dry conditions resulting from local hydrologic influences and geomorphic position within the landscape. Mesic to dry prairie species composition varies across units. Historic disturbance and management by the Refuge or past landowners, as well as soils, hydrology, and landscape position, largely influence this variation. Wet prairie areas dominated by sedges, rushes, and prairie cordgrass are still intact in some areas, but most of the wet meadows are dominated by reed canary grass and American phragmites.

Regardless of the grassland type, many unwanted species are encroaching, notably: Kentucky bluegrass, smooth brome, crown vetch, Canada thistle, leafy spurge, and reed canary grass. In addition to herbaceous invasive species, woody invasive species such as colonizing natives like boxelder and green ash and non-native woody species like common buckthorn and Siberian elm, are common in many grassland units. Historically, fire and large ungulate grazing (e.g., bison) influenced the structure, function, and composition of prairie. Currently, the Refuge relies on prescribed burning and occasional livestock grazing to manage grasslands.

Remnant Prairie

According to Marschner (1974), in pre-European settlement times 11,426 acres of native prairie were present within the current Refuge boundary and native tallgrass prairie dominated the landscape in this region. Some remnant prairie sites, characterized as never-been-tilled grasslands dominated by native grasses and forbs, remained intact prior to establishing the Refuge. These areas were primarily used as pastureland. Today, only 1,237 acres of native remnant prairie habitat remain within the Refuge boundary (2020 unpublished Refuge data; Figure 2-9) and very little remains in the counties surrounding the Refuge (Figure 2-10).

Remnant prairie is dominated by short-to-medium height, native prairie grasses with scattered clumps and pockets of tallgrass species and a suite of forbs. Forbs typically present include such species as yellow coneflower, purple coneflower, beardtongues, false gromwell, purple prairie clover, wild bergamot, blazing stars, and lead plant. The native cool-season grasses include junegrass , needle and thread, porcupine grass, and western wheatgrass. The warm season grass component consists of sideoats grama, little bluestem, switchgrass, Indiangrass, big bluestem, prairie sandreed, prairie dropseed, tall dropseed, plains muhly grass, and blue grama.

Planted Grasslands

Planted grasslands on the Refuge, presently about 3,262 acres, are located on sites that at one time were native prairie but were converted to agriculture or some other cover type. Planted grasslands are categorized by Refuge staff as fully restored, partially restored, or areas dominated by non-native cool season grasses.

Fully restored grasslands vary in their species composition, and their structure. They contain a mix of warm season grasses and forbs and were seeded with the intent of restoring native prairie vegetation. Although they lack the intact soils of the remnant prairies, fully restored grasslands include many of the native grasses and forbs found in the remnant prairies. Diverse communities consisting of cool and warm season grasses and forb species are found in these grasslands. Dominant species include big bluestem, little bluestem, switchgrass, Canada wild rye, sideoats grama, prairie and tall dropseed, yellow coneflower, purple coneflower, purple prairie clover, thimbleweed, blazing stars, and goldenrods.

Partially restored grasslands are dominated by native grass species but lack many or all of the forbs found in fully restored grasslands. These grasslands are typically dominated with tall (up to six feet) warm season native grasses including big bluestem, Indiangrass, switchgrass, and Canada wild rye, but the lack of forbs makes these areas less floristically and structurally diverse than either fully restored grasslands or remnant prairie.

Grasslands restored in the 1970s to 1980s are dominated by non-native cool season grasses (e.g., smooth brome and Kentucky bluegrass). These areas were removed from past land uses such as row cropping with the intent to increase the amount of dense nesting cover available for waterfowl.

Granite Outcrops

The most unique habitat on the Refuge consists of lichen-covered granite outcrops. This unique habitat also represents the namesake for Big Stone National Wildlife Refuge. There are approximately 82 acres of granite outcrops on the Refuge. Granite outcrops in the Upper Minnesota River Valley area were identified as a target plant community for protection in Minnesota Wildlife Action Plan (MNDNR 2016). The community type itself is considered an imperiled community within the state. Globally, it is considered a G3, or vulnerable, community type.

There are three main threats to granite outcrops and the species that inhabit them: land use conversion through quarrying, woody species invasion, and impacts related to users, such as foot traffic damaging soils or illegal plant collection. Protecting and restoring granite outcrop habitats will benefit granite outcrop-obligate species, such as ball cactus and small-flowered fameflower from degradation.

Granite outcrops contain shallow fragile soils that can be easily disturbed and several of the granite outcrops have become overgrown by trees and shrubs while others maintain open grass cover. Some native tree and shrub species, like oak, exist on the outcrops; however, most of the trees are non-native or invasive species. The only population of ball cactus in the state of Minnesota is located on the outcrops that lie in the upper portion of the Minnesota River Valley. No surveys have been conducted in the past seven years to confirm population numbers or trends over time. Historically, the Refuge reported a high count of 2,230 individual ball cacti on Refuge outcrops. The number dropped to 2,014 in 2010, and the last Refuge census count in 2014 recorded 1,693 individuals. The Refuge currently has 745 individual cacti being monitored using geolocation (unpublished Refuge data). The primary threat for this species is believed to be from persons collecting the cacti, typically for use in home landscaping. Transplanting and translocation efforts currently are underway in partnership with the MN Landscape Arboretum and other partners.

In addition to intentional removals, vegetation encroachment from the surrounding prairie is another threat to the cacti on these outcrops. Species such as smooth brome and Kentucky bluegrass have encroached upon many outcrops, outcompeting native vegetation. Several other unique, native species found on the outcrops include brittle prickly pear cactus, mugworts, ferns, small-flowered fameflower, and mousetail. Most of the native vegetation found on the outcrops is reflective of shortgrass prairie and is rich in forb diversity.

A unique feature found within the granite outcrops of the Refuge are the small depressional pools associated with the granite outcrops. These ephemeral or vernal pools temporarily hold snowmelt and rainwater. They range in size from 4.7 inches to 32.3 feet and hold 0.8 to 4 inches of water when full. They typically dry up within two to four weeks but, during that time, several species of aquatic plants, including many state endangered species (e.g., blue mud plantain and water hyssop), complete their life cycles. The only management for these pools is protection.

Forest and Shrub

Approximately 960 acres of forest and shrub habitat exist on the Refuge. This habitat type includes riparian forests that are primarily concentrated along the Minnesota River and Yellow Bank River corridors. Seasonal and, at times, prolonged flooding hampers the growth of understory vegetation including young trees. The remainder of the forest and shrub habitat is scattered trees and lowland shrubs found in the prairie coulees, old farmstead sites, wetlands, and grasslands. Much of this habitat type is contained in small tracts, field edges, and riparian corridors and is not formally managed. Some areas were included in previous prescribed burns, but only when incidental to burns in adjacent grasslands or wetlands.

Primary bottomland and upland tree species that dominate the canopy of these areas include plains cottonwood, American elm, silver maple, green ash, willow, boxelder, and oak. Tree encroachment from these areas is a threat to remnant prairie and restored grasslands on the Refuge.

No Action Alternative – The No Action Alternative would have no effect on terrestrial habitats beyond existing conditions.

Proposed Alternative – The Proposed Alternative would include placing dredged material on approximately 32 acres of uplands which would potentially improve grassland habitat long-term. The dredged material would be seeded with a conservation mix containing at least 30 species of native plants and provide nesting cover for birds, food, and cover for mammals, as well as nectar sources for pollinators. Remnant prairies would not be impacted. There would be no changes to granite outcrops or forested/shrub areas. The drawdown and dredging the channel would have no effect on terrestrial habitat.

3.1.5 Birds

Historically, more than 250 species of birds have been recorded at Big Stone National Wildlife Refuge. A wide range of passerine and other birds common to the region visit the Refuge at some time during the year as it serves as an important migration stopover. Approximately 50 species of passerines have historically been documented from point count surveys.

Raptors

Twenty-three species of raptors use the Refuge and surrounding area. Of those, seven species have been documented as nesting on the Refuge. Red-tailed hawk, Swainson's hawk, northern harrier, American kestrel, great-horned owl, and eastern screech-owl are some of the more common species observed. Historically, up to three bald eagle pairs have nested on the Refuge on average, and individuals are commonly observed year round. Peregrine and prairie falcons are occasionally observed during fall migration.

The only management for tree nesting raptor species occurs with bald eagle nest tree protection in accordance with the Bald and Golden Eagle Act management guidance.

Upland Game Birds

Several species of non-migratory game birds are found at the Refuge. Ring-necked pheasants, though an introduced species, have a stable population. Historically, gray partridge have been observed during the winter months. Eastern wild turkeys were reintroduced to the area in 1995, and the population has been slowly growing since then and turkey sightings are now common. The greater prairie chicken was reintroduced into west-central Minnesota from 1999 to 2005. Fifty-eight prairie chickens were released on the Refuge during this time. Most of the birds settled off-Refuge. Prairie chickens are now only rarely observed. Sharp-tailed grouse were documented on the Refuge during the winter of 2006. During the spring of 2007, a sharp-tailed grouse lek was located in the South Prairie 2 unit. Surveys for lek locations are not regularly conducted as no active leks are believed to exist on the Refuge, and harp-tailed grouse are only occasionally observed.

Waterfowl and Waterbirds

Forty-six species of waterfowl and waterbirds have historically used the Refuge for migration and/or nesting. During spring and fall migrations in 2006, waterfowl numbers have been estimated up to 75,000 ducks and 84,000 geese (USFWS 2012). Because the Refuge is positioned between the Mississippi and Central Flyways, it hosts both western and eastern bird species.

Breeding waterfowl pair counts have historically been conducted by Refuge staff. Dominant species recorded from those surveys include Canada geese, mallards, blue-winged teal, gadwall, green-winged teal, lesser scaup, and ring-necked ducks. Hooded mergansers and wood ducks also can be found on the refuge.

Marsh birds and other waterbird species were historically monitored during the spring and fall migration periods at the same time as waterfowl. Although there is much variation and likely many missing species in these counts, due to the secretive nature of many of these birds, documentation of species occurrence is still considered important. The most frequently

observed waterbird species include American white pelican, great egret, great blue heron, green heron, double-crested cormorant, American coot, pied-billed grebe, western grebe, and black-crowned night heron.

Shorebirds

Shorebirds are very common during the migration periods in the spring and fall. Forty-six species of plovers, sandpipers, terns, and gulls have been documented on the Refuge. Sandpipers, terns, and gulls are the most prominent during the migration periods. Although rare in most parts of the state, black terns nest on the Refuge and are easily observed during the summer. Woodcock are not surveyed on the Refuge but are present around the wetland complexes and occasionally observed.

In summer/fall 2023, local volunteer birders tracked the use of these pools by migrating shorebirds. They conducted point counts at six locations (Figure 4). Two of these points (1 and 3) offered views of small wetland areas regularly managed by refuge staff that empty into East Pool. The other four points were located along shoreline vantage points of East Pool. These viewpoints do not permit viewing of all of shorebird habitat present within East Pool but provide viewsheds of approximately 500 acres (about 30 percent) of the total pool.

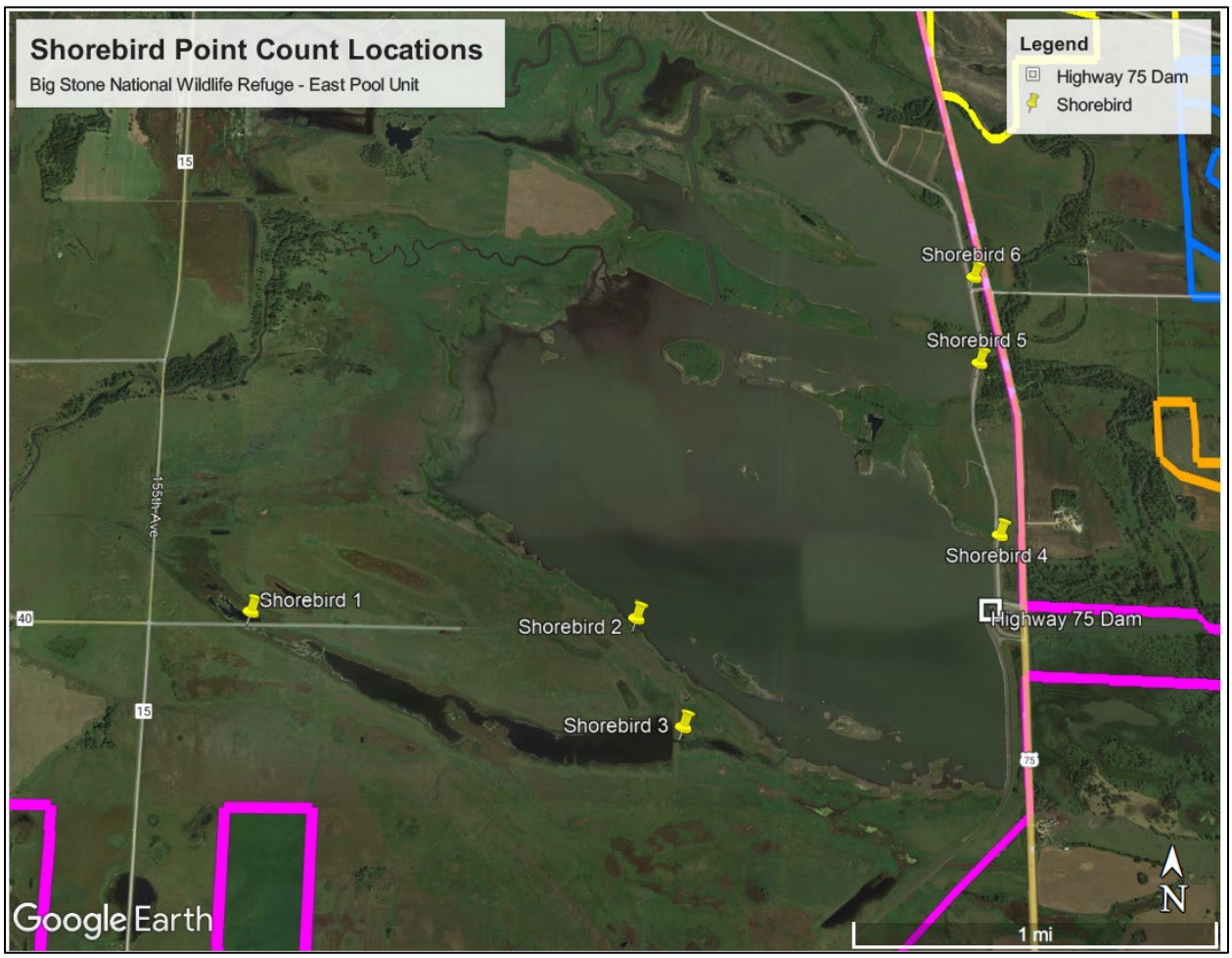


Figure 4. Shorebird monitoring locations.

Two volunteers conducted 54 separate count days from July 9 to October 25, 2023 (one count every 2-3 days). They observed 25 shorebird species (Table 2). An additional 15 incidental species were recorded. A total of 8,581 bird detections were made, of which 7,829 were shorebirds. The most commonly recorded species were least sandpipers (2,953 detections) and killdeer (1,622 detections). Twelve shorebird species had fewer than 10 detections each and were left out of subsequent analyses.

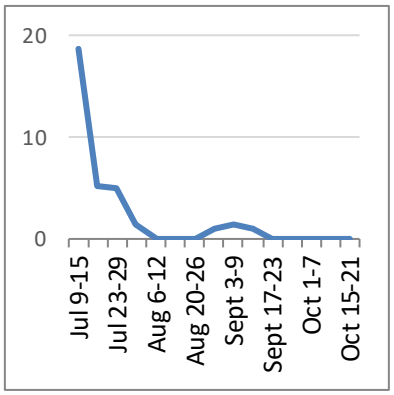
Table 2. Shorebirds observed around East Pool at Big Stone NWR from July 9 - October 25, 2023.

American Avocet*	Buff-breasted Sandpiper*	Long-billed Dowitcher*	Sanderling*	Spotted Sandpiper
American Golden-Plover*	Greater Yellowlegs	Marbled Godwit*	Semipalmated Plover	Stilt Sandpiper
Baird's Sandpiper	Killdeer	Pectoral Sandpiper	Semipalmated Sandpiper	White-rumped Sandpiper*
Black-necked stilt*	Least Sandpiper	Red-necked Phalarope*	Short-billed Dowitcher	Wilson's Phalarope*
Black-bellied Plover*	Lesser Yellowlegs	Ruddy Turnstone*	Solitary Sandpiper	Wilson's Snipe

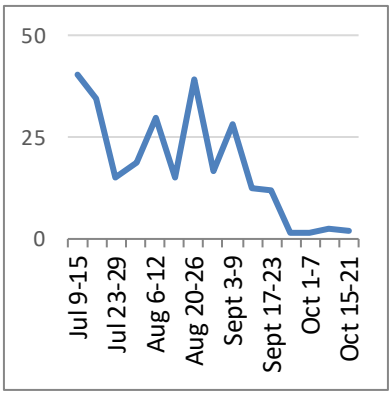
*Less than 10 detections

Migration curves were created for the 14 most observed shorebirds (28 - 2,953 detections per species; Figure 5). Detections were lumped into one week time intervals while controlling for the number of site visits conducted during each interval (total detections for the week/number of site visits that week).

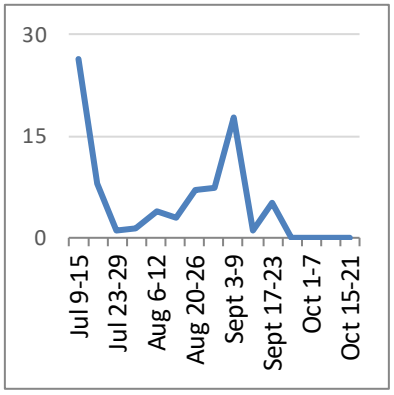
Observation points along refuge managed pools (points 1 and 3) had more detections overall and for most of the top 14 shorebird species individually (Table 3).



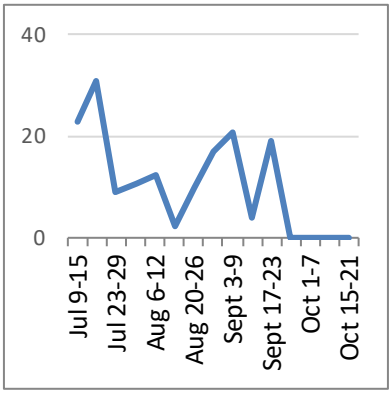
Short-billed Dowitcher



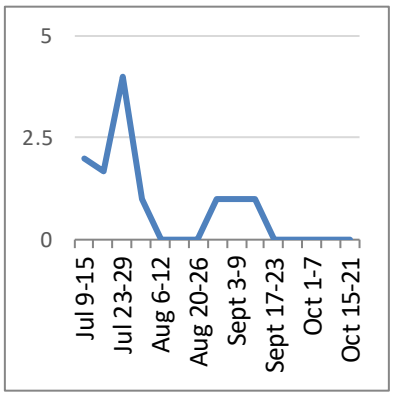
Lesser Yellowlegs



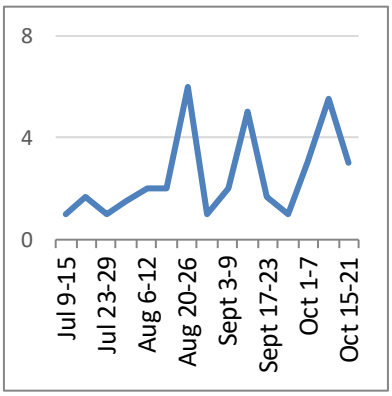
Stilt Sandpiper



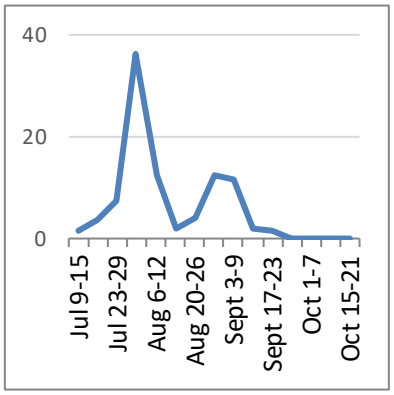
Semipalmated Sandpiper



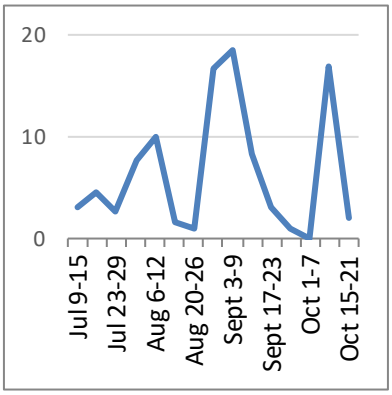
Solitary Sandpiper



Greater Yellowlegs



Semipalmated Plover



Pectoral Sandpiper

Figure 5. Migration curves for 14 shorebird species that stopped over at Big Stone NWR from July 9 - October 25, 2023. The range in the total number of detections for each species was 28 - 2,953. Migration week is on the x-axis. Detections were lumped into one week time intervals while controlling for the number of site visits conducted during each interval (y-axis). Thus, line heights are not comparable between species, but simply reflect periods of heavy stopover for each individual species.

Table 3. Total number of shorebird detections in Big Stone NWR at points along East Pool (Points 2, 4, 5, and 6, see Fig.1) and at other observation points along refuge staff managed pools (Points 1 and 3, see Fig.1). The highest count for each row is indicated in bold.

Species	East Pool Points (~500 acres visible)	Other Points (~50 acres visible)
American Golden-Plover	0	**8**
Baird's Sandpiper	1	**73**
Greater Yellowlegs	**41**	27
Killdeer	817	**871**
Least Sandpiper	945	**2266**
Lesser Yellowlegs	457	**491**
Pectoral Sandpiper	87	**155**
Semipalmated Plover	25	**295**
Semipalmated Sandpiper	109	**431**
Short-billed Dowitcher	44	**82**
Solitary Sandpiper	**20**	11
Spotted Sandpiper	**686**	54
Stilt Sandpiper	61	**199**
Wilson's Snipe	**62**	30
Grand Total	**3355**	**4993**

Shorebird stopover at Big Stone NWR extends at least from early July to the end of October. Careful management of water levels over this extended period is key to maintaining mudflats while optimizing water levels for flood control purposes. Large numbers of shorebirds of many different species currently use refuge impoundments on migration and would likely make use of increased habitat along East Pool.

No Action Alternative – The No Action Alternative would have no effect on raptor or upland game bird species. The No Action Alternative would have no effect to waterfowl or shorebirds beyond existing conditions. Shorebirds would continue to utilize the Refuge as described above.

Proposed Alternative – The drawdown would have no effect on upland game birds or raptors. The dredging would create noise and discourage upland game birds from utilizing adjacent uplands for a short period of time. The placement of dredged material to create improved grassland habitat would be beneficial for upland game birds in the long-term.

The Proposed Alternative would have a beneficial effect on waterfowl and shorebirds as this management action would provide habitat for these species. Many species, including shorebirds and dabbling ducks, prefer shallow water depths, and shorebirds typically utilize mud flats created during a drawdown. Reflooding the Highway 75 Reservoir in the fall could also provide

additional habitat for waterfowl such as dabbling ducks which prefer water depths of less than six inches and as little as two to three inches (Norrgard 2010). Plants that thrive under this proposed management regime include beggarticks, smartweeds, broad-leaved arrowhead, pickerelweed, etc. These species are a few examples of plants that provide waterfowl food sources as well as pollinator habitat.

3.1.5.1 Avian Botulism

Botulism is a natural toxin produced by a bacterium (*Clostridium botulinum*) commonly found in the soil. The type of botulism toxin that birds can contract does not affect humans. Botulism is concentrated in aquatic invertebrates that filter feed sediments or water. When birds eat the invertebrates, they get a concentrated amount of toxin. A bird-to-bird cycle can also exist where maggots feeding on dead birds can concentrate the toxin and can then be eaten by and poison other birds. Typical signs of botulism in birds include lethargy, weakness, inability to hold up the head or to fly. For waterfowl, this can be deadly because the inability to hold up the head can lead to drowning. Avian botulism is a serious concern. In August 1992 and 1993 on nearby Mud Lake, significant botulism outbreaks occurred resulting in the loss of over 2,600 and 7,300 ducks, geese, and shorebirds, respectively.

No Action Alternative – The No Action Alternative would have no effect on the risk of an avian botulism outbreak.

Proposed Alternative – The Proposed Alternative could increase the potential for avian botulism outbreaks as outbreaks coincided with water level declines in East Pool. Although rare, environmental factors which contribute to botulism outbreaks in birds include the presence of large numbers of birds, warm temperatures, decaying vegetation, bird carcasses, and declining water levels that expose anoxic soils. Optimum growth for the bacterium that causes avian botulism occurs in anoxic sediments, in the presence of decaying organic matter and during warm summer temperatures, typically above 77°F. The severity of botulism outbreaks can be lessened and even controlled on impoundments such as East Pool through properly timed water level manipulations. If there were signs of an outbreak, water levels would be stabilized or the lake would be refilled to control the outbreak. Channel dredging and placement of the dredged material into uplands would have no effect on the potential for an avian botulism outbreak.

3.1.6 Fish and Freshwater Mussels

<u>Fish</u>
Currently, there is no regular management of fish, although some stocking does occur by the MN DNR. A fishery survey conducted in 2022 by USFWS staff documented thirty species in East Pool and the Minnesota River. Game species most often encountered in East Pool were yellow perch, white bass, and black crappie. Common carp were the most abundant species captured overall in East Pool.

Proportional Stock Density (PSD) indices were calculated to aid in the evaluation of fish species size composition. This index measures the proportion of fish that fall within stock, quality, preferred, memorable, and trophy size categories within a given population (Gabelhouse 1984). Generally, quality sized fish for each respective species are of harvestable size. In East Pool, no yellow perch were of quality size, while 3 percent of bluegill fell within that category. A handful of bluegill did reach memorable (two fish) and nearly trophy size (one fish). No walleye captured reached quality size in East Pool. No northern pike reached quality size, though 23 percent of fish captured fell within the preferred category. Roughly 3 percent of white bass were of quality size in East Pool and 23 percent of black crappie. A normal PSD range for prey fish is between 20 – 40 percent while predator species should fall within 40 – 70 percent.

Freshwater mussels

Fifteen species of freshwater mussels have been identified on the Refuge (unpublished Refuge data). Refuge surveys in 1999 revealed the most common species to be the fat mucket (USFWS 2012). Most of the species exist in the wetlands and rivers on the Refuge. However, three of the species—Wabash pig-toe, pink papershell, and creek heel-splitter—were found in the Yellow Bank River.

No Action Alternative – The No Action Alternative would have no effect to fish and mussel species beyond existing conditions.

Proposed Alternative – Fisheries surveys have documented very few fish species of quality size, likely due to the low dissolved oxygen levels in the summer and/or winter. The water is currently already too shallow to provide suitable habitat for a sustainable fishery. The proposed drawdown is not expected to significantly impact the local fish populations as a large number of fish will follow the water back to the Minnesota River. Mussel species would not be impacted by the drawdown given that the species is located in the Minnesota River, which will maintain flow throughout the process.

3.1.7 Other Wildlife Species

Mammals

Forty-five mammal species inhabit the Refuge. White-tailed deer, coyotes, rabbits, squirrels, ground squirrels, and chipmunks are the most visible mammals on the Refuge. Beaver, muskrat, mink, and raccoon can be found along river corridors and cattail marshes. The prairie supports a diversity of wildlife, and less observable but common species include shrews, moles, weasels, pocket gophers, mice, and voles. River otters were reintroduced to the Refuge in 1981, and a viable population continues to thrive today. Refuge grasslands and marshes are important for all these species for forage and cover.

Amphibians and Reptiles

Seventeen species of amphibians and reptiles have been documented on the Refuge. The most observed species are the western painted turtle, western plains garter snake, and northern leopard frog. Prairie skinks are occasionally seen on the granite outcrops, and western spiny softshell and snapping turtles can be observed along the banks of the Minnesota River and Yellow Bank River and elsewhere within the Refuge.

Insects

Insects are critical for wildflower pollination and vegetation decomposition. Various species of bees, butterflies, and other pollinating invertebrates have experienced documented declines over the past 20 years. At the Refuge, staff conducted butterfly surveys in 1988, 1999, 2000, 2009, 2018, and 2019. Staff have documented 46 species of butterflies on the Refuge (USFWS 2012). Managers must consider impacts to pollinator species when determining the type of management actions to use to improve habitat conditions.

No Action Alternative – The No Action Alternative would have no effect to other wildlife species beyond existing conditions.

Proposed Alternative – The drawdown would have no effect on other wildlife species whereas, the dredging would create noise and discourage wildlife species from utilizing adjacent uplands in the short-term. The original placement of dredged material would destroy existing vegetation in the immediate area, which could negatively impact some species. However, the placement areas are approximately 32 acres of non-native smooth brome with minimal native forb components. Application of a diverse native seed mix would greatly improve the plant diversity in the dredged areas and provide long-term benefits for pollinators and other prairie species.

3.1.8 Threatened and Endangered Species

3.1.8.1 Federally Listed Species

The U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) website was consulted on September 3, 2024 to identify potential presence of federally listed threatened and endangered species within the action area. Five species listed as threatened or endangered by USFWS may be found in the action area (Table 4). No critical habitat is within the action area.

Table 4. Federally listed species.

Common Name	Scientific Name	Status
Northern long-eared bat	*Myotis septentrionalis*	Endangered
Tri-colored bat	*Perimyotis subflavus*	Proposed Endangered
Dakota skipper	*Hesperia dacotae*	Threatened
Monarch butterfly	*Danaus plexippus*	Candidate
Western Regal Fritillary	*Argynnis idalia occidentalis*	Proposed Threatened

The Northern long-eared bat (NLEB) is a medium-sized bat that hibernates in caves and mines in the winter and in the summer roosts singly or in colonies under the bark or in cracks and crevices of trees. NLEB is relatively widespread, and USFWS lists NLEB as an endangered species because a fungal pathogen causing white-nose syndrome is sharply reducing populations (USFWS 2023b).

The tricolored bat is one of the smallest bats native to North America. During the winter, tricolored bats are found in caves and mines. During the spring, summer and fall, tricolored bats are found in forested habitats where they roost in trees, primarily among leaves. Female tricolored bats exhibit high site fidelity, returning year after year to the same summer roosting locations. Female tricolored bats form maternity colonies and switch roost trees regularly, whereas males roost singly (USFWS 2023c).

The Dakota skipper is a small butterfly that lives in high-quality mixed and tallgrass prairie, including moist bluestem prairie and upland prairie that is relatively dry, often on ridges and hillsides. Adults live for approximately three weeks during which time females lay eggs of the underside of leaves, up to 250 eggs if adequate resources are available. Larvae, or caterpillars, hatch in about ten days and build shelters at or below the ground surface. They emerge at night to feed on grass leaves until fall when they become dormant, overwintering in the base of native bunch grasses. The larvae emerge the following June to continue developing, pupation takes about ten days (USFWS 2023d).

Monarch butterflies are large and conspicuous, with bright orange wings surrounded by a black border and covered with black veins. The bright coloring of a monarch serves as a warning to predators that eating them can be toxic. During the breeding season, monarchs lay their eggs on their obligate milkweed host plant, and larvae emerge after two to five days. Larvae develop over a period of 9 to 18 days, feeding on milkweed and sequestering toxic chemicals as a defense against predators. The larva then pupates into a chrysalis before emerging 6 to 14 days later as an adult butterfly. There are multiple generations of monarchs produced during the breeding season, with most adult butterflies living approximately two to five weeks (USFWS 2023e).

Western regal fritillary is a large, distinctively marked butterfly found solely in native prairie habitats. Adults are rarely found outside of native prairie habitat and can be found in both upland and wet prairies; however larval development is likely restricted to upland prairies.

Larvae only feed on violet species which are typically dispersed within prairies, therefore the density of violets is critical to the success of the species. Nectar sources to support females into fall and tall prairie vegetation to provide shelter for all life stages are also critical for survival. (MNDNR 2024).

No Action Alternative – The No Action Alternative would have no effect on federally listed species.

Proposed Alternative – The action area does not include suitable habitat for the Dakota skipper, monarch, or western regal fritillary; therefore, the Proposed Alternative would have no effect to these species. The Proposed Alternative would also have no effect on NLEB or tricolored bats as no trees would be cleared as part of the project.

3.1.8.2 State Listed Species

There are six state listed species that may be present within the Refuge (Table 5).

Table 5. Minnesota state-listed species

Common Name	Scientific Name	Status
Regal fritillary	*Argynnis idalia occidentalis*	Species of Concern
Ball cactus	*Coryphantha vivipara*	Endangered
Forster's tern	*Sterna forsteri*	Species of Concern
Horned grebe	*Podiceps auratus*	Endangered
Common tern	*Sterna hirundo*	Threatened
Wilson's phalarope	*Phalaropus tricolor*	Threatened

Regal fritillary is discussed above in Section 3.1.9.2.

Ball cactus is a state listed endangered plant and is found on the granite rock outcrops on the refuge. This is a warm season cactus that flowers in June and July and produces fruits in the fall.

The Forster's tern is a state species of concern. Nesting within the Highway 75 project area has not been documented in several years. The project area does not provide suitable habitat at this time as the upper reaches of the Highway 75 Reservoir is primarily dense cattail and the rest is open water. The Forster's tern prefers vegetation equally interspersed with open water, or a hemi-marsh. The drawdown and future growth of vegetation could promote ideal habitat for this species.

The horned grebe is a wetland dependent species found in wetlands with emergent vegetation that is equally interspersed with open water. This species is usually seen using the large emergent marshes within Big Stone NWR each year, though no nests have been confirmed. East Pool may have horned grebes around the edges of the reservoir.

Common terns nest on rocky islands, barrier beaches, and saltmarshes and forage over open waters. Common terns primarily eat small fish typically less than seven inches long, but also consume crustaceans and insects. They take fish on the wing that are close to the water's surface or plunge dive to just under the surface. They also steal fish from each other and from other tern species and gulls. Common terns nest in colonies on the ground in areas with loose sand, gravel, shell, or cobble pebbles typically less than 350 feet from the water. They tend to choose areas with scattered, low-growing vegetation to provide cover for chicks. Common terns are infrequent visitors to East Pool. There are no confirmed nesting attempts in the past 10 years at Big Stone NWR.

Wilson's phalaropes breed in wetlands, upland shrubby areas, marshes, and roadside ditches. Wilson's phalaropes mainly eat small aquatic invertebrates such as midges and shrimp. While foraging in the water, they often spin in circles to create a whirlpool that sucks up food items to the surface of the water. The female usually chooses a nest site around the edge of a wetland or in surrounding upland vegetation. This species has been observed at the Refuge in recent years.

No Action Alternative – The No Action Alternative would have no effect on state listed species.

Proposed Alternative – The Proposed Alternative would have no effect on the ball cactus as the project would not impact the granite rock outcrops where ball cactus can be found. The project would also have no effect on regal fritillary as the placement of dredged material will be in areas dominated by smooth brome and without their host plant The conversion of smooth brome to native grasses and forbs would provide improved habitat for this species. Although Forster's tern do not currently nest in the Refuge, the drawdown and future growth of wetland vegetation could promote ideal habitat for Forster's tern. The future growth of wetland vegetation would also have a beneficial effect on the horned grebe and Wilson's phalaropes, which utilize wetland habitat.

3.1.9 Invasive Species

Exotic and invasive plant species pose one of the greatest threats to the maintenance and restoration of the diverse habitats found on the Refuge. They threaten biological diversity by causing population declines of native species and by altering key ecosystem processes such as hydrology, nitrogen fixation, and fire regimes. Left unchecked, these plants have come to dominate areas on some habitat units and have reduced the value of the land as wildlife habitat.

The primary invasive exotic species include smooth brome, Kentucky bluegrass, reed canary grass, Canada thistle, narrow-leaved cattail, and leafy spurge. Fire is currently used to set back the cool season exotic grasses. Late spring burns during the bolt stage of growth on Kentucky bluegrass and smooth brome injure the grasses and delay seed head development. Setting back these species at the right time benefits native warm season grasses and forbs. Occasionally, areas dominated by these species are hayed to prevent seed maturation. Cattails are controlled through water level manipulation, herbicide, discing, and mowing. Reed canary grass is another exotic cool season grass that is associated with wetlands. Currently the only means of controlling this species is to flood the plants for an extended period.

The encroachment of invasive woody species, namely trees, also has negative impacts on the prairie landscape. Very few trees were present prior to European settlement. As settlers homesteaded the area, they planted trees around their houses and created shelterbelts. Shelterbelts dotted the landscape. Over time the trees gradually spread throughout the prairie. Most of the species were not native to this area. Granite outcrops have shallow fragile soils and were too dry to support trees. However, over time boxelder and exotic elm trees became established and have continued to invade the outcrops. They threaten the endemic shortgrass plant species on the outcrops by shading them out.

Common carp is the primary pest species invading and degrading Refuge wetlands. Carp retard the growth of aquatic vegetation by consuming it and by causing turbidity in the water, which reduces photosynthetic efficiency, an essential component of wetland food chains. Pools, other than East Pool, are occasionally drawn down to provide waterfowl and shorebird habitat, an action that temporarily reduces carp abundance.

No Action Alternative – The No Action Alternative would have little effect on invasive species within the Refuge. Carp would continue to degrade the East Pool.

Proposed Alternative – The Proposed Alternative would have a temporary, beneficial effect to East Pool by reducing carp abundance which would decrease turbidity and increase aquatic plant growth following the drawdown.

3.2 Socio-economic Resources

3.2.1 Highway 75 Dam Infrastructure

During 1980 – 1981 there were occasions where riprap slid down the upstream slope of the Highway 75 embankment. Slides were attributed to soft embankment material, foundation consolidation, inadequate embankment compaction, loss of embankment strength due to wetting/drying and freeze/thaw and heavy precipitation. Following these slides, the slope was flattened in 1982 – 1983 which prevented further slides. The embankment issues were not historically triggered by changing pool elevations. However, regular inspections of the embankment during the drawdown and after any large precipitation events would occur to ensure the riprap remains stable. The No Action and Proposed Alternatives would have no effect on the Highway 75 Dam embankment.

3.2.2 Flood Control

Management practices aimed at improving East Pool for shorebird and duck habitat may ultimately be limited by flood control needs. Summer precipitation events could require water levels to be raised in the Highway 75 project area for flood storage. The length of time needed to store flood waters could prevent a successful drawdown (likely in the event of a more extreme spring flood event or higher than normal summer and fall precipitation). The primary flood control purpose of the Highway 75 Project would not be impaired to accommodate a drawdown of East Pool. Therefore, the No Action and Proposed Alternatives would have no effect on current flood control operations.

3.2.3 Recreation

Big Stone National Wildlife Refuge is a popular recreational area in western Minnesota. Approximately 30,000 people visit the refuge annually (recreation.gov). The refuge is used for wildlife viewing, photography, biking, hiking, cross-country skiing, and non-motorized boating. Hunting is also available for deer, rabbit, squirrel, turkey, however, the most popular hunted species is pheasant. Fishing for northern pike, bullhead, smallmouth and largemouth bass, walleye, and yellow perch is also popular among visitors. Wildlife observation activities account for a majority of the visitation that occurs on the Refuge each year. Four developed facilities enhance this use; the Auto Tour Route, Granite Outcrop hiking trail, Highway 75 Dam Drive and the Minnesota River Headwaters Trail. The Highway 75 Dam Drive is a 1-mile paved road found on top of the Highway 75 dam. This drive offers a view of the Highway 75 Reservoir/East Pool, flood control facilities and the remains of a historic granite quarry operation. Seasonally, visitors can view large concentrations of migrating waterfowl from this site. Historically, local birders hosted a shorebird workshop each spring at the Refuge that attracted hundreds of participants from across the state, but the event has not been held in recent years.

No Action Alternative – The No Action Alternative would have no effect on recreation beyond existing conditions.

Proposed Alternative – The Proposed Alternative would improve wildlife viewing as the several hundred acres of mudflats created through this effort would attract large numbers of shorebirds and other wildlife. The increase in shorebirds and bird diversity would also attract more birdwatchers.

3.2.4 Aesthetic Values

Big Stone National Wildlife Refuge is named for the 100 acres of granite outcrops. These bare rock areas support unusual species of endangered cactus including the ball cactus. Some of these rock outcrops are very large and offer amazing panoramic views of the entire Refuge and its wide variety of wildlife.

No Action Alternative – The No Action Alternative would have no effect on aesthetic values beyond existing conditions.

Proposed Alternative – Depending on the point of view, the effect of the Proposed Alternative could be adverse or beneficial. Some may prefer to view standing water in East Pool whereas others may prefer to view mudflats, emergent vegetation, and numerous shorebirds. The Proposed Alternative would not affect aesthetic values on the remainder of the Refuge.

3.2.5 Noise

The Refuge and surrounding area are relatively quiet.

No Action Alternative – The No Action Alternative would have no effect on noise levels in the area.

Proposed Alternative – The drawdown would have no effect on noise levels; however, dredging of the approach channel would result in a minor, temporary increase in noise due to the operation of heavy equipment. The nearest residence is approximately one mile from the channel. Dredging is expected to be completed within one week and noise levels would return to baseline conditions.

3.2.6 Agriculture

The Refuge allows haying by private individuals for the purpose of habitat management. Haying is the cutting and processing (typically baling) of grass and forbs, with subsequent removal to an off-Refuge location. Haying of any area is usually conducted as a single event during any one year but may be repeated periodically to remove undesirable grasses and forbs, remove accumulated plant biomass, remove, or reduce woody vegetation, provide a desired vegetative condition (such as short grass browse), reduce vegetation fuel levels where wildfires are a concern, or prepare sites for establishment of desired vegetation, including prairie or wetland communities. Haying activities are subject to the terms and conditions of a Special Use Permit issued by the Refuge Manager (USFWS 2012). The amount of haying conducted each year is based on habitat conditions and management need.

Grazing is conducted on the Refuge using privately owned domestic livestock. Frequency of grazing on any unit is based on site-specific evaluation of the grassland unit being managed. Administration of grazing programs is conducted in accordance with a Habitat Management Plan. Grazing activities are subject to the terms and conditions of a Special Use Permit issued by the Refuge Manager. The terms of the Permit ensure compliance with Service policy and achieving habitat objectives while safeguarding Refuge resources. Grazing contracts vary in size depending on management needs.

The No Action and Proposed Alternatives would have no effect on agriculture.

3.2.7 Transportation

The top of the Highway 75 dam serves as both an auto-tour route and maintenance access. The Refuge can also be accessed from 450th Street which is open to the public and leads down to the low-flow water control structure. Immediately below the Highway 75 dam is State Highway 75, a two lane paved highway.

No Action Alternative – The No Action Alternative would have no effect on transportation.

Proposed Alternative – The drawdown would have no effect on transportation. If dredged material needs to be disposed of off-site, there would be a temporarily increase in traffic in the area while material is being moved; however, traffic conditions would return to normal immediately after (approximately one week).

3.3 Cultural Resources

The area that surrounds the Highway 75 Dam project was continually accessed by humans beginning around 10,000 years ago, initially seasonally, and later with temporary and then permanent habitation sites. Glacial Lake Agassiz formed in southeastern North Dakota approximately 12,500 years ago and expanded northwards following receding glacial ice lobes. Lake Agassiz's shoreline changed frequently depending on ice advances and recessions until it began to drain for the final time out of North Dakota around 9,000 years ago and no longer existed by about 7,500 years ago. The Big Stone Moraine formed at the lake margin defines the landscape, supporting dependable supplies of food and water. It is likely that the area was utilized by people beginning around 10,000 years ago as major climatic and environmental changes took place. Known cultural resources in and around Highway 75 Dam include Precontact and Euro-American archaeological sites and historic period standing structures.

Cultural resources investigations in the vicinity of the dam were undertaken in 1993 and 2015 during which a total of three sites were recorded on fee-title lands associated with the project. The remains of a single farmstead identified during the 1993 survey was subsequently evaluated as being not eligible for listing on the National Register of Historic Places (NRHP). As part of later surveys, including those associated with proposed borrow areas undertaken in 2015, additional sites—all surface debris scatters—were identified. All of the sites were found on terraced landforms and contained archaeological materials of Precontact origin. Two were lithic debris scatters and a third location included artifacts dating to both Precontact and historic time periods. All sites identified to date have been recommended not eligible for listing on the National Register of Historic Places. No sites have been identified in the Eastern Pool. A synthesis of previous surveys conducted in 2024 focused on the area of the East Pool recommended additional survey for the area that would be exposed during the proposed drawdown. The report was submitted to the Minnesota State Historic Preservation Office (SHPO) for review and comment.

A Programmatic Agreement (PA) to address phased Phase I archaeological surveys that are required for the area of potential effect (APE) for the proposed undertaking, has been proposed to SHPO and will be developed in consultation with SHPO and interested Native American tribes. The PA will define the actions needed to be completed and whether USFWS or USACE is responsible for each action. Investigations have already examined documentation of earlier settlement in the area and field survey will seek to identify any previously unknown sites during the drawdown. A report and site inventory forms will be submitted to the parties of the PA for review and comment, and any sites needing further investigation will be evaluated for their eligibility for listing on the NRHP. Compliance reviews under Section 106 of the National Historic Preservation Act will continue in accordance with the proposed PA.

No Action Alternative – The No Action Alternative would not have effects on historic properties, in the event that such properties are present along the shoreline or within the area of the mudflats, as they would not be exposed by the drawdown.

Proposed Alternative – The National Historic Preservation Act (NHPA) of 1966, as amended by Public Law 96-515 (94 Stat. 2987), established national policy for historic preservation,

authorized the Secretary of the Interior to expand and maintain a National Register of Historic Places, and created the Advisory Council on Historic Preservation. Section 106 specifies that federal agencies, must consider the effect of the action on any property included in or eligible for the National Register of Historic Places. The Proposed Alternative may have effects on historic properties, in the event that such properties are present along the shoreline exposed by the drawdown or within the exposed area of the mudflats. No determination of effects on historic properties may be made until such survey for the identification and evaluation of site can be made. Therefore, the Corps, USFWS, and SHPO have agreed that under Section 106 of the National Historic Preservation Act of 1966, as amended, per its implementing regulation 36 CFR Part 800 a PA is an appropriate course of action.

3.4 Cumulative Effects

The Council on Environmental Quality (CEQ) regulations (40 CFR §§ 1500–1508) implementing the procedural provisions of NEPA, as amended (42 USC § 4321 et seq.) define cumulative effect as:

"….. which are effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time." (40 CFR 1508.1(g)(3))

Cumulative effects analysis recognizes that the most serious environmental impacts may result from the combination of individually minor effects of multiple actions over time, rather than the direct or indirect effects of a particular action (Council on Environmental Quality, 1997).

Analyzing cumulative effects requires identifying the environmentally relevant area and the past, present, and future actions in that area that would contribute incrementally to the overall effect. The environmentally relevant area is determined by both location and time. Future actions are those that are reasonably likely to occur. A future project is only considered in this analysis if there is sufficient information on the project to understand what its incremental contribution to cumulative effects might be.

3.4.1 Past, Present and Future Projects

Highway 75 Project Routine Operations and Maintenance

The Highway 75 Project is operated in accordance with a Water Control Manual (Corps 2005) and the July 16, 1975 MOU with USFWS. Routine maintenance is conducted to ensure the integrity and safety of the dam. Inspection and minor maintenance has been completed in the past 10 years.

Big Stone National Wildlife Refuge Operations and Maintenance

The Comprehensive Conservation Plan for the Refuge outlines a course of action for the future management of Big Stone National Wildlife Refuge. This includes specified goals that 1) Big Stone NWR will actively restore, manage, and protect diverse native communities of tallgrass prairie, wetland, riparian, and granite outcrop habitats to enhance the vitality and health of the natural environment; 2) Big Stone NWR will enhance and maintain habitats for biologically diverse and abundant populations of native fish and wildlife associated with healthy refuge environments; and 3) Big Stone NWR will provide a variety of wildlife-dependent recreational and educational opportunities for visitors to experience and treasure native tallgrass prairie heritage, ecological processes, and cultural resources (FWS 2012). Projects planned to actively manage the wildlife habitats, maintain public use facilities, and implement the previously mentioned goals are based on staff and funding commitments. Currently staffed and funded

projects outside of routine maintenance activities include removing a concrete box culvert on Pool 4 and replacing it with a wider low-water crossing to better accommodate flood flows. A similar project is planned on Pool 3, where smaller culverts will be replaced with low-water crossings. These low water crossings have a fixed elevation set at elevations that will safely pass flood flows and prevent levee damage. Additionally, Big Stone NWR will be actively removing non-native, invasive species across the refuge.

Western Area Master Plan

The Western Area Master Plan is a strategic land use document that serves as a vital tool for the responsible stewardship of resources to benefit present and future generations. The primary goals of the Master Plan are to prescribe an overall land use management plan and identify resource objectives and associated design and management concepts. An interdisciplinary team developed this Master Plan with input from local, state, and federal agencies, tribal representatives, and the public. The Western Area Master Plan was created in 1997 and updated in 2020.

Marsh Lake

The purpose of the Marsh Lake project was to restore the aquatic and riparian ecosystems within the Marsh Lake project area, which is along the Minnesota River and within the Lac qui Parle Wildlife Management Area (WMA) boundary. Marsh Lake is a 5,000 acre shallow reservoir along the Minnesota River in Big Stone, Chippewa, Lac qui Parle, and Swift Counties. The project included construction of a rock-ramp fishway, a water control/drawdown structure, a new dam access road and embankment features, restoration of the Pomme de Terre River to its historic channel, additional parking areas, and use of a borrow location for the earthen materials needed for project construction. Modifications to the existing dam structure provide more natural variability in water levels and also provide habitat connectivity through the rock-ramp fishway.

Whetstone Diversion

The Whetstone River is a tributary of the Minnesota River near Ortonville, MN. The river was diverted into Big Stone Lake in the 1930s to increase the lake's levels during droughts and currently flows into the lake just upstream from Big Stone Lake Dam. The Upper Minnesota River Watershed District is proposing to restore perennial flows to the historic Whetstone Channel. The Whetstone River Restoration Project would restore the hydrologic connection to the Whetstone River, where the historic Whetstone River channel previously drained into the Minnesota River. The flow would be restored to 9,000 feet of the historic Whetstone River channel between Big Stone Lake and the confluence with the Minnesota River. The project would also reestablish the downstream floodplain and floodplain wetlands along the lower Whetstone River to the confluence of the Minnesota River. The restoration project would improve the ecological integrity of the Whetstone River and the water quality in Big Stone Lake.

3.4.2 Cumulative Effects Assessment

Cumulative impacts on the environment are the result of the incremental impacts of past actions, the proposed alternative, and reasonably foreseeable future actions. Significant changes to the environment were made through construction of the Highway 75 dam. The Proposed Alternative would not adversely affect the biodiversity of the area or permanently fragment the habitat beyond existing conditions. The Proposed Alternative is intended to create additional habitat for shorebirds.

Routine operations and maintenance of the Highway 75 Project, the Big Stone NWR, the Western Area Master Plan, and Marsh Lake would not result in negative cumulative effects in conjunction with the yearly drawdown of East Mud Lake. Drawing down the East Pool every few years would not compromise the primary purpose of the Highway 75 Project which is flood control. Therefore, there would be no adverse cumulative impacts to flood control in the area.

Overall, the Proposed Alternative would cause no significant adverse cumulative impacts on the aquatic or terrestrial ecosystem.

The Upper Minnesota River Watershed District is currently working on a plan to divert the Whetstone River back to its original channel. The Whetstone River was diverted into Big Stone Lake in the 1930s to prevent the lake from going dry. However, the opposite effect is happening and low-lying properties along Big Stone Lake have the tendency to flood during the spring. The Whetstone River project will restore the Whetstone River back to its historic channel and restore a portion of its floodplain. The project will divert the river channel back to its historic configuration largely bypassing Big Stone Lake and directing flow into the Minnesota River just downstream of the Big Stone Dam. Current data modeling shows that East Pool would see a 3 percent annual increase in sedimentation and an increase in water quantity as a result of the reconnection.

4 Environmental Compliance

4.1 National Environmental Policy Act

The National Environmental Policy Act (NEPA; 42 USC § 4321 et seq.) establishes the broad national framework for protecting our environment. NEPA's basic policy is to assure proper consideration to the environment prior to undertaking any major federal action. Two alternatives have been presented and the significance of the project's impacts have been evaluated. The document will be distributed to agencies, the public and other interested parties to gather any comments or concerns. This EA is a joint document and if no significant impacts to the environment are found, both USACE and USFWS would sign a Finding of No Significant Impact (FONSI).

4.2 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act prohibits anyone from taking, possessing, or transporting an eagle, or the parts, nests, or eggs of such birds without prior authorization. Disturbing an eagle to a degree that causes, or is likely to cause injury to an eagle, decrease productivity or cause nest abandonment are considered forms of take. Activities that directly or indirectly lead to take are prohibited without a permit. The closest eagle nests to the project area are approximately 0.5-miles away. No eagle nests are located on the islands within the project area, and no take is anticipated as a result of this project.

4.3 Clean Water Act

The Clean Water Act (CWA; 33 USC §1251 *et seq.*) establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. Section 404 of the CWA regulates the discharge of dredged or fill material into waters of the United States and is administered by USACE. The drawdown would not result in a regulated discharge into of waters of the United States. Dredged material would not be placed or otherwise discharged into wetlands or Waters of the United States. For this reason, a Clean Water Act Section 404(b)(1) analysis and a Section 401 Water Quality Certification are not required for the Proposed Alternative.

4.4 Endangered Species Act

The Endangered Species Act (16 USC § 1531 et seq.) provides for the conservation of threatened and endangered plants and animals and the habitats in which they are found. There

are four federally listed species that are listed for the action area. The proposed project would have no effect on federally listed species.

4.5 Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (FWCA; 16 USC 661–667e) requires federal agencies to coordinate with the U.S. Fish and Wildlife Service and applicable state agencies when a stream or body of water is proposed to be modified. The proposed project is being conducted in coordination with USFWS Big Stone National Wildlife Refuge staff. A compatibility determination is not required as the proposed project is a habitat management action which was approved during the Comprehensive Conservation Plan as well as in the Habitat Management Plan. The project continues to be coordinated with Minnesota Department of Natural Resources.

4.6 National Historic Preservation Act

The National Historic Preservation Act (NHPA) of 1966, as amended by Public Law 96-515 (94 Stat. 2987), established national policy for historic preservation, authorized the Secretary of the Interior to expand and maintain a National Register of Historic Places, and created the Advisory Council on Historic Preservation. Section 106 specifies that federal agencies must consider the effect of the action on any property included in or eligible for the National Register of Historic Places. Compliance reviews under Section 106 of the National Historic Preservation Act will continue in accordance with the proposed Programmatic Agreement (PA). Under the PA, the FWS will be responsible for section 106 compliance as it relates to the effects of the dredging and the placement of the dredged material. The FWS will be conducting cultural resource surveys during the drawdown. If effects to cultural resources are discovered during the drawdown, actions to mitigate those effects, including halting the drawdown, will be evaluated at that time.

Table 6. Compliance with Environmental Protection Statutes and Other Environmental Requirements

Environmental Requirement	Compliance[1]
Federal Statutes	
Archaeological and Historic Preservation Act	PARTIAL
Bald and Golden Eagle Protection Act of 1940, as amended	FULL
Clean Air Act, as amended	FULL
Clean Water Act, as amended	FULL
Coastal Zone Management Act, as amended	NA
Endangered Species Act of 1973, as amended	FULL
Farmland Protection Policy Act of 1981	NA
Federal Water Project Recreation Act, as amended	FULL
Fish and Wildlife Coordination Act, as amended	FULL
Land and Water Conservation Fund Act of 1965, as amended	FULL
Migratory Bird Treaty Act of 1918, as amended	FULL
National Environmental Policy Act of 1969, as amended	PARTIAL
National Historic Preservation Act of 1966, as amended	PARTIAL
National Wildlife Refuge Administration Act of 1966	FULL
Noise Pollution and Abatement Act of 1972	FULL
Watershed Protection and Flood Prevention Act	FULL
Wild and Scenic Rivers Act of 1968, as amended	NA
Executive Orders, Memoranda	
Floodplain Management (E.O. 11988)	FULL
Safeguarding the Nation from the Impacts of Invasive Species (E.O. 13112)	FULL
Protection and Enhancement of Environmental Quality (E.O. 11514)	FULL
Protection and Enhancement of Cultural Environment (E.O. 11593)	FULL
Protection of Wetlands (E.O. 11990)	FULL
Analysis of Impacts on Prime and Unique Farmland (CEQ Memorandum, 30 August 1976)	FULL
[1] The compliance categories used in this table were assigned according to the following definitions: a. Full – All requirements of the statute, EO, or other policy and related regulations have been met for the current stage of planning. b. Partial – Some requirements of the statute, EO, or other policy and related regulations remain to be met for the current stage of planning. c. Noncompliance (NC) – Violation of a requirement of the statute, EO, or other policy and related regulations. d. Not applicable (N/A)	

5 Agency Coordination

The proposed project was coordinated with the Minnesota Department of Natural Resources Lac qui Parle Wildlife Management Area throughout planning of the project. The draft environmental assessment was also coordinated with Upper Minnesota River Watershed District.

6 Distribution and Review of the Draft Environmental Assessment

This draft environmental assessment is being made available for a 30-day public review and comment period. The document can be viewed at: https://www.mvp.usace.army.mil/Home/Public-Notices/.

Questions on the project or comments on the Environmental Assessment can be directed to LeeAnn Glomski at 651-290-5595 or at LeeAnn.M.Glomski@usace.army.mil. Please address all formal written correspondence on this project to District Engineer, St. Paul District, Corps of Engineers, ATTN: Regional Planning and Environment Division North, 332 Minnesota St., Suite E1500, St. Paul, MN 55101.

7 References

Colwell, Mark A. "Habitat Conservation and Management." *Shorebird Ecology, Conservation, and Management*, 1st ed., University of California Press, 2010, pp. 241–64. *JSTOR*, http://www.jstor.org/stable/10.1525/j.ctt1ppsxg.14. Accessed April 19, 2023.

Gabelhouse, D.W. 1984. A Length-Categorization System to Assess Fish Stocks. North American Journal of Fisheries Management 4(3): 273-285.

Klink, K. 2002. Trends and Interannual Variability of Wind Speed Distributions in Minnesota. *Journal of Climate*, 3311-3317.

Marschner, Francis J. 1974. The Original Vegetation of Minnesota. Compiled from U.S. General Land Office Survey notes. North Central Forest Experiment Station, Forest Service, U.S. Department of Agriculture.

Minnesota Department of Natural Resources (MNDNR). 2016. Minnesota's Wildlife Action Plan 2015 – 2025. Retrieved from https://www.dnr.state.mn.us/mnwap/index.html.

2020. *1981-2010 Normals Map Tool*. Retrieved from https://www.dnr.state.mn.us/climate/summaries_and_publications/normalsportal.html

2024. Rare Species Guide: *Argynnis idalia*. Retrieved from https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=IILEPJ6040.

Minnesota Pollution Control Agency (MPCA). 2024. *Draft 2024 Minnesota's impaired waters and TMDLs*. Retrieved from https://www.pca.state.mn.us/water/minnesotas-impaired-waters-list. Accessed December 18, 2023.

Nelms, K.D. 2007. Wetland Management for Waterfowl Handbook. Natural Resource Conservation Service, Mississippi. 133 pp.

Norrgard, R. 2010. Minnesota Moist Soil Management Guide. Minnesota Department of Natural Resources, St. Paul, Minnesota. 58 pp.

Tangen BA, F. R. (2019). Aquatic vegetation and invertebrate communities across the habitat gradient of Big Stone National Wildlife Refuge. *Journal of Fish and Wildlife Management,* 10(1), 277-294.

U.S. Army Corps of Engineers (USACE). 2005. Water Control Manual, Highway 75 Dam and Reservoir, Big Stone Lake – Whetstone River Project. St. Paul, Minnesota.

2017. Minnesota Integrated Watershed Study. St. Paul, Minnesota.

U.S. Environmental Protection Agency (USEPA). 2023. EJSCREEN. Retrieved June 27, 2023 from https://www.epa.gov/ejscreen.

2023. Green Book National Area and County-Level Multi-Pollutant Information. Retrieved June 27, 2023 from https://www3.epa.gov/airquality/greenbook/anayo_mn.html.

U.S. Fish and Wildlife Service (USFWS). 2012. *Comprehensive Conservation Plan: Big Stone National Wildlife Refuge.* Bloomington, Minnesota: U.S. Department of the Interior, Fish and Wildlife Service. https://ecos.fws.gov/ServCat/Reference/Profile/43592

2021.Big Stone National Wildlife Refuge: Water Resource Inventory and Assessment. https://ecos.fws.gov/ServCat/Reference/Profile/140705

2023a. Shorebirds. Retrieved May 18, 2023 from https://www.fws.gov/library/collections/shorebirds.

2023b. Northern long-eared bat. https://www.fws.gov/species/northern-long-eared-bat-myotis-septentrionalis. Accessed July 10, 2023.

2023c. Tricolored bat. https://www.fws.gov/species/tricolored-bat-perimyotis-subflavus. Accessed July 10, 2023.

2023d. Dakota skipper. https://www.fws.gov/species/dakota-skipper-hesperia-dacotae. Accessed July 10, 2023.

2023e. Monarch butterfly. https://ecos.fws.gov/ecp/species/9743. Accessed July 10, 2023.

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, ST. PAUL DISTRICT
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DRAFT FINDING OF NO SIGNIFICANT IMPACT
Highway 75 Drawdown
Lac qui Parle County, Minnesota

The U.S. Army Corps of Engineers, St. Paul District (Corps) has conducted an environmental analysis in accordance with the National Environmental Policy Act of 1969, as amended. The final Environmental Assessment (EA) dated **DATE OF IFR/EA**, for the Highway 75 Drawdown addresses opportunities to improve wildlife habitat within the East Pool of the Big Stone National Wildlife Refuge.

The Final EA, incorporated herein by reference, evaluated the No Action and Proposed Alternative. The Proposed Alternative would involve the Corps drawing down the Highway 75 project area during the growing season to 1) promote shorebird habitat, 2) promote the growth of desirable wetland vegetation, 3) reduce invasive carp abundance, and 4) improve habitat conditions for an abundance of wetland dependent species. However, any potential operating changes to the Highway 75 Dam would be consistent with current flood risk management and other authorized purposes of the Highway 75 Project. The Proposed Alternative would also include dredging the approach channel to the dam by the U.S. Fish and Wildlife Service (USFWS) along with material disposal.

The proposed drawdown would begin following spring runoff (estimated around the beginning of May) and run through approximately the end of October every few years. A full drawdown is defined as reaching a target elevation of 942.3 feet. The leaf gate would be slowly lowered over approximately three weeks, with a maximum of 1-ft change in gate elevation for each movement. At the same time, the low-flow structure would slowly be opened. The low flow structure would be left closed for the first two movements, and gradually opened during the last three movements. By the end of these five movements, both the leaf gate and low flow structure would be fully open. Once the drawdown time frame is complete, the leaf gate would remain open, and the low flow structure would be closed to 0.5’ in order to maintain the minimum discharge of 2 cubic feet per second.

To maximize wildlife habitat values, the 7,000 linear foot trans-basin channel would be dredged by USFWS to the as-built dimensions of elevation 942.0’, a 45-foot bottom width and 3:1 side slopes. Before dredging, USFWS would test the material for contamination. If clean, approximately 60,000 cubic yards of dredged material would be placed over 32 acres of uplands and spread to an average depth of one foot. A seed mix would be spread over the material to stabilize the soils and to prevent it from washing back into the reservoir. The seed mix would include forbs and legumes favorable to pollinators, monarchs, and grassland birds. If the material is not determined to be suitable for upland disposal based on testing, USFWS would need to dispose the material offsite in an approved location.

Potential effects of the Proposed Alternative were evaluated, as appropriate and are listed in Table 1.

Table 1: Summary of Potential Effects of the Proposed Alternative

	Insignificant effects	Insignificant effects as a result of mitigation*	Resource unaffected by action
Aesthetics	☒	☐	☐
Air quality	☒	☐	☐
Aquatic resources/wetlands	☒	☐	☐
Invasive species	☒	☐	☐
Fish and wildlife habitat	☒	☐	☐
Threatened/Endangered species/critical habitat	☐	☐	☒
Historic properties	☒	☐	☐
Other cultural resources	☒	☐	☐
Floodplains	☐	☐	☒
Hazardous, toxic & radioactive waste	☐	☐	☒
Hydrology	☒	☐	☐
Land use	☐	☐	☒
Navigation	☐	☐	☒
Noise levels	☒	☐	☐
Public infrastructure	☐	☐	☒
Socio-economics	☐	☐	☒
Environmental justice	☒	☐	☐
Soils	☐	☐	☒
Tribal trust resources	☐	☐	☒
Water quality	☒	☐	☐
Climate change	☐	☐	☒

All practicable and appropriate means to avoid or minimize adverse environmental effects were analyzed and incorporated into the recommended plan. Best management practices (BMPs) as detailed in the EA will be implemented, if appropriate, to minimize impacts.

No compensatory mitigation is required as part of the proposed alternative.

Public review of the draft EA and FONSI was completed on **DATE DRAFT EA AND FONSI REVIEW PERIOD ENDED**. All comments submitted during the public review period were responded to in the Final EA and FONSI.

Pursuant to section 7 of the Endangered Species Act of 1973, as amended, the U.S. Army Corps of Engineers determined that the Proposed Alternative will have no effect on federally listed species or their designated critical habitat.

Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, the U.S. Army Corps of Engineers determined that the Proposed Alternative may have effects on historic properties. No determination of effects on historic properties may be made until such survey for the identification and evaluation of site can be made. Therefore, the Corps and MNSHPO have

agreed that under Section 106 of the National Historic Preservation Act of 1966, as amended, per its implementing regulation 36 CFR Part 800 a Programmatic Agreement is an appropriate course of action.

The drawdown and dredging of the approach channel would not result in a discharge of dredged or fill material into waters of the United States. For this reason, a Clean Water Act Section 404(b)(1) analysis and a Section 401 Water Quality Certification are not required for the Proposed Alternative.

All applicable laws, executive orders, regulations, and local government plans were considered in evaluation of alternatives. Based on this report, the reviews by other Federal, State, and local agencies, Tribes, input of the public, and the review by my staff, it is my determination that the recommended plan would not cause significant adverse effects on the quality of the human environment; therefore, preparation of an Environmental Impact Statement is not required.

_____ _____

Date

JOSHUA D. RUD
LTC, EN
Acting Commander