Mound Creek post flood, Blue Mounds State Park – June 2014, MNDNR

Environmental Assessment – Draft

Blue Mounds State Park Lower Mound Lake Basin Restoration Environmental Assessment

Luverne, Rock County, Minnesota
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DEPARTMENT OF NATURAL RESOURCES

Prepared for
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List of Acronyms, Chemical Formulas, and Abbreviations

Edit this list of acronyms to include those in this document.

AADT–Annual Average Daily Traffic

AHAP–Archaeological and Historic Preservation Act of 1974

AIRFA–American Indian Religious Freedom Act

APE–Area of Potential Effect

BMP–Best Management Practice

CEQ–Council on Environmental Quality

CO–Carbon monoxide

CR–County Road

EA–Environmental Assessment

EIS–Environmental Impact Statement

EO–Executive Order

EPA–Environmental Protection Agency

ESA–Endangered Species Act

FEMA–Federal Emergency Management Agency

FONSI–Finding of No Significant Impact

FPPA–Farmland Protection Policy Act

MBS–Minnesota Biological Survey

MNDNR–Minnesota Department of Natural Resources

MPCA–Minnesota Pollution Control Agency

NAAQS–National Ambient Air Quality Standards

NEPA–National Environmental Policy Act

NHIS–Natural Heritage Information System

NHPA–National Historic Preservation Act

NO2-Nitrogen dioxide

NOI–Notice of Intent

NPDES–National Pollutant Discharge Elimination System

NRCS–Natural Resources Conservation Service

NRHP–National Register of Historic Places

NWI–National Wetlands Inventory

O3–Ozone

OSHA–Occupational Safety and Health Administration

Pb-Lead

P.L. –Public Law

PM10-Particulate matter

SHPO–State Historical Preservation Office

SWPPP-Stormwater Pollution Prevention Plan

SO2–Sulfur Dioxide

THPO–Tribal Historic Preservation Office

WCA–Minnesota Wetland Conservation Act

WPA- Works Progress Administration

USACE–United States Army Corps of Engineers

USFWS–United States Department of the Interior Fish and Wildlife Service

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SECTION ONE: BACKGROUND

1.1 Project Authority

Between June 11 and July 11, 2014, high winds and heavy rains resulted in flooding and mudslides throughout the state of Minnesota. President Obama issued disaster declaration DR-4182-MN for the State of Minnesota on July 21, 2014, which made disaster recovery assistance available through the Federal Emergency Management Agency (FEMA). The Minnesota Department of Natural Resources (MN DNR) applied for funding from FEMA's Public Assistance (PA) Program to underwrite the proposed project. FEMA's PA grant program provides federal assistance to government organizations and certain private nonprofit (PNP) organizations following a Presidential disaster declaration. Public Assistance is authorized by Section 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Public Law [P.L.] 93-288), 42 U.S.C. 5121-507.

In accordance with the National Environmental Policy Act of 1969, the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 Code of Federal Regulations [CFR] Parts 1500 through 1508), and FEMA regulations for NEPA compliance (44 CFR Part 10), FEMA must fully understand and consider the environmental consequences of actions proposed for federal funding. The purpose of this Environmental Assessment (EA) is to meet FEMA's responsibilities under NEPA and to determine whether to prepare a Finding of No Significant Impact (FONSI) or a Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) for the proposed project.

In accordance with federal laws and FEMA regulations, the EA for a proposed federal action must include an evaluation of alternatives and a discussion of the potential environmental impacts. This EA was prepared in accordance with FEMA's regulations as required under NEPA. As part of this NEPA review, the requirements of other environmental laws and executive orders are addressed.

1.2 Project Location

The proposed project is located in Rock County, Minnesota, which is in the far southwest corner of the state. The population of Rock County, Minnesota, is 9,687. The nearest population center is the city of Luverne with a population of 4,745. (US Census 2010). The proposed project is located within Blue Mounds State Park statutory boundary, approximately 5 miles north of the City of Luverne.

A project location map is provided in **Appendix A, Figure 1**.

1.3 Purpose and Need

The purpose of the project reviewed in this EA is to address conditions caused by the natural disaster that occurred between June 11 and July 11, 2014, resulting in the failed dam, and damages including the drained basin, downstream reach of Mound Creek, and loss of recreational facilities within Blue Mounds State Park. These damages have significantly degraded key features of the park, interfering with the park's purpose by limiting recreational use of the damaged section of the park. The project need is to address the loss of recreational facilities caused by the disaster event and to restore aquatic and terrestrial habitat in the area of failed dam, drained basin, and downstream

reach of Mound Creek. These actions will reclaim damaged areas of the park for recreational use and improve the park's natural features.

1.4 Existing Facility

The project area is located entirely within Blue Mounds State Park, which is owned by of the State of Minnesota and managed by the Department of Natural Resources. Blue Mounds State Park consists of 1,830 acres and had 64,789 annual visits and 8,052 overnight visits in 2016. The failed dam and former Lower Mound Lake is downstream of Upper Mound Lake, located in the northern part of the park. Mound Creek continues to flow easterly beyond the park boundary to its confluence with Rock River.

In 1934, citizens of Rock County asked the federal government for a Works Progress Administration (WPA) project in the Blue Mound area. In 1937, the first phase of the project was completed and included development of two dams on Mound Creek, forming two lakes (Upper Mound and Lower Mound) in the park.

Additional park development occurred during the 1950s, including tree plantings around the picnic areas near the lakes and the campground area, which was known as Mound Springs Recreation Area until 1961 when the park name was changed to Blue Mounds State Park.

Blue Mounds State Park is one of the largest prairie parks in Minnesota, preserving approximately 1,500 acres of prairie and grassland, with a wide variety of rare and common plants and wildlife. Bison have been managed within the state park system since 1961 when three animals from Fort Niobrara National Wildlife Refuge (Nebraska) were reintroduced to Blue Mounds State Park. Over the next 30 years, the bison herd grew and the bison range within the park was occasionally expanded to meet the needs of the growing number of bison. During that time, Blue Mounds State Park remained the only state park unit with bison. Most of the park's prairie and bison range is on top of a massive rock outcrop of Sioux Quartzite. The rock outcrop cliff is approximately 1.5 miles long and rises up to 90-feet high, providing a panoramic view of the countryside.

The land within the park was never cultivated due to the shallow soils and rock outcrops. However, heavy grazing by domestic livestock diminished the native grasses and wildflowers while introducing exotic weedy plants. Special park management programs are underway to restore the native prairie while managing the bison herd. The native prairie and bison range area of Blue Mounds State Park will not be affected by the proposed project.

The park is also managed for recreational use, including camping, hiking, biking, snowmobiling, wildlife viewing, rock climbing and other outdoor activities. The park includes a campground with 73 drive-in campsites, 14 cart-in campsites, 3 tipis, and a primitive group camp; approximately 15 miles of trails for hiking, biking and snowmobiling; picnic areas and a shelter, and a playground. Rock climbing, wildlife viewing and bird watching are also popular activities within the park.

In 2013, approximately 91,000 people (including 16,000 overnight campers) visited the park and used these resources. Prior to flooding in June, 2014, the park maintained a recreational area on

and around Lower Mound Lake and the Lower Mound Lake Dam (Lower Dam). The WPA dam created a 20-acre impoundment, known as Lower Mound Lake, for recreational purposes. As visitors approached the lake via the park road, they could take in the viewshed of the impoundment and exposed quartzite bluff on the opposite shore. Visitors parked in a large parking area, where a picnic grounds sat between the parking lot and the lake. The picnic area provided picnic tables and fire rings for camp/cooking fires. In the picnic grounds, visitors had access to a sand volleyball court, horseshoe pits, and a swing set.

On the edge of the picnic grounds, the lake's shoreline had a fishing pier where anglers tried for panfish, catfish, and bass. The park also stored row boats, canoes, and kayaks in this area, which could be rented and used to paddle on the impoundment. A trail from the picnic grounds led to the beach area, where a sand beach aligned with an area ringed by buoys that provided a swimming area on the beach. A small building at the beach provided changing facilities, the building had been slated for demolition prior to the flood and has since been removed. Water quality testing of Mound Creek has been conducted since 2010, and in September 2014 these data resulted in the MPCA classifying Mound Creek as impaired for aquatic recreation use (Missouri River Basin Monitoring and Assessment Report, MPCA, September 2014).

The Mound Creek Trail (hiking) could be accessed at the picnic grounds. The trail crossed over a walkway on the Lower Dam structure, then traveled along the opposite (northern) shore of Lower Mound Lake before looping around the Upper Mound Lake and returning to the picnic grounds along the southern shore of the Lower Lake, creating a 3 mile hiking loop.

The basin area was part of a larger nationally designated historic district. The district included the Upper and Lower Dams and impoundments, as well as a WPA bath-house which currently serves a small rustic campground on a bluff above the southwest corner of the impoundment.

The storm and flood events in June of 2014 resulted in a failure or breach to the Lower Dam on Mound Creek. The breach led to a complete draining of the former impoundment and also caused a breach in a Mound Creek Trail (hiking) that crossed Mound Creek on top of the dam.

Since the flood events in 2014, soil erosion and sedimentation has occurred and will continue to impact Mound Creek and degrade water quality through increased turbidity. In addition, considerable head-cutting has been occurring within the channel. The creek is currently unstable and will continue to incise the banks until it can stabilize. In the long term, future flood events could potentially exacerbate the soil loss. (Additional information provided in 3.1.2.)

SECTION TWO: ALTERNATIVE ANALYSIS

This section describes the alternatives that were considered in addressing the purpose and need stated in Section One. In this EA, two alternatives are evaluated; the No Action Alternative and the Proposed Action Alternative. Three additional alternatives were considered and dismissed as not viable.

2.1 Alternative 1 - No Action

Under the No Action Alternative, no improvement would be made to the dam nor to the areas impacted by the breach in the dam: the dam would be left in disrepair and vulnerable to further damage from flood events; the former reservoir would continue to be vegetated by non-natives and woody cover; the stream would have limited aquatic habitat lacking deep pools and rock riffles; the stream would continue head cutting through the sediment in the former reservoir causing erosion and degrading downstream water quality; users of the park trail system would be left with no means of crossing Mound Creek as they had previously been able to do by using the trail on the dam.

2.2 Action Alternative 2 - Lower Mound Lake Basin Restoration (Proposed Action)

MNDNR proposes to restore Lower Mound Lake Basin and Mound Creek as it flows through the former basin to a natural stream channel. Restoration of the basin includes the elements described below. A preliminary design of the proposed action is attached in **Appendix A, Figure 2.** The proposed project area encompasses 60 acres. Within the project area is the area of impact, or construction limits, which covers 30 acres, including the entire drained basin along with what remains of the Lower Dam, immediately adjacent areas, staging area for construction equipment and an access route.

Prior to proposing to restore the basin and stream channel, several hydrologic models where created to develop precipitation hydrographs of the watershed and dam. The results where later incorporated into a hydraulic model to model the flow characteristic of the reservoir and dam. The results of the hydrologic and hydraulic analysis determined that the original South Mound Creek Dam produced minimal attenuation of peak flows for storm events with a frequency larger than 5 years.

Proposed project elements include the following:

Demolition and removal of the existing dam

Removing the existing dam will include removal of the main spillway structure and its abutments, the emergency spillway and the diversion channel. The main spillway is a concrete and stone masonry structure; the spillway utilized locally sourced Sioux Quartzite in its construction. The Sioux Quartzite is supported by concrete piles, concrete abutment, and concrete face on the upstream side. The emergency spillway and diversion channel consist of grouted quartzite over a gravel subsurface with a clay core. Much of the grouted quartzite has been covered in concrete during previous repairs. The north embankment consists of granular fill with a riprap toe along the upstream side. The quartzite masonry from the main spillway will be salvaged and stockpiled to be reused in the park; the grouted quartzite riprap, concrete and other debris will be disposed of at an approved off-site facility. Much of the north embankment will remain in place and continue to be used as a pedestrian trail.

Construction of a pedestrian bridge

The washout of the emergency spillway has resulted in a severance in Mound Creek Trail (hiking) that travels around the upper and lower basins. A catwalk on the main spillway of the dam served as a pedestrian bridge over Mound Creek. To restore trail connectivity, a pedestrian bridge will be constructed where the current stream flows through the embankment. The bridge will be designed for a 100 year rain event. Additional details about the bridge will be determined as design progresses.

Restoration of Mound Creek

The restoration of Mound Creek through the basin is intended to create a natural, meandering stable stream channel and provide improved habitat for species native to southwestern Minnesota, including the Topeka shiner and Plains Topminnow. Approximately 4,500 feet of stream channel will be created along with several wetland oxbows. The stream restoration will consist of a series of riffles and pools. A highly sinuous 'E' channel, as classified by the Rosgen classification system, will be restored throughout the drained basin. This is the reference stream type for the unconfined valley within the Blue Mounds State Park proposed project boundary. As the stream flows under the pedestrian bridge, a series of rock arch riffles will direct flow through a slightly steeper reach. Downstream of the former dam, the stream restoration is anticipated to include riparian vegetation management, grade control riffles, and slight alternations to the channel shape and/or dimensions to ensure adequate floodplain connectivity and stream stability.

The stream will be designed with the proper dimensions, pattern, and profile to enhance ecological functions, improve water quality and habitat for aquatic life. The restoration design will incorporate detailed survey data from a reference reach channel to mimic natural channel conditions and be designed and implemented by a multidisciplinary team including experienced MNDNR stream practitioners and a licensed engineer. The width of the channel will be approximately 15 to 20 feet. The maximum depth of the pools will be approximately 5 feet at bankfull flows. The restored stream will be in connection with its floodplain at typical bankfull flows. (Bankfull flow is defined as the 1.5-2 year return interval flow.) A diverse native prairie will be restored along the stream corridor and throughout the drained basin.

Restoration of vegetation within the basin

The previous footprint of Lower Mound Lake now consists of mudflats dominated by early successional hydrophilic vegetation, sandbar willow, rice cutgrass, native sedges, and native rushes. As these desirable plants mature, they are providing stabilization of the soils in this area. Non-native reed canary grass, and undesirable woody species, including cottonwoods, are well established in parts of the basin. Some desirable sandbar willow is providing stabilization of the soils in this area. Vegetation best management practices will be used to establish native plant species throughout the former reservoir. The native seed mix/species selected will be designed to benefit state-listed species and pollinators as appropriate. It is expected that restoration of the vegetation will take several years of management effort, the first step will be to remove undesirable woody species and

plant native herbaceous species. Invasive species will continue to be controlled post-construction to ensure successful establishment of native species.

Construction of pedestrian trails

Pedestrian trails will connect the existing use areas with the restored stream. The trails will provide opportunities to view the stream and provide opportunities for educational and interpretive programming. One trail will lead from the day-use area to one or more locations along the stream, this trail will meet Americans with Disabilities Act (ADA) requirements. Another trail is planned to lead from the existing trail on the north side of the basin to the restored stream.

Construction Equipment, Staging and Sequencing

Construction will involve a combination of heavy equipment including: excavators, bull-dozers, front-end loaders, dump trucks, cranes, and pile-driving equipment.

A staging area has been chosen at a location east of the north embankment of the dam. This area is an old field now dominated by bromegrass and used as a hay source for the Blue Mounds State Park bison herd. Access to the staging area and primary construction access will be from County Road 8 located to the east of the project area. A stabilized construction access will be constructed at the highway access point to prevent mud from being tracked onto the highway. Construction access will also be provided through the day-use area on the south side of the basin. The day-use parking lot will provide additional staging area for construction if needed.

The expected major steps to complete the project are listed below. However, the sequence of construction activity will be determined in consultation with the selected construction firm.

1) Installation of erosion control measures as identified on the Storm Water Pollution Prevention Plan (SWPPP).
2) Creation of the staging area.
3) Creation of a diversion channel to allow for demolition of the main spillway and construction of the restored natural stream channel and completing construction of the pedestrian bridge.
4) Construction of the restored natural stream channel northerly of the current stream location through the basin.
5) The site will be graded to allow proper flood flows.
6) Establishing vegetation along the newly constructed stream channel.
7) Plugging the existing stream channel so the stream is directed into the newly constructed channel.
8) Filling the current stream channel with the spoils of the new channel.
9) Seeding of all disturbed areas with native species, planting of plugs, or use of native sod mats. Temporary cover crops will be used in accordance with established erosion prevention Best Management Practices (BMPs) throughout the project.
10) Restoration of native plants within the former reservoir.

Construction is anticipated to begin in 2018 with completion expected in 2019. As previously noted, restoration of native plant species is expected to take several years to complete.

2.3 Alternatives Considered and Eliminated From Further Consideration

Other alternatives were considered in an effort to explore multiple approaches to balancing recreation, natural and cultural resources. Ultimately these alternatives were dismissed as not viable or not meeting the project purpose and need.

Restore the Lower Dam and Lower Mound Lake

With this alternative the Lower Dam would be reconstructed but modified to meet current engineering standards. Modifications would include reinforcing the main spillway to withstand ice forces in the lake; constructing a new emergency spillway along the north embankment capable of passing future floods; rebuilding the remainder of the north embankment; and replacing the existing emergency spillway and diversion channel with an embankment. This alternative would not meet the purpose and need for the project and therefore was not retained for further consideration.

Restore Mound Creek, stabilize the Lower Dam artifacts, and create a swim pond

With this alternative portions of the Lower Dam would be left in place, but would not impound any water, instead Mound Creek would be restored through the basin and a small swimming pond would be created in the basin. This alternative was removed from further consideration because there is insufficient hydrology to maintain flow in both Mound Creek and the swim pond; further water quality issues, particularly the presence of *E. coli*, would create a public health concern.

Restore the Lower Dam and a portion of the lake and create a naturalized stream channel for fish passage

With this alternative a portion of the basin would be separated from the rest of the basin with a dike running the length of the basin roughly perpendicular to the existing dam. It would create a smaller impoundment behind the main spillway, but also accommodate a stream channel that would bypass the impoundment. This alternative was removed from further consideration because there is insufficient space within the basin for both a natural stream design and an impoundment; there is insufficient hydrology to maintain flow in both Mound Creek and an impoundment; and water quality issues, particularly the presence of *E. coli*, would create a public health concern.

SECTION THREE: AFFECTED ENVIRONMENT AND CONSEQUENCES

Preliminary Screening of Assessment Categories

For some project areas, it is possible to narrow the list of environmental assessment categories for which detailed assessments will be performed. This would be done through a preliminary screening based on project and project area descriptions and easily obtained information. For example, if there is no coastal zone or maritime fisheries or agricultural lands in the project area, these

categories of assessment could be identified through a preliminary screening and eliminated from the detailed environmental assessment process. If a preliminary screening results in any assessment categories being eliminated, the list of these categories should be presented accompanied by a statement of why the elimination is justified.

3.1 Physical Environment

3.1.1 Geology, Seismicity and Soils

The project is located at Mound Creek within Blue Mounds State Park, 5 miles north of Luverne, Minnesota, Rock County. Mound Creek is a prairie stream with riffle/pool sequences on a meandering channel. Elevations range from 1,477 to 1,502 feet within the project area.

The geology of Blue Mounds State Park is dominated by rock outcrops that rise above the shallow prairie soils as part of the Sioux Quartzite formation and lie within the Pipestone basin. These outcrops form "long, narrow ridges that project a few feet to several tens of feet about the surrounding prairie." (Jirsa, et al. 2015)

There is no known seismic data and EO 12699 does not apply. No earthquake risks or faults are present in Minnesota.

The soils within Blue Mounds State Park generally tend to be well-drained, silty-clay-loams with very fine textures. They lie in thin layers over the bedrock. Most of these soils have moderate limitations for recreational development

Following construction of the dam in 1937, sediment has gathered within the project area behind the dam. It has never been dredged. Soil borings determined the bedrock depth to be 60 feet. The topsoil fill was described as silty sand. In the existing embankments, the fill consisted of silty sand and lean clay with some organic clays. Below the fill, silty sand, poorly graded sands with silts, and sandy clays were discovered on top of lean clays and then bedrock. **(See Appendix A, Figure 3.)**

In 1981, the Farmland Protection Policy Act (FPPA) (P.L. 97-98, Sec. 1539-1549; 7 U.S.C. 4201, et seq.) was enacted (P.L. 98-98) to minimize the unnecessary conversion of farmland to non-agricultural uses as a result of federal actions. Programs administered by federal agencies must be compatible with state and local farmland protection policies and programs. The Natural Resources Conservation Service (NRCS) is responsible for protecting significant agricultural lands from irreversible conversions that result in the loss of an essential food or environmental source.

Prime farmland is characterized as land with the best physical and chemical characteristics for the production of food, feed, forage, fiber and oilseed crops (USDA, 1989). This land is either used for food or fiber crops or is available for those crops, but is not urban, built-up land, or water areas. According to NRCS, prime farmland is located in the vicinity of the state park as well as within the state park boundary.

Table 3.1. NRCS Map Units within Project Area, Lower Mound Basin Restoration

Map Unit	Description	Slopes	Depth to restrictive feature	Limitations – Picnic Areas	Limitations – Paths and Trails
P06A*	Colo silty clay loam, occasionally flooded	0 to 2 percent	Very deep	Very Limited	Very Limited
P11A*	Dempster silt loam	0 to 2 percent	Very deep	Not limited	Not limited
P16A*	Graceville silty clay loam	0 to 2 percent	Very deep	Not limited	Not limited
P17A*	Ihlen silty clay loam	0 to 2 percent	20 - 40 inches	Not limited	Not limited
P17B*	Ihlen silty clay loam	2 to 6 percent	20 - 40	Not limited	Not limited
P18B	Ihlen-Rock outcrop complex	0 to 4 percent	20 - 40	Not limited	Not limited
P18C	Ihlen-Rock outcrop complex	4 to 38 percent	20 - 40	Somewhat limited	Not limited
P19A*	Judson silty clay loam	1 to 3 percent	Very deep	Not limited	Somewhat limited
P24B*	Moody silty clay loam	2 to 5 percent	Very deep	Not limited	Not limited
P33A*	Spillco silt loam, Occasionally flooded	0 to 2 percent	Very deep	Somewhat limited	Somewhat limited
P40A	Bluemound silt loam	0 to 3 percent	10 - 20 inches	Very limited	Not limited
W	Water	-	-	Not rated	Not rated

*= Prime farmland soil type.

Source: Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at http://websoilsurvey.nrcs.usda.gov/ (Accessed 10/11/2016).

Alternative 1 – No Action

If the No Action alternative is chosen, soil erosion and sedimentation will continue to impact Mound Creek and degrade water quality through increased turbidity. Considerable head-cutting has been occurring within the channel since the flood event. The creek is currently unstable and will continue to incise the banks until it can stabilize. In the long term, future flood events could potentially exacerbate the soil loss. Geology and seismicity would not be affected by a No Action alternative.

This alternative will not impact agricultural lands/farmlands surrounding the state park. The Farmland Protection Policy Act does not apply to the proposed project area.

Alternative 2 – Lower Mound Lake Basin Restoration Project

This alternative will be designed to reconnect the stream with the floodplain. Stabilization of the stream channel using natural channel restoration principles will prevent further head cutting and contributing sedimentation downstream. Revegetation of the stream slopes with native vegetation will provide long-term stabilization to the site.

There is no anticipated impact to geology or seismicity from this project alternative.

Excavation depths within the stream channel will be no greater than 5 feet deep. The existing embankments will be excavated and sloped down no more than 10 feet. The total excavated area is estimated to be 2.7 acres, and the total grading area estimated at 5.54 acres.

During construction, excavated soils will be stored on-site. The excavated material will be used on-site to create channel plugs, repair scoured areas, and slope shorelines and berms. It is anticipated that all of the material excavated will be used on the project. Additional materials will need to be brought in for bridge and trail construction, since the soils in the basin are not appropriate for these features.

By constructing the majority of the project outside the main channel, many of the potential soil erosion problems will be mitigated. Project engineer will develop an SWPPP using best management practices and on site staff will ensure that erosion control practices are properly installed and maintained. These measures may include: floating silt curtain within the channel, silt fencing, bio rolls and hay bales, wildlife friendly erosion control blankets, and immediately revegetating areas using onsite vegetation and cover crops.

The land within the project area was previously a man-made reservoir and was not used as farmland. This alternative will not impact agricultural lands/farmlands surrounding the state park and the Farmland Protection Policy Act does not apply.

3.1.2 Water Resources and Water Quality

Mound Creek within Blue Mounds State Park is the subject of the proposed project. The upstream contributing watershed is 16.97 square miles. Mound Creek (DNR-catchment 8302900) is a tributary to the Rock River in Rock County, Minnesota.

Mound Creek was surveyed and observed during 2015, 2016, and 2017 at base flow conditions. Currently the creek is flowing through a self-forming erosive channel in the southern half of Lower Mound Lake Basin. Mound Creek flows from the west to the east through the project area. There are two distinct areas of incision within the channel as head cuts or nick points migrate upstream through unconsolidated reservoir sediment. As the stream reaches the failed dam, it flows south around the structure where the emergency spillway was previously located. Downstream from the dam, Mound Creek is routed back into its naturally meandering channel and flows approximately two miles southeast to its confluence with the Rock River.

The riparian corridor adjacent to Mound Creek, and the majority of the drained reservoir, currently exhibits wetland characteristics typical of a seasonally flooded basin. Groundwater fed springs discharge into the basin on the west side of the project area. The majority of the watershed and project area are within close proximity to Sioux Quartzite bedrock, resulting in increased groundwater/surface water connection.

Stormwater runoff comes from the restored native prairie, grasslands mixed with native trees and shrubs, bison pasture, bedrock outcrops, roads/trails/parking lots, and camping and recreational areas adjacent to the project area. According to the 2011 National Land Cover Dataset (NLCD), the Mound Creek watershed is 83.7% row crop agriculture, 7.3% developed, 7.4% shrub and herbaceous cover, and the remaining land cover includes water, wetland, and forest. Livestock are common in

the watershed. Upstream there are 22 registered feedlots and 29 building sites. A small portion of the town of Hardwick is also included in the watershed.

The project area is located within the Sioux Quartzite aquifer, according to Minnesota Department of Health well boring records. Exposed outcrops and fractures in the Precambrian bedrock are common. Drinking water sources are susceptible to contamination due to the unique geologic conditions. No wells are located within the project area. Well logs indicate three wells within the state park boundary. Two active wells (*i.e.* unique IDs 804457 and 222773) are 261 to 335 feet deep, respectively. The well utilized for the park's water source tested positive for Escherichia coli (*E. coli*) bacteria in 2015. A third well (unique ID 222772) located in the park was sealed in 2014 and was 138 feet deep.

According to the MPCA 303d impaired waters list, Mound Creek (HUC sub-watershed 101702040109) is non-supporting for aquatic recreation and exceeds the standards for *E. coli*. The four mile segment (*i.e.* AUID 10170204-551) of Mound Creek was added to the impaired waters list in 2014, including the segment through Blue Mounds State Park. It is listed as a 2C use class. The MPCA has deferred the aquatic life assessment for Mound Creek until the second cycle of the state of Minnesota's watershed approach in the Missouri Basin. At that time, the Tiered Aquatic Life Use (TALU) process will be utilized to assess predominately (*i.e.* >50%) channelized streams.

Alternative 1 – No Action

The main impact to water quality with the No Action Alternative would be the continued erosion of the stream channel. A natural disaster has already impacted this area and a new channel is cutting through the drained reservoir. Continued erosion will further expose and transport reservoir sediments (along with nutrients and bacteria adsorbed to soil particles) continuing to degrade downstream water resources. As Mound Creek continues to cut a channel throughout the drained reservoir, incision and widening will occur. The primarily straight channel will function more like a ditch without meandering bends or riffle and pool habitats. It is anticipated the channel will further lose floodplain connectivity at bankfull flows (*i.e.* 1.5-year return interval flows) as the head cut moves upstream; thus, reducing the stream's ability to dissipate hydraulic energy during high flows and filter sediment and nutrients. The No Action Alternative is not expected to cause an impact to groundwater resources.

Alternative 2 – Lower Mound Lake Basin Restoration Project

The Proposed Action Alternative will reduce excess erosion and related nutrient and bacteria loading downstream to Mound Creek and the Rock River. The channel restoration will create a functional, meandering, stable stream with riffle and pool sequences; as well as a connected floodplain to store floodwater. There will be a positive impact to fisheries and aquatic organisms as habitat is restored. The project will also include the creation of small oxbow wetlands and restoration of native vegetation in the floodplain in order to enhance ecological functions.

The proposed pedestrian bridge will span Mound Creek and will be designed for a 100 year rain event. A United States Army Corps of Engineers (USACE) Section 10 Permit and MNDNR Waters Permit will be required prior to construction beginning.

Short term effects during construction will be minimized by utilizing an SWPPP developed in accordance with the National Pollutant Discharge Elimination System (NPDES) permit requirements. The SWPPP will include applicable BMPs to control and minimize erosion and stormwater management. BMPs will include the use of wildlife friendly, natural fiber, erosion control blankets, silt fencing, hydromulch, and rock checks. In addition, construction equipment will be staged in designated area(s). Where removal of streamside vegetation is necessary, native vegetation will be saved and restored wherever possible.

Short term impacts during construction will also be minimized by constructing the majority of the stream restoration away from the active channel. This will allow for native vegetation and erosion control measures to become fully functional before connecting the new stream restoration with Mound Creek. Construction will also be sequential and a cover crop used to quickly re-vegetate areas. No groundwater withdrawal or discharge is associated with project.

3.1.3 Floodplain Management (Executive Order 11988)

The Blue Mounds dam is located on Panel 11 of the Rock County Flood Hazard Boundary Map (See **Appendix B**). Blue Mound Creek is currently mapped as an approximate Zone A, floodplain. If work takes place in a Zone A floodplain, no FEMA or state floodplain permits are required as long as the project results in a decrease in water surface elevation during the 1-percent-annual-chance event. Additionally, this creek is currently being modeled by FEMA, and the model will reflect the proposed stream restoration showing the lower floodplain elevation.

Alternative 1 – No Action

Under the No Action alternative, it is anticipated the channel will further lose floodplain connectivity at bankfull flows (*i.e.* 1.5-year return interval flows) as the head cut moves upstream, thus reducing the stream's ability to dissipate hydraulic energy during high flows and filter sediment and nutrients.

Continued erosion will further expose and transport reservoir sediments (along with nutrients and bacteria adsorbed to soil particles) continuing to degrade downstream water resources. As Mound Creek continues to cut a channel throughout the drained reservoir, incision and widening will occur. The primarily straight channel will function more like a ditch without meandering bends or riffle and pool habitats.

Alternative 2 – Lower Mound Lake Basin Restoration Project

The proposed alternative is restoring the creek back to natural condition and removing floodplain impediments. This project alternative would create a beneficial impact to the floodplain by lowering these floodplain levels and reducing impacts for future flood events. The proposed alternative avoids direct and indirect development of the floodplain and reduces the risk of flood loss. Hydrologic and hydraulic modeling shows that there are minor increases to water surface elevation near the dam, but there will be no increase in flood potential to the structures downstream (See **Appendix G,** Barr Engineering Memorandum: Blue Mounds State Park – Lower Mound Lake Basin

Restoration Hydraulic Impacts). Under 44 C.F.R Part 9.5(2)(i and ii), the proposed alternative meets all test criteria for no adverse impacts to the floodplain; thus no 8-step analysis will be conducted.

3.1.4 Air Quality

The Clean Air Act requires the U.S. Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. The Clean Air Act established two types of national air quality standards: primary standards set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly; secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation and buildings. Current criteria pollutants are Carbon Monoxide (CO), Nitrogen Dioxide (NO2), Ozone (O3), Lead (Pb), Particulate Matter (PM10), and Sulfur Dioxide (SO2).

The U.S. Environmental Protection Agency's *Green Book* provides detailed information about the NAAQS designations, classifications and non-attainment areas. According to the *Green Book*, the project area is not located in a non-attainment area.

Alternative 1 – No Action

If no action is taken, air pollution is not expected to change or be affected.

No air quality permits are required if no action is taken.

Alternative 2 – Lower Mound Lake Basin Restoration Project

Air pollution will not change as a result of the proposed project. Potential air quality impacts are expected to be minimal and temporary. Earth moving equipment will only operate during daylight hours. Active construction is expected to take up to 12 months to complete. The resulting project will not negatively affect air quality.

No Air quality permits are required for the proposed action.

3.2 Biological Environment

3.2.1 Terrestrial and Aquatic Environment

The proposed project area is located in the northeast corner of Blue Mounds State Park, Rock County, Minnesota. The 1,830 acre state park is located in the Prairie Coteau and is characterized by tallgrass prairie and abundant rock outcrops and shallow soils. Sioux Quartzite rock cliffs and formations are unique to the area. Blue Mounds State Park is considered an important area of biodiversity in an agriculturally dominated landscape due to the intact native plant communities and high number of rare features. The entire park is ranked as a Minnesota Biological Survey (MBS) site with outstanding biodiversity significance, resulting in designation as a conservation focus area for the Minnesota State Wildlife Action Plan (MN SWAP) and the Minnesota Prairie Conservation Plan. "Outstanding" sites contain the best occurrences of the rarest species, the most outstanding

examples of the rarest native plant communities, and/or the largest, most ecologically intact or functional landscapes.

The land cover of the action area is comprised of three native plant communities. The majority of the area is Ups23a (Southern Mesic Prairie), a small section of habitat classified as MHs38b (Southern Mesic Oak- Basswood Forest), and a marsh system near the Upper Dam. The remaining surrounding land cover is old field and use areas (beach, picnic area, parking lot). (See **Appendix A, Figure 4.**)

Mound Creek is a perennial prairie stream with riffle/pool sequences on a meandering channel. The watershed is 16.9 square miles with 83% of that in row crops. Considerable watershed health and water quality issues are present. Mound Creek is listed as a potential severe impairment, exceeds the criteria for bacteria, and was listed as impaired for aquatic recreation use by the MPCA. The Upper and Lower Dams located within the park create a barrier for aquatic species to migrate through Mound Creek and disconnect about 5 miles of the stream from the lower reach and the Rock River. The bedrock at the surface of the basin, the braided channel, and the 0.9 acre natural pool below the Upper Dam are unique features to Mound Creek.

Mound Creek is identified as critical habitat for the Topeka Shiner by the USFWS.

The project area is highly disturbed, due to the severe flood event, which resulted in the failure of the Lower Dam. In this event, Mound Creek was washed out below the dam and sustained extreme damage and scouring of the channel. The lake created by the dam was drained and large areas scoured. In the time since the dam failure in 2014, Mound Creek has remained unstable and continues to head-cut in the channel and slump on the banks, causing sedimentation downstream.

The previous footprint of Lower Mound Lake now consists of mudflats dominated by early successional hydrophilic vegetation. The wetland is primarily vegetated with reed canary grass (*Phalaris arundinacea*), hybrid cattail (*Typha angustifolia*), quaking aspen saplings (*Populus tremuloided*) and sandbar willow (*Salix interior*)." "The upland buffer surrounding the wetland is primarily vegetated with reed canary grass (*Phalaris arundinacea*), sawtooth sunflower (*Helieanthus grosseserratus*), and smooth brome (*Bromus inermis*). The transition between the upland and the wetland is composed of moderate slopes.

Alternative 1 – No Action

If no action was taken the Mound Creek channel will continue to try to stabilize itself by head-cutting further upstream. This will contribute to sedimentation downstream and into the Rock River. The stream is currently deeply incised and no longer connected to a floodplain. Future heavy rain events will continue to scour and cut this channel deeper, increasing sedimentation and further degrading the habitat.

Aquatic species like Topeka shiner are currently using portions of this creek within the project area in its current state. Since the habitat is degraded, however, it lacks areas for them to breed and escape predators. It is unclear how long they will persist in the area and what effects it would have

on the local population since this portion of the stream was historically very reliable shiner habitat and higher quality prior to the washout.

If no action is taken, the vegetation in the project area will continue to be an early successional floodplain dominated by non-native vegetation and woody cover that is not typical of the prairie setting. In the long term, the biodiversity of the site is anticipated to be lower with the no action alternative than if the site is restored. Ecological functions, like floodplain connectivity and stabilization of the shoreline, will also remain impaired with this alternative.

Alternative 2 – Lower Mound Lake Basin Restoration Project

Short term effects to the aquatic environment, specifically Topeka Shiners, will be minimized by conducting most of the work off-channel, redundant stormwater BMPs, and careful sequencing of activities as previously listed. Seine nets will be used to move Topeka Shiners and other fish downstream prior to in channel work as allowed for under the State's Section 6 permit. Additionally, the contractor will be required to use temporary bridges above bankfull width or a constructed low water crossing to cross the active stream channel. Work will also be timed to avoid fish spawning season, as recommended by USFWS.

Short term effects to the terrestrial environment will be minimized by utilizing an SWPPP. The SWPPP will include applicable BMPs to control and minimize erosion and stormwater pollution. BMPs will include the use of wildlife friendly, natural fiber, erosion control blankets, and the use of silt fencing. In areas where removal of streamside vegetation is necessary, native vegetation will be selectively relocated and transplanted on site wherever possible. Construction will also be sequential and a cover crop used to quickly re-vegetate areas.

The current degraded vegetation in the project area will be removed and restored to native vegetation appropriate for the hydrology and landscape setting of the site. In the long term, the biodiversity of the project area is anticipated to be higher with this alternative than if no action is taken. The restored vegetation could provide habitat for native flora and fauna that the currently degraded state does not provide. Ecological functions, like floodplain connectivity, and stabilization of the shoreline, will be restored.

3.2.2 Wetlands (Executive Order 11990)

Executive Order 11990, Protection of Wetlands, requires federal agencies to take action to minimize the loss of wetlands. The NEPA compliance process requires federal agencies to consider direct and indirect impacts to wetlands, which may result from federally funded actions.

The USFWS National Wetland Inventory (NWI) identifies wetlands are present within the project area (See **Appendix A, Figure 5.**). The map identifies a seasonally flooded basin (Type 1) and shallow, open water community (Type 5) wetlands within the proposed project area. The NWI map reflects conditions prior to the dam being breached, the open water community represented on the map is now the drained basin. Vegetation and hydrology conditions have been changing in the basin since the natural disaster occurred in 2014. The vegetation is currently transitioning from early successional vegetation, such as smartweed, amaranth, ragweed, reed canary grass, and other

herbaceous species to shrubby areas of cottonwood, willow, and false indigo, and open areas of rice cutgrass and native sedges and rushes.

Groundwater fed springs out letting into the basin have been documented on the west side of the project area during field surveys and are surrounded by high quality native vegetation.

A wetland delineation was completed in the summer of 2017 to assess current conditions. The report met the standards and criteria described in the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual and the Midwest Regional Supplement. It was distributed to the Technical Evaluation Panel (TEP), which includes representatives from MN DNR, Rock County Soil and Water Conservation District (SWCD), Board of Water and Soil Resources (BWSR) and USACE, in November 2017 for review and comment; no comments were received.

Alternative 1—No Action

Under the No Action Alternative, impacts to wetlands are not anticipated. However, vegetation and hydrology conditions have been changing in the basin since the natural disaster occurred in 2014. The basin was under water since the dam was constructed in the late-1930s. If no action is taken, wetlands within the basin will remain in poor condition vegetated by non-native invasive species. As the stream continues to down cut through the project area, the groundwater table could be lowered and reduce wetland hydrology during certain portions of the growing season.

Alternative 2— Lower Mound Lake Basin Restoration Project

Under the Proposed Action the stream restoration will enhance wetland functions and values typical of the conditions that existed before the dam was constructed approximately 80-years ago. In addition, off channel oxbow wetlands, wet prairie and seasonally flooded depressions will be seeded and/or planted with native wetland vegetation. The riparian wetlands will be designed to flood during high water events but will maintain shallow marsh features during periods of low flow. The enhanced aquatic resources will improve water quality and habitat for aquatic and terrestrial species, including Topeka shiner, Plans Topminnow, and potentially Blanding's Turtle and Cricket Frog. During construction grading will be necessary to accurately shape the channel and floodplain to create a stable stream.

A wetland delineation was completed in the summer of 2017 to assess current conditions. Much of the basin was classified as wetland and as a result the proposed project will need to be permitted according to Section 404 of the Clean Waters Act and the Minnesota Wetlands Conservation Act (WCA). Since the proposed project is designed to enhance wetlands it is expected to be self-mitigating and therefore will not require wetland mitigation.

The proposed project will comply with EO 11990.

3.2.3 Threatened and Endangered Species

Federally listed species

In accordance with Section 7 of the Endangered Species Act (ESA) of 1973, the project area was evaluated for the potential occurrences of federally listed threatened and endangered species. The ESA requires any federal agency that funds, authorizes or carries out an action to ensure that their action is not likely to jeopardize the continued existence of any endangered or threatened species (including plant species) or result in the destruction or adverse modification of designated critical habitats

The list of species that may occur within Rock County was constructed by consulting the USFWS list of *County Distribution of Federally-Listed Threatened, Endangered, Proposed, and Candidate Species.*

State listed species

Minnesota's Endangered Species Statute (Minnesota Statutes, Section 84.0895) requires the Minnesota Department of Natural Resources (DNR) to adopt rules designating species meeting the statutory definitions of endangered, threatened, or species of special concern. The resulting List of Endangered, Threatened, and Special Concern Species is codified as Minnesota Rules, Chapter 6134. The Endangered Species Statute also authorizes the MNDNR to adopt rules that regulate treatment of species designated as endangered and threatened. These regulations are codified as Minnesota Rules, Parts 6212.1800 to 6212.2300.

Minnesota's Endangered Species Statute and the associated Rules impose a variety of restrictions, a permit program, and several exemptions pertaining to species designated as endangered or threatened. A person may not take, import, transport, or sell any portion of an endangered or threatened species. However, these acts may be allowed by permit issued by the DNR; plants on certain agricultural lands and plants destroyed in consequence of certain agricultural practices are exempt; and the accidental, unknowing destruction of designated plants is exempt. Species of special concern are not protected by Minnesota's Endangered Species Statute or the associated Rules. Persons are advised to read the full text of the Statute and Rules in order to understand all regulations pertaining to species that are designated as endangered, threatened, or species of special concern.

MNDNR maintains *The Rare Species Guide*, the state's authoritative reference for Minnesota's endangered, threatened, and special concern species. Minnesota's Rare Species Guide was also used to identify rare features within Rock County and within the proposed project area.

The following state or federally listed species may occur within the project area:

- Northern Long-eared Bat (*Myotis septentrionalis)*, Federal Status: Threatened, Minnesota Status: Special Concern.
- Topeka shiner (*Notropis Topeka*), Federal Status: Endangered, Minnesota Status: Special Concern

- Prairie Bush Clover (*Lespedeza leptostachya*), Federal Status: Threatened, Minnesota Status: Threatened
- Western Prairie Fringed Orchid (*Platanthera praeclara*), Federal Status: Threatened, Minnesota Status: Endangered
- Plains Topminnow (*Fundulus sciadicus*), Federal Status: Not Listed, Minnesota Status: Threatened
- Pond Mussel (*Ligumia subrostrata*), Federal Status: Not Listed, Minnesota Status: Threatened
- Devil's Tongue (*Opuntia macrorhiza*), Federal Status: Not Listed, Minnesota Status: Special Concern
- Regal fritillary (*Speyeria idalia*), Federal Status: Under Review - Not Listed, Minnesota Status: Special Concern
- A species of lichen (*Buellia nigra*), Federal Status: Not Listed, Minnesota Status: Special Concern
- Western Harvest Mouse (*Reithrodontomys megalotis*), Federal Status: Not Listed, Minnesota Status: Special Concern
- Lined Snake (*Tropidoclonion lineatum*), Federal Status: Not Listed, Minnesota Status: Special Concern
- Western Foxsnake (Pantherophis ramspotti), Federal Status: Not Listed, Minnesota Status: Species of Greatest Conservation Need
- Blanchard's Cricket Frog (*Acris crepitans blanchardi*), Federal Status: Not Listed, Minnesota Status: Endangered historic record, new records found in Rock County, 2017.
- Blanding's Turtle (*Emydoidea blandinii*), Federal Status: Not Listed, Minnesota Status: Threatened, no known recent records

Alternative 1 – No Action

The no action alternative will not directly impact any threatened and endangered species. In the long term, however, no action will likely lead to further degradation of the site and eventual decline of some species. The resiliency ranking for the Topeka shiner in Mound Creek was ranked as "very low" due to impact of the Upper and Lower Dams at Blue Mounds State Park. While connectivity of the additional stretch of stream has been achieved through the blowout of the Lower Dam, the new stretch of stream is currently degraded and does not greatly contribute to Topeka shiner habitat. The resiliency ranking for the Topeka shiner would remain "very low" with the no action alternative.

Alternative 2 – Lower Mound Lake Basin Restoration Project

The proposed action would provide additional stream habitat and increased connectivity for aquatic species, in particular, the federally endangered Topeka shiner and Minnesota threatened Plains Topminnow and Pond Mussel. The new stream channel and off channel wetlands and oxbows will provide additional habitat for these species.

The proposed action aligns with the goals of MN SWAP, MN Prairie Conservation Plan, and the MNDNR Ecological and Waters division's vision of healthy watersheds. It also supports the goals of the USFWS Topeka Shiner Recovery Initiative for southwest Minnesota. The proposed project

reduces the risk of introduction of aquatic invasive species and predatory fish. This especially benefits the Topeka shiner as they are susceptible to predation. (Schrank, et. al. 2001, Mammoliti 2002, Layher 1993).

Restoration of the upland and shoreline areas with native vegetation will enhance the habitat for nearby species.

Federally listed species:

A Biological Assessment was completed to assess the effects of the proposed action on federally listed endangered, threatened, proposed and candidate species which may be present in the project area. In a letter dated February 14, 2017, the USFWS concurred that the proposed activities may affect, but are not likely to adversely affect Topeka Shiner, Prairie Brush Clover, and Western Prairie Fringed Orchid (**See Appendix C,** Biological Assessment USFWS Concurrence Letter).

Topeka Shiner (Notropis Topeka)

The Topeka shiner (*Notropis topeka*) is a federally endangered small fish found in prairie streams. It has been extirpated from approximately 80% of its historical range (Dahle 2001, Baker 2015). Topeka Shiners are most commonly found in low-order tributaries or headwater reaches of larger streams, and abundance is greater in off-channel habitats (Dahle, 2001). The Topeka shiner population is currently in decline in both occurrence and abundance throughout its range (USFWS, 2009). The Minnesota portion of the Topeka shiner population, which is considered one of the most critical to the overall representation of the species, has experienced a dramatic decline since 2010 (Nagle and Larson 2013, Nagle 2014). This decline is attributed to altered hydrology, increased predation by piscivorous fish, loss of off-channel habitat, and decreased water quality (Baker 2015 and USFWS 2014).

Mound Creek is designated critical habitat for Topeka Shiners and species and critical habitat are present in the project area. Shiners were first recorded in Blue Mounds State Park in 1942, with 12 individuals found in Upper Mound Springs Lake. Shiners were historically found above the Upper Dam in 1942 and 1947. In 1947, an unknown quantity of Topeka Shiners were found in both the Upper and Lower Lakes. This means the population was persisting above and between the dams after dam construction and creation of the impoundments in 1937. Mound Creek was not surveyed every year, but records of Topeka Shiners between 1988 and 2000 indicate the area below the Lower Dam consistently contained a healthy Topeka shiner population. In 2000, the braided channel upstream from Lower Mound Lake, was sampled and no individuals were found. In 2007, an unconfirmed record of one Topeka shiner was found in Lower Mound Springs Lake just downstream of the Upper Dam. It is unclear how this fish travelled above the dam, but likely introduced via a bait bucket. In 2010, both the Upper and Lower lakes were again sampled and no Topeka Shiners were found (Tranel-Nelson and Quinn, 2015).

In 2013, a stretch of Mound Creek 3.4 miles upstream of the Upper Dam was sampled and no Topeka Shiners found, although the stream was channelized in this stretch. Mound Creek below the dam was sampled one year after the flood (2014) and no shiners were found. In the winter of 2015-16, MNDNR Parks and Trails and the USFWS coordinated a project to improve Topeka shiner habitat

by creating an oxbow off the channel of Mound Creek downstream of the former dam and washout area. In summer of 2016 Topeka Shiners were found in this oxbow just downstream of the project area as well as the main channel of Mound Creek within the park. This early success suggests that the larger restoration project will provide excellent Topeka Shiner habitat.

The resiliency ranking for the Topeka Shiner in Mound Creek was ranked as "very low" due to impact of the Upper and Lower Dams at Blue Mounds. This project has been designed to provide important off channel habitat for Topeka Shiners and restore connectivity to an additional 4,500 feet of stream. Restoration of Mound Creek through this project may improve the ranking for the stretch of stream below the Upper Dam. There was significant damage to the Topeka Shiner habitat below the Lower Dam (sedimentation, channel degradation, etc.) and restoration of that habitat would allow Topeka Shiners to return to an area that has generally supported significant numbers of individuals in the recent past (Utrup, 2015).

Exposure of Topeka Shiners to the project will be minimized by conducting most of the work off-channel, redundant stormwater BMPs, and careful sequencing of activities. Seine nets will be used to move shiners and other fish downstream prior to in channel work as allowed for under the State's Section 6 permit. Additionally, the contractor will be required to use temporary bridges above bankfull width or a constructed low water crossing to cross the active stream channel.

MNDNR concluded and USFWS concurred that this project **may affect, but not likely to adversely affect** Topeka Shiners due to creation of off channel habitat, which they prefer, restoration of in channel habitat, and stabilization of the shoreline with native vegetation. Water quality benefits may be seen after the completion of this project, which would further benefit the Topeka Shiner.

Prairie Bush Clover (Lespedeza leptostachya)

Prairie Bush Clover is a perennial legume that is presently confirmed extant in Rock County. The only known Rock County population is believed to be an introduction (Sather and Anderson, 2015) that is over 4.5 miles from the project area. Prairie Bush Clover has never been documented within the park. There is no likely response and no likely exposure of Prairie Bush Clover to the project. Since the project area was previously underwater for 80 years, and is currently severely degraded, species and suitable habitat are not present in the action area. MNDNR concluded and USFWS concurred that this project will have no effect on Prairie Bush Clover.

Western Prairie Fringed Orchid *(Platanthera praeclara)*

Western Prairie Fringed Orchid is found in wet prairies and sedge meadows. Based on 20 populations consistently monitored in Minnesota for the last 23 years the population has declined by over half (Sather and Anderson, 2014). The project area is located within one mile of a known population.

The park's population has been carefully monitored since 1985 and shows severe declines from population highs in 1987. Recent demography monitoring data for the Blue Mounds population show a balance between vegetative and flowering plants, suggesting that population is currently stable (Anderson and Sather, 2014). For that reason, species or suitable habitat may be present in

the project area. The spatial distribution map of Western Prairie Fringed Orchid at the park was updated in 2015 and no orchids are known to occur within the project area. Since the project area was previously underwater for 80 years, and is currently severely degraded, it likely does not currently contain suitable habitat for Western Prairie Fringed Orchid. There is no likely response and no likely exposure of Western Prairie Fringed Orchid to the project. MNDNR concluded and USFWS concurred that this project may affect, but not likely to adversely affect Western Prairie Fringed Orchids. If restoration efforts are successful, this project could benefit Western Prairie Fringed Orchid by providing wet meadow habitat in the future.

Northern Long-Eared Bat (Myotis septentrionalis)

Rock County is not known to contain Northern long-eared bat hibernacula. Northern long-eared bat have never been documented within the park. The nearest known roost tree/hibernacula is 145 miles away in Nicollet County. Trees that will be removed are saplings and do not exhibit Northern long-eared bat roost characteristics. No known occupied maternity roost trees will be removed and the project is not within 150 feet of a known occupied maternity roost tree nor within 0.25 mile of a hibernaculum. It is our conclusion that this project will have no effect on Northern long-eared bats.

The USFWS requested that the Northern Long-Eared Bat 4(d) Rule Streamlined Consultation Form be completed for the proposed action. This framework allows federal agencies to rely upon the U.S. Fish and Wildlife Service's (USFWS) January 5, 2016, intra-Service Programmatic Biological Opinion (BO) on the final 4(d) rule for the Northern long-eared bat for section 7(a)(2) compliance by: (1) notifying the USFWS that an action agency will use the streamlined framework; (2) describing the project with sufficient detail to support the required determination; and (3) enabling the USFWS to track effects and determine if initiation of consultation is required per 50 CFR 402.16. (See **Appendix C,** Northern Long-eared Bat 4(d) Rule Streamlined Consultation Form.)

State listed species:

Plains Topminnow (Fundulus sciadicus)

In Minnesota, Plains Topminnow exists only within the Rock River and tributaries within the state (USFWS 2013). Although this species was first documented in the state in 1973, experts think it has been in Minnesota for a very long time (Hatch, pers. comm.). Other populations exist in the Rock River south of the park. It is unknown whether historically they may have occurred farther upstream. A careful analysis of various museum collections would be needed in order to develop a map of the historic distribution. Experts consider Plains Topminnow, without question, to be considerably rarer in Minnesota than Topeka Shiners (Hatch, pers. comm.).

As a state listed species, Plains Topminnow are automatically included as a Species of Greatest Conservation Need (SGCN). The State Wildlife Action Plan provides the following reasoning for listing of Plains Topminnow: "*Extensive survey efforts have confirmed that the Plains Topminnow is one of the rarest inhabitants of Minnesota's southwestern prairie streams. Declining water quality, potential stocking of mosquito fish, specialized habitat requirements, sensitivity to stream degradation, limited distribution and overall rarity contribute to this species being listed*".

Preferred habitat is generally clear water streams, isolated pools, backwater areas, sloughs and overflow pools of larger streams. This species inhabits areas with minimal current, muddy to sandy substrate and dense aquatic vegetation (USFWS, 2013).

Populations of Plains Topminnow persist by being able to move throughout a drainage in order to recolonize sites where the species was extirpated due to drought or other causes. Dams, impassable highway culverts and dry reaches prevent stream connectivity critical for survival of the species in a particular watershed (Rahel and Thel, 2004). No studies or information was uncovered to indicate whether Plains Topminnow can traverse fish passages (Hatch, 2000).

Some studies indicate that predation by piscivorous fish impacts local populations of Plains Topminnow, but other studies have documented the species coexisting with sport fish (Schumann 2012, Pasbrig et al 2012). Hatch (2000) did not positively identify any Plains Topminnow in a sample of 148 predatory fish stomachs.

Plains Topminnows were not discovered in Mound Creek until 1973, so there are no records of them above the Upper or Lower Dams in earlier years. All known records of Plains Topminnow in Blue Mounds State Park are from below the former Lower Dam. Records in the NHIS database document occurrences from 1997-2011. The park naturalist is recorded as finding one in the creek below the Lower Dam in 1978. From 1996-2000 they were found in low numbers every year between the Lower Dam and Highway 8. In 2006, 15 individuals were found. The last record is for one fish found between the Lower Dam and Highway 8 in 2011. No Plains Topminnows were found in the 2015 sampling effort. However, two Plains Topminnows were found downstream of the Lower Dam in the summer 2016 sampling effort.

This project is designed to benefit the Plains Topminnow by removing the dam barrier and creating off channel habitat. Immediate effects of the project on the Plains Topminnow can be minimized with stormwater management best practices during the construction phase.

Pond Mussel (Ligumia subrostrata)

In the summer of 2015, a population of Pond Mussels was discovered in Mound Creek within Blue Mounds State Park. It has likely been present for a considerable amount of time but only recently documented because this location hasn't been sampled previously. It is one of four populations known in Minnesota, all in the Missouri River drainage (Sietman pers. comm.). Recently dead or weathered shells suggest there could be populations in a few other locations in Minnesota (Sietman et al 2003). However, Sietman (pers. comm.) states the only known viable population in Minnesota is within the Rock River watershed. This species is at the northern edge of its range in South Dakota, Minnesota and Iowa. However, Minnesota likely harbors the most substantial stream population remaining in the region (Sietman et al 2003). Mussels are classified S1 (critically imperiled) in South Dakota and Nebraska, and presumed extirpated in Iowa (NatureServe, 2015).

Pond Mussels live in small streams, sloughs, quiet areas of larger rivers as well as shallow parts of lakes and ponds. Usually they occur in sand/mud bottoms in less than two feet of water (NatureServe 2015). Although this species occurs frequently in lakes and ponds in southern states,

Sietman (pers. comm.) states that he has never found this species in lentic habitats in Minnesota. Parasitic hosts of this species include green sunfish, warmouth, bluegill and largemouth bass (NatureServe 2015). It reportedly adapts well to newly created channels and ponds (Parmalee and Bogan 1998).

Impoundments can negatively impact stream mussels in several ways. Dams create barriers to fish and mussel migration, change water depth and chemistry and sediments dropping out of the slower water in the impoundment can bury mussel beds (USFWS 2015).

Freshwater mussels are also negatively impacted by channelization and dredging, pollution, fish kills that impact host fish and introduction of non-native species (USFWS 2015).

Pond Mussels were not discovered in Mound Creek until June of 2015. At this point the Lower Dam was already washed out. One older female was collected in the pool below the Upper Dam, an adult female and 2 year old juvenile were found south of the dam, and 1 juvenile was found near the Highway 8 Bridge. There were no known mussel surveys in the park prior to 2015. They were not surveyed in 2016. This project is designed to benefit mussel species by removing the dam barrier and creating off channel habitat. Newly created wetlands in the project area planted with native vegetation can help improve local water quality which would benefit the mussels. Immediate effects of the project on the mussels can be minimized with stormwater management best practices during the construction phase.

Blanchard's Cricket Frog (Acris crepitans blanchardi)

In June, 2017, Blanchard's Cricket Frogs were rediscovered in Rock County, just outside the park. No cricket frogs were heard inside the park during the June 2017 survey. Their presence within the project area is unknown at this time and further surveys are anticipated. The Cricket Frog is primarily a riparian/riverine species and would benefit from this project through increased stream connectivity and restored banks. They typically do not overwinter in steep banks, but instead prefer gradual slopes. Currently, the banks of Mound Creek in the project area are incised and steep and do not appear to be suitable habitat for Blanchard's Cricket Frogs.

These species may occur within the project area but will likely not be impacted by activities as the actual work area will avoid their habitat:

- Devil's tongue (*Opuntia macrorhiza*), Federal Status: Not Listed, Minnesota Status: Special Concern
- Regal fritillary (*Speyeria idalia*), Federal Status: Under Review - Not Listed, Minnesota Status: Special Concern
- A species of lichen (*Buellia nigra*), Federal Status: Not Listed, Minnesota Status: Special Concern
- Western harvest mouse (*Reithrodontomys megalotis*), Federal Status: Not Listed, Minnesota Status: Special Concern
- Lined Snake (Tropidoclonion lineatum), Federal Status: Not Listed, Minnesota Status: Special Concern

- Western Foxsnake (Pantherophis ramspotti), Federal Status: Not Listed, Minnesota Status: Species of Greatest Conservation Need

A visual survey was conducted along the current stream channel and adjacent seep in the spring of 2017 for the following species. None were found:

- Blanding's Turtle (*Emydoidea blandinii*), Federal Status: Not Listed, Minnesota Status: Threatened, no known recent records

3.2.4 Migratory Birds

Numerous migratory birds utilize the habitat within Blue Mounds State Park. The park is a known destination for bird watchers due to the diversity of species that may be observed. Prairie monitoring surveys in high quality prairie remnants, like those in Blue Mounds State Park, show that prairie/grassland species are declining at rates of around 5% per year; Breeding Bird Survey declines are usually greater.

A bird list for Blue Mounds State Park is included in **Appendix A, Figure 6.**

Alternative 1 – No Action

No adverse impacts to migratory birds are anticipated with the No Action alternative.

Alternative 2 – Lower Mound Lake Basin Restoration Project

No adverse impacts to migratory birds are anticipated with this project. Once the project is complete, improved habitat will be created for migratory birds, including waterfowl, water birds, songbirds, and possibly shorebirds, in the forms of improved wetlands and restored stream channel. Additional nesting habitat will also be created in the form of mesic and upland prairie. State nongame biologists have been consulted on this project to prevent any potential adverse impacts to migratory birds.

During summer 2017, bird surveys have been conducted at the park in the upland prairie located south of the project area. Terrestrial species and species of greatest conservation need (SGCN) that have been observed are all prairie/grassland species. They are likely to benefit from the grass and wet meadow habitat restorations proposed in the project area. In its current vegetative state, the project area is unlikely to be used by the SGCN birds and disturbance to those species during construction should be negligible. For other bird species within the project area, construction May through July will disturb their breeding and nesting if vegetation is present at that time (Worland, 2017). BMPs for erosion and stormwater management will also mitigate disruption to breeding and nesting birds by limiting disturbance to vegetation to only the areas needed for construction.

3.3 Hazardous Materials

Following construction in 1937, sediment began to accumulate in the basin behind the dam. This sediment has never been dredged. A composite sample of the sediment from three separate locations and depths was gathered on Oct. 26, 2015 and brought to Minnesota Valley Testing Lab in New Ulm, Minnesota for analysis. The sample was tested based on criteria from Managing Dredged

Materials in the State of Minnesota (Minnesota Pollution Control Agency). The sample from the Lower Mound Lake Basin was determined to be a Level 1 material (See **Appendix G**, Sediment Sample Lab Results). Level 1 material is suitable for use on residential or recreational properties and does not need to be removed from the site.

A search of the MPCA's "What's in My Neighborhood?" (WIMN) database, no superfund sites are located within the project area. (MPCA, Feb. 2017.)

The WIMN data also shows that Blue Mounds State Park currently has an active, 560-gallon above ground diesel storage tank onsite. There are two underground leak sites identified within the park, both in the park's service area, located approximately 2,000 feet outside of the project area. One leak was fuel oil 1 & 2 reported in 2004, closed in 2006; the other leak was a gasoline leak reported 1997, closed 2000. (MPCA, Feb. 2017.)

Alternative 1 – No Action

There are no known hazardous materials present in the project area; the No Action Alternative is not expected to generate or disturb any hazardous materials.

Alternative 2 – Lower Mound Lake Basin Restoration Project

Although subsurface hazardous materials are not anticipated to be present, excavation activities could expose or otherwise affect subsurface hazardous wastes or materials; any hazardous materials discovered, generated, or used during implementation of the proposed project shall be disposed of and handled by the project applicant in accordance with applicable local, state and federal regulations.

3.4 Socioeconomics

3.4.1 Zoning and Land Use

Blue Mounds State Park is located in Mound Township in Rock County, Minnesota, Section 24, Township 103N, Range 45W. The project area is zoned as State Park on the Rock County Zoning Map (**See Appendix B**). The land surrounding the State Park is zoned for limited agriculture.

Alternative 1 – No Action

The No Action alternative will have no effect on zoning; the project area would remain a State Park.

Alternative 2 – Lower Mound Lake Basin Restoration Project

The preferred alternative will have no effect on zoning.

3.4.2 Visual Resources

Blue Mounds State Park is known for its Sioux Quartzite cliff rising 100 feet from the plains, a bison herd that grazes on the prairie within the park boundary, and surrounding prairie grasses and flowers. Rock outcrops and shallow soil prevented much of the land within the park from being plowed. However, heavy grazing by domestic livestock has diminished the native grasses and

wildflowers and has introduced exotic or foreign weedy plants. Special management programs are currently underway to restore the native grasses and wildflowers.

The project area consists of approximately 60 acres within the park and is defined as surrounding the former basin, Lower Dam site and the creek as it exits the park's eastern boundary. (See **Appendix A**, Figure 1.)

The general landscape character of the project area includes a parking lot used to access a day use area of the park consisting of the former lake, hiking trails, and a designated picnic area. Lower Mound Creek can be seen from the parking lot as well as the drained basin, which is now dominated by cottonwood saplings and reed canary grass. The historic Upper Dam can be seen along with the damaged Lower Dam, which also served as a pedestrian bridge across the creek and impoundment area, connecting to other hiking trails in the park.

Alternative 1 – No Action

Under the No Action Alternative, no improvement would be made to the dam nor to the areas impacted by the breach in the dam. The dam would be left in a state of disrepair and vulnerable to further damage from flood events. The area around the dam would continue to be fenced to prevent access to the damaged area. The basin would continue to be vegetated by non-native species including cottonwood trees and reed canary grass, interrupting the views of the surrounding native prairie landscape recovering within the park.

The creek would have limited aquatic habitat lacking deep pools and rock riffles. The creek would continue head cutting through the sediment in the former reservoir causing erosion and degrading downstream water quality. Park visitors using Mound Creek Trail (hiking) would be left with no means of crossing Mound Creek as they had previously been able to do by using the trail on the dam.

Alternative 2 – Lower Mound Lake Basin Restoration Project

The proposed action area will encompass the entire drained basin along with what remains of the dam and immediately adjacent areas, approximately 60 acres, with the construction area of impact consisting of approximately 30 acres.

The restoration of Mound Creek through the basin is intended to create a natural, meandering stable stream channel and provide improved habitat for species native to southwestern Minnesota, including the Topeka shiner and Plains Topminnow. Approximately 4,500 feet of stream channel will be created along with several wetland oxbows. The stream restoration will consist of a series of riffles and pools. A highly sinuous 'E' channel, as classified by the Rosgen classification system, will be restored throughout the drained basin. This is the reference stream type for the unconfined valley within the Blue Mounds State Park proposed project boundary.

The stream will be designed with the proper dimensions, pattern, and profile to enhance ecological functions, improve water quality and habitat for aquatic life. The restoration design will incorporate detailed survey data from a reference reach channel to mimic natural channel conditions and be

designed and implemented by a multidisciplinary team including experienced MNDNR stream practitioners and a licensed engineer.

The width of the channel will be approximately 15 to 20 feet. The maximum depth of the pools will be approximately 5 feet at bankfull flows. The restored stream will be in connection with its floodplain at typical bankfull flows. (Bankfull flow is defined as the 1.5-2 year return interval flow.) A diverse native prairie will be restored along the stream corridor and throughout the drained basin.

Vegetation best management practices will be used to establish native plant species throughout the former reservoir. It is expected that restoration of the vegetation will take several years of management effort, the first step will be to remove undesirable woody species and plant native herbaceous species.

Pedestrian trails will connect the existing use areas with the restored stream. The trails will provide opportunities to view the stream and provide opportunities for educational and interpretive programming. One trail will lead from the day-use area to one or more locations along the stream; this trail will meet Americans with Disabilities Act (ADA) requirements. Another trail is planned to lead from the existing trail on the north side of the basin to the restored stream.

A weathering steel pedestrian bridge will be installed near the former location of the Lower Dam. This will restore connectivity of the Mound Creek Trail across the creek. As the stream flows under the pedestrian bridge, a series of rock arch riffles will direct flow through a slightly steeper reach. Downstream of the former dam, the stream restoration is anticipated to include riparian vegetation management, grade control riffles, and slight alternations to the channel shape and/or dimensions to ensure further establishment of an adequate floodplain bench.

3.4.3 Noise

No noise producing facilities are located within the state park and none are proposed.

Alternative 1 – No Action

The No Action alternative will not produce any short-term or long-term noise.

Alternative 2 – Lower Mound Lake Basin Restoration Project

Ambient noise levels will not change as a result of the proposed action. Noise from construction activities of the proposed action will be temporary and occur only during daylight hours, Monday through Friday, to minimize potential impacts to park users. There are no sensitive noise receptors in the vicinity of the project area.

3.4.4 Public Services and Utilities

The park is managed for recreational use, including camping, hiking, biking, snowmobiling, wildlife viewing, rock climbing and other outdoor activities. Rock climbing, wildlife viewing and bird watching are also popular activities within the park.

Visitors parked in a large parking area, where a picnic area sat between the parking lot and the lake. The picnic area provided tables and fire rings for camp/cooking fires. In the picnic grounds, visitors had access to a sand volleyball court, horseshoe pits, and a swing set.

Alternative 1 – No Action

With the No Action Alternative there will continue to be a severance in Mound Creek Trail. From the picnic area the trail crossed over a walkway on the Lower Dam structure, then traveled along the opposite (northern) shore of Lower Mound Lake before looping around the Upper Mound Lake and returning to the picnic area, creating a 3 mile hiking loop.

Alternative 2 – Lower Mound Lake Basin Restoration Project

Alternative 2 includes a pedestrian bridge near the former dam that will make Mound Creek Trail a complete loop again.

During construction access to the picnic area and amenities will be limited, the area will reopen once construction is complete.

3.4.5 Traffic and Circulation

Most motor vehicle access to the park comes from U.S. 75, a north-south two-lane highway that intersects with Interstate 90 at Luverne, Minnesota about 5 miles south of Blue Mounds State Park. Average annual daily traffic (AADT) volume reported by MnDOT, Office of Transportation Data and Analysis, indicate a volume of 3,400 vehicles along U.S. 75 from the intersection with County Road 8 north to County Road 7.

The primary park entrance is located off of County Road 20 (161st Street), a two lane east-west County Road that intersects with U.S. 75 about 1 mile west of the park entrance. Within the park the MNDNR maintains roads to the day-use area and campground; both are two-lane roads.

There are two secondary access points to the park off of County Road 8 along the south and west border of the park. In 2014 the volume was reported as 380 vehicles along County Road 8 from the intersection with US Highway 75 to County Road 19.

Alternative 1 – No Action

The No Action alternative will not have any impact on traffic and circulation.

Alternative 2 – Lower Mound Lake Basin Restoration Project

The proposed project will not affect the long term operation of existing parking or transportation networks within or near the park. Temporary disturbances may occur during construction. Limited trips for hauling materials and equipment to the work site will occur and the day-use parking lot may be closed at times during construction. Park visitors will be directed to other parking areas within the park; overall the disruption to visitors is expected to be minimal.

3.4.6 Environmental Justice (Executive Order 12898)

EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires federal agencies to identify and address disproportionately high and adverse human health or environmental of their programs and policies on minority and low-income populations and communities and Indian tribes. The Council on Environmental Quality (CEQ) guidance suggests that an environmental justice population may be identified if "the minority population percentage of the affected area exceeds 50%, or if the minority population percentage of the affected area is meaningfully greater than the minority population in the general population or other appropriate unit of geographic analysis" (CEQ, 1997). The CEQ defines low-income populations based on an annual statistical poverty threshold. In 2013, the poverty threshold for the 48 contiguous states for an individual under the age of 65 living alone was $12,119 (U.S. Census Bureau, 2014).

For analyzing impacts to the minority and low income populations at the Proposed Action Area, data from Rock County is compared to the State of Minnesota to determine if there were any siting concerns relative to Environmental Justice.

The minority population of the Proposed Action Area (0% as it is a State Park with no full-time residents) is less than the state as a whole (16%) and lower than surrounding county (Rock) geographical area (3.4%). Neither of these differences is considered meaningful.

The percentage of the population below the poverty level for the Proposed Action Area (0%) is lower than the state as a whole (11.3%) and also lower than surrounding Rock County geographical area (11.4%). These differences are not considered meaningful.

No appreciable minority or low-income populations exist within the area directly affected by the Proposed Action. No local community with appreciable minority or low-income populations exists in the surrounding Rock County geographical area. Based on this analysis, there is no concern regarding environmental justice to minority populations at the Proposed Action Area.

Alternative 1 – No Action

The no action alternative has no potential for disproportionate effects to minority or low income populations. Leaving the dam and creek to disrepair has an adverse effect to all populations equally.

Alternative 2 – Lower Mound Lake Basin Restoration Project

The Proposed Action is assumed to have a short construction window with a small number of construction workers dedicated to the project area. It is possible that the county within the general Project Area (Rock) could experience short-term temporary beneficial effects to the local economy through induced spending from construction employees working on the project. No residential homes or farms would be relocated resulting from the proposed action. Additionally, no demographic changes in the affected counties representing in the geographical area are anticipated because no permanent employment would be created as a result of the Proposed Action.

The project also has potential secondary and sustainable economic benefits to the community as a whole by supporting recreational tourism (both for the local community and out-of-state individuals and communities), increasing employment opportunities, and adding positive environmental value, which would be a boost to the overall economy. In addition, when considering the economic impact and benefit, once workers are employed on the Project, consistent with most construction projects, the workers would spend their earnings in the communities where they work and live, resulting in multiplied economic impacts during the construction phase.

3.4.7 Safety and Security

Safety and security issues considered in this PEA include the health and safety of nearby residents and the protection of construction personnel.

EO 13045, Protection of Children from Environmental Health Risks and Safety Risks, requires Federal agencies to identify and assess environmental health and safety risks that may disproportionately affect children.

- To minimize risks to safety and occupational health, all construction activities would be performed using qualified personnel trained in the proper use of the appropriate equipment including all appropriate safety precautions. Additionally, all activities would be conducted in a safe manner in accordance with Occupational Safety and Health Act (OSHA; 29 U.S.C. § 651 et seq.) regulations.

Alternative 1 – No Action

Under the No Action Alternative, Mound Creek Trail across the creek will remain closed. Visitors are being notified of the closure and the area has been fenced off to prevent access to the damaged spillway.

Alternative 2 – Lower Mound Lake Basin Restoration Project

To minimize risks to safety and human health, all construction activities will be performed using qualified personnel trained in the proper use of the appropriate equipment including all appropriate safety precautions; additionally, all activities will be conducted in a safe manner in accordance with the standards specified in Occupational Safety and Health Act (OSHA) regulations. The proposed pedestrian bridge and railing will be in compliance with all applicable codes and standards. No adverse impacts to children are anticipated for the proposed project.

3.5 Historic and Cultural Resources

In addition to review under NEPA, consideration of effects to historic properties is mandated under Section 106 of the National Historic Preservation Act (NHPA), as amended, and implemented by 36 Code of Federal Regulations (CFR) §800. Requirements include the Agency's identification of the Area of Potential Effect (APE), which is defined as "the geographic area or areas within which an

undertaking which may directly or indirectly cause changes in the character or use of historic properties, if such properties exist" (36 CFR §800.16(d)).

Historic properties are defined as buildings, structures, objects, sites or districts included or eligible for listing in the National Register of Historic Places (NRHP) (36 CFR §800.16(l)). In addition to identifying historic properties that may exist in the proposed project's APE, FEMA must also determine, in consultation with the appropriate State Historic Preservation Officer (SHPO) and/or Tribal Historic Preservation Officer (THPO), what effect, if any, the action will have on those historic properties. Moreover, if the project would have an adverse effect on these properties, FEMA must consult with the SHPO and/or THPO on ways to avoid, minimize, or mitigate the adverse effect. In addition, the NHPA requires that FEMA consult with any other interested consulting parties, including relevant and appropriate members of the public and/or federally-recognized Native American Tribes (Tribes).

For the Mound Creek Restoration project, FEMA initiated consultation with the SHPO on November 9, 2016, to inform them of the scope of the proposed undertaking and to provide ongoing opportunities for informal and formal review of the project's potential effects on historic resources. Although Tribal lands do not constitute any part of the APE, with input from SHPO, in January of 2017, FEMA notified THPOs and tribal leaders of eight federally-recognized Tribes with potential ancestral interests in Rock County, requesting comment on the proposed undertaking. None of the Tribes contacted requested to take part in the consultation. FEMA also contacted four offices or organizations with potential interest in the project: the Minnesota Indian Affairs Council, the Office of the State Archaeologist (OSA), the Preservation Alliance of Minnesota, and the Rock County Historical Society. Of these organizations, only the OSA asked to be included in the consultation. At the SHPO's request, FEMA also invited Benjamin Vander Kooi, a private citizen and resident of Rock County, to join the consultation, due to his long interest and involvement in historic preservation initiatives throughout the state and, particularly, in Rock County.

The identification of these consulting parties allowed FEMA to move forward with consultations meeting the requirements of a number of laws and executive orders, including but not limited to sections 1508.27(b)(3,6, and 8) of NEPA regarding the context and intensity or severity of impacts on historic and cultural resources, and Section 106 of the NHPA, as amended, and implemented by 36 CFR §800. Applicable laws and executive orders governing treatment of archaeological artifacts and Tribal resources are noted in the appropriate sections below.

Select documents from the consultation documentation are included in **Appendix B**, Section 106 Consultation Documentation. An electronic copy of the full set of documentation is available upon request from Nicholas Dorochoff at nicholas.dorochoff@fema.dhs.gov.

3.5.1 Historic Structures

Structures within the APE for this undertaking were damaged as a result of flooding between June 11, 2014 and July 11, 2014. Damages included the breach of the Lower Dam due to the failure of the emergency spillway and the destruction of over 100 feet of the emergency spillway and approximately 90 feet of the diversion channel. The washed out area was approximately 10 feet

deep, and damage to the dam prevented the impoundment of water, resulting in the complete loss (by discharge) of the Lower Mound Lake. The Lower Dam and Lower Mound Lake were listed as two of five contributing resources in the Blue Mounds State Park WPA/Rustic Style Historic Resources (Blue Mounds District), listed on the NRHP in 1989. The district nomination form notes that contributing resources are considered eligible under Criterion A for Government and Recreation for their association with the Works Progress Administration, and under Criterion C for architecture as good examples of the Rustic Style.

The identification of historic properties began with a consideration of the flood-related damages to the Lower Dam and the loss of Lower Mound Lake. Through consultation with the parties noted above, FEMA defined a plan for identification efforts and worked with the consulting parties to define the APE. Those discussions resulted in the re-scoping of identification efforts to include a more expansive APE for indirect effects. Identification efforts were also broadened to include resources that have significance only in terms of public recreation and resources that might contribute to a Cultural Landscape, assuming such a landscape might exist.

As a result, in addition to the archaeological site noted below, FEMA worked with the MNDNR to identify twenty (20) resources within the APE. These include paved and unpaved trails, parking lots, and stands of trees that either have the potential to contribute to a currently undefined Cultural Landscape or to contribute to a potential historic district significant only for its role in public recreation. Such a historic district might, once defined, completely replace or co-exist with the Blue Mounds District, which was deemed significant in 1989 for both its role in public recreation and its Rustic Style resources.

The following table summarizes the results of identification efforts:

	Resources Within Boundaries of Blue Mounds District	Resources Within APE but Not in Historic District	Total Resources
Total Resources:	13	7	20
Contributing to the Blue Mounds District:	4	0	4
Contributing to a potential Public Recreation district:	5	0	5
Contributing to a potential Cultural Landscape:	11	6	17

FEMA reached the following determinations of eligibility, with which the SHPO concurred by letter dated November 27, 2017:

- The A. D. LaDue Farmstead is not eligible for listing on the NRHP.

- The remains of the Lower Dam and the bed of the Lower Mound Lake are not eligible for listing on the NRHP individually, nor do they maintain sufficient integrity to serve as contributing features to the Blue Mounds District.
- The other contributing resources in the Blue Mounds District, namely the Upper Dam, Upper Mound Lake, and Latrine 4-77, retain sufficient integrity to be eligible for continued listing as contributing resources to the historic district as currently defined.
- One additional resource, the Unpaved East-West Southern Trail, has sufficient integrity to contribute to the district under Criterion A for Entertainment / Recreation.
- The remaining resources identified within the APE lack the significance or integrity required for individual listing on the NRHP, and do not together possess a significant concentration, linkage, or continuity united historically or aesthetically, to serve as contributing elements to either the Blue Mounds District or to another historic district and are therefore not eligible for listing on the NRHP.

Alternative 1 – No Action

Under Alternative 1, the remains of the Lower Dam would continue to deteriorate and the former lake bed would continue to support scrub and other native plants, resulting in continued degradation of the views within the boundaries of the Blue Mounds District. However, there would be no direct effects on the contributing resources in the historic district.

Alternative 2 – Lower Mound Lake Basin Restoration Project

Under Alternative 2, the restoration of Mound Creek and removal of the remains of the Lower Dam will not affect contributing resources of the Blue Mounds District. The current condition of the remains of the dam and the topography of the former lake bed is a result of flooding caused by the disaster event. The lake bed is neither naturally-occurring nor planned in either design or appearance, and the dam has lost the emergency spillway and diversion channel, comprising approximately one-third of the dam's historic fabric. The remaining element of the dam, the earthen dike, will be retained and repaired, as will the trail which runs along the top of the dike. That work, along with the restored creek bed with appropriate vegetation and associated trails and bridges, will enhance the recreational nature of this section of the park within the APE for direct effects.

Also within the APE for direct effects are three resources identified for potential inclusion in a cultural landscape: the Trail along the Earthen Dike, Mound Creek, and the eastern Parking Loop off the southern paved road. The integrity of the Trail and Mound Creek are both poor, both having been damaged by the flooding event. The scope of work for this undertaking will restore the Mound Creek stream bed within the APE and provide a new pedestrian bridge and other improvements to the Trail along the Earthen Dike. The work proposed will not directly affect the eastern Parking Loop.

Outside the APE for direct effects, the undertaking will affect the character and use of the surrounding parkland by providing a new recreational destination and new views which reflect and amplify the natural features of the park. The remaining features identified for potential inclusion in

a cultural landscape will experience only indirect effects from this undertaking. Many of these features stand within the APE, and the restoration of the stream bed, along with improved trails for access to these improved resources, would have a beneficial effect on views of the APE for direct effects. Approaches to the APE for direct effects will also benefit in that their destination—the restored creek bed—will provide for more aesthetically-pleasing views and improved recreational features related not only to the creek itself, but also to the new trails and bridges. The undertaking, then, would have no adverse effects on any of these resources that may be found eligible for listing in the future as contributing elements in a broader cultural landscape.

3.5.2 Archaeological Resources

The Archaeological and Historic Preservation Act of 1974 (AHAP) provides for the survey, recovery, and preservation of significant scientific, prehistoric, archeological or paleontological data when such data may be destroyed or irreparably lost due to a federal, federally licensed, or federally funded (in part or whole) project. If such data is anticipated to be destroyed or irreparably lost, FEMA will consult with the Secretary of the Interior in an effort to recover, preserve, and protect such data. Other federal laws applicable to this undertaking include the American Indian Religious Freedom Act (AIRFA) of 1978, under which FEMA is responsible for the protection and preservation of American Indian sites, possessions, and ceremonial and traditional rites. If any of these are anticipated to be affected by the Proposed Action, AIRFA promotes consultation with American Indian religious practitioners by the federal agency. In accordance with the NHPA, information concerning the nature and location of archaeological resources and traditional cultural properties and detailed information regarding archaeological and cultural resources is confidential.

Finally, information concerning the nature and location of archaeological resources, traditional cultural properties, and detailed information regarding archaeological and cultural resources, is treated as "security information" under the Minnesota Government Data Practices Act, Minn. Stat., Chpt. 13. The Minnesota Government Data Practices Act defines "security information" as "government data the disclosure of which . . . would be likely to substantially jeopardize the security of . . . property against theft, tampering, improper use . . . trespass, or physical injury" (Minn. Stat. §13.37(1)(a)). Because the disclosure of probable locations of archaeological sites is likely to substantially jeopardize the security of these resources due to theft, tampering, improper use, or physical injury, and in accordance with the Minnesota Government Data Practices Act, the SHPO and OSA limit access to some information about the location of archeological resources and traditional cultural properties. In addition, locational and related data regarding burial sites maintained by the OSA is considered security information to which access is limited pursuant to the Private Cemeteries Act (Minn. Stat. §307.08 (11)) and in accordance with the Minnesota Government Data Practices Act. The Private Cemeteries Act prohibits the intentional disturbance of human burials (for full language see https://www.revisor.mn.gov/statutes/?id=307.08).

Archaeological Survey

A Minnesota State Parks and Trails Cultural Resource Management Program (MSPATCRMP) archaeological survey of the construction limits was conducted by the MNDNR in 2016 (2016 MSPATCRMP survey). The report of this archaeological survey has been submitted to the SHPO and

OSA, and is subject to review and consultation with those offices and representatives of any Tribes that may express an interest in joining the consultation.

That survey identified two archaeological sites within the originally-defined APE: the Cadwallader J. Lynch Homestead (Site No. 21RK77) and the A. D. LaDue Farmstead (Site No. 21RK78). Due to protection of security information, limited information about these sites is included here and in the documentation appended to this EA (**Appendix B**, Section 106 Consultation Documentation).

In order to avoid impacts to Site 21RK77, it has been excluded from the construction limits, and therefore from the APE for direct effects. The SHPO, in its letter of August 25, 2017, has noted that the site is potentially eligible for listing on the NRHP, but as it is excluded from the APE for direct effects, FEMA is not required to complete the evaluation necessary to determine eligibility.

The archaeological assemblage at site 21RK78 was found to have poor integrity (see **Appendix B**, Section 106 Consultation), and therefore FEMA determined, and the SHPO concurred in its letter of August 25, 2017, that the A. D. LaDue Farmstead is not eligible for listing on the NRHP.

Alternative 1 – No Action

Under the no action alternative, there would be no impacts to historic archaeological properties.

Alternative 2 – Lower Mound Lake Basin Restoration Project

The APE for direct effects under Alternative 2 has been drawn to exclude site 21RK77. Although the APE for direct effects includes a small section of site 21RK78, as the site lacks integrity and is not eligible for listing on the NRHP, this alternative does not result in effects on historic archaeological properties. Under the Proposed Action, there would be no historic properties affected.

The following project conditions provide additional protection to archaeological sites potentially impacted by Alternative 2:

1) Applicant will require its contractor to monitor ground disturbance and if any potential archeological resources are discovered, to immediately cease construction in that area and notify the State and FEMA. The applicant will ensure construction activities in the vicinity of the discovery are immediately halted and will take all reasonable measures to avoid or minimize harm to the property until FEMA concludes consultation with the SHPO, THPOs, and other appropriate consulting parties, including Tribes.
2) Contractor is expected to use fill from a commercial source or regularly-maintained stockpile. If this is not the case, the subrecipient shall inform FEMA of the fill source so required agency consultations can be completed prior to beginning ground disturbing activities.

3.5.3 Tribal Coordination and Religious Sites

In accordance with 36 CFR §800.8(a)(2), the Advisory Council on Historic Preservation indicates that consultation with Tribes should begin early in the NEPA process regarding the possible effects of disaster recovery efforts on cultural properties of religious or traditional significance, or cultural

properties formally designated as Traditional Cultural Properties (TCPs). Amendments to Section 101 of the NHPA in 1992 strengthened the connection between the NHPA and AIRFA (42 USC §1996). AIRFA requires consultation with Native American groups concerning proposed actions on sacred sites on federal land or affecting access to sacred sites. It establishes federal policy to protect and preserve for American Indians, Eskimos, Aleuts, and Native Hawaiians their right to free exercise of their religion in the form of site access, use and possession of sacred objects, and freedom to worship through ceremonial and traditional rites. AIRFA requires federal agencies to consider the impact of their actions on religious sites and objects important to these peoples, regardless of eligibility for listing on the NRHP.

Tribal consultation was also undertaken in accordance with EO 13175, titled Consultation and Coordination with Indian Tribal Governments, signed by President Clinton on November 6, 2000. This EO directs federal agencies, "to establish regular and meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications, to strengthen the United States government-to-government relationships with Indian tribes, and to reduce the imposition of unfunded mandates upon Indian tribes…."

FEMA submitted invitations to join the consultation or to provide comment on the presence or absence of known cultural properties of religious or traditional significance, or of cultural properties formally designated as TCPs, within the proposed project area. This notification was sent on January 5, 2017, to the Flandreau Santee Sioux Tribe of South Dakota, the Iowa Tribe of Kansas & Nebraska, the Lower Sioux Indian Community of Minnesota, the Prairie Island Indian Community, the Santee Sioux Tribe, the Shakopee Mdewakanton Sioux Community of Minnesota, the Spirit Lake Tribe of Fort Totten, and the Upper Sioux Community of Minnesota. The Minnesota Indian Affairs Council was also invited to comment and consult. Those letters and the responses received are included in **Appendix C**, Tribal Consultation.

The Shakopee Mdewakanton Sioux Community of Minnesota responded on January 10, 2017, declining to consult, but expressing interest in updates as the project progresses. Their response also mentioned a stone structure to be avoided; subsequent investigation confirmed that this resource was outside the APE for this undertaking. FEMA received a response from the Upper Sioux dated February 9, 2017, indicating that they had no specific interest in the area but would like to be contacted if any archaeological artifacts were discovered as a result of ground disturbing activities. No other comments from invited Tribes have been received to date.

Alternative 1 – No Action

Under the no action alternative, there would be no impacts to properties of interest to Tribes consulted.

Alternative 2 – Lower Mound Lake Basin Restoration Project

Under Alternative 2, there would be no impacts to properties of interest to Tribes consulted. The following project conditions provide additional protection to properties of potential interest to Tribes that may be inadvertently impacted by Alternative 2:

1) Applicant will monitor ground disturbance and if any potential archeological resources are discovered, will immediately cease construction in that area and notify the State and FEMA. The applicant will ensure construction activities in the vicinity of the discovery are immediately halted and will take all reasonable measures to avoid or minimize harm to the property until FEMA concludes consultation with the SHPO, THPOs, and other appropriate consulting parties, including Tribes.
2) Contractor is expected to use fill from a commercial source or regularly-maintained stockpile. If this is not the case, the subrecipient shall inform FEMA of the fill source so required agency consultations can be completed prior to beginning ground disturbing activities.
3) The subrecipient will notify the Shakopee Mdewakanton Sioux Community of Minnesota by U.S. mail of the start of construction 30 days before that date.
4) The subrecipient will notify the Shakopee Mdewakanton Sioux Community of Minnesota by U.S. mail of status 60 days after construction activities have begun.
5) The subrecipient will notify the Shakopee Mdewakanton Sioux Community of Minnesota that construction has ended within 30 days of the conclusion of construction activities.

3.6 Comparison of Alternatives

A table and an explanation of the table should be included that compares the potential impacts that could result for all the alternatives from each environmental and/or historic regulation studied. If more than one action alternative is provided, the table may be formatted in landscape orientation. If use of landscape pages is necessary, FEMA staff can assist in reformatting this section.

Table 3.6. Summary of Environmental Impacts

Affected Environment	Alternative 1 - No Action, Impacts and Mitigation	Alternative 2 - Proposed Action, Impacts and Mitigation
Soils and Geology	• Soil loss and sedimentation will continue to impact Mound Creek water quality. • Long term future flood events has potential to exacerbate soil loss. • No impact to agricultural lands/farmlands. • No impacts to geology.	• During construction, soils will be stored on-site. The excavated material will be used on-site to create channel plugs, repair scoured areas, and slope shorelines and berms. • Many of the potential soil erosion problems will be mitigated by constructing the majority of the project outside the main channel. • No impacts to geology.
Water Resources and Water Quality	• Mound Creek water quality will be impaired by continued erosion and increased turbidity. • Mound Creek is unstable in its current conditions and will continue to incise banks.	• Proposed action will reduce excess erosion and related nutrient and bacteria loading downstream to Mound Creek and the Rock River. • The channel restoration will create a functional, meandering, stable stream with riffle and pool

Affected Environment	Alternative 1 - No Action, Impacts and Mitigation	Alternative 2 - Proposed Action, Impacts and Mitigation
	• No impacts to groundwater resources.	sequences, as well as a connected floodplain to store floodwater. • A positive impact to fisheries and aquatic organisms will occur as habitat is restored. • Short term impacts during construction will be minimized by utilizing an SWPPP which includes BMPs. • BMPs will include the use of wildlife friendly, natural fiber, erosion control blankets, silt fencing, hydro-mulch, and rock checks. Native vegetation will be saved and restored where possible. • Construction equipment will be staged in a designated areas. • No groundwater withdrawal or discharge is proposed.
Floodplain Management	• The channel will continue to lose floodplain connectivity at bankfull flows, reducing the stream's ability to dissipate hydraulic energy and filter sediment and nutrients. • Channel will likely begin to act more like a ditch without meandering bends, riffles and pools.	• Proposed action will restore the creek to a natural condition and remove floodplain impediments. • Will avoid direct and indirect development of the floodplain and reduces the risk of flood loss. • Will have beneficial impacts to the floodplain by lowering floodplain levels and reducing impacts of future flood events. • No adverse impacts anticipated.
Air Quality	• No impacts to air quality.	• Construction equipment exhaust may cause temporary, short term impact to local air quality. • Resulting project will not negatively affect air quality.
Terrestrial and Aquatic Environment	• Mound Creek will likely try to stabilize itself by head-cutting further upstream, contributing to further sedimentation downstream and to Rock River. • Vegetation in the project area will continue to be an early successional floodplain dominated by non-native vegetation and woody cover that is not typical of the prairie setting.	• Short term effects to the aquatic environment will be minimized by conducting most of the work off-channel, redundant stormwater BMPs, and careful sequencing of activities. • Seine nets will be used to move Topeka Shiners and other fish downstream prior to in channel

Affected Environment	Alternative 1 - No Action, Impacts and Mitigation	Alternative 2 - Proposed Action, Impacts and Mitigation
	• In the long term, the biodiversity of the site is anticipated to be degraded, and ecological functions will remain impaired.	work as allowed for under the State's Section 6 permit. • BMPs will include the use of wildlife friendly, natural fiber, erosion control blankets, and the use of silt fencing. • Contractor will be required to use temporary bridges above bankfull width or a constructed low water crossing to cross the active stream channel. • Work will also be timed to avoid fish spawning season, as recommended by USFWS. • Short term effects to the terrestrial environment will be minimized by utilizing an SWPPP. • Current degraded vegetation in the project area will be removed and restored to native vegetation appropriate for the hydrology and landscape setting of the site. • Ecological functions, like floodplain connectivity, and stabilization of the shoreline, will be restored.
Wetlands	• No impacts to wetlands anticipated. • Wetlands will remain in poor condition. • Vegetation may be dominated by non-native invasive species.	• Stream restoration will enhance wetland function. • Restoration will include seeding and planting native wetland vegetation and removal of non-native invasive species.
Threatened and Endangered Species	• No direct impacts to threatened or endangered species. • No action could lead to further habitat degradation and decline of some species.	• Proposed action will provide improved habitat and increase connectivity for aquatic species, including federally endangered Topeka shiner, state threatened Plains Topminnow and Pond Mussel.
Migratory Birds	• No adverse impacts.	• No adverse impacts expected. • Improved habitat will be created for migratory birds.
Hazardous Materials	• No known hazardous materials present.	• Should any hazardous materials be found during project implementation, all applicable local,

Affected Environment	Alternative 1 - No Action, Impacts and Mitigation	Alternative 2 - Proposed Action, Impacts and Mitigation
		state and federal regulations will be followed.
Zoning and Land Use	• No impacts to zoning or land use.	• Project area is located within a state park. • No changes or impacts to zoning or land use.
Visual Resources	• With no action, no improvements would be made and the breached dam would be left in state of disrepair and vulnerable to further damage from future flood events. • Creek will have limited aquatic habitat and continue to degrade stream quality. • Non-native invasive species would dominate basin area interrupting views of surrounding native prairie in state park.	• The proposed action includes restoration of Mound Creek as a natural, meandering stream channel. • The stream channel will include a series of riffles and pools, improving the stream habitat. • Stream will be designed with proper dimensions, pattern and profile to enhance ecological functions and improve water quality and habitat for aquatic life. • Vegetation best management practices will be followed to establish native vegetation throughout the basin. • The pedestrian trail will be replaced, providing views of the new stream channel and restored vegetation while connecting day use areas in the park.
Noise	• No changes to current conditions, no impacts anticipated.	• Temporary increase in noise levels during construction activity. • Construction activity limited to daylight hours, Monday – Friday. • No long term changes to current conditions.
Public Service and Utilities	• No impact to public service and utilities.	• No impact to public service and utilities.
Traffic and Circulation	• No changes to traffic and circulation.	• No long term changes to traffic and circulation.
Environmental Justice	• Executive Order 12898 is not applicable to this alternative.	• No concentrations of minority or low-income populations in the project area. • Project would not impact these populations.

Affected Environment	Alternative 1 - No Action, Impacts and Mitigation	Alternative 2 - Proposed Action, Impacts and Mitigation
Safety and Security	• With no action, the pedestrian trail across Mound Creek will remain closed. • State park visitors are notified of the closure and the area has been fenced off to prevent access to the damaged spillway.	• Safety risks associated with construction activities would be mitigated by using qualified personnel and appropriate safety standards in accordance with OSHA. • No adverse impacts are anticipated.
Historic Structures	• Remains of the Lower Dam would continue to deteriorate and the former lake bed would continue to support scrub and other native plants. • Continued degradation of the views within the boundaries of the Blue Mounds District. • No direct effects on the remaining contributing resources in the historic district.	• No direct effects on the remaining contributing resources in the historic district. • Restoration of the creek and surrounding area will enhance the recreational values of the park, enhancing the context of the resources within the historic district.
Archaeological Resources	• No impacts to historic archaeological properties.	• No effects on historic archaeological properties. • Project conditions protect unanticipated discoveries of archaeological resources.
Tribal and Religious Sites	• No impacts to properties of interest to Tribes consulted.	• No impacts to properties of interest to Tribes consulted. • Project conditions protect unanticipated discoveries of archaeological resources of potential interest to Tribes consulted.

SECTION FOUR: CUMULATIVE IMPACTS

Currently, Blue Mounds State Park does not have a potable water supply. The state park is not currently connected to a municipal water supply, but is anticipated to be connected to Rock County Rural Water in 2018. The connection will occur near the shop building, which is located outside the proposed project area. Many of the existing waterlines within the park are expected to be replaced at the same time. No impacts will occur within the proposed project area.

In 2016, USFWS restored an oxbow, east of the Lower Dam, as part of a larger project where they restored old or installed new oxbows at many sites in Southwest Minnesota to improve Topeka Shiner habitat. The site was an existing, natural oxbow that had silted in over the years and was no longer connected to the stream. USFWS (Windom office) removed silt from the oxbow itself and from the point where it connects to the stream. The site now fills with water during high water

periods, and provides breeding habitat for Topeka Shiners. Subsequent biological surveys have shown that shiners and other species are using the oxbows as the restoration project intended.

Blue Mounds State Park is considering adding Prairie and Bison tours by vehicle through the bison range area. Tours may begin as soon as fall 2017.

No other projects are currently proposed or planned within or in the vicinity of the proposed project. It is possible that other improvements to park infrastructure and facilities may occur within the state park, depending upon funding availability and needs. Routine maintenance, management and operations of the state park is not subject to state or federal environmental assessments. Environmental review needs will be assessed as appropriate when/if projects are proposed.

SECTION FIVE: PUBLIC PARTICIPATION

The National Environmental Policy Act requires both a planning process and a disclosure process. The complexity of the project, and likewise its environmental consequences, determines the level of public involvement that may be required in the process.

MNDNR Public Input and Feedback Summary on Proposed Project

On January 25, 2016, MNDNR issued a news release inviting the public to provide input on the two alternatives for restoring the Blue Mounds State Park dam site. A public meeting was scheduled for February 2, 2016. It was rescheduled due to inclement weather and was held in Luverne on February 9, 2016. Approximately 150 people attended. An online comment period extended to February 15, 2016, for those who were unable to attend the meeting. Public comments from the open house and website were considered by MNDNR officials making a decision about how to repair or rehabilitate the dam site. **See Appendix E,** for news releases.

Comment Period for EA

Public review period for the draft EA and will last 30 days. Public notice regarding the public comment period and the availability of this document was published on March 28, 2018 in the Rock County Star Herald, which is the county's newspaper of record and the newspaper located closest to the project area. The draft EA will be available for review at the Rock County Community Library, 201 West Main Street, Luverne, Minnesota 56156.]. The draft EA will also be published on the FEMA web site under "Recent Environmental Documents & Public Notices in Region V" (https://www.fema.gov/recent-environmental-documents-public-notices-region-v#). A copy of the public notice is included in **Appendix E**. The public was given the opportunity to comment on the project from March 28, 2018 to April 27, 2018.

SECTION SIX: MITIGATION MEASURES AND PERMITS

The following permits will be required for the implementation of the proposed Lower Mound Lake Basin Restoration:

1) A NPDES permit for construction site stormwater runoff issued by the MPCA.
2) A Section 10 Permit issued by the USACE.
3) A DNR Waters Permit issued by the MNDNR.
4) A Section 404 Permit issued by the USACE.
5) A Minnesota Wetland Conservation Act Permit issued by the MNDNR.

The State of Minnesota will follow all state and federal rules and regulations that pertain to the proposed project. The State will obtain all applicable permits prior to commencing work at the proposed site. If permit conditions change the scope of work for the project, it will be submitted to FEMA for additional review.

These mitigation measures will be followed for the implementation of the Proposed Action:

1) Appropriate construction BMPs will be implemented to minimize soil erosion. The measures will be implemented, installed, and maintained as required by the NPDES Permit. The measures may include, but are not limited to, the use of wildlife friendly, natural fiber, erosion control blankets, silt fencing, hydromulch, and rock checks. In addition, construction equipment will be staged in designated area(s). Where removal of streamside vegetation is necessary, native vegetation will be saved and restored wherever possible.
2) Measures will be taken to reduce the potential for temporary air quality impacts during construction including, keeping fuel-burning equipment running time to a minimum, minimizing open construction areas, and watering open construction areas to control dust when necessary.
3) To mitigate for potential impacts to the terrestrial and aquatic environment, native vegetation will be planted throughout the basin. Seine nets will be used to move aquatic species out of the stream during times of potential impact from construction activity.
4) If hazardous materials are encountered during construction, materials will be handled and disposed of in accordance with all applicable rules and regulations.
5) To minimize the risks to safety and human health, all construction activities will be performed using qualified personnel trained in the proper use of the appropriate equipment including all appropriate safety precautions; additionally, all activities would be conducted in a safe manner in accordance with the standards specified in the OSHA regulations.
6) Equipment will be maintained in good working order to minimize noise and pollution.
7) Applicant will monitor ground disturbance and if any potential archeological resources are discovered, will immediately cease construction in that area and notify the State and FEMA. The applicant will ensure construction activities in the vicinity of the discovery are immediately halted and will take all reasonable measures to avoid or minimize harm to the property until FEMA concludes consultation with the SHPO, THPOs, and other appropriate consulting parties, including Tribes.
8) Contractor is expected to use fill from a commercial source or regularly-maintained stockpile. If this is not the case, the subrecipient shall inform FEMA of the fill source so required agency consultations can be completed prior to beginning ground disturbing activities.

9) If deviations from the proposed scope of work result in substantial design changes, the need for additional ground disturbance, additional removal of vegetation, or in any other unanticipated changes to the physical environment, the Grantee must contact FEMA, and a re-evaluation under NEPA and other applicable environmental laws will be conducted by FEMA.
10) The applicant is responsible for obtaining and complying with all required State and Federal permits and approvals.
11) No spoil material removed from the basin may be stored or disposed of in a regulated floodplain or wetland area.

SECTION SEVEN: CONSULTATIONS AND REFERENCES

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APPENDICES

Appendix A Maps and Figures

Figure 1. Lower Mound Lake Basin Restoration – Project Location.
Figure 2. Lower Mound Lake Basin Restoration, Preliminary Design for Proposed Project.
Figure 3. Lower Mound Lake Basin Restoration – NRCS Soil Units in Project Area.
Figure 4. Lower Mound Lake Basin Restoration – Native Plant Communities (NPC) and Land Cover.
Figure 5. Lower Mound Lake Basin Restoration – NWI Circ. 39, Class 2009-2014.
Figure 6. Lower Mound Lake Basin Restoration – Blue Mounds State Park Bird Checklist.

Appendix B Floodplain Management Eight-Step Documentation

Rock County Minnesota, Zoning Map

Appendix C Agency Correspondence

1. Biological Assessment Concurrence Letter
2. Northern Long Eared Bat 4(d) Rule Streamlined Consultation Form
3. Cultural Resources Section 106 Consultation

Appendix D Tribal Nation Consultation

Appendix E Public Notice

1. MNDNR News Release January 25, 2016 – *DNR to hold public meeting on Blue Mounds State Park dam on Feb. 2 in Luverne, MN*
2. MNDNR News Release June 22, 2016 – *DNR decides not to rebuild Blue Mounds State Park dam*
3. FEMA Public Notice, March 28, 2018 – *Notice of Availability of the Draft Environmental Assessment for Blue Mounds State Park Lower Mound Lake Basin Restoration near the City of Luverne, Rock County, Minnesota.*

Appendix F Public Comments

TBD

Appendix G Technical Reports

1. Barr Engineering Memorandum: Blue Mounds State Park – Lower Mound Lake Basin Restoration Hydraulic Impacts
2. Sediment Sample Lab Results