

Theodore Roosevelt National Park
North Dakota

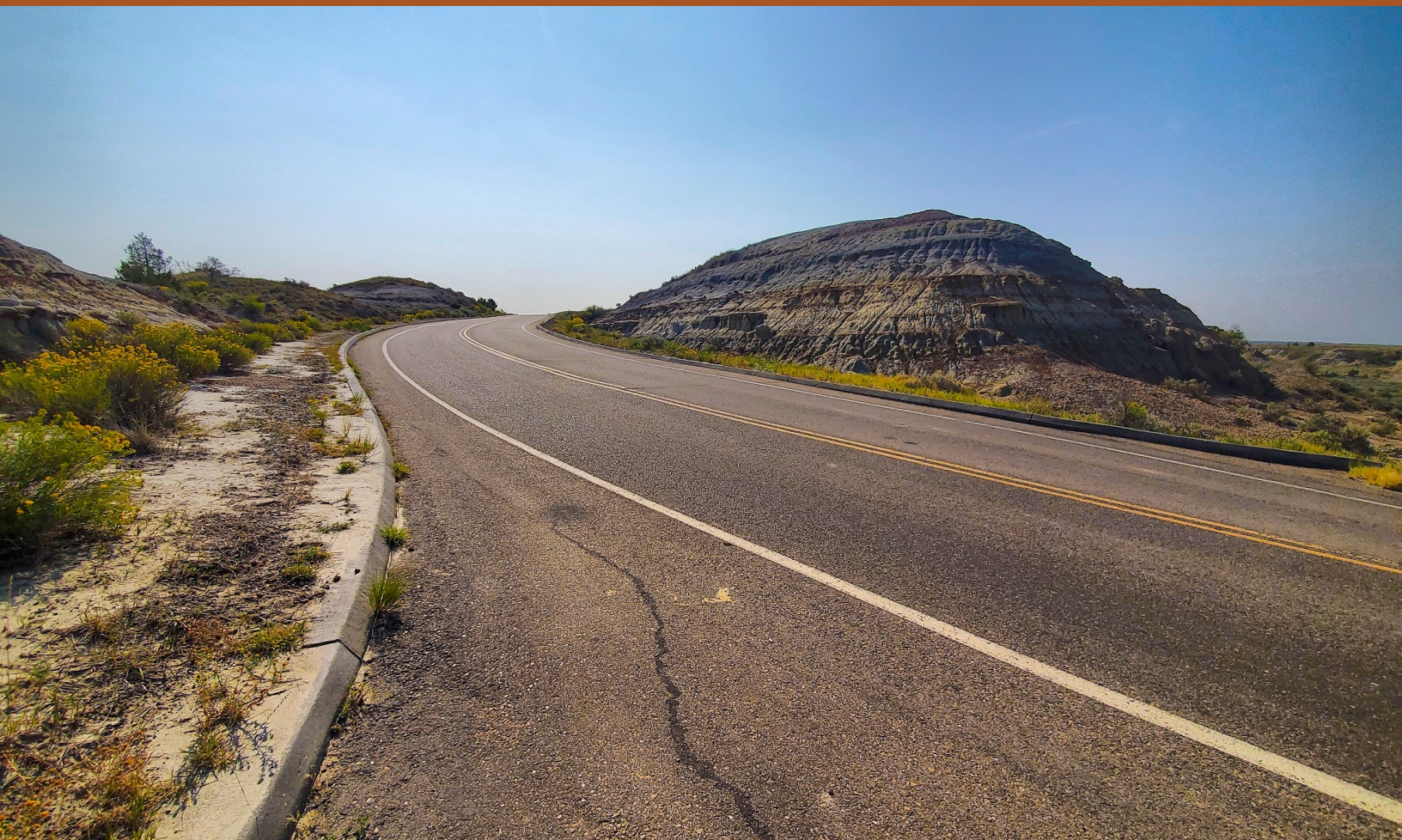
US Department of the Interior
National Park Service



Theodore Roosevelt National Park

South Unit Loop Road Reconstruction Project

Environmental Assessment



February 2022

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ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit
historic district	Scenic Loop Drive Historic District
HRA	Historical Research Associates
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
EA	environmental assessment
FHWA-CFLHD	Federal Highway Administration, Central Federal Lands Highway Division
MWAC	(National Park Service) Midwest Archeological Center
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
North Dakota DEQ	North Dakota Department of Environmental Quality
North Dakota SHPO	North Dakota State Historic Preservation Office
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
Park	Theodore Roosevelt National Park
PFYC	(Bureau of Land Management) Potential Fossil Yield Classification System
TMDL	total maximum daily load
USEPA	US Environmental Protection Agency
USC	United States Code
USFWS	US Fish and Wildlife Service

SECTION 1: PURPOSE OF AND NEED FOR ACTION

1.1 INTRODUCTION

The National Park Service (NPS) is proposing to reconstruct portions of Scenic Loop Drive (also known as Loop Road) in the South Unit of Theodore Roosevelt National Park (the park). The park is located near Medora, North Dakota, approximately 133 miles west of Bismarck, North Dakota, and 130 miles south of Williston, North Dakota. Scenic Loop Drive is one of the oldest sections of road in the South Unit; however, large-scale rehabilitation work has not been performed on the road in 20 years. During previous maintenance and repair efforts, subgrade and stormwater management issues were identified but were not fully addressed. As a result, areas of the road have succumbed to landslides and other damage over time. The proposed project would reconstruct approximately 6.15 miles of Scenic Loop Drive to provide long-term, sustainable access for future visitor use. The proposed project would also include improvements to pullouts and parking areas along the road.

This section of the environmental assessment (EA) describes the reasons NPS is proposing to reconstruct portions of Scenic Loop Drive. Specifically, this section includes the following:

- purpose of, and need for, action
- project background
- project area evaluated for impacts
- discussion of issues and impact topics retained for detailed analysis
- discussion of issues considered but dismissed from detailed analysis

1.2 PURPOSE OF THE ACTION

The purpose of the project is to restore access to park resources in the South Unit by providing a stable and more sustainable roadway that addresses visitor and staff safety, enhances the visitor's experience, improves efficiencies in park operations, and minimizes impacts on natural and cultural resources.

1.3 NEED FOR THE ACTION

The project is needed because the existing drainage system cannot convey stormwater runoff from the road surface effectively, resulting in unstable slopes that have damaged pavement along Scenic Loop Drive and caused partial or total closures. These road closures have adversely affected visitor enjoyment of the area and the park's ability to provide visitor services because portions of the road are currently unstable, inaccessible, and unsafe.

1.4 PROJECT BACKGROUND

The Federal Highway Administration, Central Federal Lands Highway Division (FHWA-CFLHD), in partnership with NPS, proposes to stabilize sections of failed roadway embankment along Scenic Loop Drive between mile marker 22 and mile marker 28. Landslides of various magnitudes and poor subgrade material within the park have affected the road for many years (**figure 1**). A 150-foot section of Scenic Loop Drive collapsed in spring 2019, requiring closure of the roadway. Subsequent sinkholes in the road required further closures. In fall 2019, the park found two other areas of potential roadway failure at Scoria Point and West Ridgeline, with other areas of concern identified. These areas of concern showed continued deterioration when reassessed in winter 2019-2020.

Geotechnical and pavement engineering studies along Scenic Loop Drive have recommended approximately 6.15 miles of roadway for reconstruction, including bank stability repairs, roadway deep patches, drainage improvements, and slope regrading (Shannon and Wilson 2020).

Pavement damage is prevalent in the form of depressions and cracking. This damage is likely due to unstable slopes, pumping of subgrade over impermeable clays, dissolution voids in embankment fill and the subsequent piping of fine fill material, and poor subgrade soils.

Additionally, evidence of embankment failures and slow downslope soil movement is found at several locations in the form of erosion, unstable slopes, and unstable trees. Historically, sections of Scenic Loop Drive have failed because of subsurface water conditions and existing culverts that were partially or fully filled with sediment. Several active seeps (i.e., wetlands where groundwater reaches the surface through an aquifer) have been observed, and it is assumed that most of the areas displaying embankment failure are experiencing a loss of strength because of high moisture content under the road surface.



FIGURE 1. A FAILED SECTION OF SCENIC LOOP DRIVE FROM A LANDSLIDE

1.5 PROJECT AREA

The project area is approximately 6.15 miles of Scenic Loop Drive located southeast of East River Road and approximately 6.5 miles from Medora, North Dakota (**figure 2**). The project area consists of a 400-foot-wide corridor (i.e., approximately 200 feet from the centerline on each side of the road). The project area may include several locations beyond the 400-foot-wide corridor to allow for adequate stormwater drainage based on hydraulics, erosion, geotechnical, and slope stability analysis.

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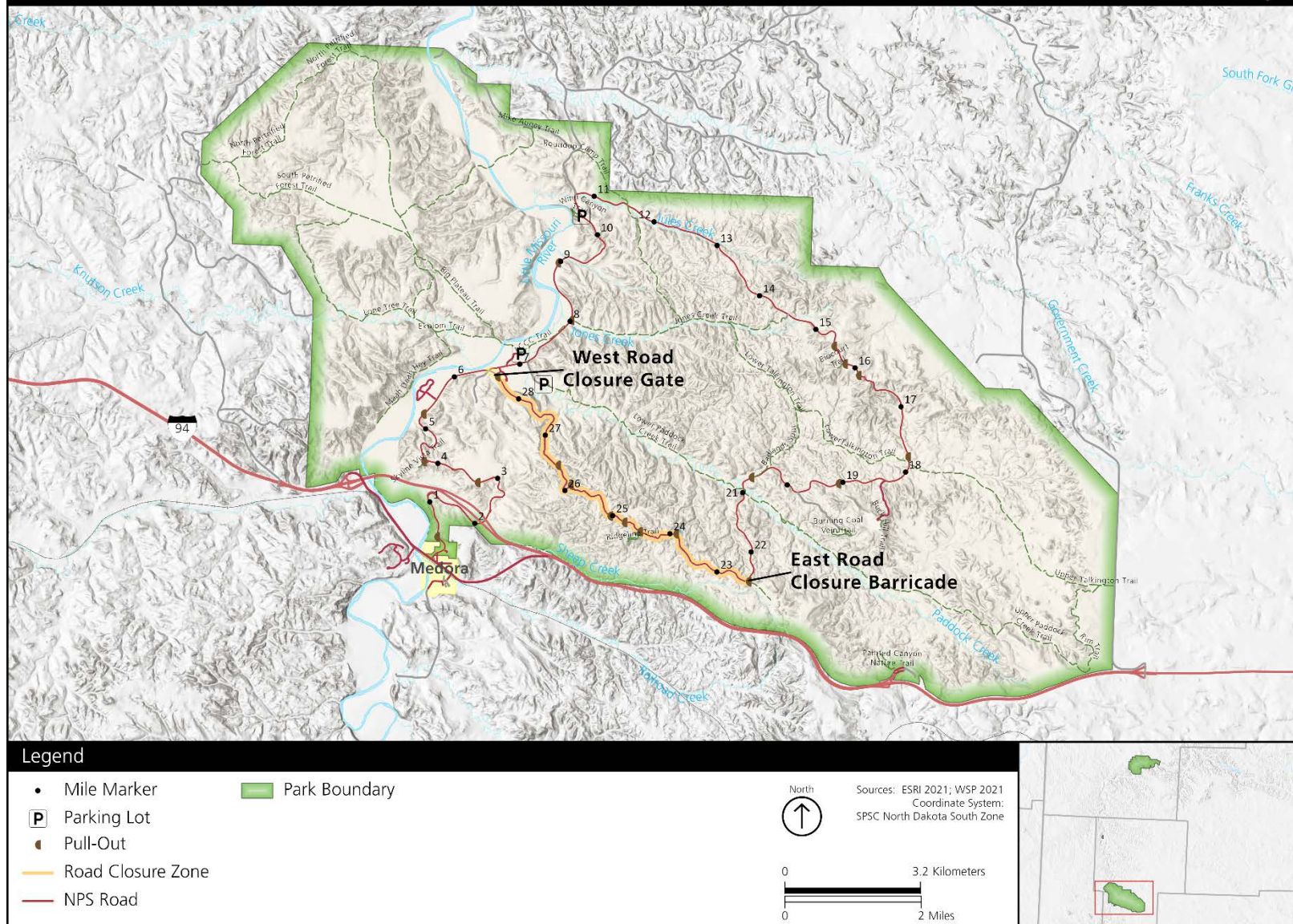


FIGURE 2. PROJECT AREA IN THE SOUTH UNIT

1.6 ISSUES AND IMPACT TOPICS

Through a series of internal meetings and site visits to the project area by an interdisciplinary team of park and regional staff, natural and cultural resource experts, and engineers familiar with the project area, NPS identified a range of issues and impact topics to evaluate. Issues are problems that the current situation has caused or that will continue to occur if they are not addressed. Impact topics are resources or values to be analyzed as part of the proposed action.

The 2015 NPS *National Environmental Policy Act (NEPA) Handbook* provides specific guidance for determining whether to retain issues for detailed analysis (NPS 2015a). Issues should be retained for consideration and discussed in detail if:

- the environmental impacts associated with the issue are central to the proposal or of critical importance,
- a detailed analysis of environmental impacts related to the issue is necessary to make a reasoned choice between alternatives,
- the environmental impacts associated with the issue are a big point of contention among the public or other agencies, or
- there are potentially significant impacts to resources associated with the issue (NPS 2015a).

If none of the considerations described above apply to an issue, it was dismissed from this EA. Issues and impact topics that could be affected by this project include cultural resources; geology and soils; paleontological resources; visitor use and experience; and water resources. Issues and impact topics dismissed from detailed analysis, including the dismissal rationale, are provided below.

1.6.1 Impact Topics Retained for Detailed Analysis

Cultural Resources. Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (16 United States Code [USC] 470 et seq.), and its implementing regulations under 36 Code of Federal Regulations (CFR) Part 800 require all federal agencies to consider effects of undertakings on historic properties, including historic structures eligible for or listed in the National Register of Historic Places (NRHP). The project area has been surveyed for archeological resources and historic structures within the built environment (NPS-MWAC 2021; Golder Associates, Inc. 2021a; WSP USA, Inc. 2021). Although NPS would avoid impacts on known archeological sites, road construction could affect historic structures and the cultural landscape. Therefore, this impact topic is carried forward for detailed analysis.

Geology and Soils. NPS *Management Policies 2006* state: the “Service will actively seek to understand and preserve the soil resources of parks, and to prevent, to the extent possible, the unnatural erosion, physical removal, or contamination of the soil or its contamination of other resources” (NPS 2006). Activities to reconstruct Scenic Loop Drive in the project area could change the local topography, which may alter the park’s geological landforms. Although the project would minimize areas contributing to surface runoff and erosion along Scenic Loop Drive in the project area, the potential for soil compaction from new impervious surfaces and the use of construction equipment would occur. Additionally, native soil would be removed along the road during implementation of the project. Therefore, geology and soils are carried forward as an impact topic.

Paleontological Resources. NPS *Management Policies 2006* state that paleontological resources (i.e., fossils), “including both organic and mineralized remains in body or trace form, will be protected, preserved, and managed for public education, interpretation, and scientific research” (NPS 2006). Ground disturbance associated with the project may affect paleontological resources located near the roadway. The project area corridor is surrounded by moderately to highly fossiliferous strata

(i.e., layers of fossil-containing rock) and is mostly underlain by the Sentinel Butte Formation or Bullion Creek Formation, which are both fossiliferous and may contain important Paleocene vertebrate fauna (Paleo Solutions, Inc. 2021). Therefore, this impact topic is carried forward for detailed analysis.

Visitor Use and Experience. The mission of NPS is to preserve unimpaired natural and cultural resources and values of the national park system for the enjoyment, education, and inspiration of this and future generations. Reconstructing a portion of Scenic Loop Drive would improve visitor access to the area and enhance the visitor experience by improving vehicular circulation and access throughout the South Unit of the park and would eliminate unstable, inaccessible, and unsafe road conditions. However, visitor access to the area would remain closed during construction because the road would serve as a staging area during construction to reduce impacts on natural and cultural resources. Winter weather conditions in North Dakota could also limit construction activities. As a result, some construction activities would occur during peak park visitation periods in the spring, summer, and fall. Therefore, this impact topic is carried forward for detailed analysis.

Water Resources. The Clean Water Act was enacted to “restore and maintain the chemical, physical, and biological integrity of the Nation’s waters” (33 USC 1251 et seq.). Consideration of impacts on wetlands is also required under Executive Order 11990, “Protection of Wetlands,” and NPS Director’s Order 77-1: *Wetland Protection* (NPS 2002). Executive Order 11988, “Floodplain Management,” requires an examination of impacts on floodplains and potential risk involved in placing facilities in floodplains. NPS *Management Policies 2006* and Director’s Order 77-2: *Floodplain Management* (NPS 2003) provide guidelines for proposals in floodplains. Surface water features and intermittent streams occur in the project area that flow under Scenic Loop Drive through existing culverts. Bank stabilization, installation of upslope or downslope inlets and outlets, and potential culvert replacements under Scenic Loop Drive could affect these water resources. Therefore, this impact topic is carried forward for detailed analysis.

1.6.2 Impact Topics Considered but Dismissed from Detailed Analysis

NPS determines whether impact topics are evaluated in detail or dismissed from further evaluation to concentrate on the issues of concern. This section evaluates and explains why NPS dismissed the impact topics described below from further consideration. Impact topics are dismissed from further evaluation if they:

- do not exist in the project area,
- would not be affected by the alternatives or the likelihood of impacts are not reasonably expected,
- would result in impacts that, through the application of mitigation measures, would be minimal, and
- there is little controversy on the subject or few reasons to otherwise include the topic (NPS 2015a).

Air Quality. Section 118 of the Clean Air Act requires NPS to meet all federal, state, and local air pollution standards (42 USC 7401 et seq.). The park currently meets the National Ambient Air Quality Standards under the Clean Air Act (NPS 2009; USEPA 2021a). The project would increase vehicle trips to the park and result in localized emissions and fugitive dust in the area during construction activities. However, emissions and fugitive dust would occur only during the construction period and would dissipate quickly. No long-term impacts on air quality are expected. Therefore, the topic was dismissed from detailed analysis in this EA.

Ethnographic Resources. In 2016, the University of Arizona at Tucson completed an ethnographic overview and assessment of the entire park (Daughtrey et al. 2016). Key resources that characterize the cultural identity of the park include: the badlands landscape, with its unique landforms, fossils, and minerals; the bison herd; the elk herd; golden eagle (*Aquila chrysaetos*) and eagle trapping features; historic structures from various periods; and prairie dog towns. Actions taken in the project area would be designed to avoid disturbance to sensitive wildlife, and no eagle trapping features have been identified in the project area. Disturbances to the badlands landscape and associated landforms, fossils, minerals, and historic structures are further discussed under the impact analyses for cultural resources, geology and soils, and paleontological resources. Repairing and reopening the road will provide visitors and tribes traditionally associated with the park safe access to these resources within the project area.

All tribes that are traditionally associated with the park have been consulted regarding this project, including via letter, e-mail, phone call, teleconference, and field visits to discuss potential project actions and identify any concerns. To date, no properties of traditional religious and cultural significance have been identified in the project area. Therefore, this topic was dismissed from detailed analysis in this EA.

Indian Trust Resources. NPS must ensure that it explicitly addresses any anticipated effects on Indian trust resources in an environmental compliance document. If any effects are identified, NPS must consult with the affected tribe(s) on a government-to-government basis with respect to the impact from the project. However, if the project or action is expected to have either an insignificant impact or no impact on any Indian trust resources, the environmental compliance document must state the reason for dismissal. Since no Indian trust resources were identified in the project area during consultation, the topic was dismissed from detailed analysis in this EA (NPS, McCann, pers. comm. 2021a).

Indian Sacred Sites. In accordance with Executive Order 13007, NPS must accommodate access to, and ceremonial use of, Indian sacred sites by Indian religious practitioners and avoid adversely affecting the physical integrity of such sacred sites. Continued access to, and use of, these sites is often essential to the survival of family, community, or regional cultural systems, including patterns of belief and sociocultural and religious life. However, no Indian sacred sites were identified during consultation in the project area (NPS, McCann, pers. comm. 2021a). Therefore, the topic was dismissed from detailed analysis in this EA.

Soundscapes. In accordance with Director's Order 47: *Sound Preservation and Noise Management* and *NPS Management Policies 2006* (NPS 2000, 2006), an important component of the NPS mission is the preservation of the natural soundscape associated with national parks. The project would occur where sounds from vehicular traffic and other human activities are historically common. During construction, anthropogenic noise would increase because of construction activities, equipment, vehicular traffic, and the presence of crews. Any sounds generated from construction would be temporary, lasting only as long as the construction activity is generating the sound(s), and would have no long-term, measurable effect on visitors, employees, or natural soundscape conditions. Therefore, the topic was dismissed from detailed analysis in this EA.

Vegetation. *NPS Management Policies 2006* state that the agency will strive to maintain all components and processes of naturally evolving ecosystems, including the natural abundance, diversity, and ecological integrity of plants (NPS 2006). Unstable slopes and erosion along Scenic Loop Drive in the project area are currently affecting some vegetation. While many portions of road are atop steep slopes where disturbance to vegetation would be limited, areas disturbed by tree felling during construction activities would be revegetated with native plants that would enhance the adjacent roadway shoulders and embankments and improve the stabilization of the slope, where applicable. Additionally, fill material used during the project would meet FHWA-CFLHD

engineering requirements to avoid the introduction of nonnative invasive plants. No known rare plants occur in the project area. Therefore, this impact topic was dismissed from detailed analysis in this EA.

Visual Resources. NPS *Management Policies 2006* state that a park's scenery and scenic features are included among the resources and values to be protected and conserved unimpaired for enjoyment by current and future generations (NPS 2006). Visual impacts from construction activities would be temporary and localized. Repair treatments to the existing road in the project area would become permanent features on the landscape, potentially detracting from the scenic resources of the park and affecting visual quality. However, the project would occur in areas where the presence of the road has already altered the natural setting and would not represent a noticeable departure from historic visual conditions. Furthermore, new structures would resemble the existing landscape in color and geological form to minimize visual disturbances. Therefore, this topic was dismissed from detailed analysis in this EA.

Wildlife, including Threatened and Endangered Species. According to the NPS *Management Policies 2006*, NPS strives to maintain all components and processes of naturally evolving park unit ecosystems, including the natural abundance, diversity, and ecological integrity of native animal populations (NPS 2006). Repairs to the existing road in the project area and reopening the road to vehicular traffic would have direct and indirect impacts on wildlife, including direct injury and mortality from vehicle collisions and equipment use, altered behavior and patterns of habitat use, and increased human use and disturbance of wildlife (Gerow et al. 2010). The reconstruction of the road would not introduce new impacts on most wildlife—these impacts already exist. However, the project may disturb existing prairie dog (*Cynomys ludovicianus*) habitat and individual animals in the project area. Increased noise levels during the construction phase of this project could result in temporary increases in localized disturbances to wildlife. While the project could result in minimal, temporary impacts, it would not affect the viability or population dynamics of wildlife in the park (Barnhart et al. 2017).

Although no federally threatened or endangered species are known to occur in the park, NPS has received concurrence from the US Fish and Wildlife Service (USFWS) that the project “may affect, but is not likely to adversely affect” northern long-eared bat (*Myotis septentrionalis*). To mitigate impacts to northern long-eared bat, no construction-related tree removal would occur during the roosting season between April 1 and October 31. The park also received concurrence that there would be “no effect” on the endangered whooping crane (*Grus americana*) and the candidate-for-listing monarch butterfly (*Danaus plexippus*) since there is no suitable habitat for either species within the project area. Upon the recommendation of USFWS, the park is planning to conduct surveys for golden eagle since the species has not been documented within the project area (NPS, McCann, pers. comm. 2021b; USFWS 2022). Therefore, the topic was dismissed from detailed analysis in this EA.

SECTION 2: ALTERNATIVES

2.1 INTRODUCTION

This section describes the alternatives developed for reconstructing portions of Scenic Loop Drive in the South Unit of the park. This section includes two alternatives: the no-action alternative and one action alternative. The action alternative presents a reasonable and feasible approach that meets the purpose of, and need for, action. This section also discusses alternatives that were initially considered but not carried forward for detailed analysis, identifies the NPS proposed action and preferred alternative, and lists stipulations and mitigation measures for the alternatives.

2.2 ALTERNATIVE 1: NO ACTION

Alternative 1, the no-action alternative, describes current management and the existing condition of Scenic Loop Drive (**figure 3**). Alternative 1 provides a basis for comparing the management direction and environmental consequences of alternative 2.

Under alternative 1, the approximately 6.15-mile section of Scenic Loop Drive would remain closed to visitors, erosion would continue to worsen the condition of the roadway, and structural and accessibility issues would remain (**figures 4 through 7**). This alternative would not relieve the risk of future roadway failures.



FIGURE 3. PROJECT AREA CONDITION UNDER THE NO-ACTION ALTERNATIVE

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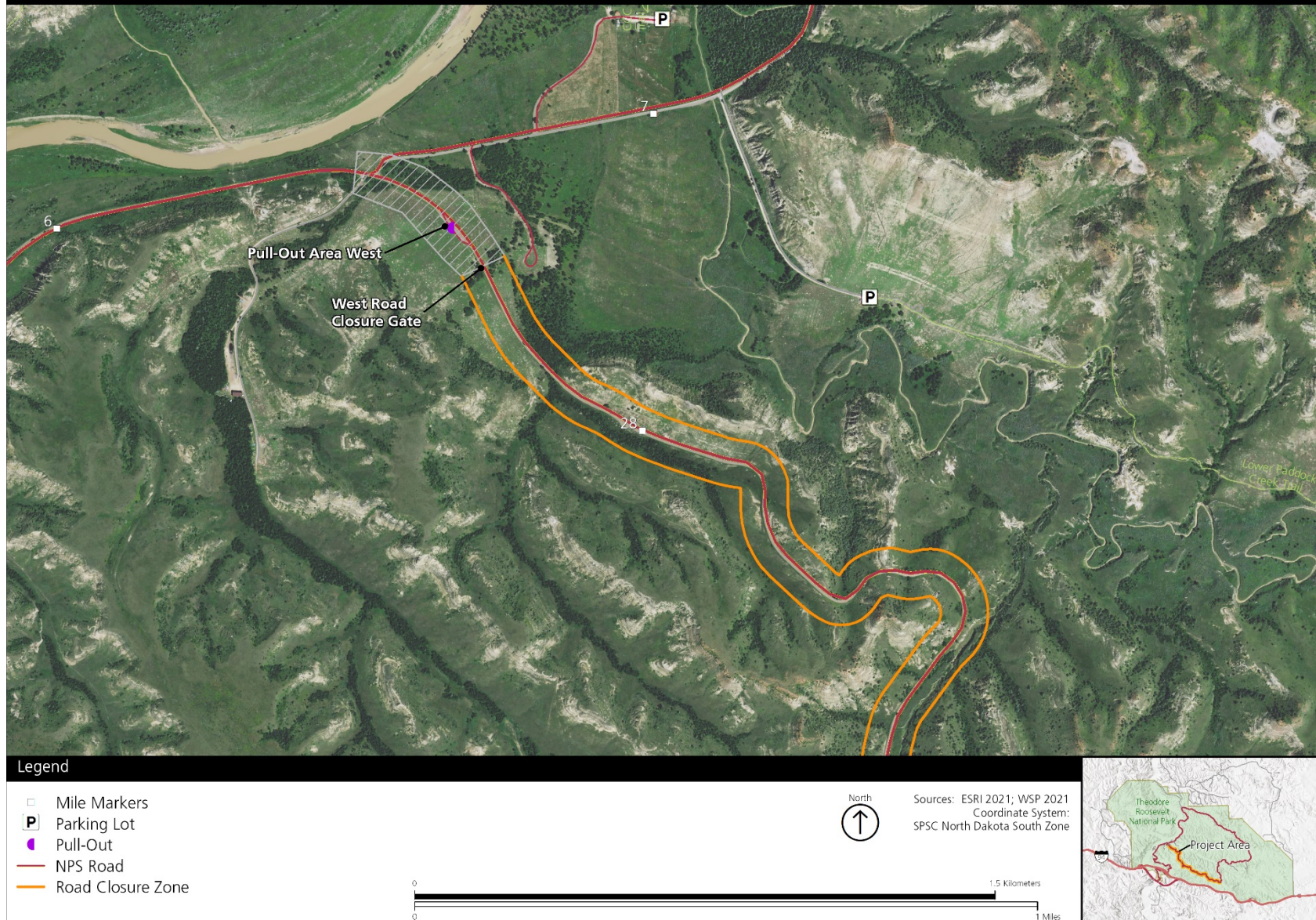


FIGURE 4. ROAD PROBLEM AREAS: WEST

Theodore Roosevelt National Park

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North Dakota

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US Department of the Interior

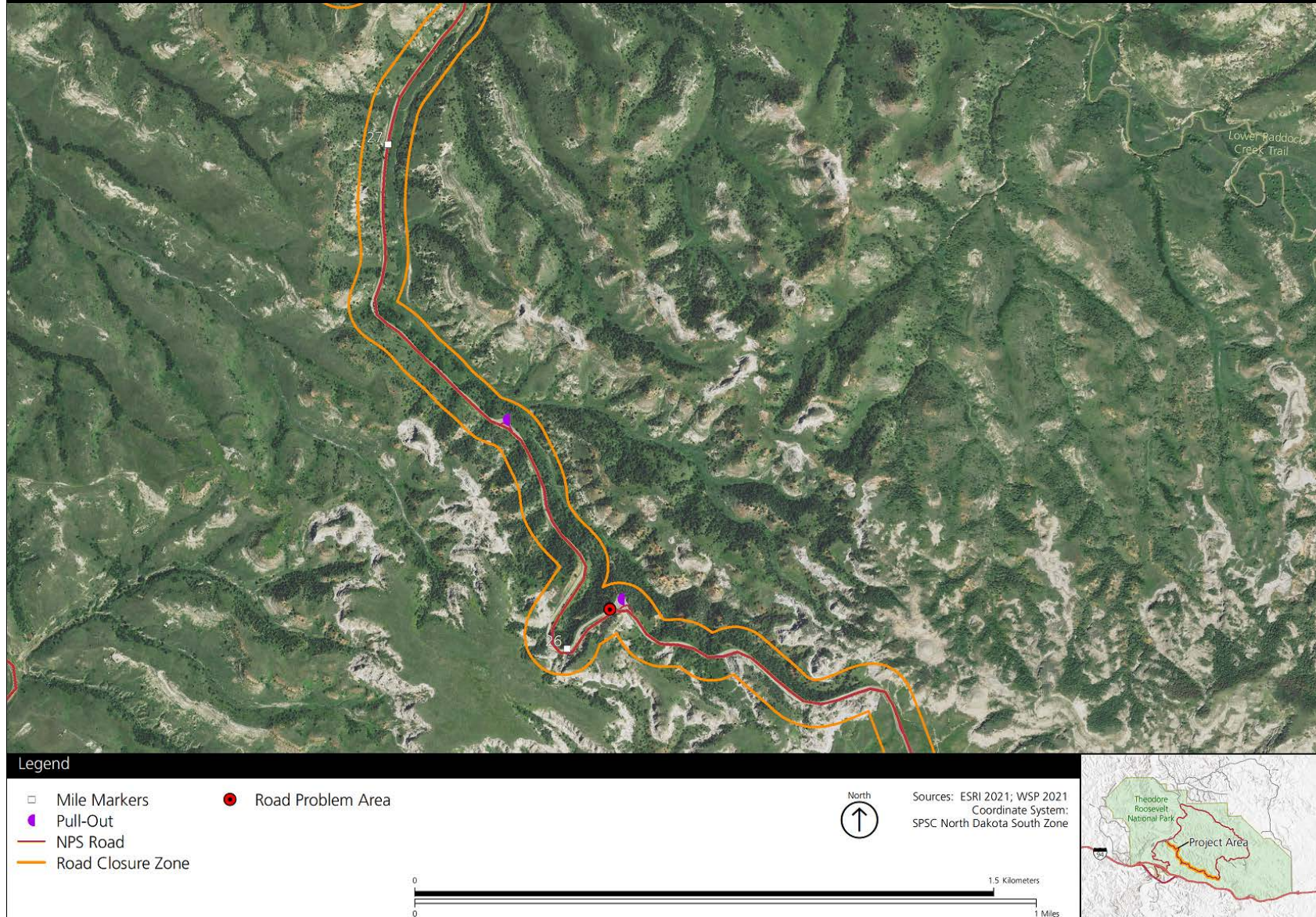


FIGURE 5. ROAD PROBLEM AREAS: WEST-CENTRAL

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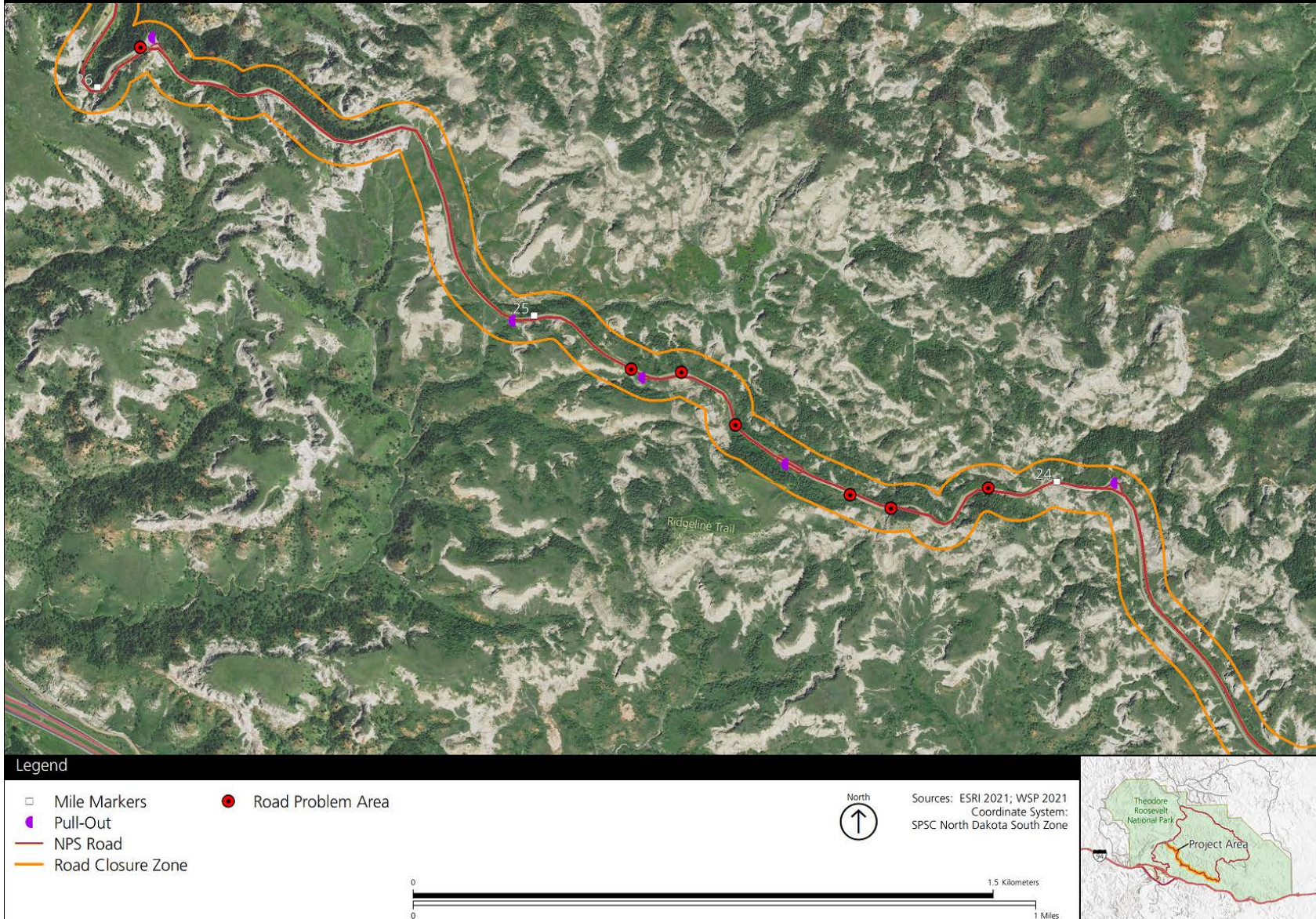


FIGURE 6. ROAD PROBLEM AREAS: CENTRAL-EAST

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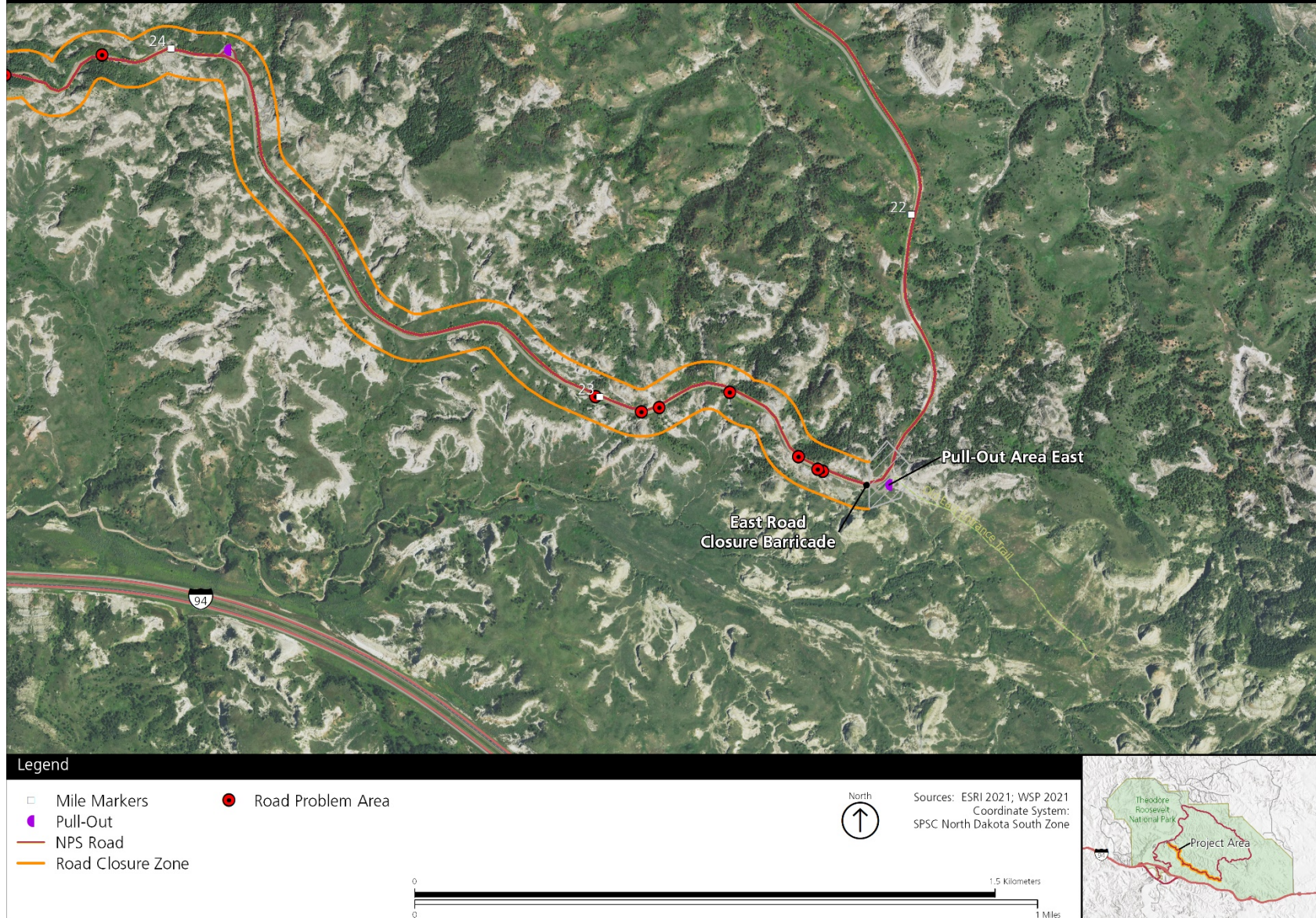


FIGURE 7. ROAD PROBLEM AREAS: EAST

2.3 ALTERNATIVE 2: RECONSTRUCTION OF SOUTH UNIT LOOP ROAD (PROPOSED ACTION AND PREFERRED ALTERNATIVE)

Alternative 2 is the proposed action and preferred alternative and would address multiple roadway problem areas along Scenic Loop Drive by reconstructing approximately 6.15 miles of road from mile marker 22 to mile marker 28 for longevity and resilience. Alternative 2 includes specific treatment options for repairing each section of the road to address existing problems. These treatment options are based on existing data, geological and soil studies, field exploration, survey and mapping of surface features, groundwater and hydraulics analyses, geotechnical back-analysis, and stability analyses. All proposed treatment options would occur within the project area, with possible exceptions for stormwater drainage requirements.

Alternative 2 also includes landslide mitigation and minimization measures, such as stabilization, that would protect natural aesthetics and reduce environmental impacts. Programmatic actions, or other means to address future maintenance and repair of the road in the project area, would be implemented. The Council on Environmental Quality (CEQ) defines “programmatic” as any broad or high-level analysis that assesses the environmental impacts of proposed policies, plans, programs, or projects implemented by subsequent actions (CEQ 2014). Programmatic actions proposed under alternative 2 would include, but would not be limited to, conducting roadway condition assessments, filling cracked pavement, repaving sections of road surface, repairing deteriorating culverts, removing eroded sediment from the road surface and culverts, restoring riprap and retaining walls, monitoring historic structures, and tracking the effectiveness of revegetation. General assumptions have been included below for the amount and type of disturbance anticipated.

Alternative 2 would reconstruct the road and reopen the project area, fulfilling the purpose of, and need for, action to resume park operations and allow visitors to enjoy the area. The proposed treatments under alternative 2 are summarized in the following subsections.

2.3.1 Roadway Reconstruction

In the project area, Scenic Loop Drive would be reconstructed to a typical cross-section containing one 10-foot travel lane in each direction and a 1-foot-wide shoulder. Construction widths could vary due to slopes, drainage, and geotechnical requirements for specific road sections. Alternative 2 would maintain the existing horizontal and vertical roadway alignment, except for a minor shift of the centerline of the road in a previously disturbed area.

2.3.2 Subgrade Excavation, Replacement, and Stabilization

Stabilization of the road in the project area would include excavation of the existing subgrade (i.e., material underneath the constructed road) at certain locations and full-depth reclamation. The existing pavement depth varies in thickness. Subgrade treatment would occur for the entire length of the project area by treating the top 6 to 12 inches of road subgrade with cement—via mixing or injection—to convert structurally unstable soils to stable soils, increasing the strength of the subgrade, and/or providing a barrier from surface water. In certain areas that are more unstable, a subexcavation treatment of approximately two feet in depth might be applied. This treatment would excavate the approximately two feet of unstable soils and replace it with imported stable backfill material. Once the subgrade is treated, the roadway would be paved with four inches of asphalt. Displaced materials would be removed from the park along structurally sound roadways. Approximately 35,000 cubic yards of soil would be excavated, and options to use or store this displaced soil are being examined.

2.3.3 Drainage Improvements

While stormwater runoff contributes to the current condition of the road, FHWA-CFLHD has determined the project area includes space to improve drainage and adequately carry stormwater away from the road. Based on a hydraulic analysis, drainage improvements may include:

- Directing stormwater on pavement to intakes or curbs at various locations along the road to drain stormwater off the roadway into drainageways and avoid eroding soils in the project area.
- Installing adequately sized culverts and drainageways. The design and material of the culverts and drainageways would be appropriate for the park's unique landscape and would accommodate the proposed hydraulic requirements, as determined by FHWA-CFLHD.
- Placing riprap (i.e., stone armoring) and/or vegetation in strategic locations to slow stormwater and reduce erosion.
- Constructing upslope and downslope intakes, underground piping, and outlets where needed. As previously stated, locations beyond the 400-foot-wide corridor may be used to allow for adequate stormwater drainage, as needed.

2.3.4 Structural Improvements

Structural improvements along the approximately 6.15 miles of Scenic Loop Drive would occur at specific locations throughout the project area to stabilize soils, reduce landslide hazards, and promote roadway resilience. Seven lagging walls—also known as retaining walls—are currently proposed for installation (**figure 8**). The length of each retaining wall could range from approximately 30 to 430 linear feet. The ultimate structural improvement recommendations under alternative 2 would be based on geotechnical and engineering analyses conducted during the design phase. Structural improvements in the project area may include:

- Deep Patch—the upper 1.5 to 6 feet of subsiding sections of the roadway are excavated and replaced with compacted backfill and reinforced with geosynthetic material, such as permeable fabrics. Deep patches reduce soil instability but do not eliminate all causes of instability. They confine the likelihood of road failure to the face of weak soil slopes and prevent failures from extending into the roadway bench.
- Reinforced Soil Slope—slopes are reinforced with geosynthetic materials as part of roadway design and backfilled with granular material.
- Tied Back Soldier Pile and Lagging Wall—retaining walls with soldier piles (i.e., H-piles vertically placed into the earth to hold horizontal lagging [planks or panels] in place) installed below the slope's highest elevation with ground anchors (also called tie backs; grouted anchors installed



**FIGURE 8. EXAMPLE SOLDIER PILES AND LAGGING WALLS
IN MESA VERDE NATIONAL PARK**

at an angle to hold back soldier piles, walls, or other structures), as needed. Concrete could be applied at high velocity (e.g., shotcrete) to further strengthen the wall.

- Cantilever Soldier Pile and Lagging Wall—soldier pile and retaining wall without ground anchors.
- Coupled Shear Pile Wall, Tied Back (i.e., ground anchors)—two coupled large-diameter drilled shafts called coupled shear piles installed as a row to resist lateral force.

2.3.5 Pullout Area Improvements

The proposed project would also include improvements to pullout areas. These improvements may include delineating parking stalls to expand the footprint of available parking spaces, improving aesthetics to meet FHWA-CFLHD design standards, resolving social trailing, and improving accessibility. Improvements to pullouts in the project area are proposed at the following locations under alternative 2 (all mile markers indicated herein are approximate):

- Site 1 (Pullout Area West [Prairie Dog Town]): The pullout area would be slightly expanded from its existing width to accommodate peak volumes of visitors. Expansion would include new head-in parking and relocated parallel parking for oversized vehicles, an accessible pad with a ramp and sidewalks, additional trash bins, and benches.
- Site 2 (Pullout Area, Mile Marker 26.5): A linear stripe would be placed to delineate the pull-off edge of the road, and curbs and drainage would be modified. The width of the pullout would be reduced, and areas of removed pavement would be revegetated. A curb and gutter would also be installed along the roadway to direct stormwater.
- Site 3 (Scoria Point, Mile Marker 26): Scoria Point is a relatively new wayside and kiosk that requires accessibility improvements to comply with the Architectural Barriers Act of 1968. The existing island at the wayside would be removed and paved to accommodate parking, and tree limbing and revegetation would occur at the edges of the parking area. Head-in parking, an accessible concrete pad, and a seat wall overlook would also be added.
- Site 4 (Pullout Area, Mile Marker 25.5): A linear stripe would be placed to delineate the pull-off edge of the road, and curbs and drainage would be modified. The curbline would be articulated to define the pullout area and reduce plow damage.
- Site 5 (Pullout Area, Mile Marker 25): A linear stripe would be placed to delineate the pull-off edge of the road, and curbs and drainage would be added. The curbline would be articulated to define the pullout area and reduce plow damage.
- Site 6 (Ridgeline Trail Pullout and Trailhead, Mile Marker 24.5): A linear stripe would be placed to delineate the pull-off edge of the road, and curbs and drainage would be added. The curbline would be articulated to define parallel parking stalls and reduce plow damage. Parallel parking in the pullout area would be retained, and a ramp with a sidewalk would be added to connect to the trailhead.
- Site 7 (Badlands Overlook, Mile Marker 24): The existing center island would be removed and paved to accommodate parking. Head-in parking with an accessible concrete pad and limestone seat wall overlook would be added, and the area would be revegetated with plants native to the park.
- Site 8 (Pullout Area, Mile Marker 23.5): The curbline would be articulated to delineate the pull-off edge of the road.
- Site 9 (Pullout Area East [Old East Entrance]): The existing pullout area would be modified to create a formalized trailhead and accessible parking with interpretive signage for the historic park entrance road. The design would modify the existing center island; add an

accessible concrete pad, ramp, and head-in parking; accommodate pull-through parking; and add sidewalks, two benches, and a trash receptacle.

2.3.6 Staging Areas

Staging areas under alternative 2 would be located on the existing road in the project area where conditions are safe to host staging activities and where these activities would not affect archeological, cultural, or potential tribal resources. The project area would remain closed to vehicular and pedestrian traffic during construction to make the road available for staging throughout the construction period, with minimal need for traffic management. During construction, the volume of construction vehicle traffic to, from, and through the project area and staging areas would be higher because of the amount of subgrade, removal of pipe culverts and old road material (e.g., plastic pipes, asphalt, gravel, rock, plastic mesh, pipe liners), and trucking associated with transporting new materials for the project.

2.4 STIPULATIONS AND MITIGATION

NPS places strong emphasis on avoiding, minimizing, and mitigating potentially adverse environmental impacts. To help ensure the protection of natural and cultural resources and the quality of the visitor experience, NPS would implement the following measures as part of the action alternative.

2.4.1 General

- Clearly state all resource protection measures in the construction specifications and instruct workers to avoid conducting activities outside the project area. Limit disturbances to roadsides, culvert areas, and other areas inside the project area. Clearly indicate areas of concern on construction drawings, such as historic culverts.
- Hold a preconstruction meeting to inform contractors about sensitive areas, including natural and cultural resources, and provide procedures for identifying and addressing any unanticipated discoveries.
- Delineate construction zones outside existing disturbed areas with flagging and confine all surface disturbance to the construction zone.
- Site staging and storage areas for construction vehicles, equipment, materials, and soils in previously disturbed or paved areas approved by NPS. These areas would be outside high visitor use areas and clearly identified in advance of construction.
- Require contractors to properly maintain construction equipment to minimize noise and do not allow construction vehicle engines to idle for extended periods.
- Remove all tools, equipment, barricades, signs, and surplus materials from the project area upon completion of the project.
- Only remove trees between November 1 and March 31 to avoid potential impacts to any roosting northern long-eared bat. Review records for known eagle nests and conduct surveys for nests in the vicinity of the project area, if needed. Develop additional mitigation measures to prevent impacts if these species are present (e.g., no tree removal within a half mile or 1 mile).

2.4.2 Cultural Resources

- Identify and delineate archeological or structural resources near the project area prior to project work. An archeologist who meets the Secretary of the Interior's professional

qualification standards would monitor specific areas of ground disturbance indicated by NPS cultural resources staff. A tribal cultural specialist identified through consultation with tribal partners would also be present to monitor ground-disturbing activities, particularly in areas within or adjacent to known archeological sites.

- Continue to coordinate with the North Dakota State Historic Preservation Office (North Dakota SHPO) throughout the course of the project if unknown cultural resources are discovered as a result of the actions associated with alternative 2.
- Stop all work on the project and contact the park's archeologist immediately if human remains are discovered during construction activities. As required by law, notify the coroner. Follow all provisions outlined in the Native American Graves Protection and Repatriation Act (1990).
- Follow stipulations provided in the draft memorandum of agreement between NPS and concurring parties to resolve adverse effects to the Scenic Loop Drive Historic District (historic district) and protect other historic properties.

2.4.3 Geology and Soils

- Avoid or minimize disturbance to soils as much as possible.
- Evaluate new or locally sourced topsoil for nonnative invasive plant infestations.
- Wash and inspect construction equipment to remove potential nonnative invasive plant seeds.
- Implement erosion control measures that provide for soil stability and prevent movement of soils during rain events (i.e., silt fences and tarps).
- Aerate any ground surface temporarily disturbed during construction and revegetate with native plants to reduce compaction and prevent erosion.
- Develop and adhere to a stormwater pollution prevention plan and project specifications for dust control measures within construction areas, including active haul roads and staging areas, and engage a qualified stormwater practitioner to ensure compliance.

2.4.4 Paleontological Resources

- Incorporate paleontological monitoring during ground-disturbing actions in areas known to contain sensitive paleontological resources.
- Take all necessary steps and immediately notify NPS paleontologists if concealed paleontological resources are encountered during construction. Implement paleontological mitigation measures, such as specimen collection, and minimize ground disturbance, where possible, where associated resources of scientific significance are found.

2.4.5 Visitor Use and Experience

- Inform visitors in advance of construction activities via multiple methods, including the park's website, various signs, and the visitor center. Have park staff available to address visitor questions during construction and provide regular updates to the public about project progress and any associated delays.
- Coordinate with the City of Medora and North Dakota Department of Transportation on installing appropriate signage regarding construction routes for public safety.
- Develop provisions for emergency vehicle access through construction zones.

- Develop a cohesive aesthetic treatment plan throughout the project area corridor where treatments, like retaining walls, are visible.

2.4.6 Water Resources

- Comply with and meet all relevant requirements under the Clean Water Act, including management of stormwater-related nonpoint source pollutants under the National Pollutant Discharge Elimination System.
- Implement best management practices for drainage and sediment control to prevent or reduce nonpoint source pollution and minimize soil loss and sedimentation in drainage areas. These practices may include, but are not limited to, silt fencing, filter fabric, temporary sediment ponds, check dams of pea gravel-filled burlap bags or other material, and/or immediate mulching of exposed areas to minimize sedimentation and turbidity impacts as a result of construction activities. As much as practicable, do not use plastic materials. Leave erosion control measures in place at the completion of construction to avoid adverse impacts on water resources, after which time NPS staff would be responsible for maintenance and removal.
- Use qualified NPS staff or certified wetland scientists to identify and clearly mark wetlands before construction work. Perform construction activities with caution to prevent damage caused by equipment, erosion, siltation, or pollutant discharges.

2.5 ALTERNATIVES DISMISSED FROM FURTHER CONSIDERATION

2.5.1 Reconstruct South Unit Loop Road on a New Alignment

This alternative would abandon the existing section of Scenic Loop Drive in the project area and construct a new road with a new alignment. This alternative was dismissed from further consideration because the topography along the road severely limits the feasibility of a new alignment, it would convert a large section of the park to transportation use, and it would have significant adverse impacts on natural and cultural resources.

2.5.2 Resurface South Unit Loop Road

This alternative would not reconstruct the entire section of road in the project area but would repave the surface of the existing roadway, employing patches or local structural improvements where roadway failures have occurred. This alternative was dismissed because resurfacing the road, without complete reconstruction, would not resolve the geotechnical and structural issues of the subgrade and soils and would continue the current cycle of roadway deterioration and failure. Previous resurfacing attempts on Scenic Loop Drive, particularly multiple applications of thick patching in damaged areas, added weight to the road that contributed to failures.

SECTION 3: AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 INTRODUCTION

In this section, the NPS presents the existing conditions of resources in the project area, along with reasonably foreseeable environmental trends and planned actions for those resources. It also includes the beneficial and adverse impacts that may occur under the two alternatives carried forward for detailed analysis. Each impact topic briefly describes the methods and assumptions used to adequately assess potential impacts on the resource.

3.2 CULTURAL RESOURCES

3.2.1 Affected Environment

3.2.1.1 Built Environment

In 2001, Historical Research Associates (HRA) recommended Scenic Loop Drive as eligible for listing as a historic district in the NRHP under criteria A and C for its association with the development of the South Unit as a Recreation Demonstration Area (HRA 2001). Civilian Conservation Corps and Emergency Relief Agency crews implemented the planning, design, and construction of the road and its associated structures. The period of significance for the historic district is from 1934 to 1941, which is when the road and its associated structures (i.e., retaining walls and culverts) were constructed. HRA determined that approximately a 7-mile segment of Scenic Loop Drive between the Peaceful Valley intersection and the old East Entrance Station at mile marker 23.5 has sufficient integrity to be eligible.

HRA identified 38 historic Civilian Conservation Corps- and Emergency Relief Agency-constructed stone culvert headwalls and retaining walls associated with Scenic Loop Drive, from Peaceful Valley to the old East Entrance. HRA did not include most of the small culverts and other features as resources because of their small scale. However, most of these features would contribute to the significance of the historic district if they were constructed within the period of significance and retained integrity. Of the 38 HRA-identified headwalls and retaining walls, 8 headwalls and 2 retaining walls were identified as contributing structures in the historic district (table 1).

TABLE 1. CONTRIBUTING STRUCTURES IN THE SCENIC LOOP DRIVE HISTORIC DISTRICT

Structure	Description	Location (Mile Marker)
Culvert 7.95 (LR 27)	48-inch stone arch culvert and headwall	28
Culvert 8 (LR 24)	18-inch steel culvert with stone headwalls	27
Retaining Wall 8	90-foot-long retaining wall adjacent to Culvert 8	27
Retaining Wall 8.7 (LR 17)	63-foot-long stone retaining wall	26.7
Culvert 8.85 (LR 18)	25-inch steel culvert and stone headwall	26.55
Culvert 8.95 (LR 19 and LR 20)	24-inch concrete culvert and stone headwall/drainage system	26.45

Structure	Description	Location (Mile Marker)
Culvert 9.85 (LR 8)	18-inch steel culvert with stone headwall	25.35
Culvert 10.2 (32BI00541)	120-inch-wide stone culvert and wing walls	25
Culvert 11.9 (32BI00540)	74-inch stone arch culvert and wing walls	23.3
Culvert 12.0 (LR 2)	72-inch stone arch culvert and wing walls	23.2

Source: HRA 2001

In September 2021, WSP USA, Inc., conducted a survey of the built environment along Scenic Loop Drive (appendix A). Ten previously surveyed individual resources, the road itself, and associated components such as pullouts and overlooks in the historic district, designated by the North Dakota SHPO as number 32BI1196, were identified. These resources were included in the 2001 NRHP nomination for Scenic Loop Drive (HRA 2001). An additional 18 structures were mentioned in the 2001 NRHP nomination; however, they were not included in the resource count or narrative description. These 18 structures are listed in **table 2**.

The Badlands Overlook was constructed in 1939 after most of the road was completed and is considered contributing to the historic district; however, the Scoria Point overlook and a pullout near mile marker 26.5 were constructed well after the main road was completed and are thus not associated with the historic roadway.

Several non-contributing resources within the district were constructed after the period of significance, including metal guardrails, signage, prairie dog exclusion mesh, Architectural Barrier Act-compliant components, repaving, and culverts replaced with modern metal or plastic pipes, including inlets and outlets. Between 1942 and 1971 is considered a potential or additional period of significance, although studies indicate modifications to the road during that time were minimal and limited to repaving and repairs of minor road features, with no new features constructed.

TABLE 2. IDENTIFIED RESOURCES IN THE SCENIC LOOP DRIVE HISTORIC DISTRICT

SITS/ Architectural Feature #	Field No.	Type	Year Built	NRHP Eligibility (Contributing/ Not Contributing)
1	N/A	Historic road	1935- 1941	Contributing
2	THRO LR2	Stone arch culvert	1936	Contributing, Individually NRHP eligible
3/32BI000540	THRO LR2.5	Stone arch culvert	1936	Contributing, Individually NRHP eligible
29/32BI00541	THRO LR3.5	Stone arch culvert	1936	Contributing, Individually NRHP eligible
4	THRO LR3	Corrugated metal pipe culvert	1936	Contributing

SITS/ Architectural Feature #	Field No.	Type	Year Built	NRHP Eligibility (Contributing/ Not Contributing)
5	THRO LR4	Corrugated metal pipe culvert	1936	Contributing
6	THRO LR8	Corrugated metal pipe culvert	1936	Contributing
7	THRO LR5	Corrugated metal pipe culvert	1936	Non-contributing
8	THRO LR 6	Corrugated metal pipe culvert	1936	Contributing
9	THRO LR7	Corrugated metal pipe culvert	1936	Contributing
10	THRO LR14	Plastic pipe culvert	1936	Contributing
11	THRO LR13	Corrugated metal pipe culvert	1936	Contributing
12	THRO LR12	Corrugated metal pipe culvert	1936	Contributing
13	THRO LR11	Concrete pipe culvert	1939	Contributing
14	THRO LR10	Concrete pipe culvert	1939	Contributing
15	THRO LR9	Concrete pipe culvert	1939	Contributing
16	THRO LR23	Corrugated metal pipe culvert	1939	Contributing
17	THRO LR22	Plastic pipe culvert	1939	Contributing
18	THRO LR21	Corrugated metal pipe culvert	1939	Contributing
19	THRO LR20	Stone retaining wall	1939	Contributing
20	THRO LR19	Corrugated metal pipe culvert	1939	Non-contributing
21	THRO LR18	Corrugated metal pipe culvert	1939	Non-contributing
22	THRO LR17	Stone retaining wall	1939	Contributing
23	THRO LR16	Corrugated metal pipe culvert	1939	Contributing
24	THRO LR15	Triple corrugated metal pipe culvert	1939	Contributing
25	THRO LR24	Corrugated metal pipe culvert	1939	Contributing
26	THRO LR25	Corrugated metal pipe culvert	1939	Contributing
27	THRO LR26	Corrugated metal pipe culvert	1939	Contributing
28	THRO LR27	Stone arch culvert	1936	Contributing, Individually NRHP eligible

Note: SITS – Smithsonian Institution Trinomial System

Source: WSP USA, Inc. 2021

3.2.1.2 Archeology

In 1988, the University of North Dakota and NPS conducted an archeological survey of Scenic Loop Drive (Kuehn 1988). In July and September 2021, Golder Associates, Inc., conducted an archeological survey of portions of the road for this project. Three previously unrecorded resources were identified within the project area during the most recent surveys (table 3). They include one prehistoric lithic scatter site (32BI1195), one historical isolated find (32BIX1017), and one prehistoric isolated find (32BIX1018). Through consultation with tribal partners and the North Dakota SHPO, it was determined that evaluative testing of 32BI1195 was needed to assess the horizontal and vertical extent of cultural materials and to determine if construction design should be modified to avoid or minimize ground disturbance within the site boundaries.

TABLE 3. ARCHEOLOGICAL RESOURCES IN THE PROJECT AREA

SITS Number	Description	NRHP Eligibility	Recommendations
32BI1195	Prehistoric lithic scatter	Eligible; portion of site within area of potential effects does not contribute to eligibility	Monitoring during construction
32BIX1017	Historical isolated find (bottle base)	Not eligible	None
32BIX1018	Prehistoric isolated find (flake)	Not eligible	None

Notes: SITS – Smithsonian Institution Trinomial System. Note: The “X” in “32BIX1017” and “32BIX1018” indicates that the SITS Number is not yet considered final and is commonly used for isolated finds.

Source: Golder Associates, Inc. 2021a

In October 2021, Golder Associates, Inc., performed subsurface testing on 32BI1195 and recovered several dozen artifacts. In consultation with the North Dakota SHPO and tribal partners, the overall site was determined eligible for the NRHP under criterion D. However, intensive surface reconnaissance and subsurface testing only identified a single artifact within the project area, which has also been extensively disturbed by construction of the road and prairie dog activity. Therefore, the portion of the site where future construction may occur was determined not eligible for the NRHP. Because of the sensitive nature of archeological site information, detailed summaries regarding these resources are not provided in this EA. The cultural resources are protected by various federal regulations, including the NHPA and the Archeological Resources Protection Act of 1979.

3.2.1.3 Trends and Planned Actions

NPS’s Cultural Resources Climate Change Strategy establishes goals to preserve and maintain cultural resources as the climate continues to warm. Rising temperatures expedite crystallization of efflorescent salts from increased evaporation rates, which could lead to higher rates of structural cracking and deterioration of the existing culverts and retaining walls in the project area (NPS 2016).

Moisture absorption in brick and porous stone structures from the potential increase of intense rainfall events may lead to frost damage, mold growth, and stress from the salt crystallization (NPS 2016; USEPA 2016). Surface cracking, flaking, and sugaring (i.e., surface disintegration) of these structures and spalling (i.e., peeling away) of stone could also occur as a result of worsening freeze-thaw cycles. If wildfires become more frequent in the park because of warming temperatures or human-caused activity, cracking and other physical damage to masonry components from thermal

stress and discoloration caused by smoke and/or extreme heat may occur. However, the potential impacts on masonry from wildfire could be mitigated through roadside vegetation management.

NPS actions that occur in the project area include updating databases for known cultural resources, conducting archeological surveys, and consulting regularly with tribal partners and academic institutions to better understand and monitor these resources in the park. The park also responds to climate change impacts on cultural resources by reducing fuel loading on sensitive resources and monitoring cultural resource locations during and after fires.

3.2.2 Environmental Consequences

3.2.2.1 Methods and Assumptions

Short-term impacts on historic properties within the historic district are analyzed quantitatively by calculating the number of contributing features that would be lost through actions such as reconstruction or replacement of culverts to improve stormwater drainage. The status of those resources that are affected to the extent that they no longer contribute to the significance of the historic district is changed to non-contributing. The number of contributing properties remaining in the historic district are compared to the original number to determine the overall impact to the historic district. The location of the non-contributing resources are also noted to determine whether the impact is widespread or localized. Long-term impacts from a lack of maintenance are analyzed in the same way.

The qualitative analysis assesses the level of integrity loss and its relation to the criterion under which the historic district is considered eligible. The historic district is eligible under criteria A and C for its association with development of the South Unit as a Recreation Demonstration Area between 1934 and 1941. Key aspects of integrity under criterion A are setting, feeling, and association and design; under criterion C, key aspects are workmanship and materials. Different aspects of integrity are critical to the eligibility of the resource depending on the significance of the historic district.

Section 106 of the NHPA and its implementing regulations under 36 CFR 800 require all federal agencies to consider effects of federal actions on historic properties eligible for, or listed in, the NRHP. Any impact to contributing structures, buildings, objects, or sites within the historic district would be subject to review under section 106. An assessment of effects was completed separately under section 106 consultation, which determined the project would have an adverse effect to the historic district and no adverse effect to any other historic properties. Adverse impacts on historic properties would be avoided, minimized, or mitigated, per the draft memorandum of agreement (appendix B) among concurring parties.

3.2.2.2 Alternative 1 (No Action)

Built Environment

Under alternative 1, management of cultural resources would follow *NPS Management Policies 2006* and *Cultural Resource Management Guidelines* (NPS 2006, NPS 1998). Current management of the project area (i.e., approximately 6.15 miles of Scenic Loop Drive) would continue under alternative 1. Inadequate drainage would exacerbate erosion, further damaging the historic roadway and culverts that are partially or wholly silted-in. While the historic culverts would remain unchanged, continued erosion and sedimentation could damage those structures in areas with inadequate drainage. Erosion could also increase the risk of additional roadway failures. As a result of deterioration of the roadway and impacts on contributing properties, alternative 1 would have long-term, adverse impacts on the built environment.

Archeology

Current management of the road would have no impact on archeological resources because the roadway adjacent to where archeological resources are present would remain unchanged. In the long-term, it is foreseeable that natural forces would adversely affect known archeological sites, such as lithic scatter site 32BI1195.

3.2.2.3 Alternative 2 (Proposed Action and Preferred Alternative)

Built Environment

Alternative 2 would adversely affect the historic district, 32BI1196. The approximately 6.15 miles of historic roadway in the project area would be substantially reconstructed and stabilized with modern roadway features such as retaining walls, curbing, and drainage intakes that would adversely impact the historic district's design, workmanship, and feeling. Furthermore, the entire roadway would require excavation along the alignment of the existing pipes. The headwalls and associated mortar and stone would be removed along with the existing pipe, new inlets and outlets would be constructed, concrete pipe would be installed, the headwalls would be restored, and the roadway would be reconstructed as the last step in the construction process.

Twenty-three contributing culverts within the historic district would be impacted by alternative 2. Five contributing culverts (Feature Nos. 9, 16-18, and 26) would require upsizing of culvert pipes and reassembly of stone headwalls that would adversely affect the design, workmanship, and materials of these individual resources and the historic district as a whole. Feature Nos. 10, 24, and 25 would be adversely affected because each site would be redesigned with new pipes to provide proper drainage. Adverse impacts on 11 culverts (Feature Nos. 4-6, 8, 11-14, 15, 23 and 27) would be minimized by replacing culverts with the same size pipe, pipe alignment, and intakes/outlets as the original culvert pipe. Depending on their condition, the stone headwalls would be rehabilitated or repaired according to the *Secretary of the Interior's Standards for the Treatment of Historic Properties*, which would also minimize adverse impacts.

Alternative 2 would have beneficial impacts on four stone arch culverts (Feature Nos. 2, 3, 28, and 29) because work would be conducted to reestablish the channel, clear sediment that has built up in the culverts, and repair headwalls where mortar has been damaged. Hydrological modeling and condition assessments for the project indicate that the surrounding topography, historical construction, and decades of subsequent use that these features are in locations where existing structures would accommodate anticipated precipitation, provided these structures receive maintenance to address siltation and remove vegetation. This work would improve water flow through the culverts and prevent further silting at each site, which would result in the long-term preservation of these structures.

The project would not affect two contributing retaining walls (Feature Nos. 19 and 22) because drainage improvements are not required at these locations. The park would coordinate with roadway construction personnel to avoid impacts on Architectural Feature No. 19, a stone retaining wall.

The historic roadway would continue to contribute to the historic district despite the proposed elements of alternative 2, because the main alignment of the road would not change, and repairs to the road and associated culverts would make the road functional again. Reconstruction of the existing road would not adversely affect the visual quality of the historic district. The historic intent of the road is to provide scenic vistas and views of the landscape, which would remain intact and alternative 2 would restore visitor access to these vistas and views. However, introduction of modern elements along the road such as drainage inlets, curbing, and retaining walls would adversely affect the design and setting of the resource. New structures installed during project implementation would resemble the existing landscape in color and geological form, with vegetation planted where

appropriate, to minimize disturbance to cultural resources, specifically reducing the potential visual intrusion to the historic district.

Archeology

Alternative 2 would not adversely impact the lithic scatter at site 32BI1195. The site was subjected to subsurface testing to determine the potential for further research and eligibility to the NRHP. The portion of the site within the project's area of potential effects was determined not eligible for listing in the NRHP because extensive surface reconnaissance and subsurface testing found a lack of cultural materials (limited to a single piece of flaked stone) and evidence of extensive disturbance associated with construction of the road, pullout area, and decades of prairie dogs mixing the soils. Therefore, alternative 2 would not have an adverse impact on the site. Other known archeological resources located near the western pullout area—which are limited to isolated finds and are not eligible for listing in the NRHP—are not within the limits of the project area.

3.3 GEOLOGY AND SOILS

3.3.1 Affected Environment

The badlands in the park are an intermittently barren landscape with juniper (*Juniperus spp.*) on the northern slopes, ash (*Fraxinus spp.*) in the valleys, and cottonwood (*Populus spp.*) stands along river corridors. The badlands were formed and continue to be re-formed by the ongoing water and wind erosion of sedimentary rocks (i.e., sandstone, siltstone, and claystone) formed from deposits of sand, silt, mud, and layers of volcanic ash (NPS 2015b). Seams of lignite coal are also present in many areas of these badlands, including along Scenic Loop Drive. These coal seams formed from dying and decaying trees and other plants in prehistoric swamps. When streams in the area changed course, they buried partially decomposed vegetation (i.e., peat) beneath layers of silt and clay. Over time, the weight of the overlying sediment compressed the peat to lignite coal (Bluemle 2014). Lignite coal is present in the Bullion Creek and Sentinel Butte Formations and in eroded sediments. This lignite has a high moisture content, is porous, and acts as a pathway for water to seep into soils, increasing soil moisture (NPS 2015b).

Sediments in or near the project area are deposited in a dynamic system containing rivers, streams, ponds, and swamps. According to the Natural Resources Conservation Service (NRCS), the project area comprises 13 different soil map units (**figure 9, table 4**). Most of this area consists of the Cabbart, Patent, Kirby, and Lonna soil series (NRCS 2021). These soils are calcareous (i.e., abundant in calcium) and are described briefly below.

- The Cabbart soil series consists of shallow, well-drained soils with moderate permeability. They were formed in material derived from semi-consolidated loamy sedimentary beds and are typically found on ridges and escarpments.
- The Patent soil series consists of very deep, well-drained soils with moderate permeability. They were formed in alluvium and are typically found across alluvial fans and swales.
- The Kirby soil series consists of very deep, excessively drained soils with rapid permeability. They were formed in alluvium, colluvium, or residuum derived from porcellanite. They are typically found on hills and ridges.
- The Lonna soil series consists of very deep, well-drained soils with moderate permeability. They were formed in alluvium derived from semi-consolidated loamy sedimentary beds, similar to the Cabbart series. They are typically found across alluvial fans and stream terraces (NRCS 2005).

Theodore Roosevelt National Park

South Unit Loop Road Reconstruction Project
North Dakota

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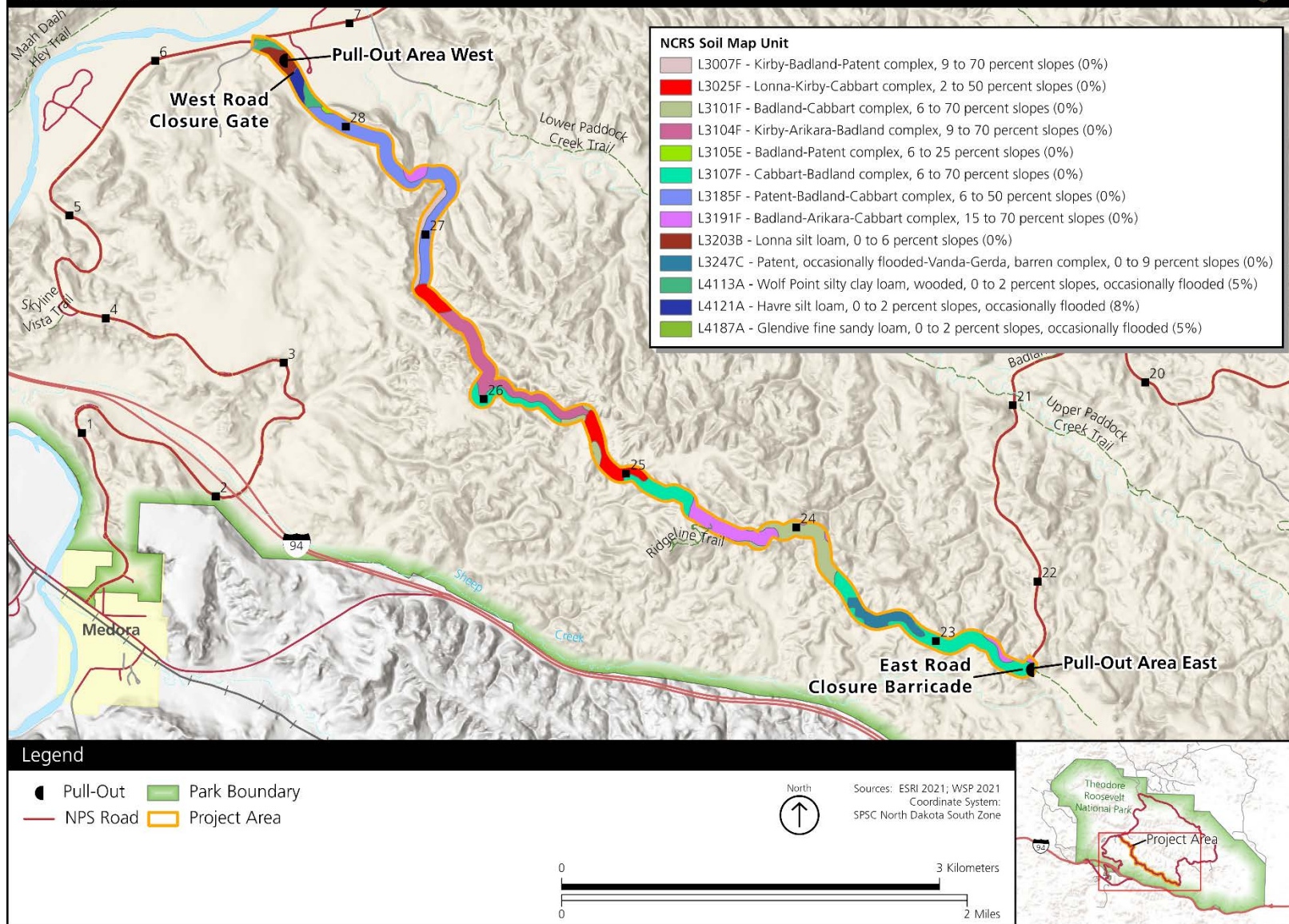


FIGURE 9. SOIL RESOURCES IN THE PROJECT AREA

TABLE 4. SOIL MAP UNITS IN THE PROJECT AREA

Map Unit Symbol	Map Unit Name	K-Factor	Acres of Project Area	Percent of Project Area
L3107F	Cabbart-Badland complex, 6 to 70 percent slopes	0.32	69.4	23.10%
L3185F	Patent-Badland-Cabbart complex, 6 to 50 percent slopes	0.37	55.4	18.40%
L3104F	Kirby-Arikara-Badland complex, 9 to 70 percent slopes	0.10	38.8	12.90%
L3101F	Badland-Cabbart complex, 6 to 70 percent slopes	0.55	31.2	10.40%
L3191F	Badland-Arikara-Cabbart complex, 15 to 70 percent slopes	N/A	29.6	9.80%
L3025F	Lonna-Kirby-Cabbart complex, 2 to 50 percent slopes	0.32	27.8	9.20%
L3247C	Patent, occasionally flooded-Vanda-Gerda, barren complex, 0 to 9 percent slopes	0.24	15.1	5.00%
L3007F	Kirby-Badland-Patent complex, 9 to 70 percent slopes	0.10	8.6	2.90%
L3203B	Lonna silt loam, 0 to 6 percent slopes	0.37	8.8	2.90%
L4113A	Wolf Point silty clay loam, wooded, 0 to 2 percent slopes, occasionally flooded	0.32	8.1	2.70%
L4121A	Havre silt loam, 0 to 2 percent slopes, occasionally flooded	0.43	5.6	1.90%
L3105E	Badland-Patent complex, 6 to 25 percent slopes	0.55	1.3	0.40%
L4187A	Glendive fine sandy loam, 0 to 2 percent slopes, occasionally flooded	0.20	0.9	0.30%
	Totals or Average for Project Area	0.32	300.6	100.00%

Source: NRCS 2021

NRCS has identified K-factors, which describe soil susceptibility to erosion and the rate of runoff, for each soil type listed above. These factors can range from 0.02 (low) to 0.69 (high). Soils with a low K-factor are susceptible to erosion but have a low runoff rate. Soils with a median K-factor are moderately susceptible to erosion and have a moderate runoff rate. Soils with a high K-factor are the most erodible and have a high rate of runoff. The locations where road failures have occurred in the project area are found on the Badland-Arikara-Cabbart complex, a map unit for which NRCS does not have a K-factor established. However, these locations are less than 50 feet from the Badland-

Cabbart (L3101F) and Cabbart-Badland (L3107F) complexes, which have K-factors of 0.55 and 0.32, respectively, indicating moderate to high erosion and runoff rates.

NRCS has rated each of these soil map units as “very limited” for the construction of roads, which indicates that the soil has one or more features that are unfavorable for this use (appendix C). These limitations generally cannot be overcome without major soil reclamation, special design, or particular installation procedures for infrastructure. Poor performance and high maintenance are typically expected for roads constructed on these soil map units (NRCS 2021). Poor performance of soils in the project area is evident where landslides of various magnitudes have affected the roadway, and pavement is cracking and crumbling. Past road construction, road resurfacing, and development for pullouts have also disturbed native soils in the project area and decreased soil stability and increased erosion over time.

3.3.1.1 Trends and Planned Actions

As the impacts of climate change become more apparent, soil conditions could change. Higher intensity and more frequent rainfall may lead to more erosion on susceptible soils along Scenic Loop Drive and an increase in runoff when soils reach saturation levels (USEPA 2016). With rainfall amounts potentially increasing, erosion and runoff levels may increase at a greater rate (Nearing et al. 2004). NPS intermittently conducts research and sampling of soil resources in the project area, which is anticipated to continue in the future.

3.3.2 Environmental Consequences

3.3.2.1 Methods and Assumptions

This section describes the potential impacts on geology and soils from implementation of the alternatives developed for reconstructing portions of Scenic Loop Drive in the South Unit of the park, including the no-action alternative and the proposed action/preferred alternative. Impacts are quantitatively analyzed by calculating the amount of excavated soils within the project area. The analysis also qualitatively focuses on the likelihood of landslides, erosion, and sedimentation. The following discussion describes the impacts that are reasonably foreseeable and have a reasonably close causal relationship to the proposed action/preferred alternative.

3.3.2.2 Alternative 1 (No Action)

Under alternative 1, geology and soils would not be altered from existing conditions. Geology and soils in the project area would continue to be subject to landslides of various magnitudes. Poor subgrade materials would continue to affect the structural integrity of the road, potentially leading to additional roadway failures along Scenic Loop Drive. Sedimentation and lack of adequate stormwater drainage would continue to adversely affect the visual quality of geology and soils in the project area because erosion and landslides would continue to expose soils and geologic formations. No attempt would be made to repair the existing roadway within the project area, so roadway equipment and tools would not be used. No mitigation measures would be implemented because vehicular and pedestrian access to the project area would remain closed, and the road would not be reconstructed.

3.3.2.3 Alternative 2 (Proposed Action and Preferred Alternative)

Alternative 2 would include implementation of structural improvements in the project area to stabilize soils, reduce landslide hazards, and promote roadway resilience. The current proposed design for alternative 2 includes the installation of approximately seven lagging/retaining walls that would stabilize soils where landslides are occurring or are anticipated to occur due to the erosion potential of underlain soils. Soils with moderate to high erosion and runoff rates exist where roadway failures have occurred in the project area.

During construction, increased disturbance, exposure, and excavation would adversely affect geology and soils in the project area in the short-term. Approximately 35,000 cubic yards of soil would be permanently excavated and replaced, and options to use or store this displaced soil are being examined. However, following the completion of construction, the stability of geological features and soils in the project area would be improved because soils would be reinforced with geosynthetic materials as part of the roadway design and backfilled with granular material, resulting in long-term, beneficial impacts.

New impervious surfaces (i.e., repaired roadways and pullouts) and the use of construction equipment could have a long-term, adverse impact on geology and soils from soil compaction. Construction may require benching for equipment, placement of riprap, and the installation of long pipe outfalls to divert stormwater. This disturbance may extend outside the roadway corridor in some areas. However, installing adequate stormwater drainage under alternative 2 would minimize areas contributing to surface runoff and erosion throughout the project area, which would stabilize geology and soils and have a long-term, beneficial impact.

The proposed reconstruction of the existing road would maintain a permanent feature on the landscape. Alternative 2 would be implemented in areas where the presence of the road has already altered geology and soils and would not represent a noticeable departure from historic visual conditions.

Mitigation measures for soils associated with alternative 2 would include erosion control techniques that provide for soil stability and prevent movement of soils during rain events (i.e., silt fences and tarps), dust control measures, and implementation of a stormwater pollution prevention plan. Furthermore, ground surfaces disturbed during construction would be aerated and revegetated with native plants to reduce compaction, prevent erosion, and increase soil stability through implementation of a revegetation plan.

3.4 PALEONTOLOGICAL RESOURCES

3.4.1 Affected Environment

Paleontological resources, or fossils, along with the sedimentary units in which they are preserved, provide evidence of the history of life in the North American western interior. The project area is in the Williston Basin in western North Dakota, which is a large structural basin that contains Cambrian through Quaternary-aged geologic units (Gerhard 1982). The Williston Basin has been the subject of extensive research because of the high oil and gas production from the strata contained within it. It occupies most of North Dakota, parts of South Dakota, Montana, and a portion of Saskatchewan, Canada.

3.4.1.1 Geologic Map and Literature Review

As mentioned above in the “Geology and Soils” section, the project area is underlain by two bedrock sedimentary geologic units, the Bullion Creek Formation and the Sentinel Butte Formation of the Fort Union Group. These geologic units are summarized in **table 5**. Additionally, six Holocene and Pleistocene-age surficial deposits occur within the project area, consisting of engineered artificial fill, modern alluvial deposits, alluvial fan deposits, mantled pediment deposits, older alluvial deposits, and landslide deposits.

The Bureau of Land Management’s Potential Fossil Yield Classification System (PFYC) defines paleontological potential based on a numeric ranking system, from 1 (very low potential) to 5 (very high potential) (BLM 2016). The PFYC uses an assessment of rock type and records of fossil discovery to create a database for all lands, not just those managed by the Bureau of Land Management. These data are made available for all interested parties. According to this system, the

Bullion Creek and Sentinel Butte Formations have high paleontological potential (PFYC 4), and the Holocene to Pleistocene-age surficial deposits have low paleontological potential (PFYC 2).

TABLE 5. GEOLOGIC UNITS IN THE PROJECT AREA

Geologic Unit Name	Map Unit Abbreviation	Common Fossils	Age	PFYC	Acres (Half-Mile Area)
Engineered Fill	Qef	Too young to contain <i>in-situ</i> fossils	Holocene	PFYC 2	14.82
Modern Alluvial Deposits	Qal	Too young to contain <i>in-situ</i> fossils	Holocene	PFYC 2	234.74
Alluvial Fan Deposits	Qf2	Too young to contain <i>in-situ</i> fossils	Holocene	PFYC 2	10.81
Mantled Pediment Deposits	Qmp	Too young to contain <i>in-situ</i> fossils	Holocene	PFYC 2	92.05
Older Alluvial Deposits	Qoal	Too young to contain <i>in-situ</i> fossils	Holocene	PFYC 2	72.64
Landslide Deposits	Qls	Deposition of landslide deposits are not conducive to preserving fossils	Holocene and Pleistocene	PFYC 2	12.77
Sentinel Butte Formation including HT Butte Clinker, and Unnamed Clinker Beds	Tsb, Tsbcb, Tsbck	Champsosaurs, turtles, crocodiles, fish, invertebrates, plants	Paleocene	PFYC 4	1172.96
Bullion Creek Formation	Tbc	Champsosaurs, alligator, turtles, invertebrates, plants, trace fossils	Paleocene	PFYC 4	707.3

Source: Gonzalez 2003

3.4.1.2 Record Search

Based on data provided by NPS, four fossil localities in the project area were previously documented—one from the Bullion Creek Formation consisting of non-significant invertebrates, and three from the Sentinel Butte Formation that are considered significant and were collected (table 6). Significance is determined by how well fossils are preserved to permit identification to a low taxonomic level (i.e., cellular structure or other features such as distinctive bark that is clearly visible). Additionally, 14 localities in the project area are from both the Bullion Creek and Sentinel Butte Formations, including significant fossils that were collected consisting of turtles, fish, crocodile, and champsosaur (an extinct crocodile-like reptile).

TABLE 6. PREVIOUSLY RECORDED FOSSIL LOCALITIES

Locality Number	Data Provided By	Fossils	Age	Formation	Collected?
TRS21_050	NPS	Bivalves and gastropods	Paleocene	Bullion Creek	N – not significant
TRS20-041	NPS	Reptile long bone	Paleocene	Sentinel Butte	Y – significant
TRS20-042	NPS	Fish vertebra	Paleocene	Sentinel Butte	Y – significant
TRS20-042b	NPS	Fish vertebra	Paleocene	Sentinel Butte	Y – significant

3.4.1.3 Field Assessment Summary

Two new significant fossil localities and five new non-significant fossil occurrences were discovered during a paleontological field survey in September 2021 (**table 7**). The two significant fossil localities, which consist of well-preserved plants from the Sentinel Butte Formation and crocodile and turtle fossils from the Sentinel Butte Formation, were collected (**table 8**). Non-significant fossils, such as petrified wood from this formation, were not collected because they are common and are already well represented in museum collections. Furthermore, the science of identifying a species of plant based on wood, for example, is not well developed, and only a few paleobotanists in the United States focus on fossil wood.

TABLE 7. SUMMARY OF SIGNIFICANT FOSSIL LOCALITIES AND NON-SIGNIFICANT FOSSIL OCCURRENCES DISCOVERED DURING THE SCENIC LOOP DRIVE SURVEY

ID	Significance	Collected?	Formation
Gastropoda undet. – 10+ shell fragments Bivalvia undet. – 100+ shell fragments	Non-Significant	No	Bullion Creek
Bivalvia undet. – 10 to 15+ shell fragments	Non-Significant	No	Bullion Creek
Plantae undet. – +50 plant impressions along bedding plane	Non-Significant	No	Sentinel Butte
Plantae undet. – petrified wood, hundreds of fragments from pebble size to boulder sized	Non-Significant	No	Sentinel Butte
Bivalvia undet. – 100+ shell fragments; Gastropoda undet. – 100+ shell fragments	Non-Significant	No	Sentinel Butte
Crocodylia undet. – 15 to 20 bone and scute fragments; Testudines undet. – shell fragments	Significant	Yes – Surface Collection	Sentinel Butte
Plantae undet. – 5 to 6 seed pods and 5 to 10 leaf impressions	Significant	Yes – Surface Collection	Sentinel Butte

TABLE 8. INVENTORY OF FOSSILS COLLECTED

NPS Catalogue Number	Taxon ID	Description
7912	<i>Nyssidium arcticum</i>	Fruit (contains small winged seeds)
7913	<i>Nyssidium arcticum</i>	Fruit (contains small winged seeds)
7911	<i>Porosia verrucosa</i>	Seed or leaf of an aquatic angiosperm
7914	<i>Porosia verrucosa</i>	Seed or leaf of an aquatic angiosperm
7915	<i>Porosia verrucosa</i>	Seed or leaf of an aquatic angiosperm
7916	<i>Porosia verrucosa</i>	Seed or leaf of an aquatic angiosperm
7917	<i>Porosia verrucosa</i>	Seed or leaf of an aquatic angiosperm
No #	Angiospermopsida	Poorly preserved leaves and plant frags (4)
7904	cf. Trionychoidea	Claw (ungual)
7905	cf. Aves	Proximal ulna
7906	cf. Reptilia	Proximal phalanx
7907	cf. Reptilia	Phalanx fragment
7908	Testudines (mixed)	Approximately 98 shell fragments
7909	cf. Trionychoidea	Distal lateral hypoplastral processes (3)

Source: Paleo Solutions, Inc. 2021

3.4.1.4 Trends and Planned Actions

Climate change is projected to change the ecosystems in the park at rates that are unprecedented for millions of years. Robust climate data will be fundamental to interpreting the fossil record in the future. Developing a methodology for interpreting the extensive biotic datasets provided through paleontological records will also be key. It will be important to examine fossils with different ecologies to better understand the morphological changes and linkages to environmental drivers, and their sensitivities to these drivers (Schmidt 2018).

The park routinely processes categorical exclusions for paleontological resource collection in the park, including in the project area. The park also partners with paleontologists at the NPS Geological Resources Division to conduct field and laboratory studies, develop and address important research questions, curate collections, and provide important reporting and interpretive materials for long-term understanding of these important resources.

3.4.2 Environmental Consequences

3.4.2.1 Methods and Assumptions

The project area is surrounded by moderately to highly fossiliferous strata (i.e., layers of fossil-containing rock) and is mostly underlain by the Sentinel Butte Formation or Bullion Creek

Formation, which are both fossiliferous and contain important Paleocene vertebrate fauna. The analysis qualitatively considers potential changes and impacts to paleontological resources and these formations via changes to existing geological landforms, which could affect undiscovered fossils in the project area.

3.4.2.2 Alternative 1 (No Action)

Under alternative 1, continued erosion and landslides may lead to the exposure and instability of undiscovered paleontological resources in the project area; however, impacts would be minimal and unlikely to affect bedrock. Standing water, poor drainage, and sink holes also have the potential to impact undiscovered paleontological resources because of freeze-thaw cycles and the increased potential for fracturing. These impacts would be localized because the project area is approximately 300 acres in size compared to the 70,447 acres park-wide that support paleontological resources. Paleontological resources discovered within the project area to date have been collected and would not be affected under alternative 1. Newly discovered paleontological resources would continue to be collected, if found, under alternative 1.

3.4.2.3 Alternative 2 (Proposed Action and Preferred Alternative)

Road reconstruction, slope stabilization, and drainage improvements could disturb non-renewable paleontological resources in the project area, while excavation activities could lead to the disturbance or loss of fossils. If disturbance and/or loss occurs, there would be a long-term, adverse impact from the loss of individual fossils. Construction monitoring performed by a qualified paleontologist would reduce the potential for adverse impacts. To help protect the context and integrity of paleontological resources in the project area, FHWA-CFLHD approved engineering fill used for slope stabilization and roadway reconstruction would be obtained from an off-site source that has been determined to be free of fossils to prevent new fossils from being introduced that are not in context with the park.

To stabilize the banks along Scenic Loop Drive where continual erosion has been problematic, the roadway embankment would be graded to more gradual slopes that support vegetation. As noted above, structural engineering fill would be used, and options to use or store displaced soil are being examined. This grading and changes to the slope could impact existing geologic formations between the bottom of the slope and the roadway. These geologic landforms may contain paleontological resources and contribute to the park feeling and visual setting as visitors drive the road. Project engineers would seek to minimize impacts during detailed design by delineating landforms on the project plans and requiring contractors to avoid or minimize ground disturbance in areas likely to contain paleontological resources. Furthermore, a paleontologist would monitor the project area during construction and collect any specimens found. In the context of the landforms in the larger park setting of the South Unit, adverse impacts to existing paleontological resources are expected to be minimal.

3.5 VISITOR USE AND EXPERIENCE

3.5.1 Affected Environment

The mission of NPS is to preserve unimpaired natural and cultural resources and values of the national park system for the enjoyment, education, and inspiration of this and future generations. It is a fundamental purpose of all parks that NPS is committed to providing appropriate, high-quality opportunities for visitors to enjoy the parks (NPS 2006).

The park is one of the top tourist destinations in the state, with approximately 97% of the park in natural or near-natural condition. Visitors to the park report wildlife viewing and the natural landscape as the two most important factors of their park visit (NPS 2020a). Scenic Loop Drive

provides visitors and recreationists, including those in motor vehicles, recreational vehicles, and on bicycles with access to several scenic overlooks and trails in the park's South Unit, as well as access to wildlife-viewing areas, ranger-led activities, and campgrounds (NPS 2021c). Scenic Loop Drive spans 35 miles and includes a portion of East River Road. Scenic Loop Drive is the most heavily used road in the park, with most visitation occurring between June and August (NPS 2020a, NPS 2021c). Traffic counts show a steady increase in use over time, with 2021 data showing the highest number of vehicles traveling Scenic Loop Drive to date (NPS 2021g).

Current visitor use in the park's South Unit is limited by the closure of Scenic Loop Drive between mile markers 22 and 28. Although most of the roadway is still open, visitors cannot experience the scenic route as a loop, as intended. Visitors now must backtrack and drive 22.5 miles from the park entrance and the same 22.5 miles out. This creates a longer drive time, higher risk of traffic congestion at vehicle pullouts, and increased likelihood of seeing other vehicles along the roadway. Visitors have reported that only seeing one to two vehicles during their visit significantly increases the quality of their experience (NPS 2020a). The poor roadway condition in the project area, which can cause visual impacts and less-comfortable driving conditions, also affect visitor experience. Despite the partial road closure, increases in visitation have intensified traffic. However, heavy equipment and construction-related traffic is limited within the park.

Ridgeline Nature Trail, the only out-and-back trail in the project area, is currently inaccessible to visitors because of the road closure. No other designated trailheads exist in the project area.

Because Scenic Loop Drive in the project area is currently unstable, inaccessible, and unsafe, the park has been unable to provide visitor services there since 2019. Safety concerns remain an issue for visitors and park staff because of the continued deterioration of the pavement and existing landslides. Emergency access has also been reduced as a result of the increased traffic throughout the open portion of the road and lack of access to the far end of the road.

3.5.1.1 Trends and Planned Actions

Since 1992, visitor use data show that Scenic Loop Drive has seen a steady increase in vehicular traffic of roughly 2,175 vehicles per year. Prior to the closure of Scenic Loop Drive between mile markers 22 and 28, the highest amount of traffic on the road to date occurred in 2018 (116,454 vehicles). There was a slight drop in overall traffic in 2019 (112,634 vehicles) and 2020 (100,646 vehicles), which can be explained by the closure of Scenic Loop Drive and the COVID-19 pandemic. As of August 2021, 87,736 vehicles traveled Scenic Loop Drive, which puts 2021 on track to receive the highest vehicle visitation to date (NPS 2021g). Despite 2019 and 2020 not following historic trends, an increase in traffic and visitation is anticipated to continue in future years, based on the 2021 statistics for vehicles entering the park.

Between 2016 and 2019, the park welcomed between 698,236 and 760,458 visitors each year. In 2020, the park had 551,303 visitors, despite being closed for several months due to the COVID-19 pandemic (NPS 2020b). These data show that recreational use of the park is consistently trending upward, with visitation expected to continue to increase. The 2020 Visitor Use and Associated Thresholds Study reports that visitors experienced slightly more crowding in 2017 compared to 2001, with key areas of crowding including roadside pullouts by prairie dog towns and along Scenic Loop Drive (NPS 2020a).

The NPS Social Science Program will continue to coordinate the collection of visitor statistics for the park in future years. Official statistics are traditionally reported during the first few months of a new year.

3.5.2 Environmental Consequences

3.5.2.1 Methods and Assumptions

This section describes the alternatives developed for reconstructing portions of Scenic Loop Drive in the South Unit of the park and their potential impact on visitor use and experience. The analysis qualitatively focuses on public access and safety, viewscales, and soundscapes.

3.5.2.2 Alternative 1 (No Action)

Under alternative 1, visitor use and experience would remain unchanged. Vehicular and pedestrian access to the project area would remain closed because of the existing roadway failures and the potential for future failures that threaten the safety of park visitors. The poor physical condition of the project area along Scenic Loop Drive and the potential for landslides would continue to adversely affect the visitor experience. Visitors would still have access to nearly 22.5 miles of Scenic Loop Drive under alternative 1, as well as other roads in the park. However, visitor experience would continue to be adversely impacted because visitors would not be able to experience the scenic route as a loop, as intended. If visitation trends continue upward, as expected, congestion and traffic would also continue to adversely impact the visitor experience and be exacerbated by visitors having to backtrack to the park entrance via the same route they used to enter the park.

Under alternative 1, visitors would continue to be unable to enter the project area on foot to access Ridgeline Nature Trail, the only designated trail in the project area. No construction equipment or tools would be used under this alternative, creating no visual or auditory impacts for visitors to experience. Alternative 1 would continue to have an overall long-term, adverse impact on visitor use and experience.

3.5.2.3 Alternative 2 (Proposed Action and Preferred Alternative)

Alternative 2 would address multiple roadway problem areas along Scenic Loop Drive by reconstructing approximately 6.15 miles of road from mile marker 22 to mile marker 28 for longevity and resilience, allowing it to be reopened to visitors. Reconstructing a portion of Scenic Loop Drive would improve visitor access to the area and enhance the overall visitor experience by improving access throughout the South Unit of the park and returning the scenic route to a 35-mile loop, as intended. This alternative would also eliminate unstable, inaccessible, and unsafe road conditions, thus improving visitor safety and having a beneficial impact on the visitor experience. The pullout areas would be expanded slightly, which would give visitors increased and safer opportunities to view the landscape and rest. Parking stalls would be delineated at the pullouts, and some additional parking would be constructed, giving visitors improved access and reducing conflicts between vehicles. Accessibility would be improved, including parking for persons with disabilities and a reduced grade for ramps, which would improve access for all visitors to the park. Emergency access would also be improved because reopening the loop would allow emergency vehicles to access the far end of Scenic Loop Drive quickly, and improved pullout areas, would allow vehicles to pull-over for emergency response personnel.

Temporary adverse impacts on visitor use and experience would occur during construction of the project. Visitor access would remain closed throughout the duration of project implementation. The approximately 6.15-mile project area would serve as a staging area during construction to ensure park visitors remain safe. It is anticipated that construction activities would occur during the spring, summer, and fall, with required tree removal conducted in the winter, over the course of two years. During construction, pick-up trucks would arrive at the park with construction personnel, and construction equipment such as dump trucks hauling new or excavated materials would create additional traffic between the park entrance in Medora, North Dakota, and the intersection of East River Road and Scenic Loop Drive. Traffic would only increase between this 6.5-mile section of East River Road, because visitors would still have access to nearly 22.5 miles of Scenic Loop Drive, as well

as other roads in the park. The only designated trail within the project area, Ridgeline Nature Trail, would remain closed during construction for visitor safety and to avoid visitors experiencing visual and auditory disturbances from construction. These adverse impacts would be temporary and would not continue following the completion of construction activities.

Once construction is complete, the project area would reopen to visitors, including the pullout area at Ridgeline Nature Trail and scenic overlooks such as Scoria Point, Badlands Overlook, and the Prairie Dog Town in the western portion of the project area. Visitors would be able to enjoy the entirety of the 35-mile Scenic Loop Drive and would no longer have to backtrack to exit the park, reducing traffic congestion over the long-term.

Reconstruction of the existing road would maintain a permanent feature on the landscape, potentially detracting from the visual quality of the project area. However, alternative 2 would occur in areas where the presence of the road has already altered the landscape and would not represent a noticeable departure from historic visual conditions for visitors. The slight expansion of pullout areas through the removal of small vegetation islands, the delineation of parking stalls, increased parking capacity, and enhanced accessibility are not anticipated to adversely affect visitor use and experience of historic visual conditions.

To help alleviate potential traffic congestion, visitors would be informed in advance of construction activities via multiple outlets, including the park's website, various signs, and the visitor center. Park staff would be available to address visitor questions during construction and provide regular updates to the public about project progress and any associated delays. Furthermore, safety measures such as positioning flaggers or temporary stop lights at intersections (e.g., at East River Road and Fourth Street; East River Road and Scenic Loop Drive) would be taken. Provisions for emergency vehicle access through construction zones would be established, and a cohesive aesthetic treatment plan throughout the project area would be implemented.

3.6 WATER RESOURCES

3.6.1 Affected Environment

The project area is within the Middle Little Missouri River watershed, which is part of the hydrologic unit code 10110203 (1,345,900 acres) (NRCS 2007). Average annual precipitation in the project area is 13 to 15 inches. There are no surficial (i.e., shallow) aquifers underlying the Middle Little Missouri River sub-basin in the project area, but several active seeps and springs have been observed (NRCS 2007). The westernmost portion of the project area is within 250 feet of the Little Missouri River (figure 10). The Little Missouri River appears to be a Traditional Navigable Water (i.e., waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce).

Several unnamed stream channels are shown on the topographic maps located adjacent to Scenic Loop Drive in the central part of the project area. Most of these unnamed streams appear to flow into Paddock Creek, which is located north of the project area, with some unnamed streams, particularly near the east end of the project area flowing into Sheep Creek, south of the project area. Both Paddock Creek and Sheep Creek appear to be relatively permanent waterways that are tributaries to the Little Missouri River.

3.6.1.1 Wetlands and Streams

In October 2021, Golder Associates, Inc., delineated wetlands and streams adjacent to Scenic Loop Drive (appendix D). Surface water resources in the project area include 11 wetlands (table 9) totaling approximately 0.31 acres, and 39 streams (table 10), 35 of which were classified as ephemeral, 1 classified solely as intermittent, and 3 that contain both ephemeral and intermittent

reaches. Ephemeral streams exhibit flow for a brief period as a direct result of precipitation, while intermittent streams exhibit flow based on seasonal changes in runoff. The length of streams totaled approximately 17,740 linear feet (2.68 miles of ephemeral streams and 0.67 miles of intermittent streams). No part of the project area is mapped within a designated 100-year or more floodplain.

TABLE 9. SUMMARY OF DELINEATED WETLAND AREAS IN THE PROJECT AREA

Wetland ID	Wetland Classification		Area (Acres)	Likely Regulatory Status ²
	FGDC ¹	Hydrogeomorphic		
W1	PEM1B	Riverine	0.01	Jurisdictional
W2	PEM1B	Riverine	0.08	Jurisdictional
W3	PEM1B	Slope	0.02	Non-jurisdictional (Isolated Wetland)
W4	PEM1B	Slope	<0.01 ³	Non-jurisdictional (Isolated Wetland)
W5	PEM1B	Riverine	0.06	Jurisdictional
W6	PEM1A	Riverine	<0.01 ³	Jurisdictional
W7	PEM1B	Depressional	0.03	Non-jurisdictional (Isolated Wetland)
W8	PEM1B	Depressional	0.01	Non-jurisdictional (Isolated Wetland)
W9	PEM1A	Riverine	0.03	Jurisdictional
W10	PEM1B	Depressional	0.01	Non-jurisdictional (Isolated Wetland)
W11	PEM1B	Depressional	0.04	Non-jurisdictional (Isolated Wetland)
Total			0.31	

1 Federal Geographic Data Committee/Cowardin Classification: PEM1A = palustrine emergent persistent temporarily flooded; PEM1B = palustrine emergent persistent seasonally saturated.

2 Final jurisdictional determination is made by the US Army Corps of Engineers.

3 Wetland area <0.01 calculated as 0.01 acres for calculating overall wetland acreage.

Source: Golder Associates, Inc. 2021b

TABLE 10. SUMMARY OF DELINEATED STREAMS IN THE PROJECT AREA

Stream Designation	Flow Regime	Length (Lineal Feet)	Average Width at OHWM (Feet) ¹	Area (Square Feet)	Likely Regulatory Status
S1	Ephemeral	1,381	2	2,765	Jurisdictional

Stream Designation	Flow Regime	Length (Lineal Feet)	Average Width at OHWM (Feet) ¹	Area (Square Feet)	Likely Regulatory Status
S2	Ephemeral	33	2	69	Jurisdictional
S3	Ephemeral	212	2	426	Jurisdictional
S4	Ephemeral	47	2	96	Jurisdictional
S5	Intermittent	81	5	424	Jurisdictional
S6	Ephemeral	309	4	1,246	Jurisdictional
	Intermittent	1,647	4	6,601	
S7	Ephemeral	117	2	236	Jurisdictional
S8	Ephemeral	2,324	2	4,650	Jurisdictional
S9	Ephemeral	1,019	2	2,040	Jurisdictional
S10	Ephemeral	293	1	294	Jurisdictional
S11	Ephemeral	191	2	385	Jurisdictional
S12	Ephemeral	157	2	318	Jurisdictional
S13	Ephemeral	30	1	31	Jurisdictional
S14	Ephemeral	152	2	307	Jurisdictional
S15	Ephemeral	206	2	416	Jurisdictional
S16	Ephemeral	311	2	625	Jurisdictional
S17	Ephemeral	351	3	1,059	Jurisdictional
	Intermittent	959	3	2,883	
S18	Ephemeral	47	1	47	Jurisdictional
S19	Ephemeral	60	1	61	Jurisdictional
S20	Ephemeral	200	1	201	Jurisdictional
S21	Ephemeral	23	2	49	Jurisdictional
S22	Ephemeral	219	1	220	Jurisdictional
S23	Ephemeral	840	1	840	Jurisdictional
S24	Ephemeral	905	2	1,813	Jurisdictional
S25	Ephemeral	351	3	1059	Jurisdictional

Stream Designation	Flow Regime	Length (Lineal Feet)	Average Width at OHWM (Feet) ¹	Area (Square Feet)	Likely Regulatory Status
S26	Ephemeral	342	2	687	Jurisdictional
S27	Ephemeral	522	1	522	Jurisdictional
S28	Ephemeral	106	1	106	Jurisdictional
S29	Ephemeral	194	2	392	Jurisdictional
S30	Ephemeral	472	2	945	Jurisdictional
S31	Ephemeral	102	2	206	Jurisdictional
S32	Ephemeral	1,082	3	3,250	Jurisdictional
	Intermittent	874	3	2,630	
S33	Ephemeral	79	1	80	Jurisdictional
S34	Ephemeral	76	1	77	Jurisdictional
S35	Ephemeral	234	1	235	Jurisdictional
S36	Ephemeral	109	1	110	Jurisdictional
S37	Ephemeral	852	2	1,707	Jurisdictional
S38	Ephemeral	109	1	110	Jurisdictional
S39	Ephemeral	123	3	376	Jurisdictional
Totals	Ephemeral	14,179	-	28,055	-
	Intermittent	3,561	-	12,538	-

¹ Ordinary High Water Mark

Source: Golder Associates, Inc. 2021b

Theodore Roosevelt National Park

South Unit Loop Road Reconstruction Project
North Dakota

National Park Service
US Department of the Interior

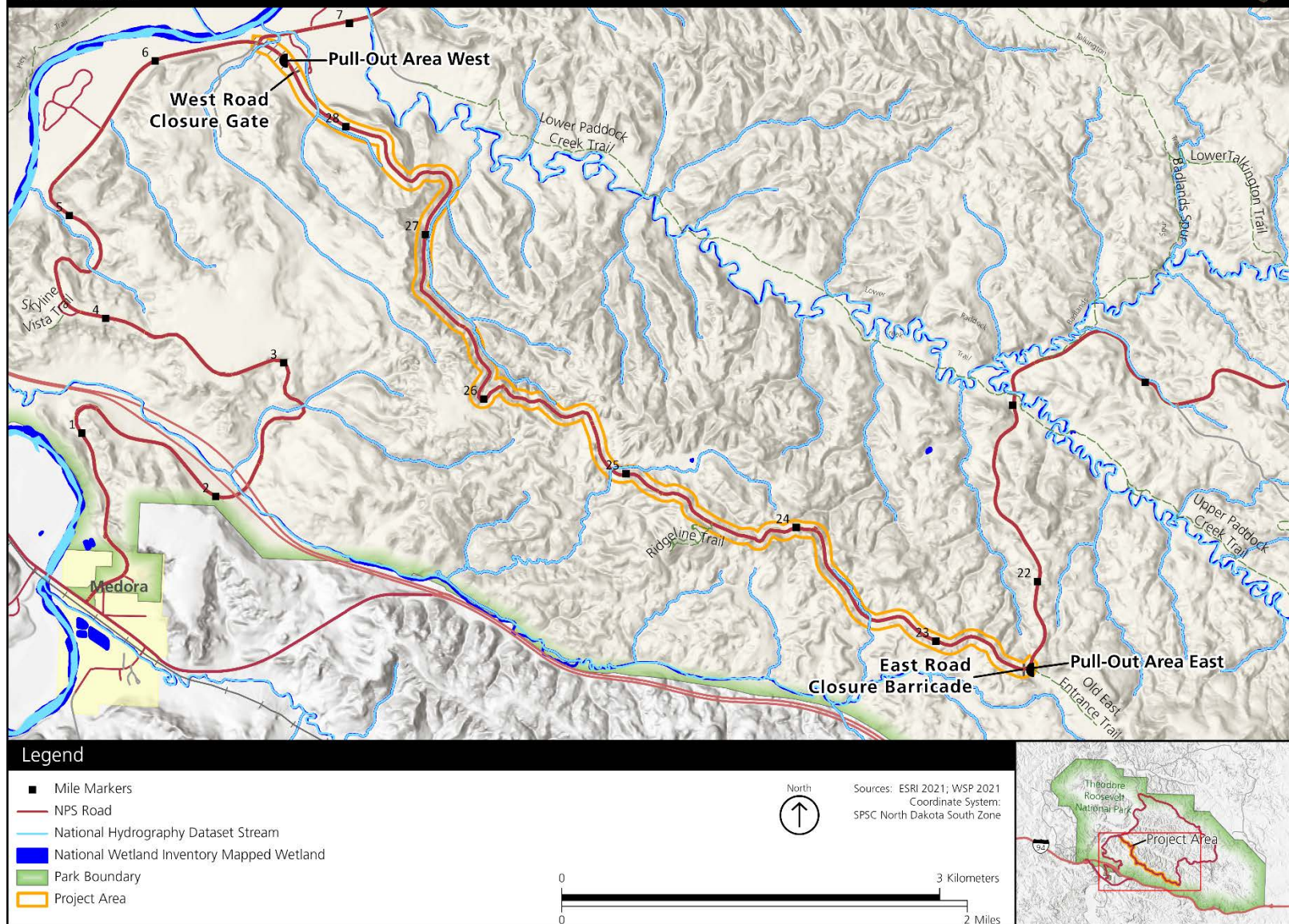


FIGURE 10. WATER RESOURCES NEAR THE PROJECT AREA

Wetlands and streams in the project area are potentially regulated under section 404 of the Clean Water Act of 1972. Consistent with the US District Court for the District of Arizona’s August 30, 2021, order vacating and remanding the Navigable Waters Protection Rule, the US Army Corps of Engineers and US Environmental Protection Agency (USEPA) have halted implementation of the Navigable Waters Protection Rule and are interpreting “waters of the United States” consistent with the pre-2015 regulatory regime, which considers ephemeral and intermittent waters as jurisdictional if they have a significant effect on the chemical, physical, or biological integrity of a navigable water, interstate water, or territorial sea (USEPA 2021b).

3.6.1.2 Water Quality

As the lead water quality agency in the state of North Dakota, the North Dakota Department of Environmental Quality (North Dakota DEQ) has primary responsibility for the development, implementation, and delivery of several Clean Water Act programs, including water quality standards, total maximum daily loads (TMDLs), section 319 nonpoint source pollution management, and point source permitting. Designated use classifications for surface waters in North Dakota include municipal and domestic water supply, fish and aquatic life, recreation, agriculture uses, and industrial uses. Under the Clean Water Act, North Dakota DEQ is also responsible for lake, reservoir, river, stream, and wetland monitoring and assessment and for reporting the condition of its surface waters every two years in a report referred to as the Integrated Sections 305(b) Water Quality Assessment Report and Section 303(d) List of Impaired Waters Needing TMDLs; the most recent integrated report is from 2018 (USEPA 2021a).

Designated use classifications for the segment of Little Missouri River near the project area include recreation (North Dakota DEQ 2021). The 2018 Integrated Section 305(b) Water Quality Assessment Report and Section 303(d) List of Waters Needing TMDLs indicates the segment of the Little Missouri River just upstream of the project area was non-supporting of its designated use (i.e., recreation) because of pathogenic bacteria (i.e., *E. coli*) and is included on the 2018 303(d) list. The main source of water quality degradation is nonpoint sources associated with existing agriculture and stormwater runoff farther upstream in the watershed. Waters within the project area are classified as class II—or headwater streams but contain few, if any, fish. Sediment loading from erosion and degradation in the project area is associated with natural processes, land development and disturbance, and stormwater runoff (North Dakota DEQ 2021).

3.6.1.3 Trends and Planned Actions

In the last century, temperatures in North Dakota have warmed more than most of the United States, rising between 2.0 degrees Fahrenheit (°F) to 2.5°F (USEPA 2016). In 2016, there were many days when water temperatures and pH were above North Dakota standards in the Little Missouri River. Water temperatures exceedances were above 84.9°F multiple times during June and July (NPS 2020c).

As a result of warmer temperatures, USEPA indicates climate change is expected to exert additional impacts on water resources over time, as large precipitation events increase in frequency and size (USEPA 2016). Increases in rainfall could lead to more runoff and increase the potential for flooding events in the Middle Little Missouri River watershed. However, peak flows of the Little Missouri River were only 1,440 cubic feet per second in 2016 as result of receiving only 16 inches of rain over the course of the year. In contrast, the Little Missouri River’s peak flow was over 8,000 cubic feet per second in 2013 (NPS 2020c). This variability in precipitation may drive moisture deficits in the project area if North Dakota continues to warm.

3.6.2 Environmental Consequences

3.6.2.1 Methods and Assumptions

This section describes the alternatives developed for reconstructing portions of Scenic Loop Drive in the South Unit of the park and their potential effects on water resources. Impacts on water resources are analyzed quantitatively through calculating the acreage (wetlands) or mileage (streams) of water resources lost through actions such as road reconstruction or replacement of culverts conducted to improve drainage. The impact analysis for the project describes what is likely to happen to water resources and water quality under each of the two alternatives. The locations of the affected water resources have been mapped to determine whether the impact is widespread or localized. The analysis focuses on the impacts that are reasonably foreseeable and have a reasonably close causal relationship to the proposed action/preferred alternative.

3.6.2.2 Alternative 1 (No Action)

Under alternative 1, erosion would continue to worsen the condition of the roadway, and structural and accessibility issues would remain. Water resources such as wetlands and streams that occur in the project area would remain intact under alternative 1. Several active seeps (i.e., wetlands where groundwater reaches the surface through an aquifer) have been observed, and it is assumed that most of the areas displaying roadway embankment failure are experiencing a loss of strength because of high moisture content under the road surface. As sections of roadway continue to deteriorate, water resources would likely experience long-term, adverse impacts related to erosion and sedimentation from landslides. Water resources would also continue to be subject to natural geological and hydrological processes of various magnitudes. Water quality in the project area would not change under alternative 1.

3.6.2.3 Alternative 2 (Proposed Action and Preferred Alternative)

Although alternative 2 would require excavation activities, construction impacts would be limited to the current footprint of the existing road and would not involve impacts on undisturbed water resources beyond the project area. Several wetlands (i.e., W1, W2, and W5) are in areas protected by the surrounding topography, such as within valleys or at the bottom of steep slopes, which would likely prevent impacts (e.g., erosion and sedimentation from exposed soils) from construction. Wetlands W3 (0.02 acres) and W4 (<0.01 acres) are the only wetlands directly adjacent to Scenic Loop Drive. Excavation activities and sedimentation could impact both wetlands because of their proximity to the roadway, but long-term, adverse impacts are not expected due to their small size and the implementation of proposed mitigation measures (see section 2.4.6). Any impacts from the erosion of exposed soil and ground subsidence resulting from alternative 2 would be short term because the surrounding geological contours would be restored upon completion of the project. Both of these wetlands are isolated and do not display any connections to other wetlands or waterbodies (i.e., streams).

Wetland W9 (0.03 acres) is situated downhill of a significant landslide that required closure of the road. This wetland may have been partially formed by sediment deposition from the landslide and blockage of surface water flow through stream S31. Construction associated with recontouring the hillside to stabilize the landslide would likely adversely affect this wetland. Because the soil uphill of the wetland is not stable, ground movement could occur during construction that would indirectly result in sediment and soil filling portions or all of the wetland. Following construction and grading associated with the road repairs, the ground surface/contours of the area within and adjacent to wetland W9 would be restored which may reduce the current wetland area but would restore the free flow of surface water through the stream. The total area of impacted wetlands would be 0.06 acres (appendix D).

The installation of new stormwater infrastructure or culverts under the road would temporarily affect stream segments in the project area. While several stream segments are located in the project area, short-term, adverse impacts (e.g., erosion, sedimentation, water quality) would likely be limited to the segments of 10 streams that cross the existing roadway. Impacts in these areas, including those near roadway embankment failures, are expected to be minimal based on the size, location, and type (ephemeral) of each stream segment. Long-term, adverse impacts on streams and water quality during construction are not expected. Affected streams would be restored to previously existing conditions to maintain the free flow of surface water along the streambeds, resulting in long-term, beneficial impacts (e.g., reduction of erosion and sedimentation) on water resources. No part of the project area is mapped within a designated 100-year or more floodplain.

As noted previously, impacts to water resources and water quality in the project area are associated with natural processes, land development and disturbance, and stormwater runoff. The expansion of pullout areas through the removal of small vegetation islands could increase the amount of impervious surface in the project area. However, alternative 2 would be contained within the footprint of the existing pullout areas and roadway, so the amount of additional impervious surface would be minimal and not result in additional impacts on water resources or water quality.

Under alternative 2, best management practices would be implemented for drainage and sediment control to prevent or reduce nonpoint source pollution that could affect water quality and minimize soil loss and sedimentation in drainage areas. These practices may include, but are not limited to, silt fencing, filter fabric, temporary sediment ponds, check dams of pea gravel-filled burlap bags or other material, and/or immediate mulching of exposed areas to minimize sedimentation and turbidity impacts as a result of construction activities. Furthermore, wetlands would be identified and clearly marked before construction work begins. Overall, alternative 2 would enhance the flow of stormwater and ensure hydrological connectivity and function throughout the project area, resulting in a long-term, beneficial impact on water resources.

SECTION 4: CONSULTATION AND COORDINATION

4.1 INTRODUCTION

This section describes the public involvement and agency consultation during the preparation of the EA. NPS places a high priority on public involvement in the NEPA process and on giving the public an opportunity to comment on the alternatives. Consultation and coordination with federal, state, and local agencies, as well as tribes, were conducted to identify issues and concerns related to park and tribal resources.

4.2 INTERNAL SCOPING AND PUBLIC INVOLVEMENT

4.2.1 Internal Scoping

Under NEPA regulations, scoping is an “early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action” (40 CFR 1501.7). The scoping process is focused on determining the extent and nature of issues and alternatives that should be considered during a NEPA review. The internal scoping process for the project began on September 2, 2021. Internal scoping refers to the use of NPS staff to accomplish the outcomes described above. An interdisciplinary team that is familiar with the issues and affected resources is essential to a successful internal scoping process. Internal scoping associated with this EA has been extensive and has included dozens of internal interdisciplinary team meetings and reviews of the issues, alternatives, and impacts on park and tribal resources.

4.2.2 Public Involvement

Public involvement refers to the engagement of the interested and affected public on matters related to the project. Public involvement for the project began on February 14, 2022, with a public notice issued on NPS’ Planning, Environment, and Public Comment website at <https://parkplanning.nps.gov/parkHome.cfm?parkId=167>. The notice highlights the availability of this EA for public review. The public review and comment period for the EA will be open for 15 calendar days and close on March 1, 2022. Interested individuals and organizations will also be notified of its availability.

4.3 FEDERAL AGENCIES

4.3.1 Federal Highway Administration, Central Federal Lands Highway Division

FHWA-CFLHD is a cooperating agency and developed the preliminary design for the project. They are continuing to work with NPS to revise the designs to limit the potential impacts on natural and cultural resources. On September 28-29, 2021, FHWA-CFLHD and NPS held a value analysis workshop to obtain an optimum value for each dollar required for the project and achieve the essential functions and benefits based on the materials, equipment, staffing, energy usage, facilities, professional services, and maintenance needed for the proposed action/preferred alternative.

Furthermore, cultural resource field surveys conducted during the preparation of this EA identified potential historic properties that would be adversely affected by the proposed action/preferred alternative. This required more intensive collaboration between FHWA-CFLHD, NPS, North Dakota SHPO, and tribes. Several meetings, teleconferences, and e-mail exchanges were held to discuss the findings from these field surveys, the potential implications for section 106 of the NHPA compliance, recommendations for design modifications to avoid impacts, and associated measures to preserve historic properties and incorporate findings into the design documents.

4.3.2 US Fish and Wildlife Service

Section 7 of the Endangered Species Act requires federal agencies to consult with USFWS to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat. NPS initiated consultation with USFWS on December 16, 2021, requesting concurrence with the park's recommendation that the proposed action/preferred alternative "may affect, but is not likely to adversely affect" northern long-eared bat and describing the mitigation measures that would be implemented to avoid impacts to golden eagle. Furthermore, the park requested concurrence that there would be "no effect" on the endangered whooping crane and the candidate-for-listing monarch butterfly since there is no suitable habitat for either species within the project area. USFWS concurred with these recommendations and mitigation measures in a letter to the park superintendent, dated January 12, 2022 (USFWS 2022).

4.3.3 Advisory Council on Historic Preservation

The Advisory Council on Historic Preservation was notified using its e106 online system on December 22, 2021, of the determination of adverse impacts to historic properties under the proposed action/preferred alternative. The information shared included a summary of the proposed project, historic properties, assessment of effects, and consultation efforts with North Dakota SHPO and tribes, as described further below. The Advisory Council on Historic Preservation declined to participate further in consultation.

4.4 STATE AGENCIES

4.4.1 North Dakota State Historic Preservation Office

This EA evaluates impacts on cultural resources according to NPS *Management Policies 2006*. Section 106 of the NHPA also requires federal agencies to consider the effects of their undertakings on historic properties. Compliance with section 106 of the NHPA was carried out separately but concurrently with the planning process for the EA. NPS conducted a site visit to the project area on July 1, 2019, that included staff from the North Dakota SHPO. This meeting included a discussion of potential actions associated with the project and data needs to identify historic properties. NPS provided a letter to the North Dakota SHPO on July 2, 2021, summarizing the results of a preliminary cultural resources survey and the participation of a tribal cultural monitor during the fieldwork. On October 8, 2021, NPS held a teleconference with, and submitted a letter to, the North Dakota SHPO identifying the need for additional archeological work in the project area and further coordination with tribal partners, including participation of a tribal cultural monitor during the work. Personnel from the North Dakota SHPO were present during the survey and excavation work conducted between October 18-22, 2021. On November 2, 2021, NPS sent a letter to the North Dakota SHPO summarizing the results of archeological work, and a teleconference was held on November 9, 2021, to discuss next steps for evaluation of archeological sites and historic structures within the project area.

NPS sent another letter to the North Dakota SHPO on December 8, 2021, initiating consultation for the project, describing the area of potential effects, summarizing previous and ongoing tribal consultation efforts, providing archeological and historical built environment surveys of the project area, and requesting concurrence with the identification of historic properties within the area of potential effects. NPS recommended archeological site 32BI1195 (lithic scatter) and the portion of the historic district within the project area (32BI1196) as eligible for listing in the NRHP. NPS submitted a draft assessment of effect letter to the North Dakota SHPO for review on December 9, 2021, stating that the project would have an adverse effect on 32BI1196 but not on 32BI1195. The North Dakota SHPO replied on December 13, 2021, with the following:

We have reviewed ND SHPO Ref.: 21-6285, NHPA H4217, South Unit Scenic Loop Road Repairs Project, Theodore Roosevelt National Park, Billings County, North Dakota. We concur that site 32BI1195 is eligible and that the portion of the site within the area of potential effects does not contribute to its significance. Therefore, the proposed undertaking would have “No Adverse Effect” to 32BI1195. We further concur that site 32BI1196 is eligible for listing and that the undertaking will have an “Adverse Effect” to 32BI1196.

On December 13, 2021, NPS began the process of minimizing the adverse effect on 32BI1196 by composing a draft memorandum of agreement (appendix B). NPS solicited the North Dakota SHPO’s feedback on the draft memorandum of agreement on December 22, 2021, and a teleconference to review and apply edits to the document was conducted on January 20, 2022. The draft memorandum of agreement included in this EA incorporates information provided by the North Dakota SHPO, but the final agreement will include any information provided during public comment for this EA. NPS has been making efforts to avoid and minimize disturbance to 32BI1196 throughout the design process. This includes preserving contributing features of the historic district, where possible. However, efforts to resolve the adverse effect, including mitigation measures, are incorporated into the draft memorandum of agreement and it contains input from various experts on historic preservation within NPS and consultation with the North Dakota SHPO. The recommendations in the draft memorandum of agreement have been incorporated into design documents, and all measures would be conducted with funding for the project.

4.5 AMERICAN INDIAN TRIBES

The park consults with eight tribes traditionally associated with the park:

- Blackfoot Tribe
- Crow Tribe, Chippewa Cree Tribe
- Mandan, Hidatsa, and Arikara Nation (Three Affiliated Tribes)
- Fort Peck Assiniboine and Sioux Tribes
- Spirit Lake Sioux Tribe
- Standing Rock Sioux Tribe
- Turtle Mountain Band of Chippewa
- Rocky Boy’s Reservation, Chippewa Cree Tribe

The tribes were first consulted about the proposed project via letter and e-mail on January 8, 2021. This correspondence discussed the damage to Scenic Loop Drive and its closure, asked tribal partners to identify if they had any concerns about resources along the road, if the project was not of further interest or concern, and invited all to participate in a teleconference held on February 4, 2021. Based on these discussions and in preparation of NPS-Midwest Archeological Center’s (MWAC) pedestrian survey of the project area in July 2021, the Standing Rock Sioux Tribe provided a tribal resource monitor to help NPS assess potential impacts on tribal resources.

A second consultation period occurred between NPS and the eight tribes on September 14, 2021, via e-mail. NPS again requested participation from tribal partners, including the Standing Rock Sioux Tribe, during another archeological survey and a wetland delineation in October 2021. The archeological survey was conducted in locations proposed for modification of existing pullout areas, while the wetland delineation was conducted throughout the project area. On December 6, 2021, the final archeological report, which included review comments from NPS and North Dakota SHPO staff, was submitted to all tribes via letters and e-mail. To date, the only additional comments from

tribes on the proposed action/preferred alternative and associated impacts were from the Fort Peck Assiniboiné and Sioux Tribes, indicating they had no further comments on the proposed project.

On December 14, 2021, all tribes were sent an e-mail and a letter identifying that the proposed action/preferred alternative would have an adverse effect on the 32BI1196 historic district, but no adverse effect to any other historic properties. Enclosures included the final archeological report and the form for the historic district. On December 15-16, 2021, NPS and the Fort Peck Assiniboiné and Sioux Tribes exchanged e-mails clarifying the extent of the adverse effect and confirmed that there would be no adverse effect to archeological sites.

On December 22, 2021, all tribes were sent e-mails and letters notifying them of NPS' plan to draft a memorandum of agreement to resolve the adverse effect to 32BI1196. Included in the e-mail was a copy of the draft final historic architecture report for 32BI1196, a draft memorandum of agreement, and a request for the tribes to confirm their participation further as concurring parties and potential signatories on the agreement. On January 10, 2022, the Blackfeet Tribe contacted NPS and noted they had decided not to participate in development of the memorandum of agreement. All tribes are listed as concurring parties at the end of the memorandum of agreement, although to date none have indicated a preference to sign the document.

4.6 LIST OF PREPARERS

Name	Title
National Park Service	
Angela Richman	Acting Superintendent, Theodore Roosevelt National Park
Blake McCann, Ph.D.	Director, Resource Management and Science, Theodore Roosevelt National Park
Chad Sexton	Management Assistant, Theodore Roosevelt National Park
Wendy Ross	Deputy Regional Director, Midwest Regional Office
Christine Gabriel	Regional Environmental Coordinator, Midwest Regional Office
Mark Pritchett, RLA, PMP	Senior Project Manager, Denver Service Center
Tracy Cudworth, RLA, PMP	Project Manager/Landscape Architect, Denver Service Center
Matthew Loscalzo	NEPA Compliance Specialist, Denver Service Center
Wesley Wills	Cultural Resource Specialist, Denver Service Center
Nathan Thomson	Project Specialist, Denver Service Center
Anne Vawser	Park Archeology Program Manager, Midwest Archeological Center
WSP	
Derrick W. Rosenbach, AICP	Project Manager
Rudi Byron, AICP	Assistant Vice President
Camilla McDonald	Manager, Historic Preservation
Matthew Hull	Project Archeologist
Rebecca Reints	Environmental Planner
Nicholas Funk	Water Resources Planner
Deborah Mandell	Senior Technical Editor

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APPENDIX A
PHOTO LOG OF HISTORIC FEATURES OF THE
SCENIC LOOP DRIVE HISTORIC DISTRICT

APPENDIX B
DRAFT MEMORANDUM OF AGREEMENT
BETWEEN THE NATIONAL PARK SERVICE AND THE
NORTH DAKOTA STATE HISTORIC PRESERVATION OFFICE

APPENDIX C
NATURAL RESOURCES CONSERVATION SERVICE
SOIL DATA EXPLORER:
SUITABILITIES AND LIMITATIONS RATINGS

**APPENDIX D
WETLANDS AND FLOODPLAINS
STATEMENT OF FINDINGS**