



Draft Environmental Assessment

Cedar Shore Bank Stabilization Project

Town of Oacoma, South Dakota

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FEMA

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Acronyms and Abbreviations

ac-ft	acre-feet
ACHP	Advisory Council on Historic Preservation
ACS	American Community Survey
APE	area of potential effect
BGEPA	Bald and Golden Eagle Protection Act
BMP	best management practice
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
dB	decibels
EA	Environmental Assessment
EDA	Economic Development Administration
EIS	Environmental Impact Statement
EPA	United States Environmental Protection Agency
EO	Executive Order
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FMA	Flood Mitigation Assistance
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
HDR	HDR Engineering, Inc.
HMGP	Hazard Mitigation Grant Program
I-90	Interstate 90
MBTA	Migratory Bird Treaty Act of 1918
mg/L	milligrams per liter
MSL	mean sea level
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act of 1969
NETR	Nationwide Environmental Title Research, LLC
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act of 1966
NLAA	not likely to adversely affect
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
OHWM	Ordinary High Water Mark
PM	particulate matter

Acronyms and Abbreviations

ROW	right-of-way
SD Hwy 90-L	South Dakota Highway 90-L
SDDENR	South Dakota Department of Environment and Natural Resources
SDDOT	South Dakota Department of Transportation
SDGFP	South Dakota Department of Game Fish and Parks
Section 10	Section 10 of the Rivers and Harbors Act
Section 106	Section 106 of the National Historic Preservation Act of 1966
Section 404	Section 404 of the Clean Water Act
Section 4(f)	Section 4(f) of the Department of Transportation Act
Section 6(f)	Section 6(f) of the Land and Water Conservation Fund Act
SHPO	State Historic Preservation Office
SWD	Surface Water Discharge
U.S.	United States
USACE	United States Army Corps of Engineers
USC	United States Code
USCG	United States Coast Guard
USDOT	United States Department of Transportation
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	underground storage tank

SECTION ONE INTRODUCTION

1.1 PROJECT AUTHORITY

The South Dakota Department of Game Fish and Parks (SDGFP) has applied to the Federal Emergency Management Agency (FEMA) for assistance with mitigation measures under FEMA's Hazard Mitigation Grant Program (HMGP), sub application number 1984-52R. FEMA provides HMGP funds to assist states and communities in implementing cost-effective mitigation projects that will reduce the overall risk to populations and property. SDGFP has also applied for federal funding from U. S. Coast Guard (USCG). State funding will also be provided from SDGFP, South Dakota Department of Environment and Natural Resources (SDDENR), and the South Dakota Department of Transportation (SDDOT).

FEMA is the federal lead agency for the National Environmental Policy Act of 1969 (NEPA) process. FEMA invited the following to be cooperating agencies: U.S. Army Corps of Engineers (USACE), SDDOT, USCG, and the U.S. Economic Development Administration (USEDA).

In accordance with 44 Code of Federal Regulations (CFR) Part 10.9, Subpart B, FEMA Agency Implementing Procedures, this Environmental Assessment (EA) has been prepared pursuant to NEPA, as implemented by the regulations promulgated by the President's Council on Environmental Quality (CEQ) (40 CFR Parts 1500-1508). The purpose of the EA is to analyze the potential environmental impacts of the proposed action on the human and natural environment, and to determine whether to prepare an Environmental Impact Statement (EIS) or Finding of No Significant Impact (FONSI).

1.2 PROJECT LOCATION

The project is located within Lyman County, South Dakota, and lies within the Town of Oacoma limits. (see **Appendix A, Exhibit 1**). The project area, for the purposes of the project, is an area used to study the impacts of all reasonable alternatives that meet the purpose and need. This area includes Shoreline Drive from South Dakota Highway 90-L (SD Hwy 90-L), also referred to as Hwy 16 to the public, to approximately 1,500 feet beyond Cedar Shore Resort. The area also extends approximately 1,000 to 1,500 feet north of the roadway. The coordinates for the project are from the intersection of SD Hwy 90-L and Shoreline Drive (latitude: 43.813906 and longitude: -99.353485) to the Cedar Shore Resort (latitude 43.830440 and longitude -99.341898).

1.3 BACKGROUND AND HISTORY

The Cedar Shore Resort lies within Lyman County and is located on the eastern bank (western shore) of Lake Francis Case/Missouri River. This area consists of two main components for this project: Cedar Shore Resort shoreline and the shoreline from the Cedar Shore Resort to SD Hwy 90-L (see **Appendix A, Exhibit 2**). The Missouri River originates in the Rocky Mountains of western Montana and flows primarily east, then south, before entering the Mississippi River north of St. Louis, Missouri. The project is located in the segment of the Missouri River that is upstream of Fort Randall Dam.

Fluctuating water levels along Lake Francis Case/Missouri River have had a serious negative impact on the bank's structural integrity over the last several years. Alternating wet and dry

periods cause the soils to expand and contract, which has resulted in significant bank degradation compromising the riprap or hard bank in the project area. The historic flooding along the river in 2011 significantly exacerbated the degraded conditions thus causing the shoreline from SD Hwy 90-L to the Cedar Shore Resort to erode at an excessive rate. Shoreline Drive is currently not experiencing roadway stability issues; however, continued erosion would become an issue. The erosion coupled with soil movement threatens to destroy the public infrastructure serving the area to include water and sewer line as well as the only access road and a bike path.

In addition to the resort, the infrastructure serves approximately 28 homes. The Cedar Shore Resort and accompanying conference center is valued at \$5.7 million; this value does not include the homes, the road leading to the resort, or the water and wastewater infrastructure serving the resort. The existing infrastructure is also vital for visitors to access the area's recreational opportunities that include the Cedar Shore Resort marina, a multi use path, and campground facilities.

SECTION TWO PURPOSE AND NEED

The purpose of the proposed action evaluated in this EA is to reduce the long-term risk of damage to Cedar Shore Resort and associated infrastructure as a result of continued erosion and destabilization of the Lake Francis Case/Missouri River bank.

Based on the continuing risk of erosion from Lake Francis Case/Missouri River flows, SDGFP and SDDOT have identified the need to perform bank stabilization along the shoreline from SD Hwy 90-L to Cedar Shore Resort. The primary need is to reduce the potential for Shoreline Drive, pedestrian facilities, Cedar Shore campground, and Cedar Shore Resort to be affected by flooding events up to and including a top elevation of 1,370 feet mean sea level (MSL). The reduced flooding potential will help maintain traffic on the only roadway that provides access for traffic, including emergency vehicles, to approximately 28 residences, the Cedar Shore Resort and its recreational resources, and a multi use path. In addition, stabilizing the Lake Francis Case/Missouri River shoreline would maintain the function of existing utilities such as sewer and water.

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SECTION THREE ALTERNATIVES

This section describes all of the alternatives that were considered in addressing the purpose and need stated in Section Two. In this EA, two alternatives are evaluated in detail: the No Action Alternative and the Proposed Action Alternative. Several other potential alternatives were considered, but were dismissed as not viable.

3.1 ALTERNATIVES NOT RETAINED FOR FURTHER STUDY

There were several potential alternatives considered for stabilization of the Missouri River shoreline by the Cedar Shore Resort. A few of these alternatives were quickly eliminated from consideration and did not require a detailed evaluation. These early eliminations are described below and include the main reason the option was not viable.

- *Unload the head of the slide¹ by excavation* – This option would involve demolition of the Cedar Shore Resort. As a result, this option was not considered further.
- *Buttress the toe of slide² with extensive riprap* – This option would result in reduction of the usable space within the Cedar Shore Resort’s marina with some remaining uncertainty regarding the extent and timing of remaining slope movements before the slope movements are sufficiently mitigated. As a result, this option was not considered further.
- *Groundwater control* – Lowering of groundwater at the site would be difficult while maintaining a normal pool elevation at 1,355 feet³ in the Cedar Shore Resort’s marina. As a result, this option was not considered further.

The most technically and economically feasible options for stabilization of the Cedar Shore Resort’s shoreline were:

- Ground improvement techniques
- Structural retention systems

These options are further discussed in the following sections.

3.1.1 Ground Improvement Techniques

This alternative was evaluated to provide a zone of higher friction material to intersect the failure plane and resist the activating forces. The higher friction material would be formed by the installation of the Impact® system, a displacement Rammed Aggregate Pier® technology (Geopiers).⁴

The impact piers would be installed from a level working surface near elevation 1,353 feet and extend down to the Niobrara Chalk, a geologic formation of the fine-grained limestone, at an

¹ Head of the slide is the portion of the slide mass that is furthest upslope.

² Toe of the slide is the portion of the slide mass that is furthest downslope. A buttress is a feature (riprap in this case) that provides weight and lateral resistance to the remainder of the slide mass.

³ Elevations are reference to mean sea level (MSL) datum.

⁴ Rammed aggregate piers are a ground improvement system installed by drilling holes on a grid pattern and filling each hole with highly compacted aggregate to create stiff elements. Compaction is achieved using a special tamper device that generates high radial stresses as it compacts the aggregate. The resulting improved ground is typically stiffer and less compressible as a result of this treatment.

approximate elevation of 1,320 feet. The riprap would have to be removed, and the site graded to create the platform while the water levels are low. The impact piers would be constructed in pre-drilled holes due to the stiff consistency of the overburden and Niobrara Chalk.

The analysis indicated the impact piers would be placed in a grid pattern at 4 feet on center, along the length of the Cedar Shore Resort's marina shoreline. A deeper failure surface next to the Cedar Shore Resort's convention center northeast entrance was identified and it was determined by the installer of this technology (Ground Improvement Engineering) that it likely would not be practical to achieve the desired safety factor using ground improvement for this deep-seated failure situation. If the safety factor could be achieved, it would be a very expensive option. For these reasons, this alternative was eliminated early as a non-viable alternative.

3.1.2 Structural Retention Systems

Several structural retention systems were considered including drilled shafts, auger cast piles, micropiles, driven steel H-piles, driven sheet piles, and driven pipe piles. Based on the experience of experts in the geotechnical community, the most economical and technically feasible options were narrowed down to:

- A combination king pile and sheet pile wall⁵ with tie-back anchors⁶
- Drilled shafts with tie-back anchors

With either option, the structural features would be installed from the access road at the top of the riprap slope. Selective removal and replacement of riprap would be required to install the components of the earth retention system. The installation of the earth retention system would be completed during the seasonal low lake level period to reduce the risk of flooding to the construction site.

The earth retention systems were modeled as structural elements using SLOPE-W software (November 2012 Release; GEO-SLOPE International, Ltd), sized to provide a minimum global factor of safety of 1.5. Additionally, the computer program PYWALL Version 3.0.15 (Ensoft, Inc.) was used to model the earth retention systems and to select the required sizes of the system components.

3.1.2.1 King Pile and Sheet Pile Combination Wall with Tie-Back Anchors

With this option, typical steel sheet piles would be used and tied to "H-type" king piles⁷ to provide additional strength to resist the mass of the active slide. The design indicated the spacing of these king piles and tie-backs would be at approximately 6.8 feet on center. The pile sections would be driven to refusal⁸ in the Niobrara Chalk. This option would use tie-backs installed at the king piles. These would be inclined at 45 degrees and grouted into the Niobrara

⁵ Sheet piles are special steel sheets driven into the ground in a row to act as a retaining wall. The sheets each have a mechanical interlock with adjacent sheets to improve the integrity of the wall. King piles (also known as soldier piles) are long guide piles driven in the center of a trench. In this case, the king piles are H-piles (structural steel sections) and the space between the king piles is filled with steel sheet piles.

⁶ Tie-back anchors are steel rods inserted into holes drilled through soil and into bedrock to restrain the drilled shafts. The steel rods are anchored into the bedrock by filling the annular space with grout.

⁷ Refer to Footnote 5.

⁸ Refusal indicates that the pile is driven until the pile tip encounters bedrock or soil that is sufficiently dense or hard that the rate of advancement during driving is very small.

Chalk (minimum 8 inches in diameter). One substantial concern with this option is where the refusal point may be for the driven piles. Embedment⁹ into the chalk would be essential to a successful implementation of this technique. It is possible that refusal could be reached prior to achieving the desired embedment, which could result in a less effective retention system. This uncertainty of achievable embedment depth is a drawback with this option.

Another concern with this option is that groundwater may buildup behind the king pile and sheet pile wall. Buildup of groundwater may result in unintended consequences such as seepage at the ground surface behind the earth retention system, resulting in surface erosion and instability at the access drive and slope extending up to the resort structures. In addition, seepage may occur into below-grade structures and vaults in this area that are not watertight. Because this option is less effective as a retention system and there is potential for groundwater buildup, this option was not considered further for the project.

3.1.2.2 Drilled Shafts with Tie-Back Anchors

The drilled shaft option was considered viable and was carried forward for detailed evaluation as Alternative 2. Alternative 2 is discussed below in Section 3.2.2.

3.2 ALTERNATIVES STUDIED IN DETAIL

Although taking no action would not meet the project purpose and need requirements, the No Action Alternative was carried forward for evaluation in this EA in accordance with the NEPA requirement that the impacts of no action be considered. Alternative 2, the Proposed Action, consists of stabilizing the bank along the Missouri River as described below.

3.2.1 Alternative 1 – No Action

The No Action Alternative provides a baseline for comparison in determining the potential environmental effects of the Proposed Action. Under the No Action Alternative, stabilization of the eroding Missouri River shoreline along Shoreline Drive, Cedar Shore Campground, and Cedar Shore Resort would not occur.

3.2.2 Alternative 2 – Cedar Shore Resort and Shoreline from Cedar Shore Resort to South Dakota Highway 90-L Stabilization

Alternative 2, the Proposed Action, would provide stabilization of an eroding Missouri River shoreline occurring from the Cedar Shore Resort along Cedar Shore Campground, Shoreline Drive, and pedestrian trail to SD Hwy 90-L. The proposed stabilization of the segment of the Missouri River shoreline for this alternative includes the following:

3.2.2.1 Cedar Shore Resort

The preliminary design for this portion of Alternative 2 indicated that 48-inch diameter drilled shafts would be required, installed at 5-foot centers. These shafts would be socketed approximately 10 feet into the un-weathered Niobrara Chalk (see **Appendix A, Exhibit 3** and

⁹ Embedment refers to the distance that the pile is driven into bedrock.

Appendix B, Photo 1). With the drilled shaft, embedment into the Niobrara Chalk to the desired depth can be achieved consistently. These shafts would be cast-in-place concrete with a reinforcing cage embedded in the concrete to increase the strength (see **Appendix B, Photo 2**).

Tie-backs would be installed at reinforced drilled shafts, inclined at 45 degrees. This grouted zone would extend into the un-weathered Niobrara Chalk and would be a minimum 8 inches in diameter. The details of this option and a typical cross section of the shaft and tie-backs are shown in Appendix A, Exhibit 3.

Since there is a 1-foot space between the drilled piers, groundwater flow would not be impeded to the same extent as with the pile wall retention system (see **Appendix B, Photo 3** and **Photo 4**). Flow can pass between the piers as opposed to being dammed up behind a continuous wall.

Alternative 2 is noted as the viable stabilization option for the Cedar Shore Resort component of this project. The primary reasons for choosing this stabilization option include the ability to socket the drilled shafts into the underlying chalk bedrock for stability, the ability to allow groundwater migration between the shafts, and an estimated lower total cost than other alternatives considered.

3.2.2.2 Cedar Shore Campground and Shoreline Drive

For this segment of the project, USACE and SDDOT coordinated and completed a wind and wave analysis to determine the type of riprap and placement needed to stabilize the shoreline. Based on this analysis, riprap would be placed from a top elevation of 1,370 feet MSL. New Class B riprap will be placed to a thickness of approximately 24 inches from an elevation of 1,370 feet down to an elevation varying from approximately 1,355 to 1,365 feet, depending on condition and quantity of existing riprap. Appendix A, Exhibit 4, illustrates the proposed cross section of the riprap. The riprap would be placed from the intersection of SD Hwy 90-L and Shoreline Drive until the end of the segment (6,500 feet total), at the Cedar Shore Resort (see **Appendix A, Exhibit 5**).

For the fill required, it would be taken from a nearby site located to the southeast of the resort (see **Appendix A, Exhibit 6**). The project would disturb approximately 40 acres of land and construction is slated for winter 2013 through fall 2014.

During final design, minor changes may occur to the preliminary design. These changes are acceptable, provided they achieve the project objectives, and would fall within the bounds of the impacts identified in this EA. During construction, best management practices (BMPs) would also be used to control and minimize erosion, until vegetation has been reestablished in the project area.

SECTION FOUR AFFECTED ENVIRONMENT AND POTENTIAL IMPACTS

4.1 PHYSICAL RESOURCES

The physical resources considered in this EA are geological resources, farmland, soils, air quality and climate change, and visual resources.

4.1.1 Affected Environment

The project area is located northeast of Interstate 90 (I-90) exit 260 at Oacoma, Lyman County, South Dakota. The project area is located on the west bank of the Missouri River. It is a combination of maintained and mowed recreation areas, including a marina; natural scrub, trees and wetlands; and remnants of previously placed rip rap and other types of erosion control. Evidence of ongoing bank erosion includes numerous scarps and slumps.

4.1.1.1 Geology

Within the project area, the geology consists of Missouri River alluvium overlying redeposited Pierre Shale and Niobrara Chalk. Landslides in Pierre Shale close to the Missouri River in central South Dakota are relatively common, particularly following land development or modification. A combination of factors are believed to have caused a landslide at this site, including the presence of redeposited Pierre Shale, groundwater fluctuations related to fluctuations in Lake Francis Case, and groundwater fluctuations related to surface water infiltration.

4.1.1.2 Farmland

A federal project, program, or other activity that requires acquisition of right-of-way (ROW) must comply with the provisions of the Farmland Protection Policy Act (FPPA). The FPPA governs impacts on farmland, which is defined as prime farmland, unique farmland, or farmland that is of state or local importance. Land that is already in or committed to urban development or water storage does not qualify as farmland and is therefore not subject to the FPPA. The FPPA and U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) define urban development as residential, commercial, or industrial use, or as lands identified as urbanized area on the U.S. Census Bureau map, or urban area mapped with a tint overprint on the U.S. Geological Survey (USGS) topographical maps (USDA NRCS October 1983, 7 CFR 658).

The project area contains no land currently used as farmland. Of the 745 acres in the project area, approximately 67 acres are identified by soil type according to the online NRCS soil database, as prime or unique farmlands or farmland of statewide importance. The land that is designated as “farmland of statewide importance” or “prime farmland if irrigated” has already been disturbed and developed, therefore is not currently farmland.

4.1.1.3 Soils

According to NRCS database, the primary soil mapping unit in the project area is Promise Clay (USDA NRCS 2013). In general, the soils within the project area are well-drained, clayey alluvium derived from clayey shale (Promise Clay, 0 to 3 percent slopes; Promise Clay, 3 to 6 percent slopes, Promise Clay, 6 to 9 percent slopes) and well-drained, clayey residuum weathered from shale (Sansarc Clay, 15 to 40 percent slopes and Sansarc-Opal Clays, 9 to 40 percent

slopes). However, with the amount of development and redevelopment that has occurred in and surrounding the project area, the soils presently in the project area can be considered previously disturbed. Previously disturbed soils are those that have been changed due to human activities, such as dredging, land filling, land leveling, and surface removal.

4.1.1.4 Air Quality and Climate Change

The National Ambient Air Quality Standards (NAAQS) established by the U.S. Environmental Protection Agency (EPA) define the concentrations of air pollutants that should not be exceeded in a given period to protect human health (primary standards) and welfare (secondary standards) with a reasonable margin of safety. These standards include maximum concentrations of ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, lead, and particulate matter (PM). There are standards for particulate matter smaller than 10 microns in diameter (PM-10) and smaller than 2.5 microns in diameter (PM-2.5). SDDENR's Air Quality Program is the primary authority of protection air quality in South Dakota under NAAQS (SDDENR n.d.b). The goal of the Air Quality Program is to maintain air quality levels in South Dakota that protect human health, safety, and welfare. SDDENR achieves this goal by monitoring the ambient air quality throughout the state, permitting businesses and facilities that emit air pollution, and ensuring compliance with the state laws and rules. To determine the quality of the air in South Dakota, ambient air monitoring is conducted at potentially high air pollution areas across the state. The closest monitoring stations are located in Pierre and Sioux Falls, South Dakota. These areas monitor for radiation and various air pollutants. South Dakota has no non-attainment areas (EPA 2013).

CEQ has recently released guidance on how federal agencies should consider climate change in their decisions. Guidance for NEPA documents suggests that quantitative analysis should be done if an action would release more than 25,000 metric tons of greenhouse gases per year (CEQ 2010). Given that the proposed project is a relatively small construction effort, no quantitative analysis is required.

4.1.1.5 Visual Impacts

The project area is located along Shoreline Drive on the west bank of Lake Francis Case/Missouri River across from the City of Chamberlain, South Dakota. Looking east from within the project area, views of Lake Francis Case/Missouri River and the City of Chamberlain can be seen. Looking west, the Lake Francis Case/Missouri River bluffs and residential homes can be seen. The project area does not contain any commercial businesses or small businesses other than Cedar Shore Resort and Cedar Shore Campground. Photographs of the viewshed are provided in Appendix B.

4.1.2 Environmental Consequences

4.1.2.1 Alternative 1 – No Action Alternative

4.1.2.1.1 Geology

The No Action Alternative would have no direct effect on the geology in the project area. However, without added protection, the areas along the Lake Francis Case/Missouri River shoreline that are eroding would continue to do so and ultimately affect the geology of this area. Continued erosion at the toe of the slope creates an over steepened slope, which may result in some type of mass movement (for example, slump). If erosion continues, more cycles of mass

movement may continue, and the shoreline could progressively move backward, endangering the trail and eventually Shoreline Drive.

4.1.2.1.2 *Farmland*

The No Action Alternative would have no direct effect on farmland in the project area because no project related disturbance would occur. However, the areas identified by soil type as prime or unique farmland are located in the previously developed portions of the project area.

4.1.2.1.3 *Soils*

The No Action Alternative would have no direct effect on soils in the project area because no project-related disturbance would occur. Without added protection, stream erosion and deposition patterns that presently exist would continue.

4.1.2.1.4 *Air Quality and Climate Change*

The No Action Alternative would not include any construction activities for the project. General maintenance of Shoreline Drive, Cedar Shore Campground, and Cedar Shore Resort would continue. These maintenance activities would have no adverse effect on air quality in the project or surrounding areas. Additionally, the No Action Alternative would have no effect on global climate change because no activities would occur that would generate large quantities of greenhouse gases.

4.1.2.1.5 *Visual Impacts*

The No Action Alternative would maintain the current visual components of the project area; therefore, this alternative would not affect the visual aesthetics of the project area. However, if no action was taken, the erosion along the shoreline would continue and worsen. If facilities ultimately are impacted, the current landscape could be adversely affected.

4.1.2.2 *Proposed Action*

4.1.2.2.1 *Geology*

The geology within the project area would be affected due to the installation of the drilled shafts that would help with shoreline stabilization. When the shafts are drilled, soil and bedrock cuttings excavated in the process of drilled shaft construction would be removed. However, due to the stabilization efforts of the Proposed Alternative, continuing erosion would be halted, thus preventing further damage to the shoreline's geology. Drilled shafts would be put in place to restrain the upslope slide mass from further movement toward Lake Francis Case/Missouri River.

4.1.2.2.2 *Farmland*

NRCS was consulted for the project, and the response letter noted that the project would have no effect on prime or important farmland (see **Appendix C, Agency Correspondence**). Therefore, the Proposed Alternative would have no effect on farmlands.

4.1.2.2.3 Soils

For the Cedar Shore Resort portion of the project, approximately 8 acres of soils would be disturbed from the proposed stabilization. The remainder of the project, the shoreline from Cedar Shore Resort to SD Hwy 90-L, would disturb 40 acres along the Lake Francis Case/Missouri River shoreline, including the borrow area. The construction limits include land that has been disturbed by previous construction and erosion. Under the Proposed Action, the shoreline would be stabilized utilizing soils from the identified borrow area (see **Appendix A, Exhibit 6**) and riprap, as discussed in Section 3, Alternatives.

For construction, a General Permit for Storm Water Discharges Associated with Construction Activities would be required from SDDENR, because more than 1 acre of ground disturbance would occur. During construction, BMPs would be implemented to minimize soil erosion. Following construction, all disturbed areas that have not been hardened would be revegetated with a mixture of grasses and shrubs that would minimize post-project soil erosion.

4.1.2.2.4 Air Quality and Climate Change

No long term effects on air quality and climate change are anticipated since the project is a protection of existing resources. No additional traffic or changes to other sources contributing to air quality levels would occur due to this project. Soil disturbance during excavation and construction activities could result in a temporary increase of particulates (that is, dust) in the air. If dust became a problem during construction, the contractor would be required to water down the work area to reduce the dust levels. Operation of the construction equipment would add to exhaust-related air pollutants such as nitrogen oxide, carbon monoxide, and ozone within the local area. Increases of these air pollutants would be localized and temporary and would have a minor effect on local air quality. SDDENR was consulted for the project, and the response letter noted that the project would have little or no impact on air quality in this area (see **Appendix C, Agency Correspondence**).

4.1.2.2.5 Visual Resources

Alternative 2 would have a short-term adverse impact on the visual resources near the project area as a result of construction activities and the presence of construction equipment. Post-project, erosion would be greatly minimized, and disturbed areas would be revegetated with grasses, trees, and shrubs. Therefore, the Proposed Action would have a long-term beneficial effect on the visual resources in the project area.

4.2 LAND USE

4.2.1 Affected Environment

The project area is located within the limits of the Town of Oacoma. Oacoma is located to the south of the project area and the City of Chamberlain is to the east, on the east shore of Lake Francis Case. Oacoma land use plans identify land in the project area zoned as Commercial (C-1) and Low Density Residential (R-1).

The entire portion of the project area to the east of Shoreline Drive is zoned for commercial uses and has recreational areas including Cedar Shore Resort, Cedar Shore Campground, a multi use trail, and Lake Francis Case/Missouri River. This area also includes open space to the north of the Cedar Shore Resort's boat ramp parking lot that is used for recreational activities, specifically trap shooting, and consists of mowed grassland, wetland, and trees (Town of Oacoma 2013).

Non-mowed grassland and trees are present just north of the project area. A low density residential area is located just west of Cedar Shore Resort; except for the River Ranch cabins that are zoned commercial (Planning and Development District III 2003). To the west of Shoreline Drive and south of Cedar Shore Resort is an unzoned area consisting of undisturbed river breaks that form broken terraces and uplands on the descent to the Missouri River and contain woodland areas in the ravines. Appendix A, Exhibit 8, shows residences located within or near the project area.

4.2.2 Environmental Consequences

4.2.2.1 Alternative 1 – No Action Alternative

With the No Action Alternative, no steps would be taken to stabilize Lake Francis Case/Missouri River shoreline in the project area. If no action is taken, the area is likely to continue to erode, affecting the ability of the area to provide recreational opportunities, a large part of the current land use. In addition, residential area access from Shoreline Drive would be affected if erosion continues, potentially resulting in road closures. With no action, the land use could be drastically affected as bank erosion would occur over time.

4.2.2.2 Alternative 2 – Proposed Action

Alternative 2 would affect approximately 40 acres of land on and near the shoreline in the project area. The project would provide bank stabilization and protect current land uses. Residential and commercial access from Shoreline Drive would be maintained, allowing current zoning to remain consistent. Therefore, the Proposed Action would have no impact on land use in the vicinity of the project.

4.3 WATER RESOURCES

Water resources evaluated in this EA include surface water, groundwater, floodplains, and wetlands.

4.3.1 Affected Environment

4.3.1.1 Surface Water

The project area is located adjacent to Lake Francis Case, a Missouri River mainstream reservoir. Lake Francis Case has a storage capacity of 5,494,111 acre-feet (ac-ft) and has a multipurpose use of flood control, irrigation, municipal and industrial water supply, hydropower, fish and wildlife, and recreation. Water quality standards for the State of South Dakota designate the following beneficial uses to protect Lake Francis Case/Missouri River: 1) Domestic Water Supply; 2) Warmwater Permanent Fish Life Propagation; 3) Immersion Recreation; 4) Limited Contact Recreation; 5) Fish and Wildlife Propagation, Recreation, and Stock Watering; and 6) Commerce and Industry. Lake Francis Case currently supports all of its designated beneficial uses (SDDENR 2012). Water-borne erosion is also an issue as a result of wave action, surface water run-off, or both.

4.3.1.2 Groundwater

Public water supply for the residents of Oacoma comes from the Dakota Aquifer. Currently, there are no wellhead and aquifer protection zoning ordinances for Lyman County. No wells are located within the project area.

4.3.1.3 Floodplains (Executive Order 11988)

Executive Order (EO) 11988 requires federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative.

The project area is within an unmapped area; therefore, FEMA Flood Insurance Rate Maps (FIRMs) are not available. Furthermore, Oacoma is not an active participant in FEMA's National Flood Insurance Program (Moore 2013).

4.3.1.4 Wetlands (Executive Order 11990) and Waters of the United States

EO 11990 requires federal agencies to "minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands."

HDR Engineering, Inc. (HDR) conducted a field wetland delineation of the project area June 26, 2013. A total of 5 wetlands were delineated with 1.23 acres of wetland located within potential limits of construction (see **Appendix A, Exhibit 9-1 through 96**). Potential other waters of the U.S. include the Lake Francis Case/Missouri River. The Ordinary High Water Mark (OHWM) is at an elevation of 1,365 feet for this segment of the Missouri River, and is also the water level limit for annual flood control and multiple use. The water level exceeds the OHWM only in times where exclusive flood control is necessary (USACE 2002).

4.3.2 Environmental Consequences

4.3.2.1 Alternative 1 – No Action Alternative

4.3.2.1.1 Surface Water

Under the No Action Alternative, the shoreline would continue to erode and sediment deposition would continue to occur, with the impacts worsening over time. Therefore, the No Action Alternative would continue to have an adverse effect on surface water in and downstream of the project area.

4.3.2.1.2 Groundwater

No wells are present within the project area. The No Action Alternative would not affect the groundwater resources in the area.

4.3.2.1.3 Floodplains (Executive Order 11988)

No floodplain mapping data is available; however there are no anticipated adverse effects as a result of the No Action Alternative.

4.3.2.1.4 *Wetlands (Executive Order 11990) and Waters of the United States*

The No Action Alternative would potentially affect wetlands that are located on or adjacent to the riparian buffer because of increased erosion.

4.3.2.2 **Alternative 2 – Proposed Action**

4.3.2.2.1 *Surface Water*

Under the Proposed Action Alternative, the project would be expected to have a long-term positive effect on the water quality of Lake Francis Case/Missouri River by reducing the frequency and amount of soil erosion along the banks. During construction of the Proposed Action, there would be some disturbance to the shoreline during riprap removal, drilled shaft and tie-back anchor installation, and riprap replacement, which could potentially add sediment on a temporary basis to Lake Francis Case/Missouri River. According to the General Permit for Storm Water Discharges Associated with Construction Activities, appropriate erosion and sediment control measures must be installed to control the discharge of pollutants during construction.

4.3.2.2.2 *Groundwater*

No wells are present within the project area. As a result, Alternative 2 would not affect groundwater within the area.

4.3.2.2.3 *Floodplains (Executive Order 11988)*

The project area is within an unmapped area; therefore, FEMA FIRMs are not available. The project would not require a change in the slope of the bank throughout the entire project area. However, in areas of the bank that need reshaping, the project would include a slope gradient of approximately 2.5 to 1 and top of bank elevation from approximately 1,365 feet to 1,400 feet. Based on a wind and wave analysis conducted by USACE and SDDOT, SDDOT Class B riprap would be used in the project area to an elevation of 1,370 feet. It is anticipated that the project would not affect or be affected by the floodplain.

4.3.2.2.4 *Wetlands (Executive Order 11990) and Waters of the United States*

SDGFP and FEMA have consulted with USACE Omaha District to discuss the impacts of Alternative 2. Regulatory permits are required from USACE under Section 10 of the Rivers and Harbors Act (Section 10) for work or structures in, on, or under navigable waters, and under Section 404 of the Clean Water Act (Section 404) for discharges of dredged or fill material into waters of the U.S. Lake Francis Case/Missouri River is a navigable water and therefore is subject to regulations of these statutes. USACE indicated Section 10 and Section 404 permits would be required for this project for all impacts occurring below the OHWM (1,365 feet MSL), and impacts on jurisdictional wetlands, respectively (see **Appendix C, Agency Correspondence**). The Proposed Action would permanently affect 0.08 acre of wetlands and permanently impact 4.9 acres and temporarily impact 1.2 acres of Lake Francis Case/Missouri River, a water of the U.S. During preliminary design, Alternative 2 was originally designed to impact approximately 0.11 acre of wetland area. The project's construction limits were revised to minimize that impact on approximately 0.08 acre of wetland.

USACE would determine if the project would be permitted under either a Nationwide Permit or Individual Section 404 Permit and a Section 10 Permit. Because the project area includes Title

VI property, a permit application has been prepared and provided to USACE to begin pre-coordination. A permit must be issued for the project to be constructed. USACE may include special conditions to the construction of the project as part of the Section 404 permit. All special conditions would be included in the final design and construction of the project. The project area is already a highly disturbed area that has been altered previously as a result of the previous infrastructure including Shoreline Drive, Cedar Shore Resort, and Cedar Shore Campground construction. Prior to construction, SDGFP would need to coordinate with the relevant USACE regulatory office to ensure that all necessary documentation has been received. Because the activities suggested for the project would improve the structural integrity of the shoreline in an area that has already been disturbed, this project would have an overall beneficial effect in the area.

4.4 BIOLOGICAL RESOURCES

The biological resources considered in this EA are vegetation, terrestrial wildlife, aquatic wildlife, and threatened and endangered species.

4.4.1 Affected Environment

4.4.1.1 Vegetation

Existing vegetation in the project area consists of three community types including:

- Narrow buffer of scattered trees and understory along the eroded shoreline.
- Maintained lawns with trees within the campground area and along the multi use trail.
- River breaks containing wooded draws. Common species within these river breaks may include but are not limited to: American elm (*Ulmus Americana*), box elder (*Acer negundo*), hackberry (*Celtis occidentalis*), and green ash (*Fraxinus pennsylvanica*).

Photos of these community types within the project area are included in **Appendix B**.

4.4.1.2 Terrestrial Wildlife

Mammals found in the region include big and small game species, furbearers, and rodents. Common big game species include white-tailed deer (*Odocoileus virginianus*) and mule deer (*Odocoileus hemionus*). Small game species include eastern cottontail (*Sylvilagus floridanus*), white-tailed jackrabbit (*Lepus townsendii*), and fox squirrel (*Sciurus niger*). Furbearers and predators include coyote (*Canis latrans*), bobcat (*Lynx rufus*), red fox (*Vulpes vulpes*), badger (*Taxidea taxus*), raccoon (*Procyon lotor*), beaver (*Castor canadensis*), mink (*Mustela sp.*), muskrat (*Ondatra zibethicus*), and weasel (*Mustela sp.*) (USACE 2001).

Lake Francis Case/Missouri River lies within the central flyway for spring and fall waterfowl migration. Sandhill cranes (*Grus canadensis*), Canada geese (*Branta Canadensis*), white-fronted geese (*Anser albifrons*), snow geese (*Chen caerulescens*), and mallards (*Anas platyrhynchos*) are common species that utilize this corridor.

Woody ravines around Lake Francis Case/Missouri River provide valuable habitat to species including sparrows, robins, brown thrashers, chickadee, grackles, nuthatches, flycatchers, grosbeaks, warblers, woodpeckers, flickers, buntings, and meadowlarks (USACE 2002). The Migratory Bird Treaty Act of 1918 (MBTA) (16 United States Code [USC] 703–711) prohibits

the taking of any migratory birds, their parts, or eggs, except as permitted by regulations. U.S. Fish and Wildlife Service (USFWS) consults on issues related to migratory birds.

4.4.1.3 Aquatic Wildlife

The Missouri River is known to support more than 156 fish species (USACE 2001). Large amounts of channel catfish, smallmouth bass, largemouth bass, and walleye are caught at Lake Francis Case/Missouri River (USACE 2002).

4.4.1.4 Threatened and Endangered Species and Critical Habitat

4.4.1.4.1 Federally Listed Species

Section 7 of the Endangered Species Act of 1973 (16 USC 1536) requires that actions authorized, funded, or carried out by federal agencies are not likely to jeopardize the continued existence of threatened, endangered, or proposed species or cause destruction or adverse modification of their critical habitats.

According to USFWS' South Dakota Ecological Services website, the federally listed threatened and endangered species listed in Lyman County are whooping crane, least tern, piping plover, black-footed ferret, and pallid sturgeon. Sprague's pipit is a federal candidate species being considered for listing. No designated critical habitat exists within Lyman County.

4.4.1.4.2 State-listed Species

State-listed species within the project area were determined by verifying that Lyman County was within the species current distribution identified in the South Dakota Comprehensive Wildlife Conservation Plan (SDGFP 2006). All state-listed threatened and endangered species listed by SDGFP and tracked by the South Dakota Natural Heritage Program were evaluated to determine if their distribution is within the project area. Table 4-1, includes all the state-listed threatened and endangered species and if the project area contains suitable habitat. July 10, 2013, SDGFP was contacted regarding the project. SDGFP responded by stating that the proposed project would have no impacts on fish and wildlife resources. This correspondence is included in **Appendix C**.

4.4.2 Environmental Consequences

4.4.2.1 Alternative 1 – No Action Alternative

4.4.2.1.1 Vegetation

Under the No Action Alternative, no vegetation would be affected, as construction activities would not occur. Impacts on the vegetation may occur over time as the bank erodes, eliminating shoreline and potential habitat.

4.4.2.1.2 Terrestrial Wildlife

Similar to vegetation discussed in the previous section, no terrestrial wildlife impacts would occur as a result of the No Action Alternative. Impacts on terrestrial wildlife may occur over time as the bank erodes, eliminating shoreline and potential habitat.

4.4.2.1.3 *Aquatic Wildlife*

The No Action Alternative would not affect aquatic wildlife as no major alterations to the Missouri River would take place. Impacts on aquatic wildlife may occur over time as the bank erodes and as a result, increasing sedimentation in the water.

4.4.2.1.4 *Threatened and Endangered Species and Critical Habitat*

No changes would occur with the No Action Alternative as no federally or state-listed threatened or endangered species would be affected by this alternative. In addition, no critical habitat exists within the project area.

4.4.2.2 *Alternative 2 – Proposed Action*

4.4.2.2.1 *Vegetation*

Under Alternative 2, the project would not be expected to have a long term impact on the vegetation within the project area. Due to the already highly disturbed nature of the project area (campground, roadways, parking lots, and pathways), not much disturbance would be caused to the vegetation by the project itself. Any disturbance caused to the native vegetation would be revegetated, including reestablishing any vegetation that was disturbed due to the construction of Alternative 2. During construction, BMPs would be implemented to minimize soil erosion. Following construction, all disturbed areas that have not been hardened would be revegetated with a mixture of grasses and shrubs that would minimize post-project soil erosion in compliance with the General Permit for Storm Water Discharges Associated with Construction Activities.

4.4.2.2.2 *Terrestrial Wildlife*

Under Alternative 2, the project would not be expected to impact the terrestrial wildlife found within the project area. Due to the recreational nature (boating, camping, walking, and biking) of the project area, not many mammals and/or waterfowl would utilize this area as habitat. Also, wildlife would not likely occupy the project area during construction due to noise and a lack of vegetation. In a letter dated August 8, 2013, SDGFP responded that the project as proposed would have no impacts on fish and wildlife resources. After construction has been completed and the disturbed areas are revegetated, wildlife could return to the area, therefore, the project would have no long-term effects on local wildlife.

4.4.2.2.3 *Aquatic Wildlife*

As discussed earlier, the Proposed Action would have a short-term, minor, adverse impact on the water quality of Lake Francis Case/Missouri River during construction, but a long-term beneficial impact following construction. In a letter dated August 8, 2013, SDGFP responded that the project as proposed would have no impacts on fish and wildlife resources. Therefore, Alternative 2 would have a negligible effect on the aquatic resources that presently occur in the project area. Long-term, less erosion and sedimentation adjacent to the project area would occur, with less impact on aquatic wildlife.

4.4.2.2.4 *Threatened and Endangered Species and Critical Habitat*

The South Dakota Comprehensive Wildlife Plan lists six state-listed species within the project area. Table 4-1 includes all the state-listed threatened and endangered species and if the project

area contains suitable habitat. Of the six state-listed species, the habitat does not exist for three of them. In a letter dated August 8, 2013 from the SDGFP states, “The Project as proposed will have no impacts on fish and wildlife resources.”

Table 4-1 summarizes FEMA’s determination of effects for federally listed species with the potential to occur in the project area or be affected by project activities. FEMA has determined that Alternative 2 may affect, but is not likely to adversely affect (MANLAA) the pallid sturgeon. Of the other federally listed species, FEMA determined there would be no effect on the interior least tern, piping plover, whooping crane, or black-footed ferret. FEMA also determined that there would be an insignificant effect on the Sprague’s pipit. If bald and golden eagle nests are spotted within the project area, then appropriate avoidance or mitigation as prescribed by USFWS would be taken prior to construction activities. In a letter dated August 6, 2013, USFWS concurred with FEMA’s determination that the project would not adversely affect listed species (see **Appendix C, Agency Correspondence**).

Table 4-1: Threatened and Endangered Species that May Occur or Could Be Affected by Projects in Lyman County

Species	Status	Preferred Habitat	Habitat Present in Project Area?	Determination
Interior least tern (<i>Sterna antillarum</i>)	Federally Endangered	Nest on open shorelines, riverine sandbars, and mudflats throughout the Mississippi and Missouri River drainages.	No habitat	No effect
Whooping crane (<i>Grus americana</i>)	Federally Endangered	Breed and nest along lake margins or among rushes and sedges in marshes and meadows. The water in these wetlands range in depth from 8 to 10 inches to as much as 18 inches. Prefer sites with minimal human disturbance.	No habitat	No effect
Piping plover (<i>Charadrius molodus</i>)	Federally Threatened	Utilizes sparsely vegetated sandbars in the Missouri remnant reach. Prefers areas with minimal human activity.	No habitat	No effect
Black-footed Ferret (<i>Mustela nigripes</i>)	Federally Endangered	Depends on prairie dogs for food and on prairie dog burrows for shelter. Associated with mixed and shortgrass prairies, but any prairie dog town of suitable size may be potential ferret habitat.	No habitat	No effect
Pallid sturgeon (<i>Scaphirhynchus albus</i>)	Federally Endangered	Favors gravel deposits and slow moving side channels to spawn.	Habitat exists in project area	May affect, but not likely to adversely affect
Sprague's pipit (<i>Anthus spragueii</i>)	Federal Candidate Species	Large patches of grassland habitat for breeding, with preferred grass height between 4 and 12 inches. The species prefers to breed in well-drained open grasslands and avoids grasslands with excessive shrubs. Can be found in lightly to heavily grazed areas and typically avoids intrusive human features on the landscape.	No habitat	Insignificant effect
False map turtle (<i>Graptemys pseudogeographica</i>)	State Threatened	Sandbars, islands, and beaches along the Missouri River up to 300 feet from water. Loss of habitat is due to water impoundment, channelization, inundation, and lack of nesting sites (sandbars).	Habitat exists	No effect

Species	Status	Preferred Habitat	Habitat Present in Project Area?	Determination
Bald eagle (<i>Haliaeetus leucocephalus</i>)*	State Threatened	Utilizes mature trees as nesting sites. Known nesting locations have been documented in Lyman County.	Habitat exists in project area.	No effect
Peregrine falcon (<i>Falco peregrinus</i>)	State Endangered	Utilizes open grasslands with suitable nesting cliffs and rock outcroppings near concentrations of prey including waterfowl and ground squirrels.	No habitat	No effect
Northern river otter (<i>Lontra Canadensis</i>)	State Threatened	Slow-moving rivers and streams with deep pools, abundant riparian vegetation, and plentiful fish; often associated with beaver activity.	No habitat	No effect
Sturgeon chub (<i>Macrhybopsis meeki</i>)	State Endangered	Swift current areas of large silty river channels with gravel bottoms.	No habitat	No effect
Swift fox (<i>Vulpes velox</i>)	State Threatened	Shortgrass or mixed grass prairies with open gently rolling topography, usually associated with prairie dogs or ground squirrel colonies.	Habitat exists in project area	No effect

Source: SDGFP 2006.

* The bald eagle remains protected by the Bald and Golden Eagle Protection Act (BGEPA) in addition to protection as a state threatened species.

4.5 CULTURAL RESOURCES

The consideration of cultural resources is guided by various statutes and EOs. Principal among these is National Historic Preservation Act (NHPA). Section 106 of the NHPA (Section 106) directs federal agencies to take into account the effects of their undertakings on historic properties and provide the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on the undertaking. This is accomplished by following the ACHP's implementing regulations, 36 CFR 800. Consideration of historic and cultural resources is also required pursuant to NEPA and CEQ's implementing regulations found at 40 CFR 1500. Both NHPA and NEPA encourage integration and coordination of their procedures to promote timely and efficient consideration of the undertaking's impacts on properties that are listed in or qualify for listing in the National Register of Historic Places (NRHP). Activities carried out to assess the impacts of the project on cultural and historic resources were designed to ensure coordination of these statutory requirements.

4.5.1 Affected Environment

In the project area, the Area of Potential Effect (APE) was examined for cultural resources that could be directly impacted by the construction of the project. A majority of the APE for this project was previously surveyed. However, a 26-acre area identified as the potential borrow area had no survey history. Therefore, a Level III Survey was performed by Kogel Archaeological Consulting Services in August 2013. An initial background records search revealed no previously recorded historic properties or previously conducted cultural surveys within the entire construction limits for the project.

4.5.1.1 Aboveground Resources

No aboveground historical resources are known to be present within the construction limits.

4.5.1.2 Archaeological Resources

No archaeological resources are known to be present within the construction limits.

4.5.2 Environmental Consequences

4.5.2.1 Alternative 1 – No Action Alternative

The No Action Alternative would have no impact on aboveground and archaeological resources. Therefore, FEMA has determined that no historic properties would be affected by the No Action Alternative.

4.5.2.2 Alternative 2 – Proposed Action

No aboveground or archaeological resources have been documented within the construction limits. Due to the project occurring on Title VI property, USACE completed the Section 106 coordination with the Tribes and the State Historic Preservation Office (SHPO) as part of the agreed upon Programmatic Agreement for the Operation and Management of the Missouri River Main Stem System for Compliance with the National Historic Preservation Act and dated March 2004. As determined in the USACE Programmatic Agreement, a letter was sent on October 9, 2013 to the following tribes: Cheyenne River Sioux Tribe, Assiniboine and Sioux Tribes of Fort

Peck, Santee Sioux Tribe of Nebraska, Omaha Tribe of Nebraska, Turtle Mountain Band of Chippewa, Lower Brule Sioux Tribe, Three Affiliated Tribes, Ponca Tribe of Nebraska, Crow Creek Sioux Tribe, Northern Cheyenne Tribe, Flandreau Santee Sioux Tribe, Northern Arapaho Tribe, Eastern Shoshone Tribe, Sisseton-Wahpeton Sioux Tribe, Winnebago Tribe of Nebraska, Sac and Fox Nation of Missouri in Kansas and Nebraska, Bureau of Indian Affairs, Chippewa Cree Tribe of the Rocky Boy's Reservation, Spirit Lake Sioux Tribe, Rosebud Sioux Tribe, Oglala Sioux Tribe, Blackfeet Nation, Gros Ventre and Assiniboine Tribes, Standing Rock Sioux Tribe, Yankton Sioux Tribe, Crow Nation, and Sac and Fox Nation of Oklahoma. During the informational comment period, the Oahe Project office received one, "no environmental objections" reply from the Bureau of Indian Affairs on October 30, 2013. The USACE determined the portion of the Project near the Cedar Shore Resort was cleared under no potential to affect cultural resources, due to this portion being previously developed. For the remainder of the Project, USACE recommended an effect determination of No Historic Properties Affected to SHPO in a letter dated November 13, 2013. SHPO concurred with the no potential to affect area, as well as the effect determination of No Historic Properties Affected (see Appendix C).

If unexpected discoveries are made during the course of construction activities, FEMA would proceed in compliance with state and federal laws protecting cultural resources, including Section 106, and all work would cease in the immediate vicinity of the discovery until appropriate parties are consulted and a treatment plan is established.

4.6 SOCIOECONOMICS RESOURCES AND ENVIRONMENTAL JUSTICE

4.6.1 Affected Environment

4.6.1.1 Socioeconomics

Oacoma was incorporated in 1910, and covers approximately 2.59 square miles of land on the west bank of the Missouri River, across from the City of Chamberlain. The major employment sectors in Oacoma include education, healthcare, entertainment, recreation, and hospitality (U.S. Census Bureau 2007-2011).

Project activities are limited to the Lake Francis Case/Missouri River shoreline from the Cedar Shore Resort's marina to SD Hwy 90-L. The project area is located along Shoreline Drive and consists of no commercial businesses or small businesses other than Cedar Shore Resort, Cedar Shore Campground, and River Ranch Resort and Cabins. Based on a review of aerial imagery, 28 residences rely on Shoreline Drive for access. Fourteen of the twenty-eight residences were found to be owned by non-residents of the Chamberlain and Oacoma area, which indicates that half of the residences are likely second homes.

According to the U.S. Census Bureau, in 2010, the population of the Town of Oacoma was 451 while the population of Chamberlain was 2,387 (U.S. Census Bureau 2010).

4.6.1.2 Environmental Justice

EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, directs federal agencies to "make environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations."

Table 4-2, includes a comparison of demographic and economic data for the Town of Oacoma to South Dakota. Demographic data was taken from the 2010 U.S. Census (U.S. Census Bureau

2010), while the poverty and median household income data was taken from the 2007-2011 American Community Survey (ACS) 5-year estimates (U.S. Census Bureau 2011).

Table 4-2: Census Data for Oacoma and South Dakota.

Demographic Group	Oacoma		Lyman County		South Dakota	
	No.	Percent	No.	Percent	No.	Percent
Total Population	451		3,755		814,180	
White	401	88.9	2,166	57.7	699,392	85.9
Black or African American	1	0.2	11	0.3	10,207	1.3
American Indian and Alaska Native	29	6.4	1,468	39.1	71,817	8.8
Asian	2	0.4	11	0.3	7,610	0.9
Native Hawaiian and other Pacific Islander	0	0.0	0	0.0	394	0.0
Other	3	0.7	4	0.1	7,477	0.9
Two or More Races	15	3.3	97	2.6	17,283	2.1
Hispanic or Latino	8	1.8	45	1.2	22,119	2.7
Persons Below Poverty (%)	2.8		17.7		13.8	
Median Household Income	\$42,917		\$41,389		\$48,010	

4.6.2 Environmental Consequences

4.6.2.1 Alternative 1- No Action Alternative

4.6.2.1.1 Socioeconomics

The No Action Alternative would have negative impacts on the economics of Oacoma, because the risks and consequences of erosion would accelerate. The relatively minimal amount of damage to existing infrastructure would increase greatly as the bank encroaches on Shoreline Drive, pedestrian facilities, and utility lines such as sewer and water. These damages would result in economic impacts by increasing the cost of repairs and disrupting of services to the community. Without improvements, revenue generated from recreation and hospitality, the leading industry, may suffer, specifically Cedar Shore Resort.

4.6.2.1.2 Environmental Justice

Under the No Action Alternative, all populations in the project area and Oacoma would continue to be at risk of the economic impacts of further erosion of the Lake Francis Case/Missouri River

shoreline. The No Action Alternative would not have a disproportionate adverse effect on any minority or low-income populations and complies with EO 12898.

4.6.2.2 Alternative 2 – Proposed Action

4.6.2.2.1 Socioeconomics

The Proposed Action would have a beneficial effect on the socioeconomics of the area by providing a solution to the eroding shoreline. This alternative would also provide security to the landowners in the area as access to their property would be maintained. Alternative 2 would mitigate risk for future impacts associated with the deterioration of the shoreline.

Construction activities associated with the project may cause minor delays. Shoreline Drive is frequented by recreational guests and residents, who would produce higher traffic levels during the summer months. Depending on the construction timeframe, the local businesses could be potentially affected, temporarily. However, access to the area would be maintained throughout shoreline stabilization.

4.6.2.2.2 Environmental Justice

Alternative 2 would provide all populations in the project area the benefit of maintenance cost reduction associated with any minor stabilization projects in the future. This cost reduction would benefit all residents, including low-income and minority populations. The construction of Alternative 2 would not have a disproportionate adverse effect on any minority or low-income populations and complies with EO 12898.

4.7 COMMUNITY RESOURCES

The community resources evaluated in this EA include public health and safety, traffic and circulation, public services and utilities, and noise.

4.7.1 Affected Environment

4.7.1.1 Public Health and Safety

Shoreline Drive is the only road to this area which provides access for residents, visitors, and emergency vehicles (see **Appendix A, Exhibit 8**). The instability of Shoreline Drive as a result of further shoreline erosion is a safety concern for the Town of Oacoma and Lyman County. A damaged Shoreline Drive is a public safety concern since access is needed for residences, visitors, and emergency vehicles.

Utilities including sewer and water service are also within the project area. The existing water main provides clean drinking water to residences, Cedar Shore Resort, and Cedar Shore Campground, and the existing sewer main transports waste products from the area.

4.7.1.2 Traffic and Circulation

Shoreline Drive is a paved, two-lane road within the project area that serves as an access corridor connecting Cedar Shore Resort and residences to existing roads. Cedar Shore Resort is an integral part of the community and is used year round by local residents and non-residents seeking recreational opportunities on Lake Francis Case/Missouri River and also is used to host meetings and conferences. Twenty-eight residences rely on Shoreline Drive as the sole source of

access (see **Appendix A, Exhibit 7**). It is likely that half of these residences are used as summer or vacation homes.

4.7.1.3 Public Services and Utilities

Utilities that serve residents of Oacoma within the project area include sewer and water services. These utilities are at risk of being damaged if further erosion continues, exposing underground lines. Some of the utilities are currently being replaced under separate projects due to the level of erosion that has already occurred. The Chamberlain and Oacoma area is serviced by the Chamberlain Fire, Chamberlain Police, and Brule County Ambulance Services. The nearest hospital is the Sanford Chamberlain Medical Center.

4.7.1.4 Noise

In general, noise can be defined as unwanted sound. Sound becomes unwanted when it interferes with normal activities, such as sleep, work, speech, or recreation. Noise in the project area is derived primarily from vehicle noise (for example, road traffic, boats, jet skis, and airplanes) and from climate (for example, wind and thunder). Noise levels from traffic are affected by three factors: 1) the volume of the traffic; 2) the speed of the traffic; and 3) the number of trucks in the flow of traffic. Noise is measured in decibels (dB)—a logarithmic scale.

Because human hearing is not equally sensitive to all frequencies of sound, certain frequencies are given more weight. The A-weighted scale corresponds to the sensitivity range for human hearing; therefore, noise levels are measured in dBA.

4.7.2 Environmental Consequences

4.7.2.1 Alternative 1- No Action Alternative

4.7.2.1.1 Public Health and Safety

The No Action Alternative would not provide the necessary stabilization to the bank, potentially affecting the roadway that provides access for emergency vehicles to the residences, Cedar Shore Resort, and Cedar Shore Campground. Sewer and water main services may be affected by continued erosion, putting these services and public health in jeopardy for the project area.

4.7.2.1.2 Traffic and Circulation

The No Action Alternative could impact the traffic and circulation with road closures if the only access to the project area, Shoreline Drive, is closed due to bank erosion. These closures would last until arrangements could be made to repair the roadway until it is safe for traffic and vehicular travel. A traffic plan would be developed during final design.

4.7.2.1.3 Public Services and Utilities

The No Action Alternative could impact the sewer and water utilities within the project area. As erosion continues, these utilities run the risk of being exposed or damaged. Repair of these damages would be expensive and could result in access issues for residents and recreational visitors. If Shoreline Drive is compromised, access for emergency services could be affected, impacting the safety of the residents and other visitors of the area.

4.7.2.1.4 *Noise*

With the No Action Alternative, there would be no construction activities occurring in the project area and as a result, no effects on noise levels in the area.

4.7.2.2 *Alternative 2 – Proposed Action*

4.7.2.2.1 *Public Health and Safety*

Alternative 2 would provide bank stabilization along Cedar Shore Resort and Shoreline Drive. Shoreline Drive is the only access road for residents and emergency vehicles. The response time of emergency vehicles could be maintained with the stabilization of the bank.

4.7.2.2.2 *Traffic and Circulation*

Vehicle traffic would be generated by work crews traveling to and from the project area, in addition to trucks carrying excavated soil to and from the borrow area and shoreline. Final design would dictate access and traffic activities within the project area. It is anticipated that Shoreline Drive would remain accessible during construction. If necessary, short-term effects to local traffic would be minor. Construction delays could be short if possible, with the potential for the closure of one lane, with construction crews alternating access along segments of the project. However, the road would not be closed and access would remain open; no detours would be required.

4.7.2.2.3 *Public Services and Utilities*

Alternative 2 would stabilize the bank and reduce any further erosion that could potentially expose sewer and water lines. Caution should be used during construction and excavation activities to avoid contact with any underground utilities. With the utilities that have been identified for the Cedar Shore Resort, the Proposed Action is not expected to have any impacts on the project area during construction. No utilities are expected to be interrupted, however if any interruptions were required, affected users would be contacted. Maintaining the integrity of Shoreline Drive during construction would continue to allow emergency services to access the area as needed.

4.7.2.2.4 *Noise*

Final design would dictate traffic and activities within the project area during construction. Post construction, it is anticipated that the Shoreline Drive area would remain the same as current conditions and not be affected by the project. .

However, construction activities in the project area would temporarily increase noise levels. Most of the construction would take place near the Lake Francis Case/Missouri River, with motorcraft noise that would help mask some of the construction noise. With the close proximity to the Cedar Shore Resort and Cedar Shore Campground, construction activities would be limited to the daytime hours (7:00 a.m. to 9:00 p.m. in the summer months and 8:00 a.m. to 6:00 p.m. in the winter months). With this mitigation measure, noise impacts would be minimal and short-term. Post-project noise levels would return to current noise levels.

4.8 HAZARDOUS SUBSTANCES AND WASTES

4.8.1 Affected Environment

Properties where hazardous or other regulated materials have been stored can present a risk if spills or leaks have occurred or may occur. Contaminated or potentially contaminated properties are of concern for proposed projects because of the associated liability of acquiring the property through ROW purchase, the potential cleanup costs, and safety concerns related to exposure to contaminated soil, surface water, or groundwater.

To determine whether any facilities in the vicinity or upgradient of the project area have known and documented environmental issues or concerns, a database records search was conducted using Nationwide Environmental Title Research, LLC (NETR) environmental records database viewer and report generator (NETR 2013). This website contains a comprehensive environmental database containing thousands of environmental records collected from various local, state, and federal organizations. It contains information pertaining to Superfund sites, suspected contamination, compliance and violation concerns, permitted sources of toxic vapors, and other characteristics that may be harmful. The data found on this website is gathered from a variety of government sources. Three points were chosen within the project area; one near the southwest boundary, one near the northeast boundary, and one in the middle of the project area. Each point chosen shows environmental concerns within a 1-mile radius of this chosen point.

The NETR online database search identified one underground storage tank (UST) located at the Cedar Shore Resort. It is a 10,000 gallon gasoline tank made of cathodized steel and was built in 1994. It has auto gauging, a sump sensor, and an automatic shutoff device. The spill protection afforded for this tank is a catchment basin (NETR 2013).

SDDENR South Dakota Environmental Events Database was also searched for any environmental events and spills located within the project area. The search found no spills or events located within the project area (SDDENR n.d.a).

In the project area, it was noted that a sanitary sewer line that currently runs along the east side of the Cedar Shore Resort, between the hotel and the marina, has been damaged. This is an active slide area, which has resulted in damage to the sanitary sewer such as development of sags and joint separation.

4.8.2 Environmental Consequences

4.8.2.1 *Alternative 1 – No Action Alternative*

If no action is taken, the UST located at Cedar Shore Resort may be in jeopardy of shifting due to the erosion that is occurring. This shifting may cause the tank to become unstable and form a leak. This would lead to soil contamination and the need for remedial action to take care of the leak and contamination.

If no action is taken additional damage to the sanitary sewer between the resort and the marina is likely and this line would need to be relocated.

4.8.2.2 *Alternative 2 – Proposed Action*

Alternative 2 would involve drilled shafts with tie-back anchors and the placement of riprap. For this type of project, items of concern regarding hazardous substance and waste include:

- Presence of a hazardous substance and waste within or in the immediate vicinity of the proposed project area.
- Presence of an upgradient leaking UST that is not considered closed or does not have any further action status.
- Presence of an upgradient solid waste landfill.
- Presence of a sanitary sewer between the resort and the marina.

Depending on the exact location of the UST at Cedar Shore Resort, the drilled shafts would be installed to prevent damage to the tank and avoid jeopardizing its stability in any way. Once the Lake Francis Case/Missouri River's bank has been stabilized in this area, it would help prevent the tank from any future damage that could be caused by continued erosion or landslide activity. Likewise, stabilization would reduce the potential for additional damage to the sanitary sewer located between the resort and the marina.

The contractor should be alert for large areas of soil staining, buried drums, undiscovered USTs, or other obvious sources of contamination that are unknown at this time, and should coordinate with SDGFP and South Dakota Department of Health if any such area is found, prior to continuing work in those areas.

4.9 RECREATIONAL RESOURCES

4.9.1 Affected Environment

The project area contains several recreational resources managed by SDGFP, SDDOT, Lyman County, and commercial institutions. The following are the recreational resources within the project area:

- **Cedar Shore Resort** is full-service resort that includes a hotel, two restaurants, banquet and meeting facilities, and a marina (Cedar Shore Resort 2013). The resort is located on SDGFP property, but is leased and managed by a private company.
- **Cedar Shore Campground** includes 39 electric sites, tent sites, picnic shelters, convenience store, playground, and sport court (Cedar Shore Resort 2013). The campground is located on SDGFP property, but is leased and managed by a private company.
- **Public boat ramp** is located to the north of Cedar Shore Resort and includes a high water ramp, low water ramp, and fish cleaning station. These facilities are available to the public and are maintained by SDGFP and the private company that leases Cedar Shore Resort.
- **Unnamed multi use path** is located on the east side of Shoreline Drive, extending from Cedar Shore Resort to SD Hwy 90-L. A few segments of the multi use path are currently being blocked to users due to the erosion, which is creating an unstable path.

Section 4(f) of the Department of Transportation Act (Section 4(f)) provides protection for four main categories of resources: public parks, public recreational areas, public wildlife and waterfowl refuges, and historic properties (23 CFR 774). Section 4(f) only applies to the actions of agencies within the U.S. Department of Transportation (USDOT) (Federal Highway Administration [FHWA] 2012). FEMA is the lead federal agency, but with SDDOT involvement in the project and the need to utilize federal funds from FHWA in the future, Section 4(f) is considered in this environmental document. Through the consideration of Section 4(f), the

determination was Section 4(f) does not apply to this project. For this project to be considered under Section 4(f), the following must apply:

- The project must be a transportation project, and
- The purpose of the project must be related to the movement of people, goods, and services from one place to another (FHWA 2012).

This project is not a transportation project; the purpose of the project is unrelated to the movement of people from one place to another. The purpose of the project is to reduce the long-term risk of the Lake Francis Case/Missouri River's bank erosion by stabilizing the shoreline. Therefore, Section 4(f) was not further evaluated in this environmental document.

Section 6(f) of the Land and Water Conservation Fund Act (Section 6(f)) protects parks and recreation areas that were acquired, developed, or rehabilitated, even in part, with the use of any Land and Water Conservation Funds. Coordination occurred with the South Dakota Section 6(f) coordinator and no Section 6(f) resources exist within the project area.

4.9.2 Environmental Consequences

4.9.2.1 Alternative 1 – No Action Alternative

The No Action Alternative would impact the existing recreational resources in the area. If the erosion of the Lake Francis Case/Missouri River's bank continues, Cedar Shore Resort, Cedar Shore Campground, and the multi use path would be impacted greatly. The erosion would create instability in the structure of the resort and affect the marina. The erosion would continue to affect the area of the campground and begin to erode into some of the main facilities. The multi use path has segments that have been currently compromised due to the erosion; the problem would increase under the No Action Alternative.

4.9.2.2 Alternative 2 – Proposed Action

Alternative 2 would include the stabilization of the Lake Francis Case/Missouri River bank, therefore protecting the existing recreational resources in the project area. Alternative 2 would benefit the recreational resources in the area. As part of the construction of Alternative 2, any portions of the multi use path that have been impacted by the bank erosion or are impacted during construction would be repaired after the bank stabilization is complete.

4.10 CUMULATIVE IMPACTS

Cumulative impacts are beneficial and/or adverse effects that would result when impacts from the project are considered with impacts from other local or regional projects. CEQ's Regulations for Implementing the Procedural Provisions of NEPA defines cumulative impacts as the following:

The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. 40 CFR 1508.7

Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. They may arise from single or multiple actions and result in additive or interactive effects. Before cumulative impacts can be evaluated, a proposed action must have advanced far enough in the planning process that its implementation is reasonably foreseeable.

Reasonably foreseeable actions are not speculative, are likely to occur based on reliable sources, and are typically characterized in planning documents. The following paragraphs identify past, present, and reasonably foreseeable future actions planned within the vicinity of the project. A few other projects have been undertaken or are planned in the vicinity of the Proposed Action:

- Past actions in the project area
- Current development of infrastructure in the project area

Past actions in the project area. Modifications have been made to the Missouri River, and the construction of the Fort Randall Dam upstream created Lake Francis Case. Past actions also include the construction of the residences, Cedar Shore Resort, and Cedar Shore Campground. Past actions in the project area have resulted in impacts on water quality, wildlife, land use, and waters of the U.S.

Current development of infrastructure in the project area. A sewer reconstruction project is occurring within the project area to replace an existing sewer line. The project is funded by Economic Development Administration (EDA). Additional utility lines would be updated and added in the reasonable future. Shoreline Drive and the associated multi use path would be maintained in the future, as required. SDGFP would also continue to maintain the marina associated with Cedar Shore Resort, including an upcoming bank stabilization project along the north side of the marina. Neither the utility upgrades nor the planned maintenance activity are necessary for the proposed action to function as designed and are not considered under connected actions under NEPA.

Only the construction activities of the associated projects noted above would be additive to the Proposed Action. The sewer construction project has been coordinated with EDA and impacts have been minimized where possible. The sewer construction project is slated for construction as soon as possible this year, while this project is slated for constructed in winter 2013 and spring 2014. The bank stabilization project will be a maintenance project for the SDGFP and due to the area being previously disturbed and being replaced to primarily to existing conditions, impacts will be minimized. These additive effects would be limited to the duration of construction activities and include soil disturbance, vegetation disturbance, and traffic restrictions. The cumulative impacts would be temporary and would not be considered significant.

Long-term cumulative effects from the Proposed Action and other actions are anticipated to be beneficial to the project area, because the potential for erosion of the Lake Francis Case/Missouri River banks would be reduced.

4.11 COORDINATION AND PERMITS

The agency coordination and permits that would be required under Alternative 2 are described below.

- Surface water – For construction, a General Permit for Storm Water Discharges Associated with Construction Activities would be required from SDDENR, because more than 1 acre of ground disturbance would occur. During construction, BMPs would be implemented to minimize soil erosion. Following construction, all disturbed areas that have not been hardened would be revegetated with a mixture of grasses and shrubs that would minimize post-project soil erosion.
- Floodplain – During final design, coordination would occur with the USACE office responsible for Lake Francis Case's water elevations to determine if any analysis or documentation is required.

- Wetlands and waters of the U.S. – Alternative 2 would require Section 404 and Section 10 permits. USACE would make the determination of whether a Nationwide Permit or Individual Permit is required and coordination would begin to obtain Section 401 water quality certification from SDDENR. SDGFP would need to obtain this permit prior to beginning construction activities.
- USFWS – The contractor would be responsible for hiring a qualified person that is acceptable to USFWS to identify potential eagle nests within the project area prior to construction. If eagle nests are spotted by the surveyor, appropriate avoidance or mitigation as prescribed by USFWS would be taken prior to construction activities.

In addition, removal of inactive nests of migratory birds should not be accomplished prior to consultation with USFWS. A permit may be required for removal of inactive nests. Removing the habitat (that is, clearing and grubbing prior to nesting) for the migratory birds prior to the nesting season, April to September, can greatly reduce the chance of impacting migratory birds.

- Cultural resources – If unexpected discoveries are made during the course of construction activities, FEMA would proceed in compliance with state and federal laws protecting cultural resources, including Section 106, and all work would cease in the immediate vicinity of the area until appropriate parties are consulted and a treatment plan is established.
- Traffic and circulation – Pending final design options, access would need to be maintained to the area by Shoreline Drive during construction.
- Noise – With the close proximity to the Cedar Shore Resort and Cedar Shore Campground, construction activities would be limited to the daytime hours (7:00 a.m. to 9:00 p.m. in the summer months and 8:00 a.m. to 6:00 p.m. in the winter months).
- Hazardous wastes – The contractor should be alert for large areas of soil staining, buried drums, undiscovered USTs, or other obvious sources of contamination that are unknown at this time, and should coordinate with SDGFP and South Dakota Department of Health if any such area is found, prior to continuing work in those areas. The contractor installing the drilled shafts near the Cedar Shore Resort will need to locate any USTs and gas lines prior to construction. The contractor will either avoid the UST and gas lines or coordinate with SDDENR for the proper procedures to deal with these during construction.

SECTION FIVE SUMMARY OF IMPACTS

A summary of potential environmental impacts of Alternative 1 – No Action and Alternative 2 – Cedar Shore Resort/Shoreline from Cedar Shore Resort to SD Hwy 90-L Stabilization (Proposed Action) are presented in Table 5-1.

Under the No Action Alternative, no improvements would be made to the Cedar Shore Resort or the shoreline from the Cedar Shore Resort to SD Hwy 90-L.

The Proposed Action would reduce shoreline erosion along the Lake Francis Case/Missouri River shoreline. Project features include:

Cedar Shore Resort

- 48-inch diameter drilled shafts, installed at 5-foot centers, socketed approximately 10 feet into the un-weathered Niobrara Chalk.
- Tie-backs would be installed at reinforced drilled shafts inclined at 45 degrees.

Cedar Shore Campground and Shoreline Drive

- 24-inch-thick layer of Class B riprap would be placed on the embankment from the intersection of SD Hwy 90-L and Shoreline Drive until the end of the segment (6,500 linear feet total) to an elevation of 1,370 feet MSL.

Table 5-1: Summary of Impacts

Environmental Resource	Resource Subcategory	Alternative 1: No Action	Alternative 2: Proposed Action
Physical	Geology	Continued erosion may result in mass movement (for example, slump)	Prevent further damage to the shoreline's geology. Drilled shafts would restrain slide mass from further movement toward Lake Francis Case/Missouri River.
	Farmland	No impact on farmland.	No impact on farmland.
	Soils	No impact on soil.	Approximately 40 acres of soil would be disturbed. For construction, a General Permit for Storm Water Discharges Associated with Construction Activities would be required from SDDENR, because more than 1 acre of ground disturbance would occur. BMPs would be implemented to minimize soil erosion. Revegetation would occur in disturbed areas.
Land Use	Air Quality and Global Climate Change	No impact on air quality and global climate change.	No long-term effect on air quality. Impacts may include the temporary release of particulates in the air. If dust becomes a problem, the contractor would be required to water down the area.
	Visual Resources	No impact on visual resources.	Temporary impacts would take place as a result of construction. Disturbed areas would be revegetated. Long-term beneficial impacts would result from bank stabilization.
	Land Use	Impacts access to area and recreational resources.	Approximately 40 acres of land would be affected. Current land uses would be protected with stabilization.
Water Resources	Surface Water	Erosion and sediment deposition would continue.	Impacts on surface waters would be positive as they would reduce soil erosion. Under the General Permit for Storm Water Discharges Associated with Construction Activities, appropriate erosion and sediment control measures must be installed to control the discharge of pollutants during construction.
	Groundwater	No impact on groundwater.	No impact on groundwater.

Environmental Resource	Resource Subcategory	Alternative 1: No Action	Alternative 2: Proposed Action
	Floodplains	No floodplain mapping data available. No anticipated adverse effects.	No floodplain mapping data available. It is anticipated that the project would not affect nor be affected by the floodplain.
	Wetlands and Waters of the U.S.	Potentially affect wetlands adjacent to the riparian buffer due to increased erosion.	<p>Approximately 0.08 acre (Wetlands) acres of permanent impacts due to fill.</p> <p>Approximately 7,500 linear feet of the Missouri River would be modified by this project. The modification includes approximately 4.9 acres of fill below the OHWM and approximately 1.2 acres of temporary impacts of Lake Francis Case/Missouri River.</p> <p>SDGFP would need to obtain a Section 10 and Section 404 permits prior to construction. Prior to construction, SDGFP would need to coordinate with the relevant USACE regulatory office to ensure that all necessary documentation has been received. All activities would need to comply with the special conditions within the permit.</p>
Biological	Vegetation	No impact on vegetation. Potential impacts over time as the bank erodes, eliminating shoreline and potential habitat.	Approximately 40 acres of vegetation would be disturbed. Revegetation plans would occur in disturbed areas.
	Terrestrial Wildlife	No impact on terrestrial wildlife. Potential impacts over time as the bank erodes, eliminating shoreline and potential habitat.	Short-term impacts during construction, however no long-term impacts would occur.
	Aquatic Wildlife	No impacts on aquatic wildlife. Impacts on aquatic wildlife may occur over time as the bank erodes and as a result, increasing sedimentation in the water.	Short-term minor adverse impacts on surface water quality with a long-term beneficial impact on water quality post-construction.
	Threatened and Endangered Species	No impact on threatened or endangered species.	<p>No effect on state listed threatened and endangered species.</p> <p>May affect, not likely to affect the pallid sturgeon.</p> <p>No effect for interior least tern, whooping crane, piping</p>

Environmental Resource	Resource Subcategory	Alternative 1: No Action	Alternative 2: Proposed Action
Cultural	Aboveground	No impact on aboveground cultural resources	plover, and black-footed ferret.
	Archeological	No impact on archeological resources.	<p>No historic properties affected.</p> <p>No historic properties affected.</p> <p>If unexpected discoveries are made during the course of project execution, FEMA will proceed in compliance with state and federal laws protecting cultural resources, including Section 106 of the National Historic Preservation Act of 1966 (NHPA), and all work will cease in the immediate vicinity of the find until appropriate parties are consulted and a treatment plan, if required, is established.</p>
Socioeconomic and Environmental Justice	Socioeconomics	Impacts on area include increasing repair costs and disrupting services to the community.	Beneficial impacts on the area include providing security to the landowners as access would be maintained.
	Environmental Justice	No disproportionately high or adverse impacts on any minority or low-income populations.	<p>No disproportionately high or adverse impacts on any minority or low-income population.</p> <p>The project would have a beneficial effect on all residents, including low-income and minority populations by reducing the risk of damage to property.</p>
Community Resources	Public Health and Safety	<p>Impacts on area include those to the roadway to provide access.</p> <p>Impacts also include erosion of bank to expose sewer and water main services.</p>	Emergency response times maintained for the area as access is ensured.

Environmental Resource	Resource Subcategory	Alternative 1: No Action	Alternative 2: Proposed Action
	Traffic Circulation	Long-term negative impacts would result from bank erosion affecting traffic access to the area.	Short-term minor negative impact during construction activities. Long-term beneficial impacts would include reducing the possibility the roadway would be closed due to bank erosion. A traffic plan would be developed during final design.
	Public Services and Utilities	Utilities at risk for being exposed or damaged due to erosion. Access to this area for emergency vehicles, residents and visitors could be affected.	Benefit of stabilizing the bank and reducing erosion that could expose sewer and water lines. No utilities are expected to be interrupted, but if required, affected users would be contacted.
	Noise	No impact on noise levels in the project area.	No impact on noise levels in the project area. Construction would temporarily increase noise levels and would be limited to daytime hours near residential areas.
Hazardous Substances and Wastes	Hazardous Substances/Wastes	Impacts may occur on the Cedar Shore Resort's UST due to shifting from erosion.	No impact on hazardous substances and wastes. The UST will be secured further as the eroding bank is addressed. The contractor should be alert for large areas of soil staining, buried drums, undiscovered USTs, or other obvious sources of contamination that are unknown at this time, and should coordinate with SDGFP and South Dakota Department of Health if any such area is found, prior to continuing work in those areas. The contractor installing the drilled shafts near the Cedar Shore Resort will need to locate any USTs and gas lines prior to construction. The contractor will either avoid the UST and gas lines or coordinate with SDDENR for the proper procedures to deal with these during construction.

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SECTION SIX PUBLIC INVOLVEMENT

6.1 PUBLIC NOTICES

The initial Public Notice was published in the Capital Journal June 20 and 24, 2013, and in the Chamberlain/Oacoma Sun June 26, 2013, and July 3, 2013. The notice was also published on SDGFP's website¹⁰. An example of the Public Notice is provided in Appendix E.

The final Public Notice will also be published in the Capital Journal and Chamberlain/Oacoma Sun. This notice will also be published on SDGFP's website.

6.2 PUBLIC INVOLVEMENT

Extensive public involvement has been carried out as part of this EA. Public involvement occurred as part of a scoping phase and throughout the project, which helped develop and analyze potential environmental impacts of the No Action Alternative and Proposed Action Alternative.

A public input meeting was held at the Oacoma Community Center in Oacoma, South Dakota, on September 26, 2013. A meeting summary is provided in Appendix E that discusses the details of the meeting, any comments that were received, and responses to the comments.

6.3 FUTURE INVOLVEMENT

After the Draft EA is made available by SDGFP and FEMA, the document will be available for public comment for a minimum of 15 days. Following the 15-day comment period, FEMA will make the determination as to the adequacy of the environmental documentation. If further documentation is necessary, the EA may be revised or an EIS may be prepared, whichever is appropriate.

If the environmental review process finds the project will not result in any significant environmental impacts, FEMA will then issue a FONSI. If significant environmental impacts are projected to occur, SDGFP has the option of performing mitigation to lessen the impacts to below a significant level and prepare a Final EA, prepare an EIS, or terminate the project.

¹⁰ SDGFP website: <http://gfp.sd.gov/state-parks/docs/cedar-shores-public-notice.pdf>.

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SECTION SEVEN AGENCIES CONSULTED

7.1 AGENCY COORDINATION

Early coordination began in July 2013, through agency coordination letters, which included one figure noting the project area. The letters were sent to federal and state agencies, as well as local government agencies, to announce the initiation of the project. Letters were also sent to Tribes to consult for the project. Table 7-1 summarizes the agencies and Tribes responses to the project.

The agencies consulted about the project include:

- **South Dakota Department of Transportation**
Mr. Terry Keller, Environmental Program Manager
Mr. Tom Lehmkuhl, Environmental Engineer
- **South Dakota Department of Environment and Natural Resources**
Mr. John Miller, Surface Water Quality Program
Mr. Brad Schultz, Air Quality Program
- **South Dakota Department of Game Fish and Parks**
Mr. Al Nedved, Project Manager
Mr. Randy Kittle, Section 6(f) - Grants Coordinator
Ms. Leslie Murphy, Fish and Wildlife Resources Coordinator
- **State Historic Preservation Office**
Ms. Amy Rubringh, Review and Compliance Officer
- **Office of Emergency Management**
Mr. Jason Bauder, Emergency Management Performance Grant Department
Ms. Nicole Prince, Hazard Mitigation Grant Program
- **U.S. Army Corp of Engineers; Pickstown, South Dakota**
Mr. Cody Wilson, Project Manager
Mr. James Lindley, Natural Resource Specialist
- **U.S. Army Corp of Engineers; Pierre, South Dakota**
Mr. Steve Naylor, South Dakota Regulatory Program Manager
Mr. Matt Sailor, South Dakota Regulator
- **U.S. Coast Guard**
Mr. Jack Roberts, Boating Safety Division
- **U.S. Department of Agriculture - Natural Resources Conservation Service (NRCS)**
Ms. Deanna Peterson, State Soil Scientist
- **U.S. Economic Development Agency**
Ms. Jennifer Benz, Regional Environmental Officer
- **U.S. Fish and Wildlife Service (USFWS)**
Mr. Scott Larson, Field Supervisor
Mr. Terry Quesinberry, Biologist
- **Advisory Council for Historic Preservation**
Mr. Reid Nelson
- **Bureau of Indian Affairs**
Mr. Weldon Loudermilk

Table 7-1: Agency Responses

Agency/Tribe	Date	Response
NRCS	July 26, 2013	This project will have no effect on prime or important farmland.
USFWS	August 6, 2013	USFWS concurs with the conclusions that the described project will not adversely affect listed species.
SDGFP	August 8, 2013	At this time, the project as proposed will have no impacts on fish and wildlife resources.
SDDENR	August 12, 2013	A Surface Water Discharge (SWD) permit may be required if any construction dewatering should occur. Any construction activity that disturbs an area of one or more acres of land must have authorization under the General Permit for Storm Water Discharges Associated with Construction Activities. Special construction measures may have to be taken to ensure the total suspended solids standard of 90 [milligrams per liter] (mg/L) is not violated.
SDDENR	August 19, 2013	The Project will have little or no impact on the air quality in this area.
SD SHPO	November 15, 2013	Based upon the information provided to the SD SHPO office on 10/11/2013 and 11/14/2013, we concur with your agency's determination of "No Historic Properties Affected" for this undertaking.
Cheyenne Sioux Tribe Assiniboine and Sioux Tribes of Fort Peck Santee Sioux Tribe of Nebraska Advisory Council for Historic Preservation Omaha Tribe of Nebraska Turtle Mountain Band of Chippewa Lower Brule Sioux Tribe Three Affiliated Tribes Ponca Tribe of Nebraska Crow Creek Sioux Tribe Northern Cheyenne Tribe	October 9, 2013	No response received.

Agency/Tribe	Date	Response
Flandreau Santee Sioux Tribe	October 9, 2013	No response received.
Northern Arapaho Tribe		
Eastern Shoshone Tribe		
Sisseton-Wahpeton Sioux Tribe		
Winnebago Tribe of Nebraska		
Sac and Fox Nation of Missouri in Kansas and Nebraska		
Chippewa Cree Tribe of Rocky Boy's Reservation		
Spirit Lake Sioux Tribe		
Rosebud Sioux Tribe		
Oglala Sioux Tribe		
Blackfeet Nation		
Gros Ventre and Assiniboine Tribes		
Standing Rock Sioux Tribe		
Yankton Sioux Tribe		
Crow Nation		
Sac and Fox Nation of Oklahoma	October 9, 2013	No environmental objections.

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SECTION NINE LIST OF PREPARERS

This EA was prepared by HDR Engineering, Inc. for FEMA Region VIII in Denver, Colorado. HDR staff includes:

- Al Erickson, Project Manager
- Rebecca Baker, Senior Environmental Scientist
- Jessica Erickson, Environmental Scientist
- Brian Havens, Geotechnical Engineer
- Kendall Vande Kamp, Environmental Scientist
- Heidi Herrmann, Environmental Scientist
- Brian Goss, Senior NEPA Reviewer
- Ruth Ellen Hughes, Technical Editor

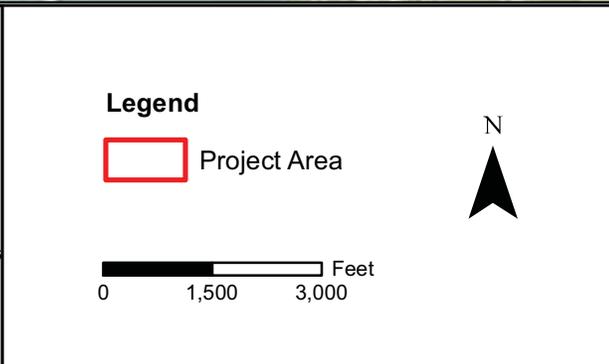
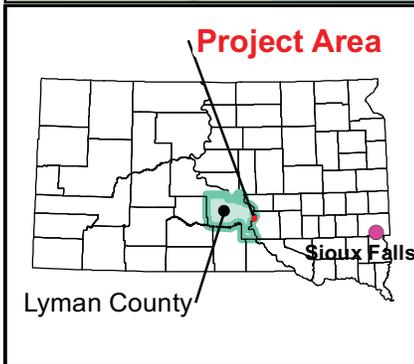
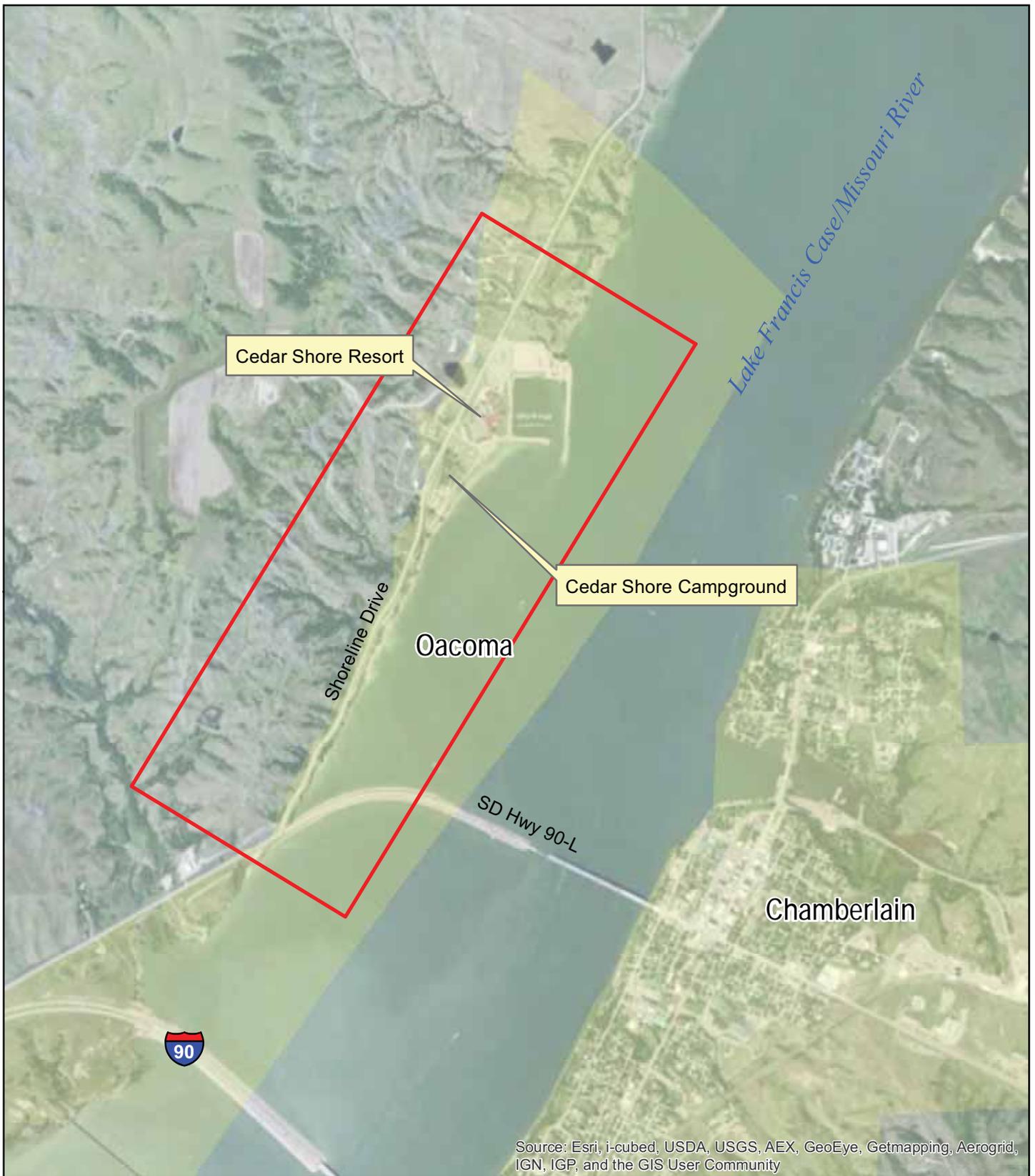
FEMA Region VIII review completed by:

- Daniel Jones, Environmental Specialist
- Richard Myers, Deputy Regional Environmental Officer
- Steven Hardegen, Regional Environmental Officer

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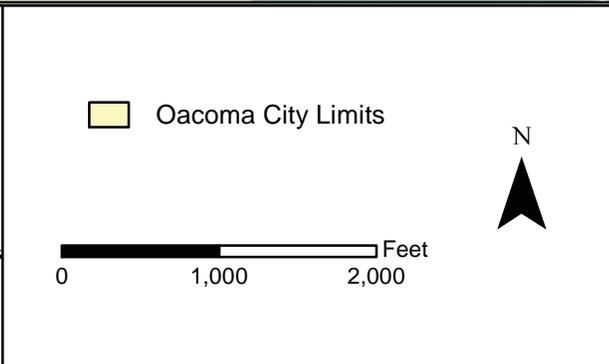
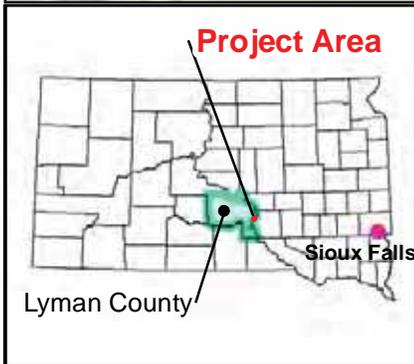
**APPENDIX A
EXHIBITS**

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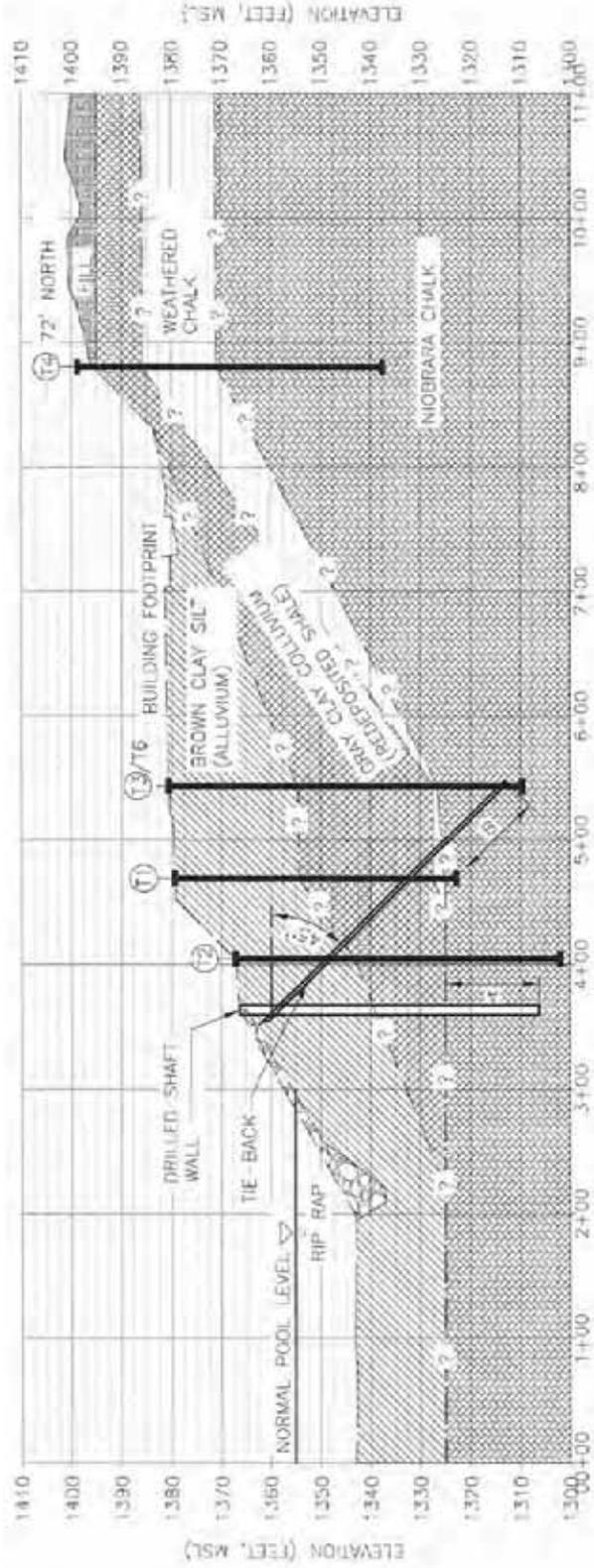
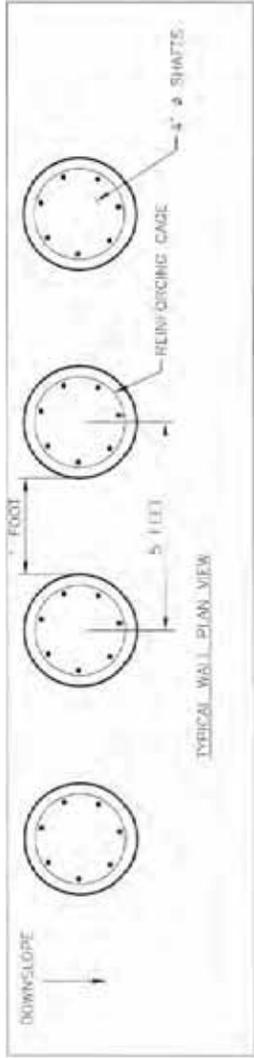
 FEMA
Cedar Shore Bank Stabilization Project Oacoma, SD
Project Location
Exhibit 1

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 FEMA
Cedar Shore Bank Stabilization Project Oacoma, SD
Project Components
Exhibit 2

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PROFILE A-A'
 HORIZ. = 1:100
 VERT. = 1:40

NOTES:

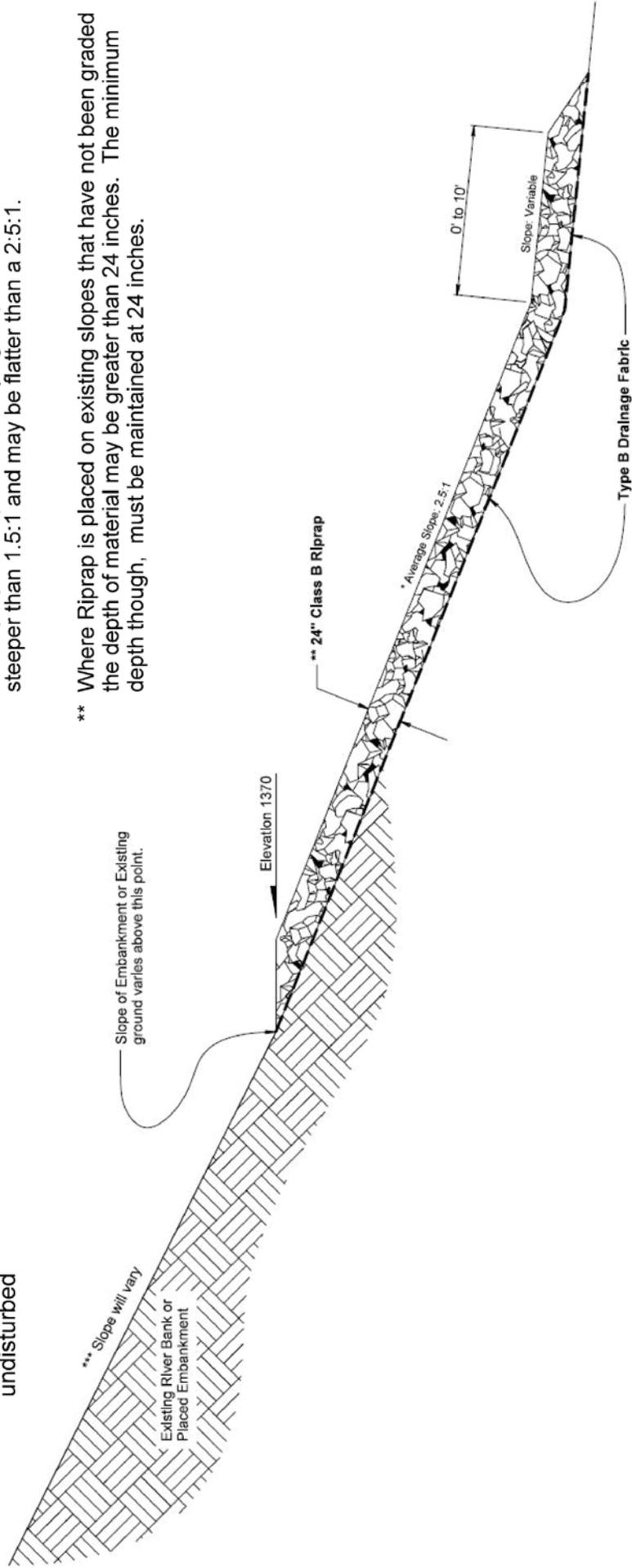
- 1.) A = MINIMUM SOCKET OF 10 FEET INTO NIOBRARA CHALK.
- 2.) B = MINIMUM ANCHOR EMBEDMENT OF 20 FEET INTO NIOBRARA CHALK.
- 3.) TIE-BACKS TO BE USED AT EACH DRILLED SHAFT.

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*** Face Stabilized slopes will be constructed at a 2:1 slope other newly constructed slopes will be 3:1. In various locations the slope above the Riprap will be left undisturbed

* The Riprap will be placed at varying slopes no steeper than 1.5:1 and may be flatter than a 2:5:1.

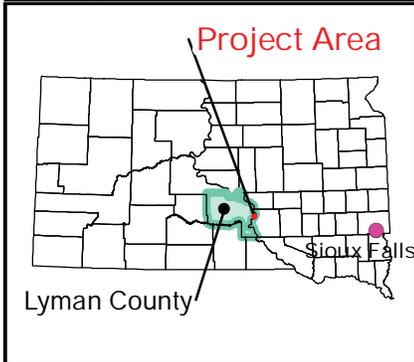
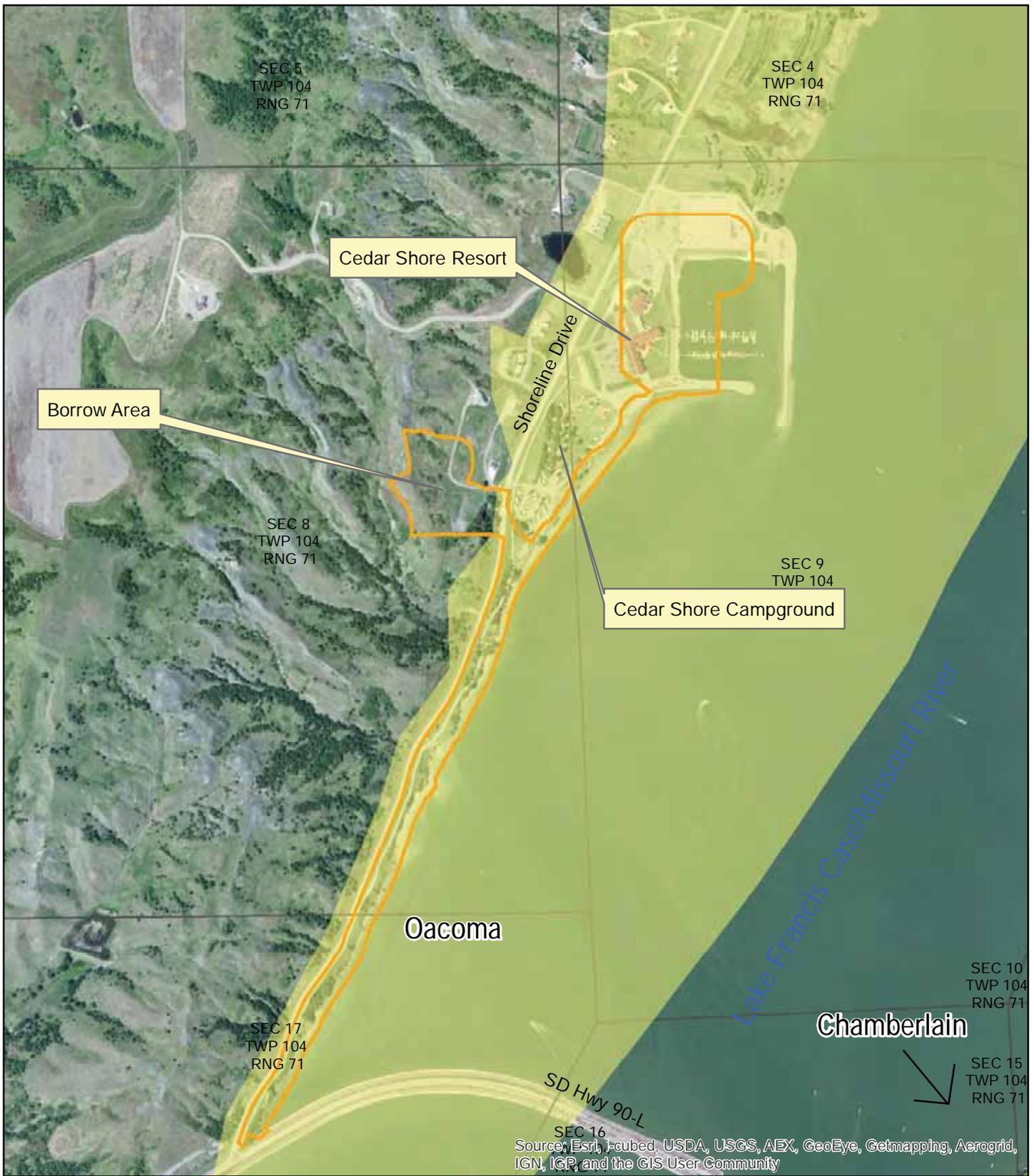
** Where Riprap is placed on existing slopes that have not been graded the depth of material may be greater than 24 inches. The minimum depth though, must be maintained at 24 inches.



Cedar Shore Bank
Stabilization Project
Oacoma, SD
Shoreline Drive

Exhibit 4

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Legend

- Construction Limits
- Oacoma City Limits
- Oacoma City Limits

0 500 1,000 Feet

N

FEMA

Cedar Shore Bank Stabilization Project
Oacoma, SD

Construction Limits

Exhibit 5

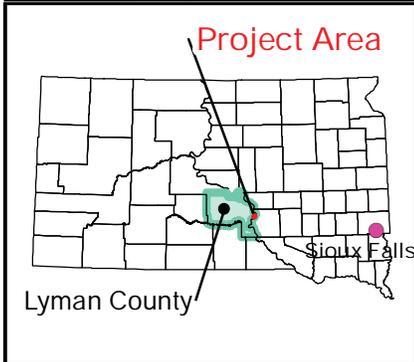
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Borrow Area

Cedar Shore Campground

Shoreline Drive



Legend

 Construction Limits



 Feet
0 150 300



Cedar Shore Bank Stabilization Project
Oacoma, SD

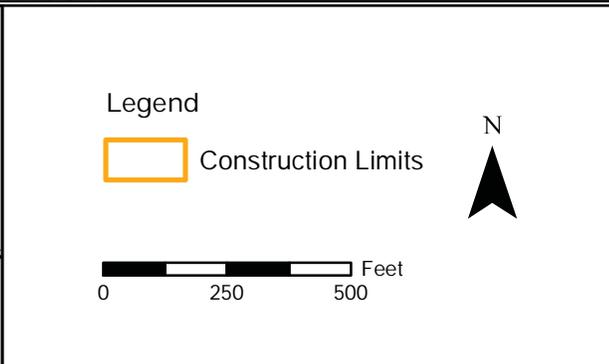
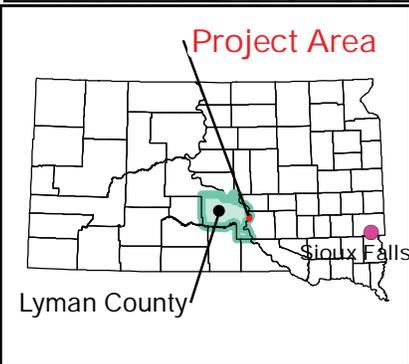
Borrow Area

Exhibit 6

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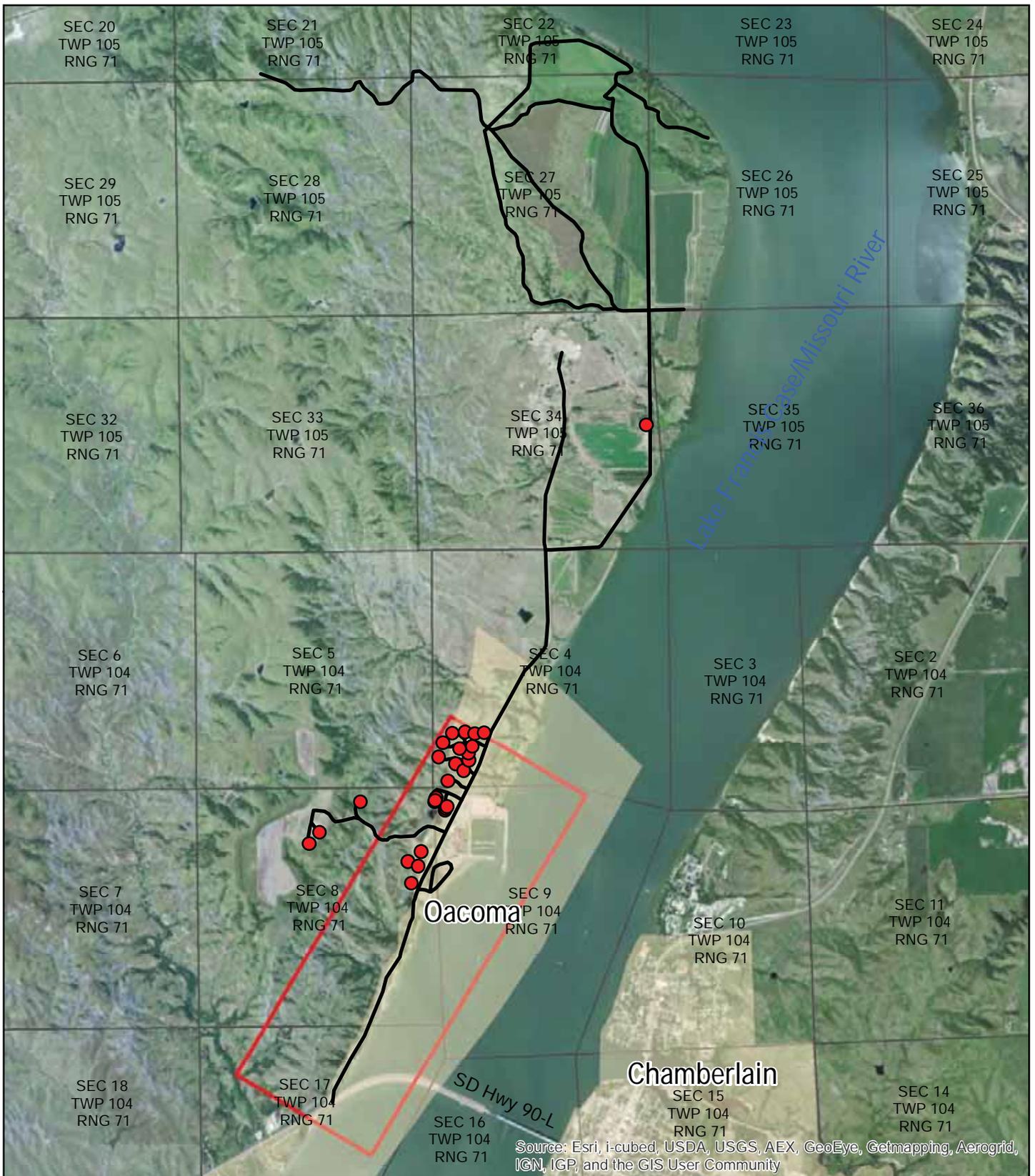


Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

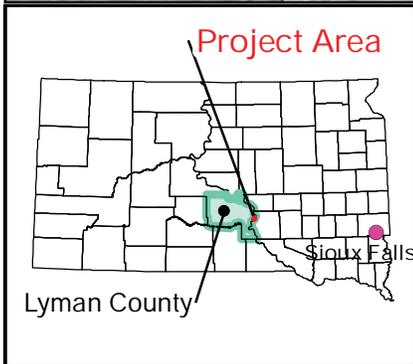


 FEMA
Cedar Shore Bank Stabilization Project Oacoma, SD
Land Use
Exhibit 7

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Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community



Legend

- Project Area
- Residences
- Roads

N
▲

0 1,500 3,000
Feet

 **FEMA**

Cedar Shore Bank
Stabilization Project
Oacoma, SD

Residences and Area Access

Exhibit 8

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Lake Francis Case/Missouri River



Cedar Shore Bank
Stabilization Project
Oacoma, SD
Wetlands and WUS

Exhibit 9-1

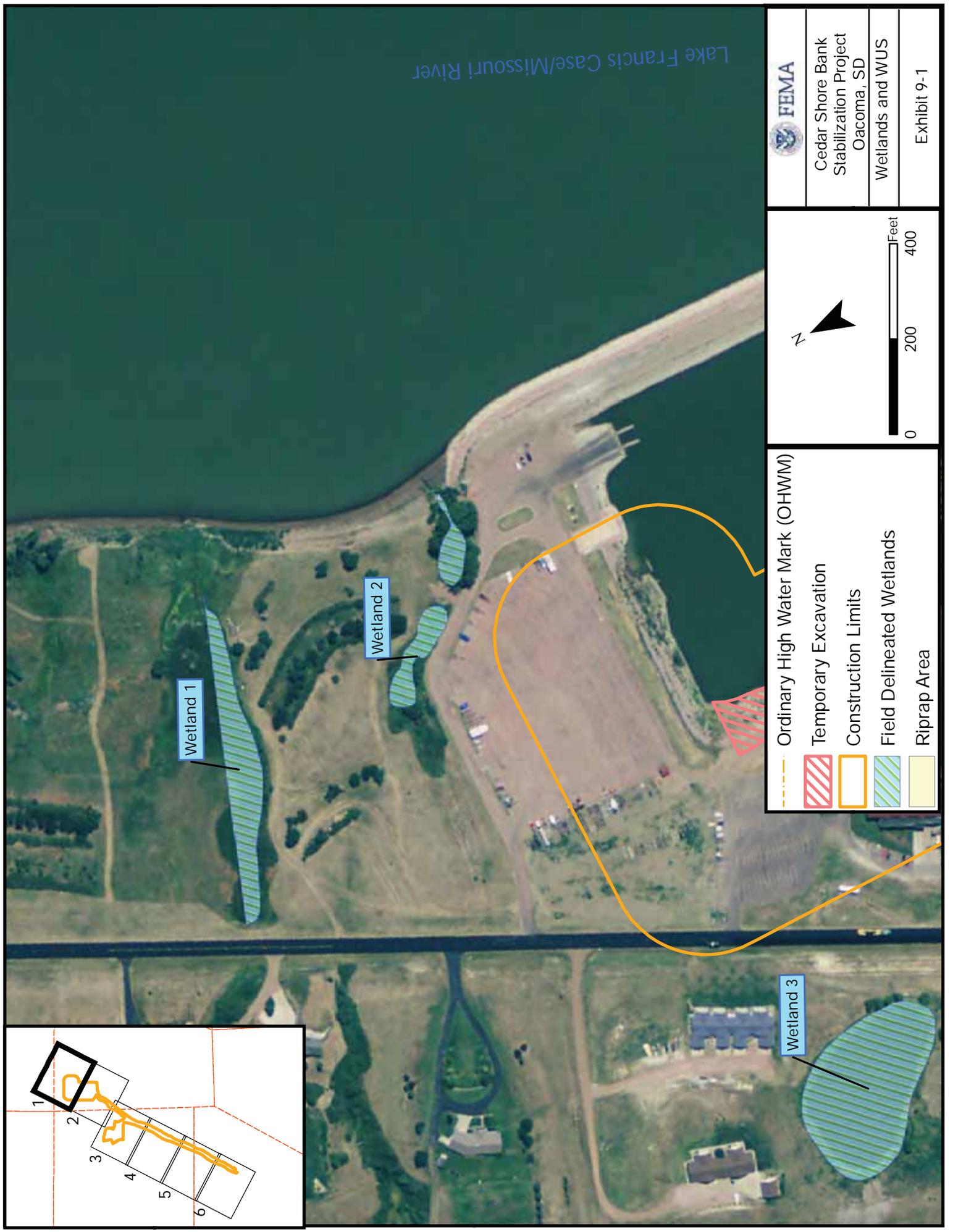
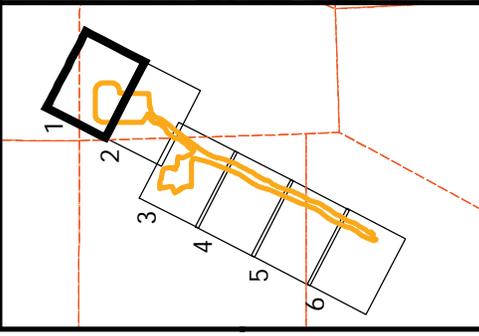


- Ordinary High Water Mark (OHWM)
- Temporary Excavation
- Construction Limits
- Field Delineated Wetlands
- Riprap Area

Wetland 1

Wetland 2

Wetland 3

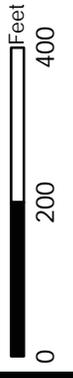


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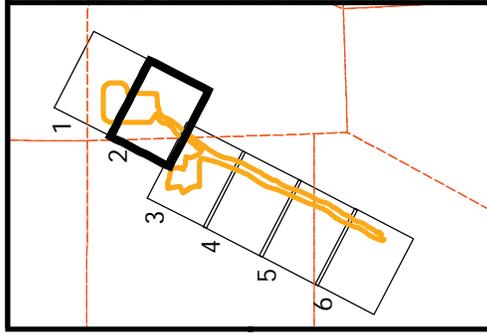
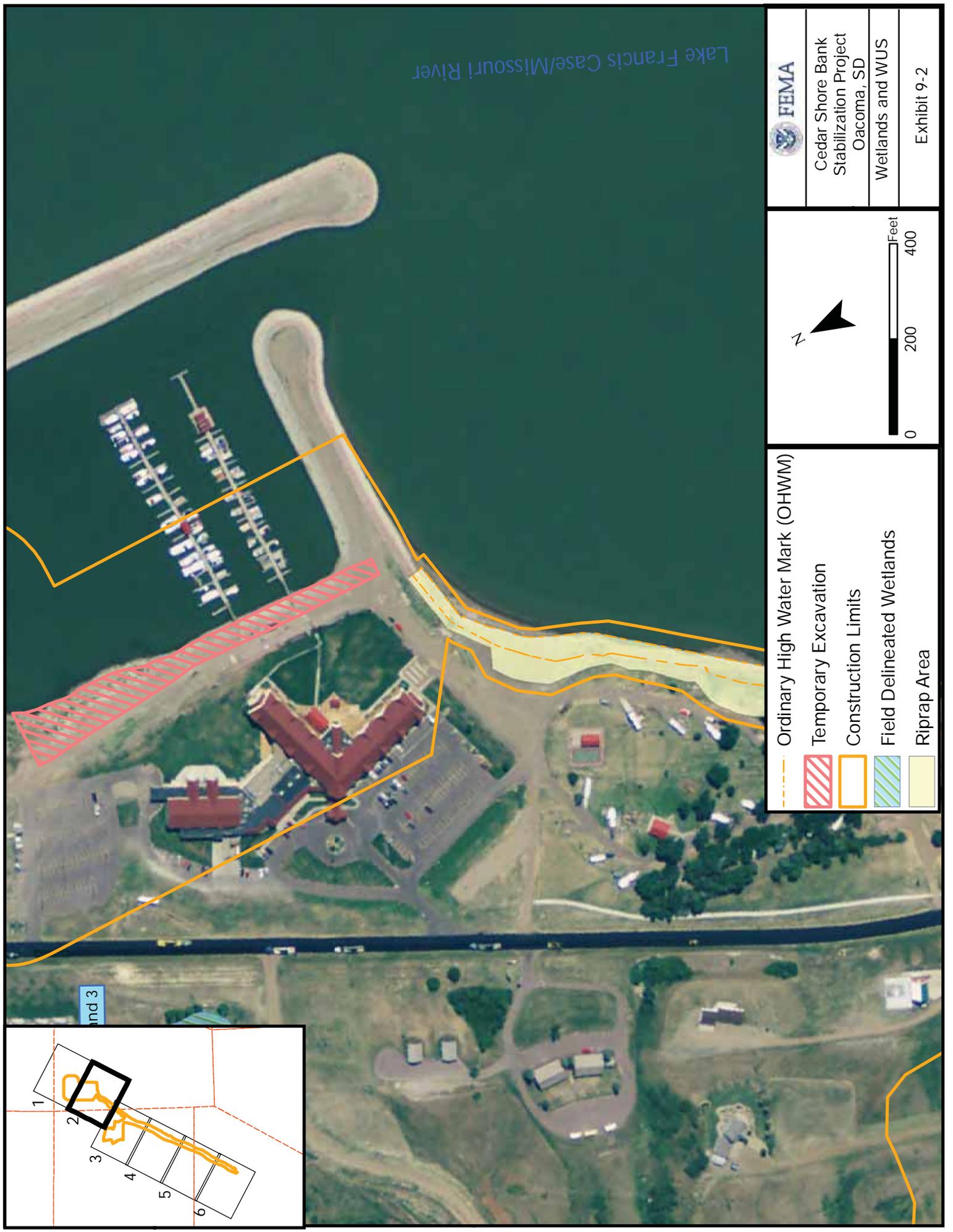
Lake Francis Case/Missouri River



Cedar Shore Bank
Stabilization Project
Oacoma, SD
Wetlands and WUS
Exhibit 9-2



- Ordinary High Water Mark (OHWM)
- Temporary Excavation
- Construction Limits
- Field Delineated Wetlands
- Riprap Area



and 3

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Lake Francis Case/Missouri River



Cedar Shore Bank
Stabilization Project
Oacoma, SD

Wetlands and WUS

Exhibit 9-3



Wetland 5

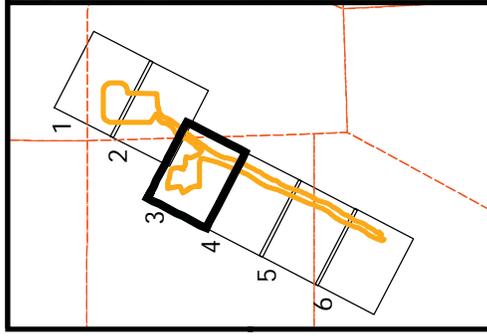
Ordinary High Water Mark (OHWM)

Temporary Excavation

Construction Limits

Field Delineated Wetlands

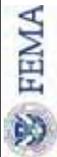
Riprap Area

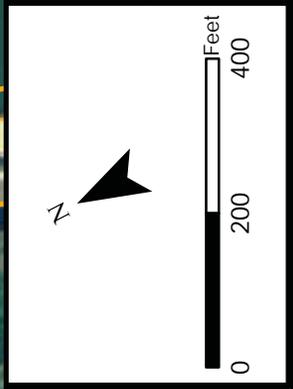


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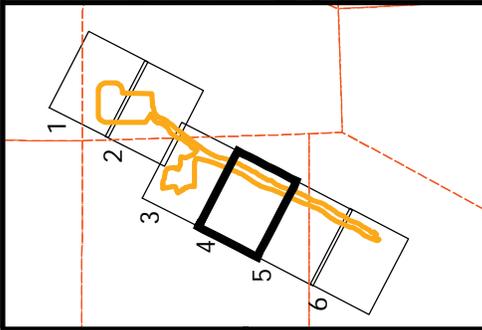


Lake Francis Case/Missouri River


Cedar Shore Bank Stabilization Project Oacoma, SD
Wetlands and WUS
Exhibit 9-4



	Ordinary High Water Mark (OHWM)
	Temporary Excavation
	Construction Limits
	Field Delineated Wetlands
	Riprap Area



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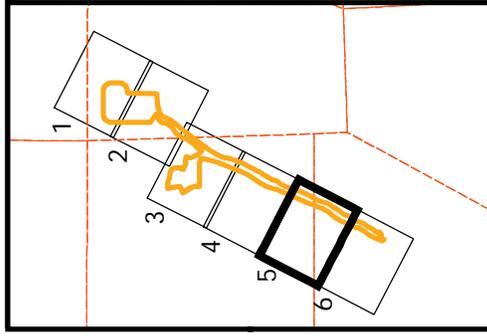
Lake Francis Case/Missouri River



Cedar Shore Bank
Stabilization Project
Oacoma, SD
Wetlands and WUS
Exhibit 9-5



- Ordinary High Water Mark (OHWM)
- Temporary Excavation
- Construction Limits
- Field Delineated Wetlands
- Riprap Area



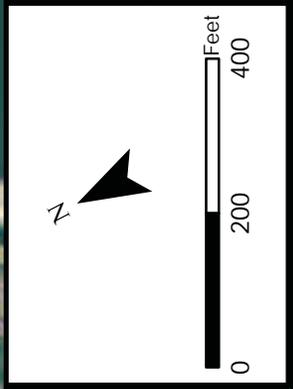
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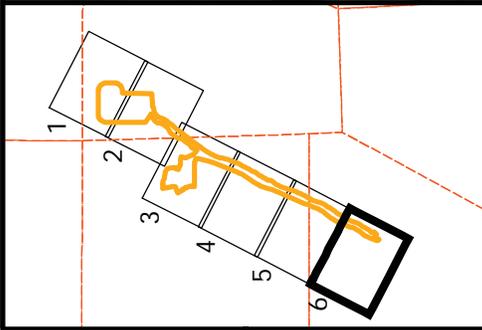
Lake Francis Case/Missouri River

Wetland 4

Cedar Shore Bank Stabilization Project Oacoma, SD
Wetlands and WUS
Exhibit 9-6



	Ordinary High Water Mark (OHWM)
	Field Delineated Wetlands
	Construction Limits
	Riprap Area
	Temporary Excavation



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APPENDIX B
SITE VISIT PHOTOGRAPHS

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Photo #1. Typical installation of drilled shaft.



Photo #2. Typical installation of reinforcing cage embedded in concrete to increase the strength.



Photo #3. Example of drilled shafts covered with riprap.



Photo #4. Example of drilled shafts covered with riprap.



Photo #5. Facing wetland area just west of shoreline drive. Wetland located in wooded ravine and extends into a draw within pastureland. Facing Southwest.



Photo #6. Facing embankment along Highway 16. Facing Southeast.



Photo #7. Looking towards riverbank in the central portion of the Study Area. Facing northeast.



Photo #8. Looking towards riverbank in the central portion of the Study Area. Facing northeast.



Photo #9. Looking towards riverbank near Cedar Shore campground to south of the resort. Facing southwest.



Photo #10. Looking towards riverbank near Cedar Shore resort. Facing northeast.

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APPENDIX C

AGENCY COORDINATION

- Letters distributed to agencies—July 10, 2013
- Letter from FEMA to potential cooperating agencies—July 29, 2013
- Letter from FEMA to USFWS concerning threatened and endangered species—July 29, 2013
- Response letter from NRCS—July 26, 2013
- Response letter from USFWS—August 6, 2013
- Response letter from SDGFP—August 8, 2013
- Response letter from SDDENR—August 12, 2013
- Response letter from SDDENR (air quality)—August 19, 2013
- Letter from USACE to general distribution list under the Programmatic Agreement for Section 106- October 9, 2013
- Response letter from SHPO—November 15, 2013

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July 10, 2013

Ms. Deanna Peterson
USDA-NRCS-Federal Building
200 Fourth St. SW
Huron, SD 57350-2475

**RE: Cedar Shores Bank Stabilization Environmental Assessment (EA)
Oacoma, Lyman County, South Dakota**

Dear Ms. Peterson:

The Federal Emergency Management Agency (FEMA) and South Dakota Department of Game Fish and Parks (SDGFP) have initiated a study for a proposed project at Cedar Shores Resort in the City of Oacoma, Lyman County, South Dakota. The SDGFP has requested Federal assistance from the FEMA and the United States Coast Guard (USCG) to reduce the long-term risk to the existing infrastructure due to the erosion of the western bank of the Missouri River from Hwy 16 to Cedar Shores Resort (see Figure 1). State funding will also be provided by SDGFP, the South Dakota Department of Environment & Natural Resources (SDDENR) and the South Dakota Department of Transportation (SDDOT).

As part of our early coordination efforts for the Project, we would like to provide your agency with Project background information on the Project as well as request any comments or responses you might have about the Project due to your agency's area of expertise and/or jurisdiction by law. The following is a discussion of the Project.

Due to flooding, the west bank of the Missouri River from Hwy 16 to Cedar Shores Resort has eroded at an accelerated rate, posing a risk to the existing infrastructure. The existing infrastructure includes Shoreline Drive, pedestrian facilities, utility lines such as sewer and water, and Cedar Shores Campground and Resort. The erosion has encroached on the pedestrian facilities and portions of the Cedar Shores Campground and Resort. Shoreline Drive is currently not experiencing roadway stability issues, however, continued erosion would become an issue. The existing infrastructure is vital to the residents in this area in order to access their properties and receive services such as sewer and water. The existing infrastructure is also vital for the visitors to access the area's recreational opportunities.

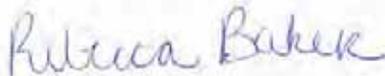
This Project will provide stabilization of an active landslide occurring at the Cedar Shores Resort using drilled piers with tie backs for approximately 800 feet downslope from the resort. The Project will also stabilize and reshape approximately 8,200 feet of the shoreline along the campground area, Shoreline Drive, and pedestrian trail.

USDA-NRCS-Federal Building
July 10, 2013
Page 2

During the study, National Environmental Policy Act (NEPA) documentation will be completed since federal funding; FEMA funds will be utilized. For this Project, the environmental documentation required is anticipated to be an Environmental Assessment.

Please submit your comments to me by July 29, 2013, so that the Project's environmental documentation can be completed and the Project can move forward in a timely manner. If you have any questions regarding the Project, please feel free to call me at (605) 977-7756. If desired or necessary, we can certainly set up a meeting with you or representatives of your agency to discuss the Project. Thank you for your consideration of this Project.

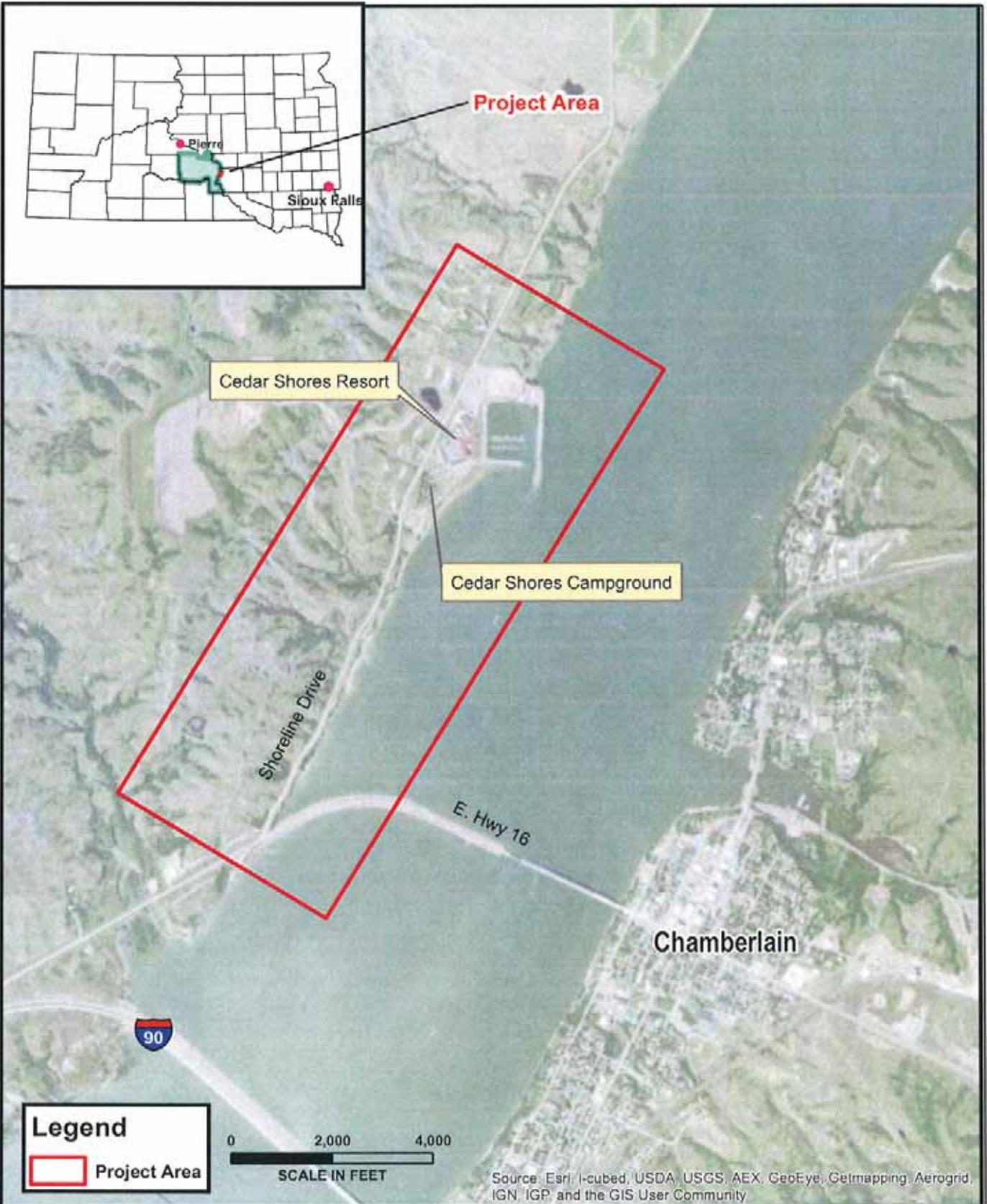
Sincerely,



Rebecca Baker
Environmental Scientist

Attachments:
Figure 1: Project Area

H:\GIS\2012_Projects\SDGFFP\213127_Cedar_Shores\Map_Docs\Agency_Letters\Project_Area.mxd, 7/5/2013



**Project Area
Cedar Shores Bank Stabilization**

DATE
July 2013

FIGURE
1



July 10, 2013

Mr. Cody Wilson
U.S. Army Corps of Engineers
P.O. Box 199
Pickstown, SD 57367-0199

**RE: Cedar Shores Bank Stabilization Environmental Assessment (EA)
Oacoma, Lyman County, South Dakota**

Dear Mr. Wilson:

The Federal Emergency Management Agency (FEMA) and South Dakota Department of Game Fish and Parks (SDGFP) have initiated a study for a proposed project at Cedar Shores Resort in the City of Oacoma, Lyman County, South Dakota. The SDGFP has requested Federal assistance from the FEMA and the United States Coast Guard (USCG) to reduce the long-term risk to the existing infrastructure due to the erosion of the western bank of the Missouri River from Hwy 16 to Cedar Shores Resort (see Figure 1). State funding will also be provided by SDGFP, the South Dakota Department of Environment & Natural Resources (SDDENR) and the South Dakota Department of Transportation (SDDOT).

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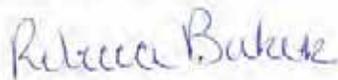
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U.S. Army Corps of Engineers
July 10, 2013
Page 2

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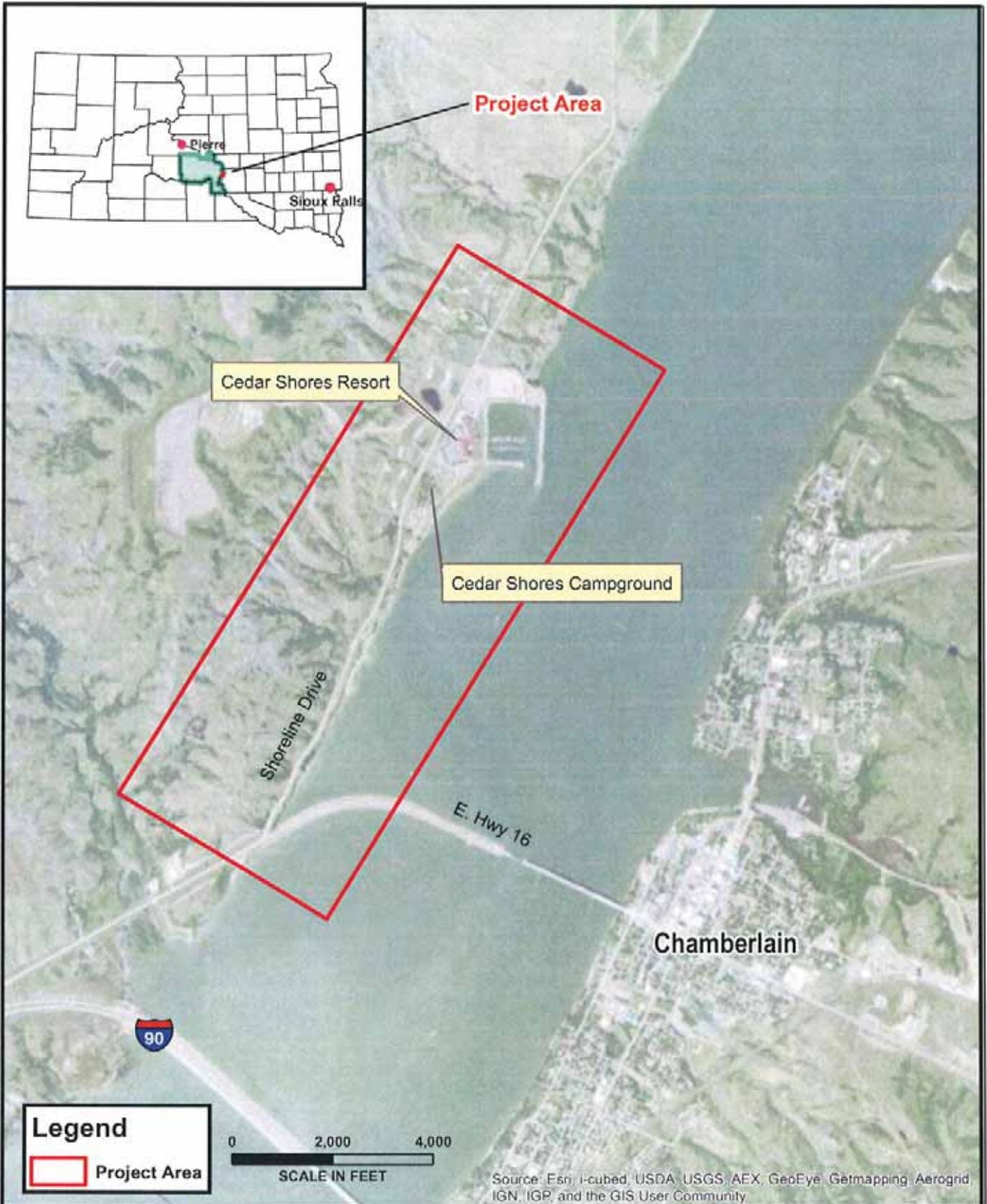
Sincerely,

A handwritten signature in blue ink that reads "Rebecca Baker".

Rebecca Baker
Environmental Scientist

Attachments:
Figure 1: Project Area

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Project Area
Cedar Shores Bank Stabilization

DATE
July 2013

FIGURE
1

July 10, 2013

Mr. Randy Kittle
South Dakota Department of Game, Fish and Parks
Joe Foss Building
523 East Capitol
Pierre, SD 57501-2217

**RE: Cedar Shores Bank Stabilization Environmental Assessment (EA)
Oacoma, Lyman County, South Dakota**

Dear Mr. Kittle:

The Federal Emergency Management Agency (FEMA) and South Dakota Department of Game Fish and Parks (SDGFP) have initiated a study for a proposed project at Cedar Shores Resort in the City of Oacoma, Lyman County, South Dakota. The SDGFP has requested Federal assistance from the FEMA and the United States Coast Guard (USCG) to reduce the long-term risk to the existing infrastructure due to the erosion of the western bank of the Missouri River from Hwy 16 to Cedar Shores Resort (see Figure 1). State funding will also be provided by SDGFP, the South Dakota Department of Environment & Natural Resources (SDDENR) and the South Dakota Department of Transportation (SDDOT).

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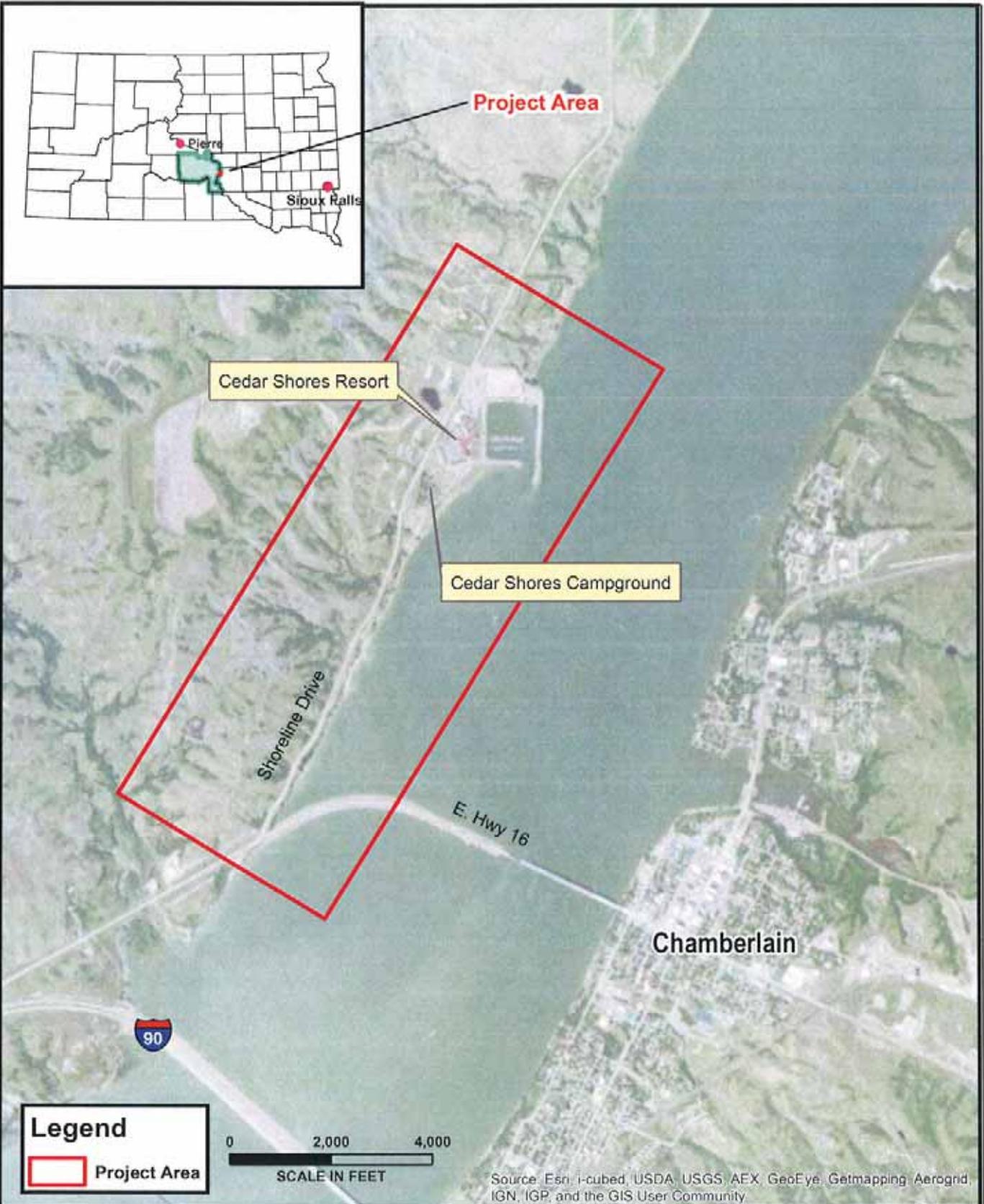
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Environmental Scientist

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**Project Area
Cedar Shores Bank Stabilization**

DATE
July 2013

FIGURE
1



July 10, 2013

Ms. Leslie Murphy
South Dakota Department of Game, Fish and Parks
Joe Foss Building
523 East Capitol
Pierre, SD 57501-3181

**RE: Cedar Shores Bank Stabilization Environmental Assessment (EA)
Oacoma, Lyman County, South Dakota**

Dear Ms. Murphy:

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South Dakota Department of Game, Fish and Parks
July 10, 2013
Page 2

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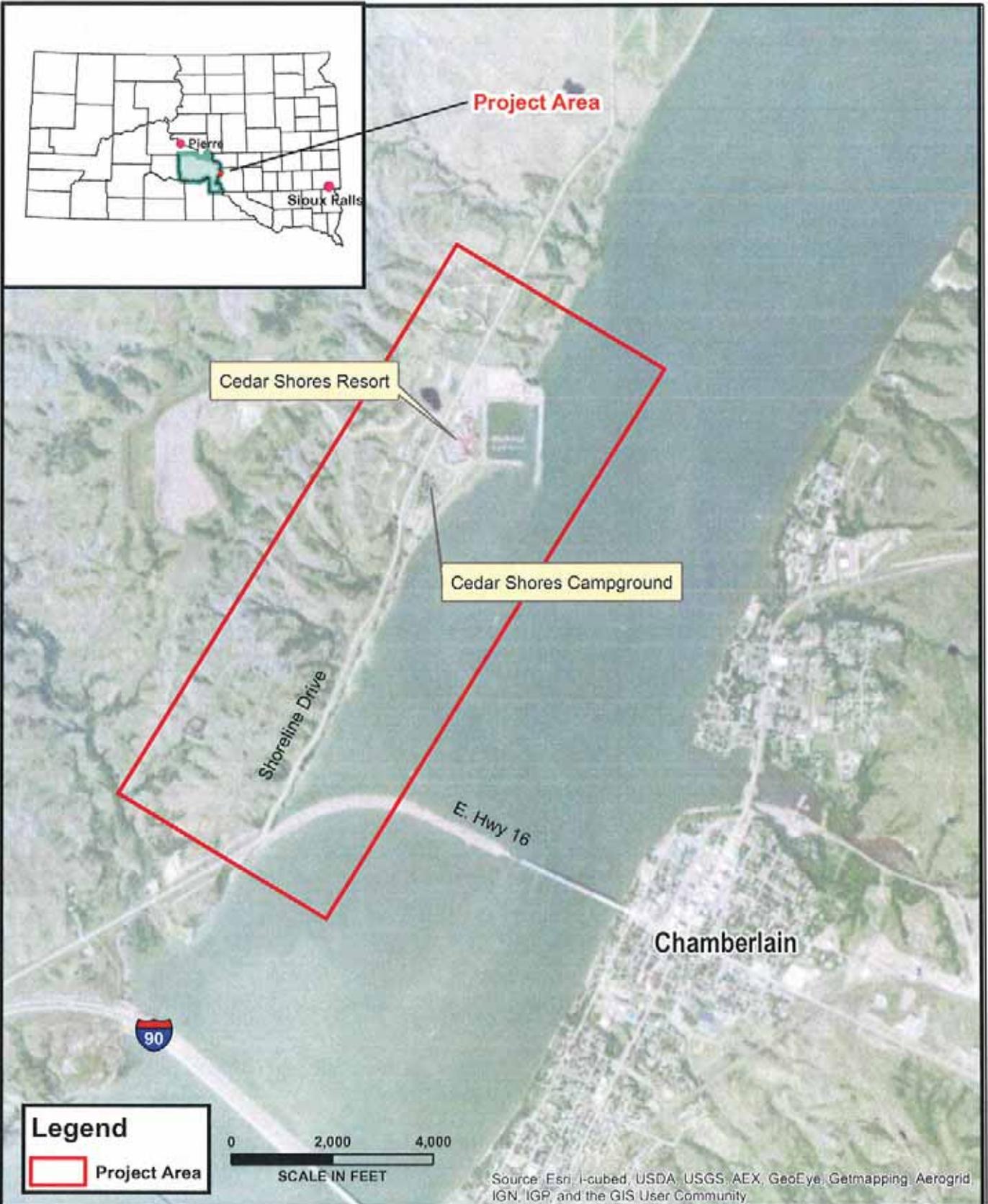
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Environmental Scientist

Attachments:
Figure 1: Project Area

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Project Area
Cedar Shores Bank Stabilization

DATE
July 2013

FIGURE
1

July 10, 2013

Ms. Amy Rubringh
South Dakota State Historical Society
901 Governors Drive
Pierre, SD 57501-2218

**RE: Cedar Shores Bank Stabilization Environmental Assessment (EA)
Oacoma, Lyman County, South Dakota**

Dear Ms. Rubringh:

The Federal Emergency Management Agency (FEMA) and South Dakota Department of Game Fish and Parks (SDGFP) have initiated a study for a proposed project at Cedar Shores Resort in the City of Oacoma, Lyman County, South Dakota. The SDGFP has requested Federal assistance from the FEMA and the United States Coast Guard (USCG) to reduce the long-term risk to the existing infrastructure due to the erosion of the western bank of the Missouri River from Hwy 16 to Cedar Shores Resort (see Figure 1). State funding will also be provided by SDGFP, the South Dakota Department of Environment & Natural Resources (SDDENR) and the South Dakota Department of Transportation (SDDOT).

As part of our early coordination efforts for the Project, we would like to provide your agency with Project background information on the Project as well as request any comments or responses you might have about the Project due to your agency's area of expertise and/or jurisdiction by law. The following is a discussion of the Project.

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This Project will provide stabilization of an active landslide occurring at the Cedar Shores Resort using drilled piers with tie backs for approximately 800 feet downslope from the resort. The Project will also stabilize and reshape approximately 8,200 feet of the shoreline along the campground area, Shoreline Drive, and pedestrian trail.

South Dakota State Historical Society
July 10, 2013
Page 2

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Please submit your comments to me by July 29, 2013, so that the Project's environmental documentation can be completed and the Project can move forward in a timely manner. If you have any questions regarding the Project, please feel free to call me at (605) 977-7756. If desired or necessary, we can certainly set up a meeting with you or representatives of your agency to discuss the Project. Thank you for your consideration of this Project.

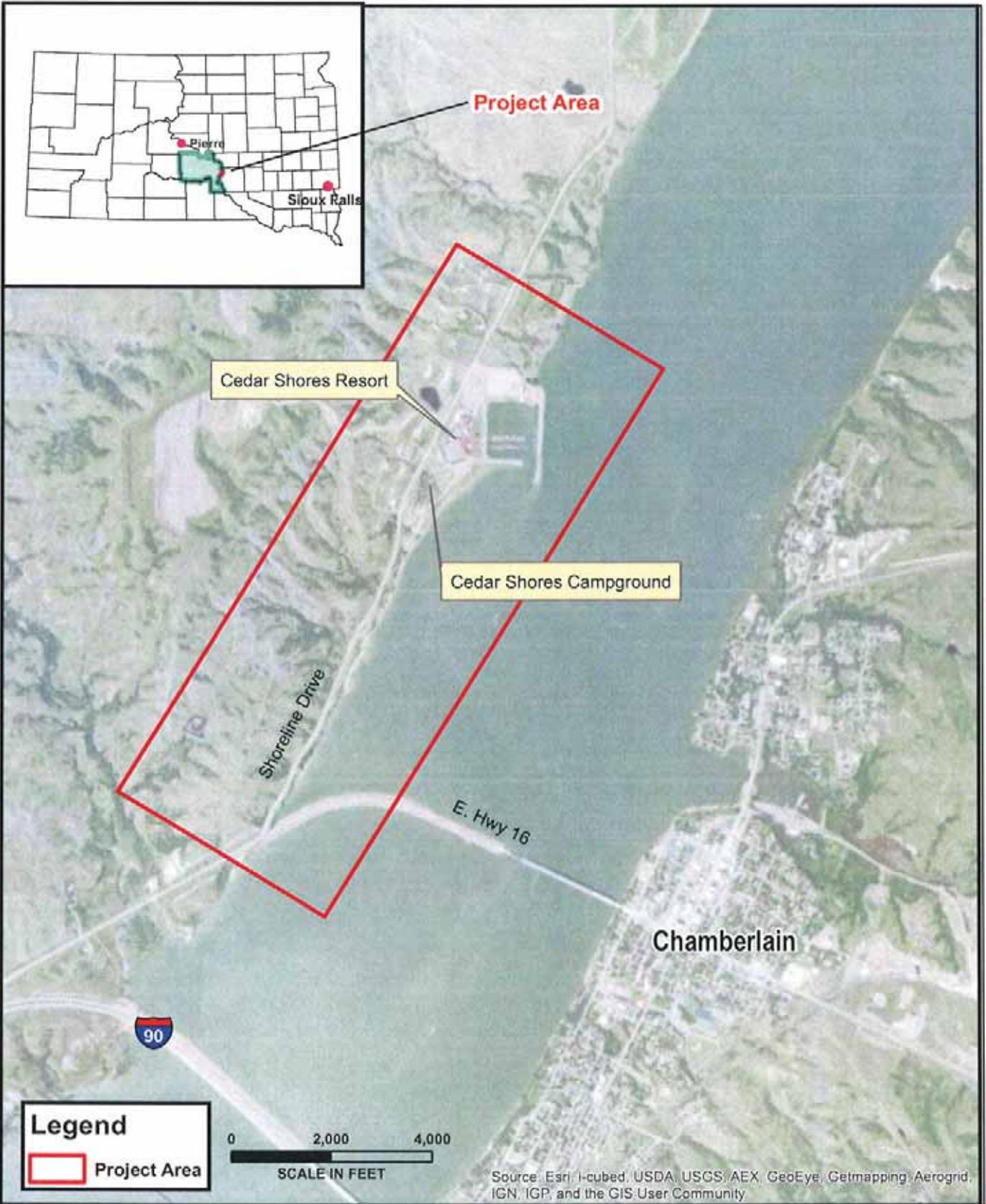
Sincerely,



Rebecca Baker
Environmental Scientist

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**Project Area
Cedar Shores Bank Stabilization**

DATE
July 2013

FIGURE
1



July 10, 2013

Mr. Brad Schultz
South Dakota Department of Environment and Natural Resources
Joe Foss Building
523 East Capitol
Pierre, SD 57501-3181

**RE: Cedar Shores Bank Stabilization Environmental Assessment (EA)
Oacoma, Lyman County, South Dakota**

Dear Mr. Schultz:

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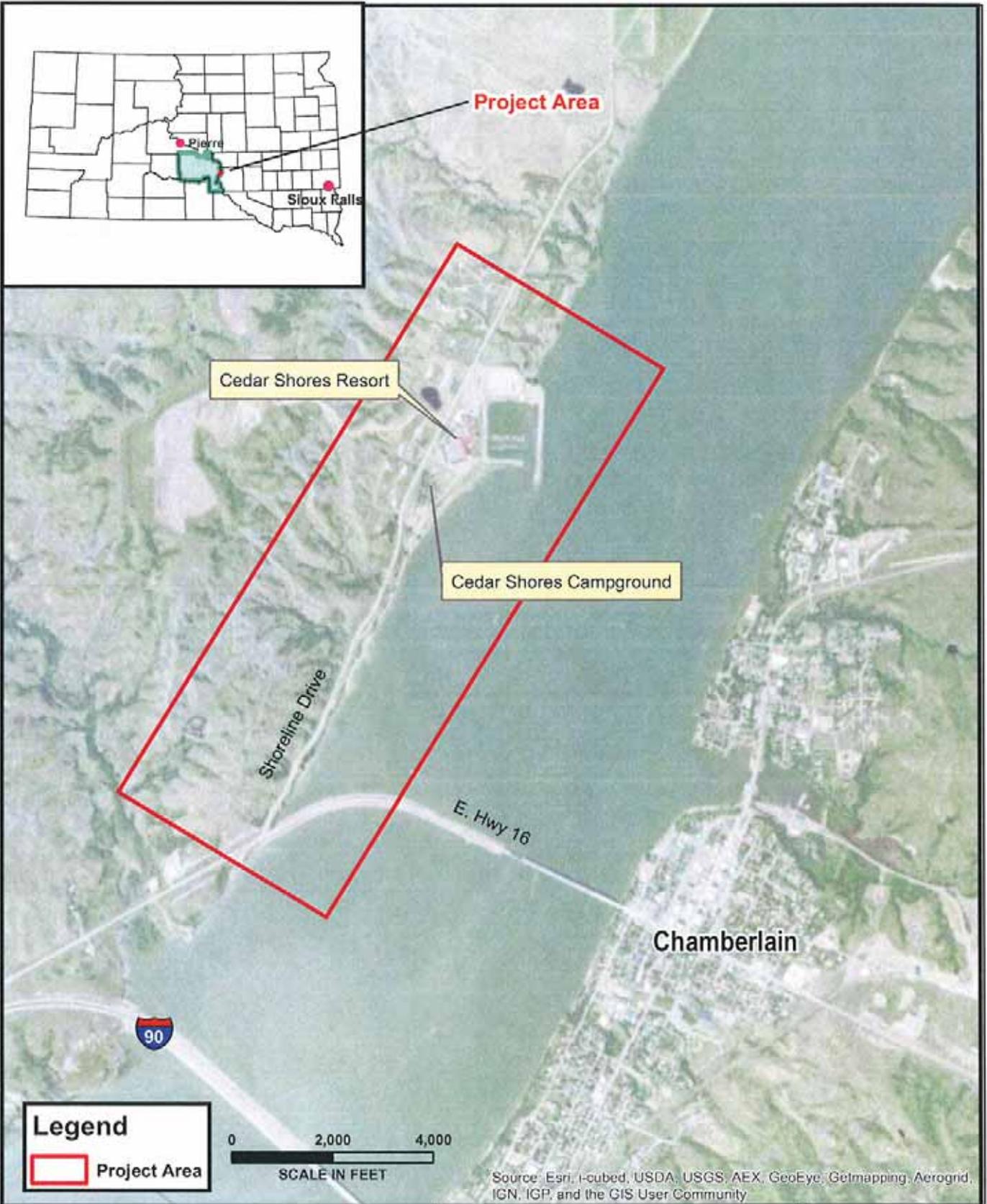
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Rebecca Baker
Environmental Scientist

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**Project Area
Cedar Shores Bank Stabilization**

DATE
July 2013

FIGURE
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July 10, 2013

Mr. John Miller
South Dakota Department of Environment and Natural Resources
Joe Foss Building
523 East Capitol
Pierre, SD 57501-3181

**RE: Cedar Shores Bank Stabilization Environmental Assessment (EA)
Oacoma, Lyman County, South Dakota**

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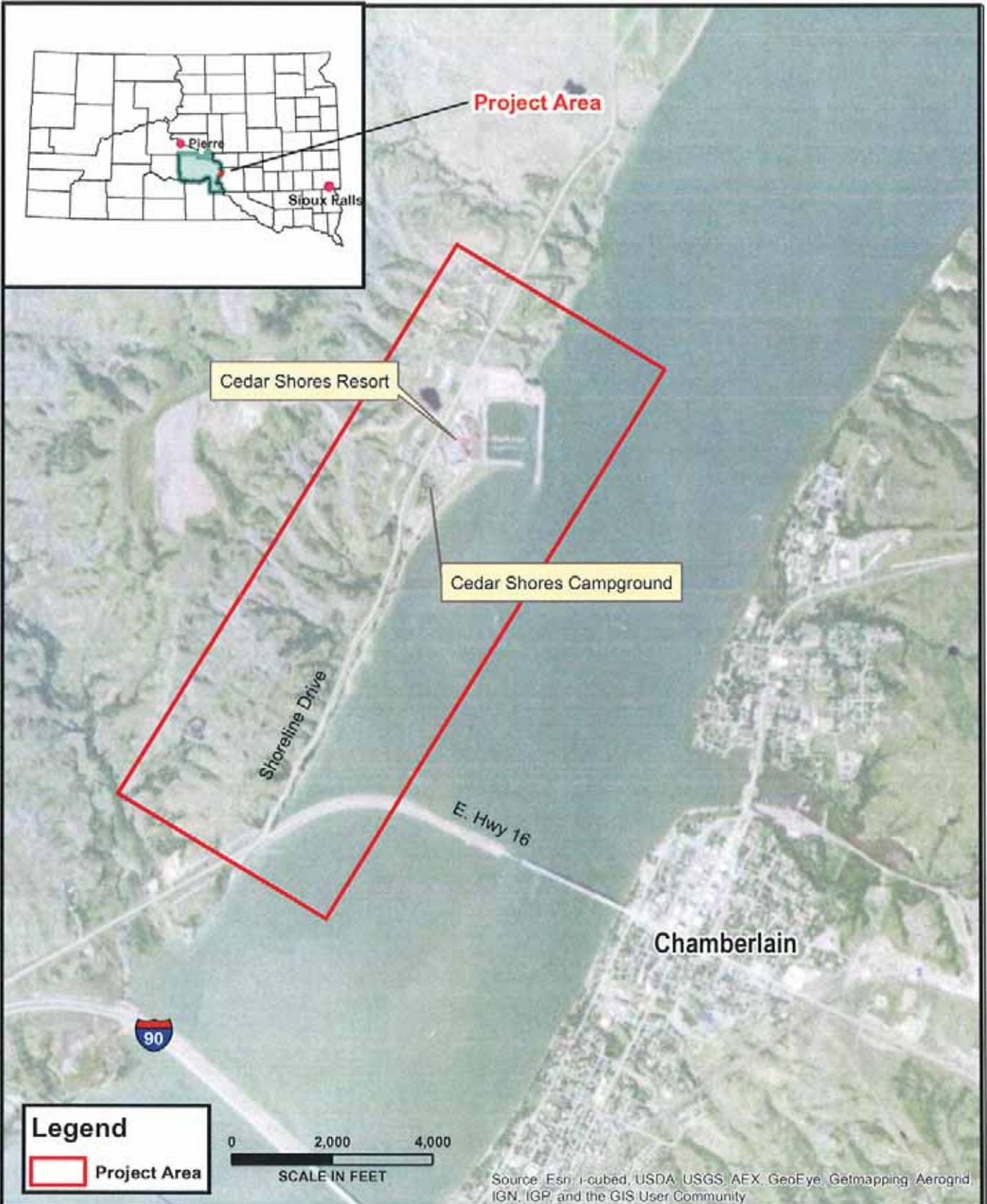
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Rebecca Baker
Environmental Scientist

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Project Area
Cedar Shores Bank Stabilization

DATE
July 2013

FIGURE
1



July 9, 2013

Mr. Steve Naylor
U.S. Army Corps of Engineers
28563 Powerhouse Road
Room 118
Pierre, SD 57501

**RE: Cedar Shores Bank Stabilization Environmental Assessment (EA)
Oacoma, Lyman County, South Dakota**

Dear Mr. Naylor:

The Federal Emergency Management Agency (FEMA) and South Dakota Department of Game Fish and Parks (SDGFP) have initiated a study for a proposed project at Cedar Shores Resort in the City of Oacoma, Lyman County, South Dakota. The SDGFP has requested Federal assistance from the FEMA and the United States Coast Guard (USCG) to reduce the long-term risk to the existing infrastructure due to the erosion of the western bank of the Missouri River from Hwy 16 to Cedar Shores Resort (see Figure 1). State funding will also be provided by SDGFP, the South Dakota Department of Environment & Natural Resources (SDDENR) and the South Dakota Department of Transportation (SDDOT).

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South Dakota Regulatory Program Manager

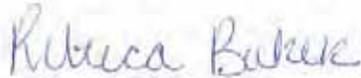
July 9, 2013

Page 2

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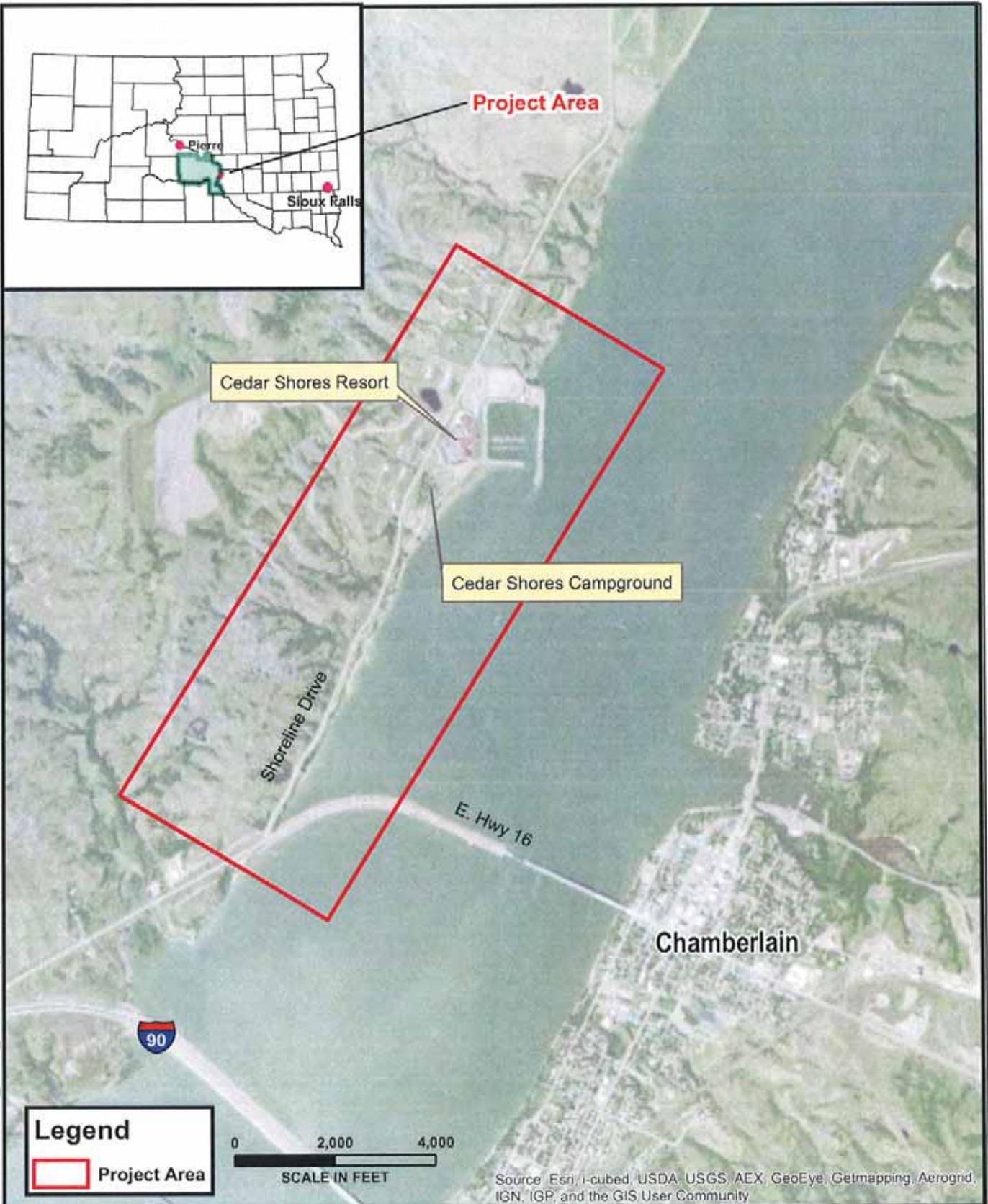
Rebecca Baker

Environmental Scientist

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Project Area
Cedar Shores Bank Stabilization

DATE
July 2013

FIGURE
1



July 29, 2013

Cody Wilson
U.S. Army Corps of Engineers
P.O. Box 199
Pickstown, SD 57367-0199

Re: Cooperating Agency status for Cedar Shore bank stabilization

Dear Mr. Wilson:

I would like to extend your office an invitation to partner with us in a cooperating agency relationship as we develop an Environmental Assessment (EA) for the use of Federal Emergency Management Agency (FEMA) funding for the proposed bank stabilization of the west shoreline of Lake Francis Case/Missouri River lying downstream from Cedar Shore Resort to Old Highway 16 in Lyman County SD.

The National Environmental Policy Act (NEPA) provides in Section 101(a) that:

“ . . . it is the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations . . . to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.”

The Council on Environmental Quality (CEQ) regulations implementing NEPA (40 CFR 1500-1508) emphasize the use of cooperating agency arrangements as a means of assuring timely coordination among Federal agencies and State, Tribal, and local governments in the preparation of NEPA analyses and documentation. We wish to seize this opportunity to work together in a cooperating agency relationship to accomplish the proposed federal action.

It is our understanding that multiple federal, tribal, state and local agencies may be providing funds and/or will have regulatory jurisdiction for various portions of the proposed project. As roles and responsibilities become more clearly defined, FEMA may prepare memoranda of understanding (MOU), letters, or other agreement documents that set forth the working relationship between specific government entities serving as cooperating agencies. These written agreements will formally establish the expectations, roles, and responsibilities of the parties involved, and help to avoid duplication of environmental requirements for those other actions needed to complete the proposed project.

Below is an informational sheet that defines a cooperating agency, its roles and responsibilities, and the process involved in becoming a cooperating agency. We would like your office to consider this opportunity to partner with FEMA and we will work with you to ensure that this is accomplished in a manner that follows the spirit of the guiding CEQ regulations. Benefits of obtaining cooperating agency status include:

- Use of the environmental analysis to meet the NEPA requirements of multiple funding and regulatory agencies;
- Establishment of protocols for sharing and disclosing relevant information early in the analytical process;
- Establishing a mechanism for addressing intergovernmental issues;
- Expediting the grant review and disbursement process.

Draft NEPA documents will be provided for your review as they are completed. Please feel free to share these documents within your office and provide comments. At a minimum, we ask that you review the documents to verify the accuracy of the information as it relates to the actions for which your agency is responsible.

If you feel that your agency cannot commit the staff or resources required of a cooperating agency, there may well be other means for you to become more involved in FEMA's planning process. Developing a partnership between your agency and FEMA will create a stronger, more relevant, and more efficient NEPA process. This will help lead to sustainable decision making process for the grants and projects under our respective jurisdictions, and a healthy economy and environment that will serve all citizens well.

Please do not hesitate to contact me by email at richard.myers@2.fema.dhs.gov or by telephone at (303) 235-4926 if you have further questions concerning this endeavor.

We look forward to working with you.

Sincerely,



Richard Myers
Deputy Regional Environmental Officer
FEMA Region VIII

Cooperating Agency Information FAQs

1. What is a “cooperating agency?”

A cooperating agency assists the lead Federal agency in developing an Environmental Assessment (EA) or Environmental Impact Statement (EIS). The CEQ regulations implementing NEPA define a cooperating agency as any agency that has jurisdiction by law or special expertise for proposals covered by NEPA. See CEQ Regulations for Implementing NEPA, 40 CFR §1501.6. Any Federal, State, local, or Tribal government entity with such qualifications may become a cooperating agency on an EA or EIS by agreement with the lead Federal agency. For example, if a county has jurisdiction by law over some aspect of a proposed project, has special expertise, and wishes to assist in analyzing impacts, it may request cooperating agency designation from the lead Federal agency.

2. How are State, local or Tribal government entities designated as a cooperating agency?

FEMA may invite State, local or Tribal government entities to participate as cooperating agencies, or a State, local or Tribal government entity may request that FEMA grant cooperating agency status. In any case, the Federal lead agency with primary responsibility for preparing the EA or EIS would decide whether: 1) the local government entity meets the CEQ requirements for cooperating agency status (40 CFR §1501.6), and 2) designation is appropriate. More than one agency or government entity may be designated as a cooperating agency.

In addition, FEMA may agree with a State, local or Tribal government entity that specific categories of activities are generally suitable for cooperating agency participation, based on the experience of the Federal agency and the State or local entity involved. Specific designation of cooperating agency status may take place on a case-by-case basis. Memoranda of understanding or other agreement documents, which are discussed under item 5, play a useful role in specifically setting out the designated responsibilities of the lead Federal agency and each cooperating agency.

3. What are the responsibilities of a cooperating agency in the preparation of an EA or EIS?

A cooperating agency participates in the preparation of the EA or EIS by agreeing to:

- Assist in the NEPA analysis at the earliest possible time.

- Participate in the scoping process, which helps define and frame the issues to be addressed in the NEPA document.

- Develop information and prepare environmental analyses (upon request of the lead agency) for portions of the EA or EIS over which the cooperating agency has special expertise.
- Contribute staff support and other resources at the lead agency's request to enhance the NEPA team's interdisciplinary capability.
- Share freely any information and data relevant to the NEPA analysis, thereby facilitating rational, fact-based decision making.
- Rely on its own funds to support its participation in the EA or EIS.

In harmony with the goals of NEPA, participation by cooperating agencies promotes efficiency, cooperation, and disclosure to the public of all relevant information. Prior to the designation of a non-Federal entity as a cooperating agency, the Federal and non-Federal entities should discuss each other's expectations and responsibilities. All parties would thus be assured that any request by the lead Federal agency, pursuant to 40 CFR 1501.6 (b)(3), (4), and (5), could be met by the cooperating agency.

4. What are the limitations on the role of a non-Federal cooperating agency?

In becoming a cooperating agency, a State, local or Tribal governmental entity does not gain new authority. FEMA retains the exclusive authority to make decisions on projects or programs for which it has responsibility by law.

For example, FEMA retains sole decision making authority for the environmental and historic preservation determinations with respect to projects funded with FEMA grants. Under the law, this authority cannot be delegated to a non-Federal government entity. Similarly, by becoming a cooperating agency, a non-Federal entity does not give up its authority to make decisions on issues over which it has legal jurisdiction.

The lead Federal agency retains decision making authority over issues relating to the completion of the EA or EIS. That is so, because it is the Federal agency that is charged with carrying out the NEPA process under §102(2)(c) of NEPA. If parties find they cannot agree on issues related to the preparation of the EA or EIS, each will be free to proceed independently in order to meet respective schedules for rendering decisions.

5. How does the FEMA formalize designation of a cooperating agency?

FEMA may prepare a memorandum of understanding (MOU), letter, or other agreement document as needed that sets forth the working relationship between the Federal agency and the State, local or Tribal government entity serving as a cooperating agency. This written agreement formally establishes the expectations, roles, and responsibilities of the parties involved. A single agreement may cover all project participants, or there may be separate agreements, as appropriate. Agency legal counsel should be consulted before such agreements are executed.



July 29, 2013

Tom Lehmkuhl
South Dakota Department of Transportation
Becker-Hansen Building
702 East Broadway
Pierre, SD 57501

Re: Cooperating Agency status for Cedar Shore bank stabilization

Dear Mr. Lehmkuhl:

I would like to extend your office an invitation to partner with us in a cooperating agency relationship as we develop an Environmental Assessment (EA) for the use of Federal Emergency Management Agency (FEMA) funding for the proposed bank stabilization of the west shoreline of Lake Francis Case/Missouri River lying downstream from Cedar Shore Resort to Old Highway 16 in Lyman County SD.

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July 29, 2013

Jack Roberts
U.S. Coast Guard- Boating Safety Division
2100 Second Street SW
Washington, DC 20593

Re: Cooperating Agency status for Cedar Shore bank stabilization

Dear Mr. Roberts:

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Sincerely,



Richard Myers
Deputy Regional Environmental Officer
FEMA Region VIII

Cooperating Agency Information FAQs

1. What is a “cooperating agency?”

A cooperating agency assists the lead Federal agency in developing an Environmental Assessment (EA) or Environmental Impact Statement (EIS). The CEQ regulations implementing NEPA define a cooperating agency as any agency that has jurisdiction by law or special expertise for proposals covered by NEPA. See CEQ Regulations for Implementing NEPA, 40 CFR §1501.6. Any Federal, State, local, or Tribal government entity with such qualifications may become a cooperating agency on an EA or EIS by agreement with the lead Federal agency. For example, if a county has jurisdiction by law over some aspect of a proposed project, has special expertise, and wishes to assist in analyzing impacts, it may request cooperating agency designation from the lead Federal agency.

2. How are State, local or Tribal government entities designated as a cooperating agency?

FEMA may invite State, local or Tribal government entities to participate as cooperating agencies, or a State, local or Tribal government entity may request that FEMA grant cooperating agency status. In any case, the Federal lead agency with primary responsibility for preparing the EA or EIS would decide whether: 1) the local government entity meets the CEQ requirements for cooperating agency status (40 CFR §1501.6), and 2) designation is appropriate. More than one agency or government entity may be designated as a cooperating agency.

In addition, FEMA may agree with a State, local or Tribal government entity that specific categories of activities are generally suitable for cooperating agency participation, based on the experience of the Federal agency and the State or local entity involved. Specific designation of cooperating agency status may take place on a case-by-case basis. Memoranda of understanding or other agreement documents, which are discussed under item 5, play a useful role in specifically setting out the designated responsibilities of the lead Federal agency and each cooperating agency.

3. What are the responsibilities of a cooperating agency in the preparation of an EA or EIS?

A cooperating agency participates in the preparation of the EA or EIS by agreeing to:

- Assist in the NEPA analysis at the earliest possible time.

- Participate in the scoping process, which helps define and frame the issues to be addressed in the NEPA document.

- Develop information and prepare environmental analyses (upon request of the lead agency) for portions of the EA or EIS over which the cooperating agency has special expertise.
- Contribute staff support and other resources at the lead agency's request to enhance the NEPA team's interdisciplinary capability.
- Share freely any information and data relevant to the NEPA analysis, thereby facilitating rational, fact-based decision making.
- Rely on its own funds to support its participation in the EA or EIS.

In harmony with the goals of NEPA, participation by cooperating agencies promotes efficiency, cooperation, and disclosure to the public of all relevant information. Prior to the designation of a non-Federal entity as a cooperating agency, the Federal and non-Federal entities should discuss each other's expectations and responsibilities. All parties would thus be assured that any request by the lead Federal agency, pursuant to 40 CFR 1501.6 (b)(3), (4), and (5), could be met by the cooperating agency.

4. What are the limitations on the role of a non-Federal cooperating agency?

In becoming a cooperating agency, a State, local or Tribal governmental entity does not gain new authority. FEMA retains the exclusive authority to make decisions on projects or programs for which it has responsibility by law.

For example, FEMA retains sole decision making authority for the environmental and historic preservation determinations with respect to projects funded with FEMA grants. Under the law, this authority cannot be delegated to a non-Federal government entity. Similarly, by becoming a cooperating agency, a non-Federal entity does not give up its authority to make decisions on issues over which it has legal jurisdiction.

The lead Federal agency retains decision making authority over issues relating to the completion of the EA or EIS. That is so, because it is the Federal agency that is charged with carrying out the NEPA process under §102(2)(c) of NEPA. If parties find they cannot agree on issues related to the preparation of the EA or EIS, each will be free to proceed independently in order to meet respective schedules for rendering decisions.

5. How does the FEMA formalize designation of a cooperating agency?

FEMA may prepare a memorandum of understanding (MOU), letter, or other agreement document as needed that sets forth the working relationship between the Federal agency and the State, local or Tribal government entity serving as a cooperating agency. This written agreement formally establishes the expectations, roles, and responsibilities of the parties involved. A single agreement may cover all project participants, or there may be separate agreements, as appropriate. Agency legal counsel should be consulted before such agreements are executed.



July 29, 2013

Trisha Korbas
U.S. Economic Development Agency
410 17th Street, Suite 250
Denver, CO 80202

Re: Cooperating Agency status for Cedar Shore bank stabilization

Dear Ms. Korbas:

I would like to extend your office an invitation to partner with us in a cooperating agency relationship as we develop an Environmental Assessment (EA) for the use of Federal Emergency Management Agency (FEMA) funding for the proposed bank stabilization of the west shoreline of Lake Francis Case/Missouri River lying downstream from Cedar Shore Resort to Old Highway 16 in Lyman County SD.

The National Environmental Policy Act (NEPA) provides in Section 101(a) that:

“ . . . it is the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations . . . to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.”

The Council on Environmental Quality (CEQ) regulations implementing NEPA (40 CFR 1500-1508) emphasize the use of cooperating agency arrangements as a means of assuring timely coordination among Federal agencies and State, Tribal, and local governments in the preparation of NEPA analyses and documentation. We wish to seize this opportunity to work together in a cooperating agency relationship to accomplish the proposed federal action.

It is our understanding that multiple federal, tribal, state and local agencies may be providing funds and/or will have regulatory jurisdiction for various portions of the proposed project. As roles and responsibilities become more clearly defined, FEMA may prepare memoranda of understanding (MOU), letters, or other agreement documents that set forth the working relationship between specific government entities serving as cooperating agencies. These written agreements will formally establish the expectations, roles, and responsibilities of the parties involved, and help to avoid duplication of environmental requirements for those other actions needed to complete the proposed project.

Below is an informational sheet that defines a cooperating agency, its roles and responsibilities, and the process involved in becoming a cooperating agency. We would like your office to consider this opportunity to partner with FEMA and we will work with you to ensure that this is accomplished in a manner that follows the spirit of the guiding CEQ regulations. Benefits of obtaining cooperating agency status include:

- Use of the environmental analysis to meet the NEPA requirements of multiple funding and regulatory agencies;
- Establishment of protocols for sharing and disclosing relevant information early in the analytical process;
- Establishing a mechanism for addressing intergovernmental issues;
- Expediting the grant review and disbursement process.

Draft NEPA documents will be provided for your review as they are completed. Please feel free to share these documents within your office and provide comments. At a minimum, we ask that you review the documents to verify the accuracy of the information as it relates to the actions for which your agency is responsible.

If you feel that your agency cannot commit the staff or resources required of a cooperating agency, there may well be other means for you to become more involved in FEMA's planning process. Developing a partnership between your agency and FEMA will create a stronger, more relevant, and more efficient NEPA process. This will help lead to sustainable decision making process for the grants and projects under our respective jurisdictions, and a healthy economy and environment that will serve all citizens well.

Please do not hesitate to contact me by email at richard.myers@2.fema.dhs.gov or by telephone at (303) 235-4926 if you have further questions concerning this endeavor.

We look forward to working with you.

Sincerely,



Richard Myers
Deputy Regional Environmental Officer
FEMA Region VIII

Cooperating Agency Information FAQs

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July 29, 2013

Mr. Scott Larson
U.S. Fish and Wildlife Service
421 South Garfield Avenue
Suite 401
Pierre, SD 57502

RE: Threatened and Endangered Species

Dear Mr. Larson:

The Federal Emergency Management Agency (FEMA) and South Dakota Department of Game Fish and Parks (SDGFP) have initiated a study for a proposed shoreline stabilization at Cedar Shore Resort in the City of Oacoma, Lyman County, South Dakota (the Project). The SDGFP has requested Federal assistance from the FEMA and the United States Coast Guard (USCG) to reduce the long-term risk to the existing infrastructure due to the erosion of the western bank of the Missouri River from Hwy 16 to Cedar Shore Resort (see Figure 1). State funding will also be provided by SDGFP, the South Dakota Department of Environment & Natural Resources (SDDENR) and the South Dakota Department of Transportation (SDDOT). Five threatened and endangered species, one candidate species are listed for Lyman County. Bald and Golden eagles may also occur within the county. This memo contains an overview of the listed threatened and endangered species for Lyman County, proposed effect determinations, and measures to minimize any potential impacts.

Early agency coordination is being completed as part of the proposed project to solicit information to be used for the environmental documentation. Letters have been sent to USACE, USDA-NRCS, SDDENR, and SDGFP on 07/10 /2013 and responses are pending.

The following sections summarize species and habitat descriptions, and propose an effect determination on threatened and endangered species.

Interior Least Tern— The interior least tern is an endangered species that utilizes sparsely vegetated sandbars along rivers, sand and gravel pits. The proposed Project Area does not contain any of these sandbar areas and therefore a determination of *no effect* on interior least tern is indicated for the Project.

Piping Plover— The Project is located along the west bank of the Missouri River. The piping plover utilizes sparsely vegetated sandbars in the Missouri “remnant” reach. The proposed Project Area contains both forested land and cropland and is located near the shoreline where no critical habitat exists.

Shorelines within the Project Area are steep and human activity in the area is prevalent. Because of these reasons, a determination of *no effect* on piping plover is indicated for the Project.

Pallid Sturgeon-- The pallid sturgeon is an endangered large river species found within the Missouri River. The pallid sturgeon favors gravel deposits and slow moving side channels to spawn. The Project may include placing rip-rap along the shoreline, which extends approximately 8,200 along the Project Area. No pile driving activities or other significant vibration-causing activities will occur for the Project. The proposed project will not involve destruction or modification of suitable habitat or any other activities that could affect the natural function of the river. The project will not require entrainment of water in diversion structures and standard Best Management Practices for erosion and sediment control will be implemented to minimize impacts to water quality.

Due to the Project location and planned activities, the pallid sturgeon will not likely be adversely affected by Project activities. Therefore, a determination of *may affect, but not likely to adversely affect* on Pallid sturgeon is indicated for the Project.

Whooping Crane—The whooping crane is an endangered species and only one population occurs in North America. They nest in Wood Buffalo National Park and adjacent areas in Canada and winter in coastal marshes in Texas and Kansas. They utilize wetlands as stop-over habitat to feed and rest during their migrations. Oacoma is within the migration corridor; however the Project is located outside of potential Whooping Crane habitat. Additionally, human disturbance is prevalent within and adjacent to the Project Area from existing roadways, homes, and resort structures. Due to the lack of suitable stopover habitat within or adjacent to the Project Area, a determination *no effect* on whooping crane is indicated for the Project.

Black-footed Ferret— The black-footed ferret is an endangered species that utilizes native grasslands and depends upon prairie dogs for survival. This species uses prairie dog burrows for dens to raise their young. Since the Project Area does not contain suitable habitat, a determination of *no effect* on black-footed ferret is indicated for the Project.

Sprague's Pipit— The Sprague's pipit is a ground nester that breeds and winters in open grasslands. It is a candidate species found in native prairie habitat. Since the Project Area does not contain suitable habitat, the Project is anticipated to have an insignificant effect on the Sprague's pipit. .

Bald and Golden Eagle— The Bald and Golden Eagle Protection Act prohibits anyone, without a permit issued by the Secretary of the Interior from “taking” bald eagles or their associated nests or eggs. bald and golden eagles are known to nest in forested areas along the Missouri River. Approximately 90 acres of forested area exists within the proposed Project Area. For these reasons, the contractor will be responsible for hiring a qualified person that is acceptable to the USFWS to identify potential eagle nests within the Project Area prior to construction. If eagle nests are spotted by the surveyor, appropriate avoidance or mitigation as prescribed by USFWS will be taken prior to construction activities.

Migratory Birds – Birds protected under the Migratory Bird Treaty Act (MBTA) include all common songbirds, waterfowl, shorebirds, hawks, owls, eagles, ravens, crows, native doves and pigeons, swifts, martins, swallows and others, including their body parts (feathers, plumes etc.), nests, and eggs. A complete list of protected species is found at 50 CFR 10.13. Take is defined as "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or any attempt to carry out these activities." A take does not include habitat destruction or alteration, as long as there is not a direct taking of birds, nests, eggs, or parts thereof.

Removal of inactive nests of migratory birds should not be accomplished prior to consultation with the USFWS. A permit may be required for removal of inactive nests. Removing the habitat (i.e. clearing and grubbing prior to nesting) for the migratory birds prior to the nesting season, April to September, can greatly reduce the chance of impacting migratory birds.

FEMA believes that, with the implementation of the recommendations and project conditions noted above, the potential for direct and indirect impacts is negligible, and has determined that the proposed actions **may affect, but are not likely to adversely affect (NLAA)** the Pallid sturgeon (a federally-listed species) or its designated critical habitat. We respectfully request your concurrence with our determination.

If you have any comments or questions or need additional information, please don't hesitate to contact me by telephone at 303-235-4926 or by email at richard.myers2@fema.dhs.gov . Thank you for all of your assistance.

Sincerely,

A handwritten signature in black ink, appearing to read 'R Myers', with a long horizontal flourish extending to the right.

Richard Myers
Deputy Regional Environmental Officer
FEMA Region VIII

Enclosure: Figure 1: Project Area

United States Department of Agriculture



Natural Resources Conservation Service
200 Fourth Street SW
Huron, South Dakota 57350

Phone: (605) 352-1200
Fax: (605) 352-1270

July 26, 2013

Ms. Rebecca Baker
Environmental Scientist
6300 S. Old Village Place, Suite 100
Sioux Falls, South Dakota 57108

RE: Cedar Shores Bank Stabilization Environmental Assessment, Oacoma, Lyman County,
South Dakota

Dear Ms. Baker:

Thank you for the opportunity to provide comments on the above projects. This project will have no effect on prime or important farmland.

The Natural Resources Conservation Service (NRCS) would advise the applicant to consult with the local NRCS and Farm Service Agency (FSA) offices regarding any USDA easements or contracts in the project area that may be affected.

If you have any questions, please contact Barb Hall, GIS Specialist, at (605) 352-1256.

Sincerely,

A handwritten signature in blue ink that reads "Deanna M. Peterson".

DEANNA M. PETERSON
State Soil Scientist



U.S. Department of Homeland Security
Region VIII
Denver Federal Center, Building 710
P.O. Box 25267
Denver, CO 80225-0267



FEMA

July 29, 2013

Mr. Scott Larson
U.S. Fish and Wildlife Service
421 South Garfield Avenue
Suite 401
Pierre, SD 57502

The U.S. Fish and Wildlife Service concurs with your conclusion that the described project will not adversely affect listed species. Contact this office if changes are made or new information becomes available.

8/6/13
Date

SD Field Supervisor
USFWS

RE: Threatened and Endangered Species

Dear Mr. Larson:

The Federal Emergency Management Agency (FEMA) and South Dakota Department of Game Fish and Parks (SDGFP) have initiated a study for a proposed shoreline stabilization project at Cedar Shore Resort in the City of Oacoma, Lyman County, South Dakota. The SDGFP has requested Federal assistance from FEMA and the United States Coast Guard (USCG) to reduce the long-term risk to the existing infrastructure due to erosion of the western bank of the Missouri River from Hwy 16 to Cedar Shore Resort (see Figure 1). State funding will also be provided by SDGFP, the South Dakota Department of Environment & Natural Resources (SDDENR) and the South Dakota Department of Transportation (SDDOT). Five threatened and endangered species and one candidate species are listed for Lyman County. Bald and Golden eagles may also occur within the county. This memo contains an overview of the listed threatened and endangered species for Lyman County, proposed effect determinations, and measures to minimize any potential impacts.

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Sincerely,

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Richard Myers
Deputy Regional Environmental Officer
FEMA Region VIII

Enclosure: Figure 1: Project Area



DEPARTMENT OF GAME, FISH, AND PARKS

Foss Building
523 East Capitol
Pierre, South Dakota 57501-3182

August 8, 2013

Ms. Rebecca Baker
HDR Engineering, Inc.
6300 S. Old Village Place, Suite 100
Sioux Falls, SD US 57108-2102

**RE: Cedar Shores Bank Stabilization Environmental Assessment
Oacoma, South Dakota**

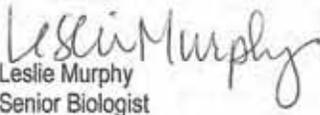
Dear Ms. Baker:

This letter is in response to your request dated July 10, 2013, for environmental comments regarding the above referenced project involving bank stabilization activities on the western bank of the Missouri River from Highway 16 to Cedar Shores Resort, near the City of Oacoma, South Dakota.

At this time, the project as proposed will have no impacts on fish and wildlife resources. If the project plans change or new information becomes available, please submit the updated information for further review. Also, as discussed with you on the phone, we would be willing to discuss the potential for including shoreline fishing access areas into the project design as the project progresses.

Thank you for the opportunity to provide comments on this project. If you have any questions, please contact me at 605.773.6208.

Sincerely,


Leslie Murphy
Senior Biologist



DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182

denr.sd.gov

August 12, 2013

Rebecca Baker
HDR Engineering Inc
6300 South Old Village Place
Suite 100
Sioux Falls, SD 57108-2102
Dear Ms. Baker:

The South Dakota Department of Environment and Natural Resources (DENR) reviewed the Cedar Shores Bank Stabilization Project dated July 10, 2013. Based on the general information provided the DENR has the following comments:

1. At a minimum and regardless of project size, appropriate erosion and sediment control measures must be installed to control the discharge of pollutants from the construction site. Any construction activity that disturbs an area of one or more acres of land must have authorization under the General Permit for Storm Water Discharges Associated with Construction Activities. Contact the Department of Environment and Natural Resources for additional information or guidance at 1-800-SDSTORM (737-8676) or <http://denr.sd.gov/des/sw/stormwater.aspx>.
2. A Surface Water Discharge (SWD) permit may be required if any construction dewatering should occur as a result of this project. Please contact this office for more information.
3. This segment of the Missouri River is classified by the South Dakota Surface Water Quality Standards and Uses Assigned to Streams for the following beneficial uses:
 - (1) Domestic water supply waters;
 - (4) Warmwater permanent fish life propagation waters;
 - (7) Immersion recreation waters;
 - (8) Limited contact recreation waters;
 - (9) Fish and wildlife propagation, recreation, and stock watering waters;
 - (10) Irrigation waters; and
 - (11) Commerce and industry waters.

Because of these beneficial uses, special construction measures may have to be taken to ensure that the total suspended solids standard of 90 mg/L is not violated.

4. Impacts to Missouri River and wetlands should be avoided by this project. These water bodies are considered waters of the state and are protected under the South Dakota Surface Water Quality Standards. The discharge of pollutants from any source, including indiscriminate use of fill material, may not cause destruction or impairment except where authorized under Section 404 of the Federal Water Pollution Control Act.

If you have any questions concerning these comments, please contact me at (605) 773-3351.

Sincerely,

A handwritten signature in cursive script that reads "John Miller".

John Miller
Environmental Program Scientist
Surface Water Quality Program



DEPARTMENT OF GAME, FISH, AND PARKS

Foss Building
523 East Capitol
Pierre, South Dakota 57501-3182

August 8, 2013

Ms. Rebecca Baker
HDR Engineering, Inc.
6300 S. Old Village Place, Suite 100
Sioux Falls, SD US 57108-2102

**RE: Cedar Shores Bank Stabilization Environmental Assessment
Oacoma, South Dakota**

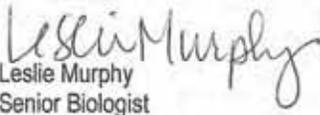
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Thank you for the opportunity to provide comments on this project. If you have any questions, please contact me at 605.773.6208.

Sincerely,


Leslie Murphy
Senior Biologist



ONE COMPANY | *Many Solutions*

July 10, 2013

Mr. Brad Schultz
South Dakota Department of Environment and Natural Resources
Joe Foss Building
523 East Capitol
Pierre, SD 57501-3181

RECEIVED

JUL 12 2013

AIR QUALITY
PROGRAM

AIR QUALITY DETERMINATION

It appears, based on the information, that the project will have little or no impact on the air quality in this area. This project is approved.

RE: Cedar Shores Bank Stabilization Environmental Assessment (EA)
Oacoma, Lyman County, South Dakota

Approved By: Brad Schultz
Date: 8/19/2013

(605) 773-6038 Fax: (605) 773-5236
South Dakota Department of Environment
And Natural Resources

Dear Mr. Schultz:

The Federal Emergency Management Agency (FEMA) and South Dakota Department of Game Fish and Parks (SDGFP) have initiated a study for a proposed project at Cedar Shores Resort in the City of Oacoma, Lyman County, South Dakota. The SDGFP has requested Federal assistance from the FEMA and the United States Coast Guard (USCG) to reduce the long-term risk to the existing infrastructure due to the erosion of the western bank of the Missouri River from Hwy 16 to Cedar Shores Resort (see Figure 1). State funding will also be provided by SDGFP, the South Dakota Department of Environment & Natural Resources (SDDENR) and the South Dakota Department of Transportation (SDDOT).

As part of our early coordination efforts for the Project, we would like to provide your agency with Project background information on the Project as well as request any comments or responses you might have about the Project due to your agency's area of expertise and/or jurisdiction by law. The following is a discussion of the Project.

Due to flooding, the west bank of the Missouri River from Hwy 16 to Cedar Shores Resort has eroded at an accelerated rate, posing a risk to the existing infrastructure. The existing infrastructure includes Shoreline Drive, pedestrian facilities, utility lines such as sewer and water, and Cedar Shores Campground and Resort. The erosion has encroached on the pedestrian facilities and portions of the Cedar Shores Campground and Resort. Shoreline Drive is currently not experiencing roadway stability issues, however, continued erosion would become an issue. The existing infrastructure is vital to the residents in this area in order to access their properties and receive services such as sewer and water. The existing infrastructure is also vital for the visitors to access the area's recreational opportunities.

This Project will provide stabilization of an active landslide occurring at the Cedar Shores Resort using drilled piers with tie backs for approximately 800 feet downslope from the resort. The Project will also stabilize and reshape approximately 8,200 feet of the shoreline along the campground area, Shoreline Drive, and pedestrian trail.



DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
OAHE PROJECT
28563 POWERHOUSE ROAD
PIERRE SD 57501-6174

RECEIVED
OCT 11 0 2013
Dept. of Game, Fish & Parks
Pierre, SD 57501

REPLY TO
ATTENTION OF :

October 9, 2013

Field Archaeologist

Mr. Dennis Williams
Environmental and Cultural Resources Specialist
South Dakota Department of Game, Fish and Parks
523 East Capitol Avenue
Pierre, South Dakota 57501-3182

Dear Mr. Williams:

The U.S. Army Corps of Engineers, Fort Randall Project, has received a request from the South Dakota Game Fish and Parks, Parks and Recreation Division, for a proposed bank stabilization project located within the Cedar Shores Lakeside Use Area. The activities will take place in Sections 8, 9, and 17, Township 104N, Range 71W, Lyman County, South Dakota.

This proposed project will consist of placing and replacing rock rip-rap along the base of the cutbank from the Cedar Shores Resort to Highway 16 (see attached map). The project will span approximately 6,500 ft. In addition, areas subject to mass sloughing along the cutbank will be filled in with borrowed material. This fill material will come from a borrow area southeast of the Cedar Shores Resort (see map).

Some sections of the project area, between Highway 16 and the Cedar Shores campground, have been stabilized with rock rip-rap in the past. In these areas the existing rip-rap will only be modified as needed to ensure adequate thickness and coverage for continuing bank protection. In those areas that have no existing rip-rap a slope will be constructed using fill materials. geotextile fabric will then be staked into place on the constructed slope. Rock rip-rap will then be placed up to an elevation of 1370'. The area along the Cedar Shores campground to the Cedar Shores Resort has been previously stabilized as well. In this area, all existing rip-rap will be removed. A new slope will be constructed with fill and existing materials. Rock rip-rap will then be replaced on the newly constructed slope at an elevation of 1370'. In addition, some areas of the cutbank are subject to mass sloughing. These areas of slough will be filled in using borrowed materials.

All construction equipment and vehicles will be confined to the defined area of potential affect (APE, see map). In addition, all construction equipment and vehicles will access the project area using existing roads. There will be various access routes to the shoreline. These access routes may require leveling and grading to improve conditions for the passage of construction equipment. Trees will be grubbed if necessary to access the cutbank. Two small stockpile areas will be located within the APE and on the shoreline below the cutbank.

The existing walkway along the top of the cutbank will have to be removed and replaced in some areas.

There are no recorded cultural sites within the project area.

The following sites are located outside the project but located within a one-mile radius:

<u>Site Number</u>	<u>Site Name</u>	<u>Site Type</u>	<u>NR Status</u>
39LM0168		Artifact Scatter	Unevaluated
39LM0196	Lyman Townsite	Historic Townsite	Unevaluated
39LM0200		Historic/ Prehistoric Artifact Scatter	Unevaluated
39LM0253		Artifact Scatter	Unevaluated
39LMIF0013		Isolated Find / Non-cultural	Not Eligible
39LMIF0012		Isolated Find/ Flake	Not Eligible
39LMIF0001		Isolated find / Shatter	Not Eligible

This area was most recently surveyed by the Archaeological Research Center in 2008. No new cultural resources were identified at this time. In addition, a site visit was conducted by Oahe Project cultural resources staff in coordination with South Dakota Department of Transportation staff on 9/23/13. During this site visit the proposed bank stabilization area and stockpile areas were examined. No cultural materials were observed during the field check.

The borrow area associated with this project was surveyed by Kogel Archaeological Consulting Services on August 3 and 7, 2013. During this survey 7 shovel tests measuring 50cm in diameter were excavated. The shovel tests were placed in areas "that appear to have topsoil layer/vegetation and exhibited no evidence of erosional or other surface disturbances" (Kogel 2013). All shovel tests were negative for the presence of cultural materials. In addition, no evidence of buried features or cultural horizons were observed (Kogel 2013)

If you have any comments or concerns regarding this project and wish to consult on this matter, please respond in writing no later than November 11, 2013. Please reference "Cedar Shores Bank Stabilization" in your correspondence. If you have any questions please contact Megan Maier at (605) 224-5862 ext. 3273

Sincerely,



Richard D. Harnois
Senior Field Archaeologist
US Army Corps of Engineers
Oahe Project Office

Works Cited

Abbott, Jane P., James Donohue and Roger Williams

1996 *An Intensive Cultural Resources Report of the River Ranch Road Survey and 39LM196 Construction Monitoring, Lyman County, South Dakota.* Archaeological Research Center, Rapid City, SD.

Clark, Andrew

2008 *An Intensive Cultural Resource Survey of Selected Title VI Lands Located Along Lewis and Clark Lake, Lake Francis Case, Lake Sharpe, and the Oahe, Transferred to the South Dakota Department of Game, Fish and Parks, Division of Parks and Recreation, from the United States Army Corps of Engineers.* Prepared for South Dakota Department of Game, Fish and Parks by the State Archaeological Research Center, Rapid City, SD

2010 *An Intensive Cultural Resource Survey of Selected Title VI Lands Located Along Lewis and Clark Lake, Lake Francis Case, Lake Sharpe, and the Oahe Reservoir in South Dakota.* Prepared for South Dakota Department of Game, Fish and Parks by the State Archaeological Research Center, Rapid City, SD

Holst, David

2007 *Corps of Engineers Missouri River Cultural Resources Baseline Monitoring for Lewis and Clark Lake, Lake Francis Case, Lake Sharpe and Lake Oahe.* Archaeological Research Center. RAPIC City South Dakota.

South Dakota State Historical Society

2013 *ARMS (Archaeological Resources Management System)* Archaeological Research Center, Rapid City, SD. Obtained from the internet September 2013

Winham, R. Peter, and Edward Lueck

1984 *Report of a Cultural Reconnaissance of Selected Areas Along the White River and Along the West Bank of Lake Francis Case.* Archaeology Laboratory, Augustana College, Sioux Falls, SD.

Enclosures

Programmatic Agreement (PA) Distribution list
Map depicting project location in relation to nearby sites
General location map

Copies furnished via hard copy:
PA General Distribution List

Copies furnished via electronic distribution (w/ enclosures):

CENWO- OD-OA (Maier)
CENWO-OD-OA (Harnois)
CENWO-OD-BB (Winter)

Copies furnished via electronic distribution (w/out enclosures):

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CENWO-OD-T (Harold M. Key)
CENWO-OD-T (Rocheford)
CENWO-OD-GP (Dave A. Becker)
CENWO-OD-GP (Gary Ledbetter)
CENWO-OD-FR (Cody Wilson)
CENWO-OD-FR (Thomas Curran)
CENWO-OD-BB (Keith Fink)
CENWO-OD-BB (Jacki Bultsma)
CENWO-OD-OA (Phil Sheffield)
CENWO-OD-OA (Eric Stasch)
CENWO-OD-GA (Todd Lindquist)
CENWO-OD-GA (Ryan Newman)
CENWO-OD-GA (Steve Gilbert)
CENWO-OD-GA (Dave Cain)
CENWO-OD-LP (John Daggett)
CENWO-OD-LP (Darin McMurry)
CENWO-OM-AE (Julie Price)

Cedar Shores Resort Bank Stabilization



Legend

-  Cultural Resources
-  Stockpile Area
-  Borrow Area
-  Area of Potential Affect
-  Approx. Title VI boundary



Cedar Shores Resort Bank Stabilization



Legend

-  Cultural Resources
-  Stockpile Area
-  Approx. Title VI boundary
-  Borrow Area
-  Area of Potential Affect



Cedar Shores Resort Bank Stabilization

39LM0253

39LM0200

39LMIF0001

Cedar Shores Resort

Cedar Shores Campground

Existing rip-rap will be removed. The slope will be rebuilt. Rock will then be replaced on the newly constructed slope.

Borrow Area

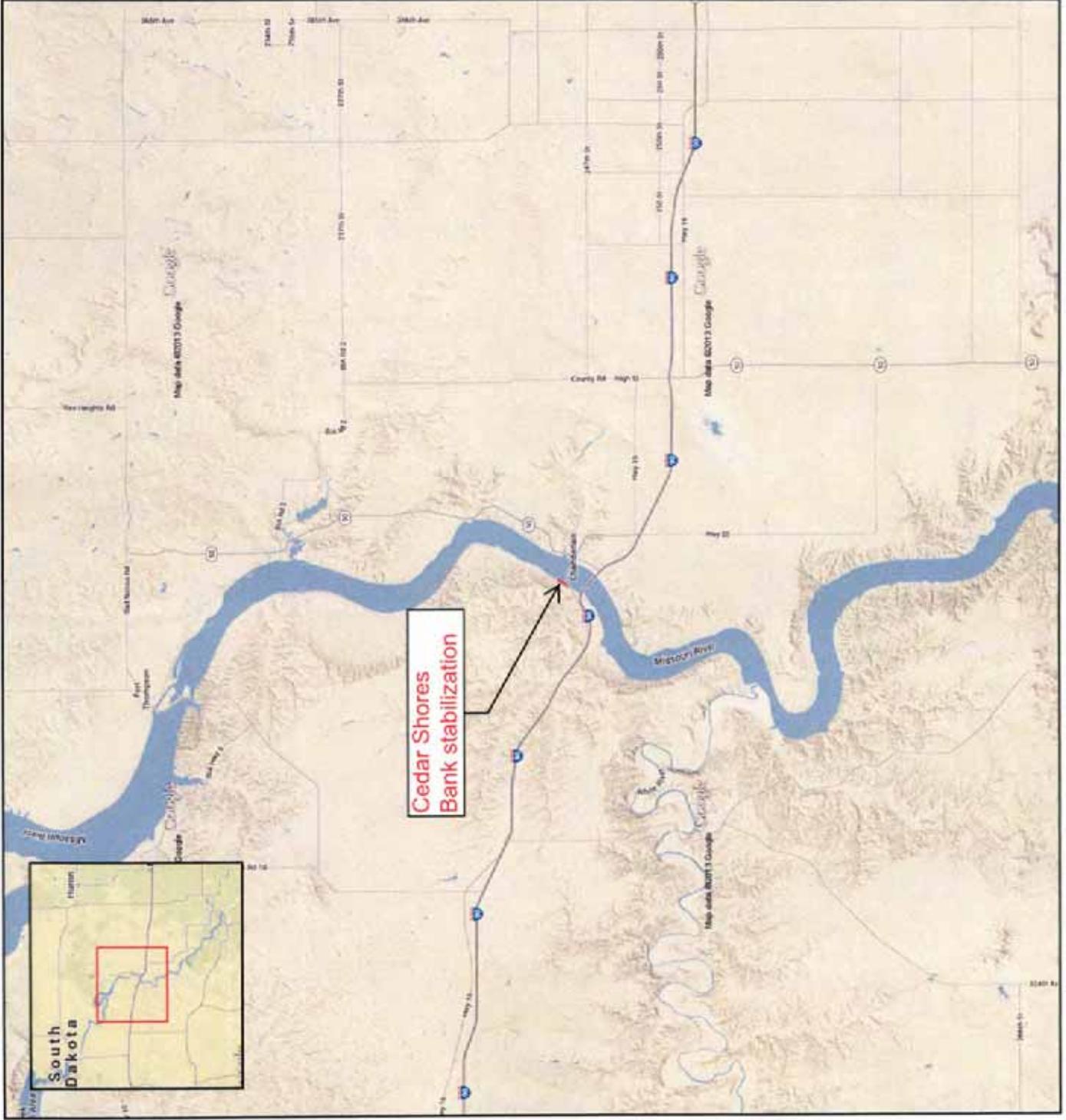


Legend

-  Cultural Resources
-  Approx. Title VI boundary
-  Stockpile Area
-  Borrow Area
-  Area of Potential Affect



General Project Location



Disclaimer: The United States Government and its contractors, including the contractor herein, make no warranty, expressed or implied, concerning the accuracy, reliability, or completeness of the information and data furnished. The United States shall be liable only for damages resulting from any error in any data furnished in support of this information and data furnished. The United States shall be liable only for damages resulting from any error in any data furnished in support of this information and data furnished. The United States shall be liable only for damages resulting from any error in any data furnished in support of this information and data furnished.

Field Archaeologist	
ZEMUCOLOSA	
Morgan Miller	
10001 1854 AM	
Cedar Shores	
US Army Corps of Engineers	
Cedar Shores District	

**PROGRAMMATIC AGREEMENT
FOR THE
OPERATION AND MANAGEMENT OF THE MISSOURI RIVER MAINSTEM SYSTEM
GENERAL DISTRIBUTION LIST
Updated March 13, 2013**

	P/CF	S/NS	Prefix	First Name	Last Name	Tribe/Agency	Title/Office
1	P	S	Mr.	Steven	Vance	Cheyenne River Sioux Tribe	Tribal Historic Preservation Officer
2	P	S	Ms.	Donna Rae	Petersen	Cheyenne River Sioux Tribe	Cultural Resource Preservation Office
3	CF	S	Chairman	Kevin	Keckler	Cheyenne River Sioux Tribe	Chairman
4	CF	S	Mr.	Robert	Walters	Cheyenne River Sioux Tribe	Tribal Council
5	P	S	Chairman	Floyd	Azure	Assiniboine and Sioux Tribes of Fort Peck	Chairman
6	CF	S	Mr.	Curley	Youpee	Assiniboine and Sioux Tribes of Fort Peck	
7	P	S	Mr.	Rick	Thomas	Santee Sioux Tribe of Nebraska	
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11	CF	S	Mr.	Michael	Smith	Nebraska State Historical Society	
12	P	S	Mr.	Paul	Coughlin	South Dakota Department of Game, Fish and Parks	
13	P	S	Mr.	Dennis	Williams	South Dakota Department of Game, Fish and Parks	
14	CF	S	Mr.	Jeffrey R.	Vonk	South Dakota Department of Game Fish and Parks	
15	P	S	Ms.	Paige	Hoskinson-Olson	South Dakota State Historical Preservation Office	
16	CF	S	Mr.	Jay D.	Vogt	South Dakota State Historical Preservation Office	
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22	P	S	Mr.	Scott	Jones	Lower Brule Sioux Tribe	
23	CF	S	Ms.	Clair S.	Green	Lower Brule Sioux Tribe	Cultural Preservation Office
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25	CF	S	Chairman	Tex	Hall	Three Affiliated Tribes	Chairman
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35	P	S	Ms.	Fern	Swenson	State Historical Society of North Dakota	
36	CF	S	Mr.	Merlan E.	Paaverud, Jr.	State Historical Society of North Dakota	
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38	CF	S	Mr.	J.B.	Weston	Flandreau Sioux Tribe	Tribal Historic Preservation Officer
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43	CF	S	Ms.	Dianne	Desrosiers	Sisseton-Wahpeton Sioux Tribe	Tribal Historic Preservation Officer
44	P	S	Chairman	John	Blackhawk	Winnebago Tribe of Nebraska	Chairman
45	CF	S	Mr.	Darwin	Snyder	Winnebago Tribe of Nebraska	
46	P	S	Chairperson	Michael	Doughterty	Sac and Fox Nation of Missouri in Kansas and Nebraska	Chairperson
47	P	S	Ms.	Barbara	Pahl	National Trust for Historic Preservation	
48	P	S	Mr.	Weldon	Loudermilk	Bureau of Indian Affairs	Regional Director,
49	CF	S	Dr.	Carson	Murdy	Bureau of Indian Affairs	Regional Archaeologist
50	P	NS	Chairman	Ken Blatt	St. Marks	Chippewa Cree Tribe of the Rocky Boy's Reservation	Chairman
51	CF	NS	Mr.	Alvin	Windy Boy	Chippewa Cree Tribe of the Rocky Boys' Reservation	Tribal Historic Preservation Officer
52	P	NS	Chairman	Roger	Yankton	Spirit Lake Sioux Tribe	Chairman
53	P	NS	President	Cyril	Scott	Rosebud Sioux Tribe	President
54	CF	NS	Mr.	Russell	Eagle Bear	Rosebud Sioux Tribe	Tribal Historic Preservation Officer
55	P	NS	President	Bryan	Brewer	Oglala Sioux Tribe	President

	P/CF	S/NS	Prefix	First Name	Last Name	Tribe/Agency	Title/Office
56	P	NS	Mr.	Wilmer	Mesteth	Tribal Historic Preservation Officer, Ogalala Sioux Tribe	Tribal Historic Preservation Officer
57	P	NS	Chairman	Willie	Sharp	Blackfeet Nation	Chairman
58	CF	NS	Mr.	John	Murray	Blackfeet Nation	Tribal Historic Preservation Officer
59	P	NS	President	Tracey	King	Gros Ventre and Assiniboine Tribes	President
60	P	NS	Chairman	Charlie	Murphy	Standing Rock Sioux Tribe	Chairman
61	P	NS	Ms.	Waste' Win	Young	Standing Rock Sioux Tribe	Tribal Historic Preservation Officer
62	P	NS	Chairman	Thurman	Courmoyer	Yankton Sioux Tribe	Chairman
63	P	NS	Ms.	Lana	Gravatt	Yankton Sioux Tribe	Tribal Historic Preservation Officer
64	CF	NS	Ms.	Ida	Ashes	Yankton Sioux Tribe	Vice Chairwoman
65	CF	NS	Ms.	Gail	Hubbleing	Yankton Sioux Tribe	Councilperson
66	P	NS	Chairman	Darin	Old Coyote	Crow Nation	Chairman
67	CF	NS	Mr.	Emerson	Bull Chief	Crow Nation	Tribal Historic Preservation Officer
68	P	NS	Ms.	Sandra	Massey	Sac and Fox Nation of Oklahoma	

P Shading designates the Primary point of contact for all PA actions.

CF Copy furnished of the letter sent to Primary point of contact for same Tribe/Agency

S/NS Denotes Signatory (S) or Non-Signatory (NS)

Total Primary: 41

Total Copy Furnished: 27



DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
OAHE PROJECT
28563 POWERHOUSE ROAD
PIERRE SD 57501-6174

NOV 14 2013
South Dakota
SHPO

REPLY TO
ATTENTION OF:

November 13, 2013

Field Archaeologist

Ms. Paige Hoskinson-Olson
Historical Archaeologist Review and Compliance Coordinator
South Dakota State Historical Society
900 Governors Drive, Cultural Heritage Center
Pierre, South Dakota 57501-2217

SECTION 106 DETERMINATION
Based upon the information provided to the South Dakota
State Historic Preservation Office on 10/11 + 11/14/13
we concur with your agency's determination of "No Historic
Properties Affected" for this undertaking.
Gay D. Vogt
State Historic Preservation Officer (SHPO)
By J. Olson
11/15/13 130712 002 F
Date SHPO Project #

Dear Ms. Hoskinson-Olson:

The U.S. Army Corps of Engineers, Fort Randall Project, has received a request from the South Dakota Game Fish and Parks, Parks and Recreation Division, for a proposed bank stabilization project located within the Cedar Shores Lakeside Use Area. The activities will take place in Sections 8, 9, and 17, Township 104N, Range 71W, Lyman County, South Dakota.

As stated in the previous information letter (dated 10/9/13), this proposed project will consist of placing and replacing rock rip-rap along the base of the cutbank from the Cedar Shores Resort to Highway 16 (see attached map). The project will span approximately 6,500 ft. In addition, areas subject to mass sloughing along the cutbank will be filled in with borrowed material. This fill material will come from a borrow area southeast of the Cedar Shores Resort (see map).

Some sections of the project area, between Highway 16 and the Cedar Shores campground, have been stabilized with rock rip-rap in the past. In these areas the existing rip-rap will only be modified as needed to ensure adequate thickness and coverage for continuing bank protection. In those areas that have no existing rip-rap a slope will be constructed using fill materials. geotextile fabric will then be staked into place on the constructed slope. Rock rip-rap will then be placed up to an elevation of 1370'. The area along the Cedar Shores campground to the Cedar Shores Resort has been previously stabilized as well. In this area, all existing rip-rap will be removed. A new slope will be constructed with fill and existing materials. Rock rip-rap will then be replaced on the newly constructed slope at an elevation of 1370'. In addition, some areas of the cutbank are subject to mass sloughing. These areas of slough will be filled in using borrowed materials.

All construction equipment and vehicles will be confined to the defined area of potential affect (APE, see map). In addition, all construction equipment and vehicles will access the project area using existing roads. There will be various access routes to the shoreline. These access routes may require leveling and grading to improve conditions for the passage of construction equipment. Trees will be grubbed if necessary to access the cutbank. Two small stockpile areas will be located within the APE and on the shoreline below the cutbank.

The existing walkway along the top of the cutbank will have to be removed and replaced in some areas.

There are no recorded cultural sites within the project area.

The following sites are located outside the project but located within a one-mile radius:

<u>Site Number</u>	<u>Site Name</u>	<u>Site Type</u>	<u>NR Status</u>
--------------------	------------------	------------------	------------------

This area was most recently surveyed by the Archaeological Research Center in 2008. No new cultural resources were identified at this time (Clark 2008). In addition, a site visit was conducted by Oahe Project cultural resources staff in coordination with South Dakota Department of Transportation staff on 9/23/13. During this site visit the proposed bank stabilization area and stockpile areas were examined. No cultural materials or buried cultural layers were observed during the field check.

The borrow area associated with this project was surveyed by Kogel Archaeological Consulting Services (KACS) on August 3 and 7, 2013. During this survey 7 shovel tests measuring 50cm in diameter were excavated. The shovel tests were placed in areas, "that appear to have a topsoil layer/vegetation and exhibited no evidence of erosional or other surface disturbances" (Kogel 2013). All shovel tests conducted by KACS were negative for the presence of cultural materials. In addition, no evidence of buried features or cultural horizons were observed (Kogel 2013). KACS states that, "based on the lack of a developed, silty or loamy topsoil, the erosional setting of the project area, and the clayey texture of most of the soils, there is little potential for buried cultural deposits within the proposed project area" (Kogel 2013). KACS recommends a "No Historic Properties Affected" determination for the borrow area.

This office concurs with the results and findings of Kogel Archaeological Consulting Services (Kogel 2013). Therefore, a "**No Historic Properties Affected**" determination is appropriate for the borrow area portion of this project.

The cutbank to be stabilized has been previously disturbed due to road construction, recreation area developments and previous bank stabilization attempts. Considering the disturbed nature of the project area, in addition to recent surveys that show no evidence of archeological deposits, the possibility for uncovering any undisturbed buried cultural deposits is very low. With this being the case, we anticipate your concurrence with our **"No Historic Properties Affected"** determination for the bank stabilization portion of the project.

During the informational comment period the Oahe Project office received one, "no environmental objections" reply from the Bureau of Indian Affairs (10/30/13). No other comments or requests for information were received. . If you have any questions please contact Megan Maier at (605) 224-5862 x 3273 or via email at megan.m.maier@usace.army.mil.

Sincerely,



Richard D. Harnois
Senior Field Archaeologist
US Army Corps of Engineers
Oahe Project Office

Pursuant to 36 CFR part 800.13, if historic properties are discovered or unanticipated historic properties found after the agency official has completed the Section 106 process, the agency official shall avoid, minimize or mitigate the adverse effects to such properties and notify the SHPO/THPO, and Indian tribes that might attach religious and cultural significance to the affected property within 48 hours of the discovery.

SECTION 106 CONSULTATION

Concurrence of the State Historic Preservation Office does not relieve the federal agency official from consulting with other appropriate parties, as described in 36 CFR Part 800.2(c).

Works Cited

Abbott, Jane P., James Donohue and Roger Williams
1996 *An Intensive Cultural Resources Report of the River Ranch Road Survey and 39LM196 Construction Monitoring, Lyman County, South Dakota.* Archaeological Research Center, Rapid City, SD.

Clark, Andrew
2008 *An Intensive Cultural Resource Survey of Selected Title VI Lands Located Along Lewis and Clark Lake, Lake Francis Case, Lake Sharpe, and the Oahe , Transferred to the South Dakota Department of Game, Fish and Parks, Division of Parks and Recreation, from the United States Army Corps of Engineers. .* Prepared for South Dakota Department of Game, Fish and Parks by the State Archaeological Research Center, Rapid City, SD

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**PROGRAMMATIC AGREEMENT
FOR THE
OPERATION AND MANAGEMENT OF THE MISSOURI RIVER MAINSTEM SYSTEM
GENERAL DISTRIBUTION LIST
Updated March 13, 2013**

	P/CF	S/NS	Prefix	First Name	Last Name	Tribe/Agency	Title/Office
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13	P	S	Mr.	Dennis	Williams	South Dakota Department of Game, Fish and Parks	
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44	P	S	Chairman	John	Blackhawk	Winnebago Tribe of Nebraska	Chairman
45	CF	S	Mr.	Darwin	Snyder	Winnebago Tribe of Nebraska	
46	P	S	Chairperson	Michael	Doughterty	Sac and Fox Nation of Missouri in Kansas and Nebraska	Chairperson
47	P	S	Ms.	Barbara	Pahl	National Trust for Historic Preservation	
48	P	S	Mr.	Weldon	Loudermilk	Bureau of Indian Affairs	Regional Director,
49	CF	S	Dr.	Carson	Murdy	Bureau of Indian Affairs	Regional Archaeologist
50	P	NS	Chairman	Ken Blatt	St. Marks	Chippewa Cree Tribe of the Rocky Boy's Reservation	Chairman
51	CF	NS	Mr.	Alvin	Windy Boy	Chippewa Cree Tribe of the Rocky Boys' Reservation	Tribal Historic Preservation Officer
52	P	NS	Chairman	Roger	Yankton	Spirit Lake Sioux Tribe	Chairman
53	P	NS	President	Cyril	Scott	Rosebud Sioux Tribe	President
54	CF	NS	Mr.	Russell	Eagle Bear	Rosebud Sioux Tribe	Tribal Historic Preservation Officer
55	P	NS	President	Bryan	Brewer	Oglala Sioux Tribe	President

	<u>P/CF</u>	<u>S/NS</u>	<u>Prefix</u>	<u>First Name</u>	<u>Last Name</u>	<u>Tribe/Agency</u>	<u>Title/Office</u>
56	P	NS	Mr.	Wilmer	Mesteth	Tribal Historic Preservation Officer, Ogalala Sioux Tribe	Tribal Historic Preservation Officer
57	P	NS	Chairman	Willie	Sharp	Blackfeet Nation	Chairman
58	CF	NS	Mr.	John	Murray	Blackfeet Nation	Tribal Historic Preservation Officer
59	P	NS	President	Tracey	King	Gros Ventre and Assiniboine Tribes	President
60	P	NS	Chairman	Charlie	Murphy	Standing Rock Sioux Tribe	Chairman
61	P	NS	Ms.	Waste' Win	Young	Standing Rock Sioux Tribe	Tribal Historic Preservation Officer
62	P	NS	Chairman	Thurman	Courmoyer	Yankton Sioux Tribe	Chairman
63	P	NS	Ms.	Lana	Gravatt	Yankton Sioux Tribe	Tribal Historic Preservation Officer
64	CF	NS	Ms.	Ida	Ashes	Yankton Sioux Tribe	Vice Chairwoman
65	CF	NS	Ms.	Gail	Hubbleing	Yankton Sioux Tribe	Councilperson
66	P	NS	Chairman	Darin	Old Coyote	Crow Nation	Chairman
67	CF	NS	Mr.	Emerson	Bull Chief	Crow Nation	Tribal Historic Preservation Officer
68	P	NS	Ms.	Sandra	Massey	Sac and Fox Nation of Oklahoma	

P Shading designates the Primary point of contact for all PA actions.

CF Copy furnished of the letter sent to Primary point of contact for same Tribe/Agency

S/NS Denotes Signatory (S) or Non-Signatory (NS)

Total Primary: 41

Total Copy Furnished: 27

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APPENDIX D
EIGHT-STEP DECISION-MAKING PROCESS

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CEDAR SHORE BANK STABILIZATION PROJECT
Executive Order 11988 – Floodplain Management
Executive Order 11990 – Protection of Wetlands
Eight-Step Decision Making Process

Executive Order 11988, Floodplain Management (42 Federal Register 26951), requires Federal agencies “to avoid to the extent possible the long and short term adverse impacts associated with the occupancy and modification of the floodplain and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative.” At 24 CFR Part 9, FEMA’s implementing regulations include an eight-step decision making process in order to comply with this part of the Executive Order.

Executive Order 11990, Protection of Wetlands, requires federal agencies “to avoid construction or management practices that would adversely affect wetlands unless that agency finds that (1) there is no practicable alternative, and (2) the proposed action includes measures to minimize harm to the wetlands.” The Executive Order directs all federal agencies to consider avoidance of adverse effects and incompatible development in wetlands. At 44 CFR Part 9, FEMA’s implementing regulations include an eight-step decision making process in order to comply with this part of the Executive Order.

This eight-step process is being applied to the Cedar Shore Bank Stabilization as the proposed Project is located near the Lake Francis Case/Missouri River and associated wetlands. The steps in the decision making process are as follows:

Step 1 Determine if the proposed action is located in the Base Floodplain and/or wetland.

The Cedar Shore Bank Stabilization project area is within an unmapped floodplain area. Therefore, FEMA Flood Insurance Rate Maps (FIRMs) are not available. Furthermore, the Town of Oacoma is not an active participant in FEMA’s National Flood Insurance Program.

A Wetland Delineation Report was completed in July and August of this year for the area that could be potentially impacted by the Project. The wetland boundaries were utilized during preliminary design to avoid wetlands to the extent possible. The wetland boundaries were compared to the preliminary working limits to determine if any wetland areas were impacted.

Step 2 Early Public Notice (Initial Public Notice).

The initial public notice concerning the Cedar Shore Bank Stabilization Project was published in the *Capitol Journal* June 20 and 24, 2013, and in the *Chamberlain/Oacoma Sun* on June 26, 2013, and July 3, 2013. The notice was also published on SDGFP’s website. No comments have been received to date.

Step 3 Identify and evaluate alternatives to locating in the base floodplain and/or wetland.

Cedar Shore Resort

The two most technically and economically feasible alternatives that were examined as options for stabilization of the Cedar Shore Resort's shoreline were: ground improvement techniques and structural retention systems. The No Action Alternative was also considered as a baseline comparison.

For the ground improvement system, the analysis indicated the impact piers would be placed in a grid pattern at 4 feet on centers, along the length of the Cedar Shore Resort's marina shoreline. A deeper failure surface next to the Cedar Shore Resort's convention center northeast entrance was identified and it was determined by the installer of this technology (Ground Improvement Engineering) that it likely would not be practical to achieve the desired safety factor using ground improvement for this deep-seated failure situation. If the safety factor could be achieved, it would be a very expensive option. For these reasons, this alternative was eliminated early as a non-viable alternative.

Several structural retention systems were considered including drilled shafts, auger cast piles, micropiles, driven steel H-piles, driven sheet piles, and driven pipe piles. Based on the experience of experts in the geotechnical community, the most economical and technically feasible options were narrowed down to: a combination king pile and sheet pile wall with tie-back anchors and drilled shafts with tie-back anchors. The options analysis indicated that the king pile option caused concern as to where the refusal point may be for the driven piles. Embedment into the Niobrara chalk would be essential to a successful implementation of this technique. It is possible that refusal could be reached prior to achieving the desired embedment and thus potentially result in a less effective retention system. This uncertainty of achievable embedment depth is a drawback with this option. Another concern with this option was that groundwater may buildup behind the king pile and sheet pile wall. Buildup of groundwater may result in unintended consequences such as seepage at the ground surface behind the earth retention system, resulting in surface erosion and instability at the access drive and slope extending up to the resort structures. In addition, seepage may occur into below-grade structures and vaults in this area that are not watertight. Because this option is less effective as a retention system and there is potential for groundwater buildup, this option was not further considered for the Project.

The preliminary design for the Proposed Alternative at the Cedar Shore Resort indicated that 48-inch diameter drilled shafts would be required, installed at 5-foot centers. These shafts would be socketed approximately 10 feet into the un-weathered Niobrara Chalk. With the drilled shaft, embedment into the Niobrara Chalk to the desired depth can be consistently achieved. These shafts would be cast-in-place concrete with a reinforcing cage embedded in the concrete to increase the strength. Tie-backs would be installed at reinforced drilled shafts,

inclined at 45 degrees. This grouted zone would extend into the un-weathered Niobrara Chalk and would be a minimum 8 inches in diameter.

Since there is a 1 foot space between the drilled piers, groundwater flow would not be impeded to the same extent as with the pile wall retention system. Flow can pass between the piers as opposed to being dammed up behind a continuous wall. The Proposed Alternative is noted as the viable stabilization option for the Cedar Shore Resort component of this Project. The primary reasons for choosing this stabilization option include the ability to socket the drilled shafts into the underlying chalk bedrock for stability, the ability to allow groundwater migration between the shafts, and an estimated lower total cost than other alternatives considered.

Shoreline from Cedar Shore Resort to Hwy 16

For this segment of the Project, USACE and SDDOT coordinated and completed a wind and wave analysis to determine the type of riprap and placement needed to stabilize the shoreline. Based on this analysis, riprap would be placed from a top elevation of 1370 feet mean sea level (MSL). The Class B riprap placement would be a layer thickness of approximately 24 inches for a total height of approximately 3.8 feet, extending from an elevation of approximately 1364 to 1370 feet. The riprap would be placed from the intersection of Hwy 16 and Shoreline Drive until the end of the segment (6,500 feet total), at the front doors of the Cedar Shore Resort. If any fill is required, it would be taken from a nearby site located to the southeast of the resort.

The No Action Alternative does not meet the purpose and need; however it provides a baseline for comparison in determining the potential environmental effects of the Proposed Action. Under the No Action Alternative, stabilization of the eroding Missouri River shoreline along Shoreline Drive, Cedar Shore Campground, and Cedar Shore Resort would not occur.

After an analyzing all design options, it was decided that in order to best reduce future erosion of the Cedar Shore bank, activities would need to take place within the Ordinary High Watermark of Lake Francis Case/Missouri River and adjacent wetlands.

Step 4 Identify impacts of proposed action associated with occupancy or modification of the floodplain.

The Cedar Shore Bank Stabilization project area is within an unmapped floodplain area. Therefore, FEMA Flood Insurance Rate Maps (FIRMs) are not available. The Project is not anticipated to have an adverse effect on any floodplains within the project area. The stabilization this segment of bank for the Lake Francis Case/Missouri River would stabilize the floodplain areas and mitigation for the current erosion in the area. Coordination has occurred with the USACE office that is currently responsible for Lake Francis Case. During final design, coordination would continue with the USACE office to ensure the proper documentation for the Lake Francis Case's floodplain would be completed.

Specifically for the portion of the Project that was to stabilize the shoreline by Cedar Shore Resort, the flow of groundwater could be inhibited by the structure selected. The Proposed Action would continue to allow flow of groundwater to pass between the piers as opposed to some of the other options which dammed up behind a continuous wall.

The Project would impact one wetland labeled Wetland 4 in the Wetland Delineation Report. During preliminary design, the Project was originally designed to impact approximately 0.11 acre of wetland area. The Project's construction limits were revised in order to minimize that impact to approximately 0.08 acre of wetland. This remaining wetland area could not be avoided in order to design a sufficient stabilization of the bank. The Project is also mitigating for impacts to the shoreline due to the erosion, by stabilizing this bank, the remaining adjacent wetlands would be protected, as well as the banks of Lake Francis Case/Missouri River.

Step 5 Design or modify the proposed action to minimize threats to life and property and preserve its natural and beneficial floodplain values to avoid, minimize or compensate for impacts to wetlands.

The Cedar Shore Bank Stabilization Project would improve the stability of the banks of the Lake Francis Case/Missouri River. For the placement of the riprap, the USACE and SDDOT did a wind and wave action study to determine the most appropriate size of riprap for this Project. It was determined that SDDOT Class B riprap would be best suited to stabilize this segment of Lake Francis Case/Missouri River's bank. As noted in Step 4, design has been changed to minimize wetland impacts near the shoreline.

After construction for the Project has concluded, disturbed areas would be revegetated with their appropriate vegetation.

Step 6 Re-evaluate the proposed action.

The Proposed Action Alternative would have a beneficial impact on Lake Francis Case/Missouri River. Through the drilled shaft design, groundwater would be able to flow through the stabilization measures. The Project would not impact mapped floodplain elevations and any disturbed habitat would be revegetated. Therefore, it is practical and feasible to construct the Proposed Action Alternative that meets the purpose and need on the shoreline of the Lake Francis Case/Missouri River.

The purpose of the proposed action evaluated in this EA is to reduce the long-term risk of Lake Francis Case/Missouri River bank erosion to the existing infrastructure by stabilizing the shoreline from Hwy 16 to the Cedar Shore Resort. Based on the continuing risk of erosion from Lake Francis Case/Missouri River, SDGFP and SDDOT have identified the need to perform bank stabilization along the shoreline from Hwy 16 to Cedar Shore Resort. Stabilizing the bank would help maintain traffic on the only roadway that provides access for

traffic, including emergency vehicles, to approximately 28 residences, the Cedar Shore Resort and its recreational resources. Through this minimization and plans to revegetate any disturbed areas, the Proposed Action Alternative was determined to be the most practicable alternative to accomplish the project purpose.

Step 7 Finding and public explanation (Final Public Notice).

After reviewing the alternatives and evaluating the existing conditions within the project area, FEMA has determined that there is no practicable alternative to locating project features. This determination will be conveyed to the public in the final public notice that will be published in *Capital Journal* and the *Chamberlain/Oacoma Sun*.

Step 8 Implement the action.

The proposed Cedar Shore Bank Stabilization Project would be constructed in accordance with applicable floodplain development requirements and USACE applicable regulations. A U.S. Army Corps of Engineers Section 10 and 404 Permit (Individual or Nationwide) must be obtained prior to being construction associated with the Project. Compliance with all stipulations stated in the USACE Section 10 and 404 permits is required for this Project.

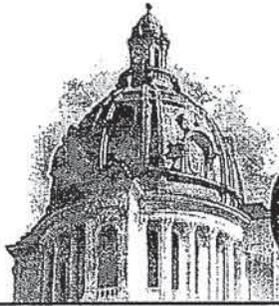
During final design, coordination would continue with the USACE office to ensure the proper documentation for the Lake Francis Case's floodplain would be completed.

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APPENDIX E
PUBLIC INVOLVEMENT

- Initial Public Notice – *Capitol Journal*- June 20 and 24, 2013
- Initial Public Notice – *Chamberlain/Oacoma Sun*-June 26 and July 3, 2013
- Public Meeting Summary – *Oacoma, SD* – September 26, 2013

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Capital Journal

AFFIDAVIT OF PUBLICATION

State of South Dakota, County of Hughes

Jackie Odom of said county, being, first duly sworn, on oath, says: That he/she is the publisher or an employee of the publisher of the Capital Journal, a daily newspaper published in the City of Pierre in said County of Hughes and State of South Dakota; that he/she has full and personal knowledge of the facts herein stated, that said newspaper is a legal newspaper as defined in SDCL 17-2-2.1 through 17-2-2.4 inclusive, that said newspaper has been published within the said County of Hughes and State of South Dakota, for at least one year next prior to the first publication of the attached public notice, and that the legal display advertisement headed Initial Public Notice Cedar Shores Bank Stabilization

a printed copy of which, taken from the paper in which the same was published, and which is hereto attached and made a part of this affidavit, was published in said newspaper for two successive week(s) to wit:

<u>June 20</u>	<u>2013</u>	<u>20</u>
<u>June 24</u>	<u>2013</u>	<u>20</u>
<u> </u>	<u>20</u>	<u>20</u>
<u> </u>	<u>20</u>	<u>20</u>
<u> </u>	<u>20</u>	<u>20</u>

That the full amount of the fee charged for the publication of the attached public notice inures to the sole benefit of the publisher or publishers; that no agreement or understanding for the division thereof has been made with any other person, and that no part thereof has been agreed to be paid to any person whomsoever; that the fees charged for the publication thereof are: \$ 97.79.

Signed: Jackie Odom

subscribed and sworn to before me this 24 day of June 2013

May L. Baker

Notary Public in and for the County of Hughes, South Dakota.

My Commission expires 2-19, 2015.

Public Notice
 SNAXLP 12/48
 2013 621, 624
PUBLIC NOTICE
 FEMA-4115-DR-SD

The Federal Emergency Management Agency (FEMA) hereby provides notice to the public of its intent to reimburse eligible applicants for damage repair and/or replacement of public facilities damaged by a disaster on or after April 16, 2013, that occurred in the State of South Dakota. FEMA is providing assistance for the repair and/or replacement of public facilities damaged by a disaster on or after April 16, 2013, that occurred in the State of South Dakota. FEMA is providing assistance for the repair and/or replacement of public facilities damaged by a disaster on or after April 16, 2013, that occurred in the State of South Dakota.

Public Notice
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 2013 621, 624
PUBLIC NOTICE
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Public Notice
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GO WITH THE PROS

CAPITAL JOURNAL CLASSIFIED DEPARTMENT WANDA DOREN, EXT. 109

<p>AUTO CARE</p> <p>AUTO BODY CONCEPTS</p> <p>We take the dirt out of accident.</p> <p>2012 Industrial Road Pierre, SD 57501</p> <p>224-0941 280-0996</p> <p>Scout 1301</p>	<p>CONSTRUCTION</p> <p>JL Construction</p> <p>- ALL TYPES - Interior-Exterior Remodeling Garages - Decks</p> <p>224-7120 or 280-3305</p> <p>FREE ESTIMATES!</p>	<p>CONTRACTORS</p> <p>GK Contractors</p> <p>• Fencing • Gravel • Iron • Miscellaneous</p> <p>605-210-0898 or 605-509-2807</p>	<p>LAWN CARE</p> <p>MARSO LAWN SERVICE</p> <p>Call Kevin 605-65-0001</p>	<p>PAINTING</p> <p>Painter PLUS</p> <ul style="list-style-type: none"> • Affordable Prices • Interior/Exterior work • Commercial/Residential • Family owned • Payment Options Available • Free Estimates • Professional Service <p>605-220-3318</p>	<p>TREE SERVICES</p> <p>Lavonne & Mike's</p> <p>Landscaping & Tree Service</p> <p>224-6600 224-2422</p>
<p>DETAILING</p> <p>Dak Car Detailing</p> <p>• All types of cars • Wash, Wax, Polish • Shampoo & Shampoo • Tire Dressing</p> <p>224-0941 280-0996</p>	<p>PRECISION CONSTRUCTION COMPANY</p> <p>- All Types Of Concrete Work - - Business & Flat Work</p> <p>224-7120 or 280-3305</p> <p>FREE ESTIMATES!</p>	<p>WILLIAMS REMODELING</p> <p>222-1999</p> <ul style="list-style-type: none"> • Kitchen • Bath • Decks • Remodeling <p>Call Dan 605-227-1099</p>	<p>LANDSCAPING</p> <p>Oahe's Lawn Care</p> <ul style="list-style-type: none"> • Power Raking • Lawn Mowing • Spring Cleanup • 4-Step Fertilizing Program • Tilling • Hedge & Branch Trimming <p>QUALITY, RELIABLE & DEPENDABLE WORK</p> <p>Call Zack 605-295-3651</p>	<p>ACKERMAN</p> <p>Paint, Paper, Plaster</p> <p>224-6600 224-2422</p>	<p>TREE PRO</p> <p>• Tree Removal • Tree Trimming • Stump Grinding</p> <p>224-6600 224-2422</p>
<p>something terrible happens when you don't advertise...</p> <p>NOTHING!</p> <p>www.capjournal.com 224-6600</p>	<p>CONSTRUCTION</p> <p>CONSTRUCTION</p> <p>• All types of concrete work • Business & Flat Work</p> <p>224-7120 or 280-3305</p> <p>FREE ESTIMATES!</p>	<p>LANDSCAPING</p> <p>Oahe's Lawn Care</p> <ul style="list-style-type: none"> • Power Raking • Lawn Mowing • Spring Cleanup • 4-Step Fertilizing Program • Tilling • Hedge & Branch Trimming <p>QUALITY, RELIABLE & DEPENDABLE WORK</p> <p>Call Zack 605-295-3651</p>	<p>LAWN CARE</p> <p>Mullivan</p> <p>YARD AND GARDEN</p> <p>Call Ron Mullivan 224-8487</p>	<p>ROOFING</p> <p>DATON STORM ROOFING</p> <p>References Fully Insured Re-Single - Tile - Flat Factor - Cedar - All Roof Types</p> <p>FREE ESTIMATES FAIR PRICES</p> <p>605-280-9891 605-280-9794</p>	<p>TREE PRO</p> <p>• Tree Removal • Tree Trimming • Stump Grinding</p> <p>224-6600 224-2422</p>
<p>"House Calls" For all those household jobs and projects. No project too small.</p> <p>280-1701 or Call 224-9120</p> <p>WE PAINT TOO!</p>	<p>With a 1.5 x 2 inch ad (full color when available) Publishes in 2 Capital Journals & Reminder per week.</p> <p>Call or email us TODAY for monthly rates or contract agreements.</p> <p>605-224-7301</p> <p>Capital Journal Classifieds</p>	<p>LANDSCAPING</p> <p>Oahe's Lawn Care</p> <ul style="list-style-type: none"> • Power Raking • Lawn Mowing • Spring Cleanup • 4-Step Fertilizing Program • Tilling • Hedge & Branch Trimming <p>QUALITY, RELIABLE & DEPENDABLE WORK</p> <p>Call Zack 605-295-3651</p>	<p>LAWN CARE</p> <p>Mullivan</p> <p>YARD AND GARDEN</p> <p>Call Ron Mullivan 224-8487</p>	<p>ADAM'S ROOFING</p> <p>Todd & Adam Berch 605-234-2006</p> <ul style="list-style-type: none"> • Shingles • Siding • Gutters • Vinyl 	<p>WINDOW SERVICE</p> <p>• Window Installation • Window Repair • Window Replacement</p> <p>224-6600 224-2422</p>

Publisher's Affidavit of Publication

STATE OF SOUTH DAKOTA)
 COUNTY OF BRULE)

Holly Endres, of said county and state being duly sworn on her oath says: The Chamberlain/Oacoma Sun is a weekly newspaper of general circulation and published in Chamberlain, Brule County, and State of South Dakota; and has been such newspaper during the times hereinafter mentioned; That said newspaper is a legal weekly, that it has a bonafide circulation of more than 200 copies weekly, that it has been published within said County of Brule more than fifty-two successive weeks next prior to publication of the notice hereinafter mentioned and maintained at the place of publication; That I, the undersigned am editor of said newspaper, in charge of the advertising department thereof, and have personal knowledge of all the facts stated in this affidavit; that the advertisement headed:

Initial Public Notice
153 Lines

a printed copy of which is hereto attached and published in the said newspaper for 2 consecutive week(s).

The first publication of said notice in said newspaper aforesaid was on Wednesday, the 26 day of July, A.D., 2013 and that the succeeding publications were severally
 Wednesday, the 3 day of July A.D., 2013
 Wednesday, the ___ day of ___ A.D., 2013

and the last publication on Wednesday, the 3 day of July, 2013, that the full sum of fees charged for publishing the same, to-wit: the sum of \$ 41.15 insures solely to the editor of The Chamberlain/Oacoma Sun. That no agreement or understanding for any division thereof had been made with any other person, and that no part thereof has been agreed to be paid to any person whatsoever.

Holly Endres
 Notary Public

Subscribed and sworn to before me this 22 day of July, 2013
 My Commission expires May 1, 2015

**Initial Public Notice
 Cedar Shores Bank
 Stabilization
 Oacoma, Lyman
 County, South Dakota
 June 2013**

Public notification is hereby given by the Department of Homeland Security's Federal Emergency Management Agency (FEMA) of the intent to prepare an Environmental Assessment (EA) for a proposed project at Cedar Shores Resort in the City of Oacoma, Lyman County, South Dakota. The South Dakota Department of Game Fish and Parks (SDGFP) has requested Federal assistance from the Federal Emergency Management Agency (FEMA) and the United States Coast Guard (USCG) to reduce the long-term risk to the existing infrastructure due to the erosion of the western bank of the Missouri River from Hwy 16 to Cedar Shores Resort. State funding will also be provided by from SDGFP, the South Dakota Department of Environment & Natural Resources (SDDENR) and the South Dakota Department of Transportation (SDDOT). This notification is provided pursuant to the National Environmental Policy Act (NEPA), Section 106 of the National Historic Preservation Act (NHRA), Executive Order 11988 (Floodplain Management), and Executive Order 11990 (Wetland Protection, and all applicable Federal agency implementation procedures. FEMA's Hazard Mitigation Grant Program (HMGP) provides funds for the planning and implementation of mitigation projects prior to a disaster event. Funding these plans and projects reduces overall risks to the population and structures, while also reducing reliance on funding from future disaster declarations. Grant applications for related projects intended to reduce the risk of future

damage have also been submitted to several other federal, state and local agencies. In accordance with NEPA, an EA will be prepared to evaluate the potential impacts of the proposed project on the human and natural environment. The EA addresses related actions that will be carried out concurrently as part of the other initiatives and is being prepared in cooperation with USCG, US Army Corp of Engineers (USACE), SDGFP, SDDENR and SDDOT. Background Due to flooding, the west bank of the Missouri River from Hwy 16 to Cedar Shores Resort has eroded at an accelerated rate, posing a risk to the existing infrastructure. The existing Drive, pedestrian facilities, utility lines such as sewer and water, and Cedar Shores Campground and Resort. The erosion has encroached on the pedestrian facilities and portions of the Cedar Shores Campground and Resort. Shoreline Drive is currently not experiencing roadway stability issues, continued erosion would become an issue. The existing infrastructure is vital to the residents in this area in order to access their properties and receive services such as sewer and water. The existing infrastructure is also vital for the visitors to access the area's recreational opportunities. PROJECT DESCRIPTION The Proposed Action is to reduce the long-term risk to the existing infrastructure posed by the Missouri River bank erosion by stabilizing the shoreline from Hwy 16 to the Cedar Shores Resort. Alternatives will be considered that evaluate ways to stabilize the shoreline as part of the EA. All required federal, tribal, state and local permits and approvals, such as a Clean Water Act Section 404 permit, will be identified in the EA and would need to be obtained prior to construction. The EA process will also include Section

106 coordination due to the Federal agency involvement for the Proposed Action. A public comment period will remain open for 15 days following publication of this notice. In addition to this initial comment period, a final opportunity for public review and comment period will be provided when the Draft EA becomes available. Initial comments will be accepted for 15 days from the date of this notice. Interested parties may submit comments or request additional information by contacting: Richard Myers Deputy Regional Environmental Officer FEMA Region VIII DFC Building 710, P.O. Box 25267 Denver, Colorado 80225 Email: richard.myers2@fema.dhs.gov Telephone: (303) 235-4926 OR Rebecca Baker HDR Engineering 6300 S Old Village Place Sioux Falls, SD 57107 Email: Rebecca.Baker@hdrinc.com Telephone: (605) 977-7756 Published twice, June 26 and July 3, 2013 at the approximate cost of \$86-43.

CEDAR SHORE BANK STABILIZATION ENVIRONMENTAL ASSESSMENT (EA)

TRANSCRIPT FOR PUBLIC INFORMATION MEETING



FEMA



HDR

Contents

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	Public Notice	
	Public Meeting Invite	
	Sign In Sheet	
	Comment Forms	
	Presentation	
	Displays	
	Written Comments	

Section 1 Public Information Meeting

1.1 Location

The Cedar Shore Public Information Meeting was held at the following location:

Oacoma Community Center
100E 3rd St.
Oacoma, SD 57365

1.2 Time

The public information meeting was an open-house style meeting which was held from 5:00-7:00 p.m. (CST) with a formal presentation at 5:30 p.m.

1.3 Public Notice and Landowner Invitation

The project team completed the advertisement and press release in accordance with FEMA and SDDOT guidance. The advertisement was submitted to the *Chamberlain/Oacoma Sun* and the *Capitol Journal*. The advertisement was published twice, on September 11, 2013 and September 18, 2013, in the *Chamberlain/Oacoma Sun*. The advertisement was published twice, September 11, 2013 and September 23, 2013 in the *Capitol Journal* in Pierre.

See Attachment A for copies of the public notice.

An invite was sent to the surrounding landowners. See Attachment A for a copy of the public invite.

1.4 Presentation

HDR created and presented a presentation that provided a project overview, discussed the Project's Purpose and Need, the EA Preferred Alternative, and the general environmental process. A copy of the presentation is shown in Attachment A.

Finally, displays were also available that noted the alignment. Copies of these displays can be found in Attachment A.

1.5 Sign In Sheet

An HDR representative was stationed at the entrance to the meeting room to ensure each individual signed in appropriately. A total of 29 individuals signed in on the sign-in sheet. See Attachment A for the sign in sheet.

1.6 Comments Received

Three different methods were available for the public to comment:

- Informal discussion with the project team during the open house portion of the public input meeting. Individual project team members were responsible for documenting questions and comments they received.
- Comment forms received during and after the public information meeting. See Attachment A for the comment form.

- Email to Richard Meyers (Richard.Myers2@fema.dhs.gov) or Rebecca Baker (Rebecca.Baker@hdrinc.com).

Verbal questions and comments received are shown in Table 1 with responses provided:

Table1. Comments received and responses provided.

Comment Received	Response Provided
<p>What will happen to the access for the road and bike path? What will happen to the sidewalks and trees during construction?</p>	<p>During construction, Shoreline Drive would continue to provide access to the area. A traffic plan would be developed during final design. It is anticipated that some sections of the bike path would need to be replaced. In some locations, existing trees would be impacted during construction.</p>
<p>Water has been higher than the riprap is currently designed to an elevation of 1370 ft. MSL what if the water gets higher?</p>	<p>The U.S. Army Corps of Engineers has performed a wind and wave analysis to determine where the riprap would be placed. 1370 ft. was determined to be the top elevation. Above 1370 ft. the damage would be short lived and infrequent, making the degree of risk for the riprap above 1370 ft. not cost efficient.</p>
<p>This Project should be for a permanent fix, if it isn't, will there need to be an additional project in the next 5 years?</p>	<p>This Project is designed to address the current and foreseeable issues while considering the most cost effective means of stabilizing the bank. The analysis done for this Project predicted that if damage is done above 1370 ft., it will be short lived and infrequent.</p>
<p>What is the construction timeframe?</p>	<p>Construction would take place for the Cedar Shore Resort portion first, followed by the Shoreline Drive portion. Both projects are anticipated to be constructed during the 2014 season with the Cedar Shore portion during the Spring 2014 and the riprap during Fall 2014 when the water elevation is lower.</p>
<p>Part of the grant process includes a benefit/cost analysis and mitigation cost after the Project is completed. Has this changed the benefit/cost analysis? Was there a set elevation that the grant required the riprap to be at?</p>	<p>The benefit/cost has been analyzed for the Project and it has been determined to be a cost effective approach to this Project.</p> <p>The project team is not aware of a specific elevation specified in the grant application that the riprap would need to go to. The elevation for the riprap was determined by the U.S. Army Corps of Engineers during their wave and wind analysis.</p>

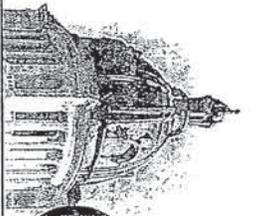
<p>Too many rocks would affect the viewshed, so the riprap should be only as high as it needs to be.</p>	<p>Thank you for your comment, no response needed.</p>
<p>There are high water impacts everywhere along the shoreline, but mostly impacts are at the runoff points. There are large amounts of water runoff on the south and north side of the Cedar Shore Resort. This project should address the runoff from the hills. The campground is highly susceptible to the runoff.</p>	<p>The Project Team will consider and evaluate this suggestion.</p>
<p>The campground has groundwater draining through it. In the beach area, the sand always gets washed away. Drilled shafts or riprap should be looked at for the area near the campground.</p>	<p>The beach area next to the campground is an erosion issue, not a landslide issue. Therefore, drilled piers would not be warranted. Riprap is not currently in the design; however the Project Team will consider and evaluate this suggestion.</p>

One written comment was received, no response was needed:

- We are in favor of the Project and believe it will benefit our interests. The preliminary design currently available is preferred by us.

Attachment A

Public Notice



Capital Journal

AFFIDAVIT OF PUBLICATION

State of South Dakota, County of Hughes

Jackie Olson

of said county, being, first duly sworn, on

oath, says: That ~~she~~ she is the publisher or an employee of the publisher of the Capital Journal, a daily newspaper published in the City of Pierre in said County of Hughes and State of South Dakota; that ~~she~~ she has full and personal knowledge of the facts herein stated, that said newspaper is a legal newspaper as defined in SDCL 17-2-2.1 through 17-2-2.4 inclusive, that said newspaper has been published within the said County of Hughes and State of South Dakota, for at least one year next prior to the first publication of the attached public notice, and that the ~~legal display advertisement~~ legal display advertisement headed FEMA Notice of Public Information Meeting Cellar Shore Bank Stabilization . . .

September 11	20	13	20
September 23	20	13	20
	20		20
	20		20
	20		20

That the full amount of the fee charged for the publication of the attached public notice inures to the sole benefit of the publisher or publishers; that no agreement or understanding for the division thereof has been made with any other person, and that no part thereof has been agreed to be paid to any person whomsoever; that the fees charged for the publication thereof are: \$ 59.41 .

Signed: Jackie Olson

subscribed and sworn to before me this 25 day of September 2013

My A. Baker

Notary Public in and for the County of Hughes, South Dakota.

My Commission expires 2-19, 2015.

Publisher's Affidavit of Publication

STATE OF SOUTH DAKOTA)
)SS
COUNTY OF BRULE)

Holly Endres, of said county and state being duly sworn on her oath says: The Chamberlain/Oacoma Sun is a weekly newspaper of general circulation and published in Chamberlain, Brule County, and State of South Dakota; and has been such newspaper during the times hereinafter mentioned; That said newspaper is a legal weekly, that it has a bonafide circulation of more than 200 copies weekly, that it has been published within said County of Brule more than fifty-two successive weeks next prior to publication of the notice hereinafter mentioned and maintained at the place of publication; That I, the undersigned am editor of said newspaper, in charge of the advertising department thereof, and have personal knowledge of all the facts stated in this affidavit; that the advertisement headed:

Notices of Public Information Meeting
108 Lines

a printed copy of which is hereto attached and published in the said newspaper for 2 consecutive week(s).

The first publication of said notice in said newspaper aforesaid was on Wednesday, the 11 day of Sept A.D., 2013 and that the succeeding publications were severally Wednesday, the 18 day of Sept A.D., 2013 Wednesday, the day of A.D., 2013

and the last publication on Wednesday, the 18 day of Sept, 2013, that the full sum of fees charged for publishing the same, to-wit, the sum of \$ 64.35 insures solely to the editor of The Chamberlain/Oacoma Sun. That no agreement or understanding for any division thereof had been made with any other person, and that no part thereof has been agreed to be paid to any person whatsoever.

Holly J Endres
May J Gondera
Notary Public

Subscribed and sworn to before me this 18 day of Oct, 2013

My Commission expires May 4, 2015

Federal Emergency Management Agency Notice of Public Information Meeting Cedar Shore Bank Stabilization Environmental Assessment

Oacoma, Lyman County, So Dakota
Date: September 26, 2013
Time: 5:00 pm to 7:00 (CST)
Place: Oacoma Commu Center
100 E. 3rd St.
Oacoma, SD 57365

The Department of Home Security's Federal Emergency Management Agency (FEMA) is requesting public participation and input in an upcoming meeting to review the project that extends from Hwy 16 to Cedar Shore Resort in the Town of Oacoma, Lyman County, South Dakota. The South Dakota Department of Game Fish Parks (SDGFP) has requested Federal assistance from the United States Coast Guard (USCG) to reduce the long-term risk to the existing infrastructure due to the erosion of the west bank of the Missouri River on Hwy 16 to Cedar Shore Resort. The erosion has encroached on pedestrian facilities and portions of the Cedar Shore Resort Campground.

The public and all interested parties are invited to attend the public information meeting on September 26, 2013 at the Oacoma Community Center. A brief presentation will be given at 5:00 pm to 7:00 pm on September 26, 2013 at the Oacoma Community Center.

left message on...
Friday, Sept. 27, 2013
9:39 am - DRI
Brule, Hanson, Hill, McCook and City of



Public Meeting Invite

Project Background

The Department of Homeland Security's Federal Emergency Management Agency (FEMA) is requesting public participation and input to review the proposed project at Cedar Shore Resort in the City of Oacoma, Lyman County, South Dakota. The South Dakota Department of Game Fish and Parks (SDGFP) has requested Federal assistance from the Federal Emergency Management Agency (FEMA) and the United States Coast Guard (USCG) to reduce the long-term risk to the existing infrastructure due to the erosion of the western bank of the Missouri River from Hwy 16 to Cedar Shore Resort. State funding will also be provided by SDGFP, the South Dakota Department of Environment & Natural Resources (SDDENR) and the South Dakota Department of Transportation (SDDOT).

The erosion has encroached on the pedestrian facilities and portions of the Cedar Shore Campground and Resort. Shoreline Drive is currently not experiencing roadway stability issues, however, continued erosion would become an issue. The existing infrastructure is vital to the residents in this area in order to access their properties and receive services such as sewer and water. The existing infrastructure is also vital for the visitors to access the area's recreational opportunities. The reduced flooding potential will help maintain traffic on the only roadway that provides access for traffic, including emergency vehicles, to approximately 28 residences, the Cedar Shore Resort and its recreational resources, and a multi-use path. In addition, stabilizing the Lake Francis Case/Missouri River shoreline would maintain utilities such as sewer and water.

Existing Shoreline



Shoreline next to the campground



Erosion occurring on the shoreline

Invitation Cedar Shore Bank Stabilization

**Public Information Meeting:
September 26, 2013**

Oacoma Community Center
100 E 3rd St., Oacoma, SD 57365
Open House: 5:00 - 7:00 pm
Presentation: 5:30 pm

All persons interested in this project are invited to attend this meeting to share your views and concerns.

Notice is further given to individuals with disabilities that this meeting is being held in a physically accessible place. Please notify the SDDOT ADA Coordinator at least 48 hours prior to the meeting if you have special needs for which this agency will need to make arrangements. The telephone number for making special arrangements is 605-773-3540 or 1-800-877-1113 (Telecommunications Relay Services for the Deaf).

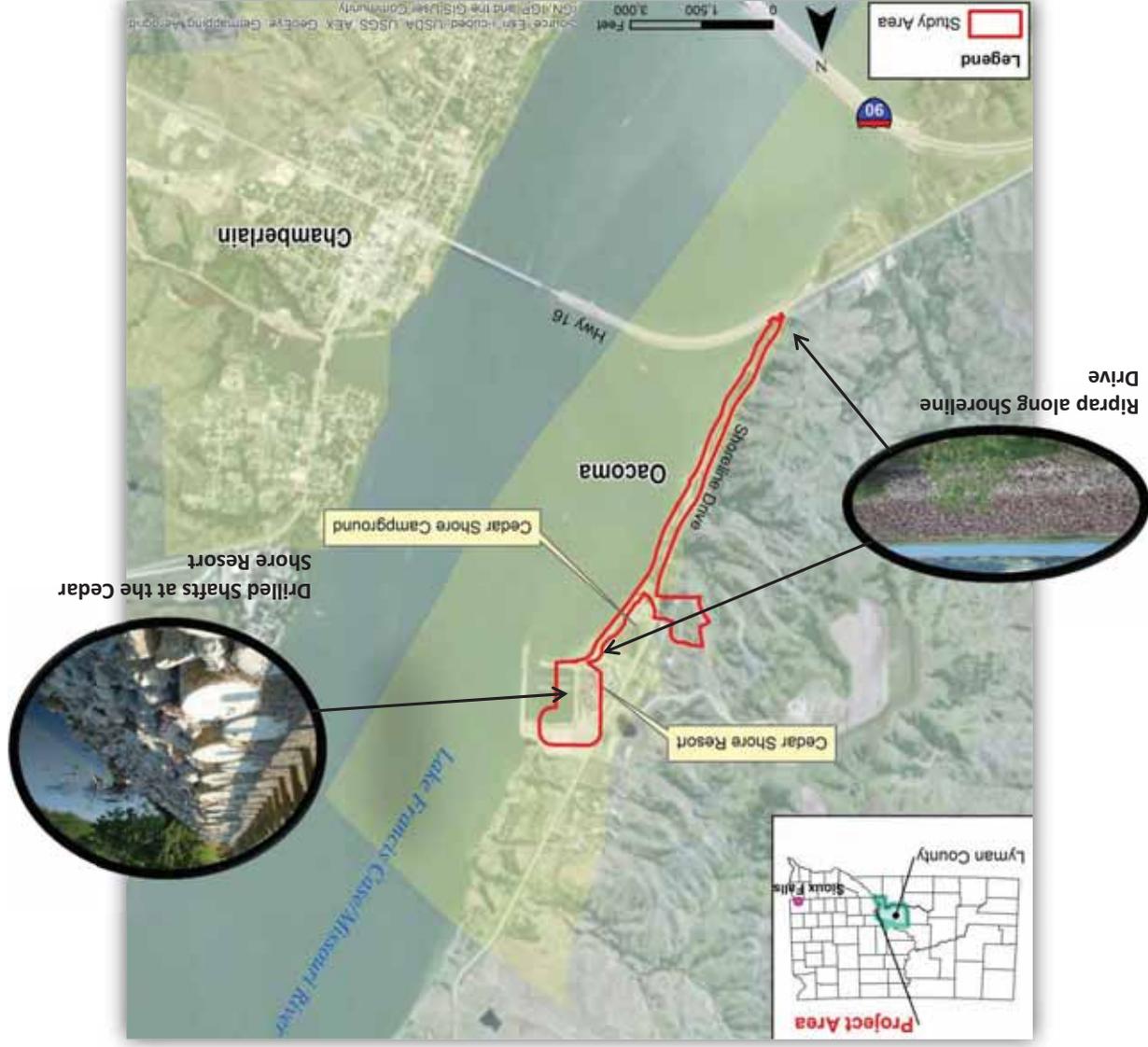
For further information, please contact
Richard Myers, FEMA, 303.235.4926
richard.myers2@fema.dhs.gov or
Rebecca Baker, HDR Engineering,
605.977.7756 Rebecca.Baker@hdrinc.com

NAME
ADDRESS 1
ADDRESS 2
CITY, STATE ZIP

HDR Engineering
ATTN: Rebecca Baker
6300 S. Old Village Place Suite 100
Sioux Falls, SD 57108



Cedar Shore Bank Stabilization Study Area



Frequently Asked Questions

What is an Environmental Assessment?

An Environmental Assessment (EA) documents the National Environmental Policy Act (NEPA) process, which includes coordinating with the public and agencies, developing a purpose and need, developing a range of alternatives, and analyzing the alternatives to determine the preferred alternative.

Why stabilize the shoreline?

As a result of flooding, this area is eroding and has already encroached on pedestrian facilities and portions of the Cedar Shore Campground and Resort.

How long is the part of the shoreline that is going to be updated?

The portion of the shoreline that will be improved is approximately 6,500 feet in length (see map on opposite page for Study Area).

What are the problems with the existing shoreline?

The steep slopes of the existing shoreline are eroding towards the roadway and pedestrian facilities. Restoring the shoreline would prevent the potential erosion of the roadway in the future.

What improvements are going to be made?

From Hwy 16 to Cedar Shore Resort, riprap would be put in place to help prevent further erosion. With the Cedar Shore Resort portion, drilled shafts would be installed to help stabilize the shoreline, and then covered with riprap (see map with images on opposite page).

Sign In Sheet

SIGN-IN SHEET



FEMA



HDR

Meeting:

Cedar Shore Bank Stabilization

Meeting Date:

Time:

Name	Organization	Phone	Email
Steve Prandy	SDDOT	273-5961	
Craig Smith	SDDOT	995-3300	
Rick Laughlin	HDR	997-7740	
Chris Laughlin	property owner	351-8067	chris.a.laughlin@gmail.com
Gary Dominick	Vice Chairman City of Oscoda	730-2128	gary@midstaresd.net
Kim Halverson	LYMAN CO	730-0414	kim@leberold.com
Valerie Moore	Town of Oscoda	734-4455	ccomasd@midstaresd.net
Dain Sisson	1513 Shoreline Dr	201-4374	fish@iw.net
Dan Wilde	Al's / Cedar Shore	605-695-3284	dan@alsoasis.com
Meynard + Karen Kuhn	Property owner	605-734-6778	kkarl@earthlink.net
Jeremy Pappas	Developer	602-615-2740	
Jim Pappas	FEMA	303-235-4606	Kevin.williams@fema.dhs.gov
Becky Baker	SD OEM	(605) 773-3831	Jim.Pappas@state.sd.us
	HDR	977-7756	rebecca.baker@hdrinc.com

SIGN-IN SHEET



FEMA



HDR

Meeting:

Cedar Shore Bank Stabilization

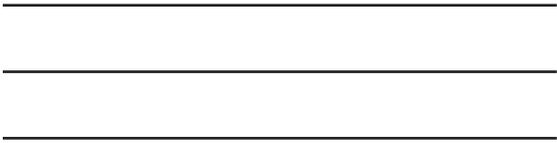
Meeting Date:

Time:

Name	Organization	Phone	Email
Al Vedved	SD Game Fish Parks	773-3391	Al.Vedved@state.sd.us
Eric Prunty	SD DOT	995-8120	eric.prunty@state.sd.us
Edge Christensen	property owner	772-5666	
Tammy Williams	SD DOT - Mitchell	995-3340	Tammy.Williams@state.sd.us
Matt Sailor	USACE	605 224 8531	matthew.c.sailor@usace.army.mil
Dave Christensen	Property Owner	359-2963	
James Lindley	USACOE	734-6772	James.a.lindley@usace.army.mil
Mike Schreiber	Oacuma Town Board	680-9797	mikenjil@midstatesd.net
Brian McQuinn	Flaming J. Subert III	605-4408	brian.mcquinn@dshdillig.org
Leroy Chasal	Lymack Co.	730-0156	lchasa@gwte.nkt
DOUG JOHNSON	PROPERTY OWNER	234-9081	dougjohnson@MOSTARSD.NET
Row Madison	Cedar Shore Resort	734-6376	Row@Cedarshore.com
Brad Schipper	Property owner	605 339-0168	bschipping@gmail.com
Greg Schipper	Cedar Shore Resort	605 339-2971	gschipped@agency-mgmt.com
Jessica Erickson	HDR	702-8118	Jessica.erickson@hdrinc.com

Comment Forms

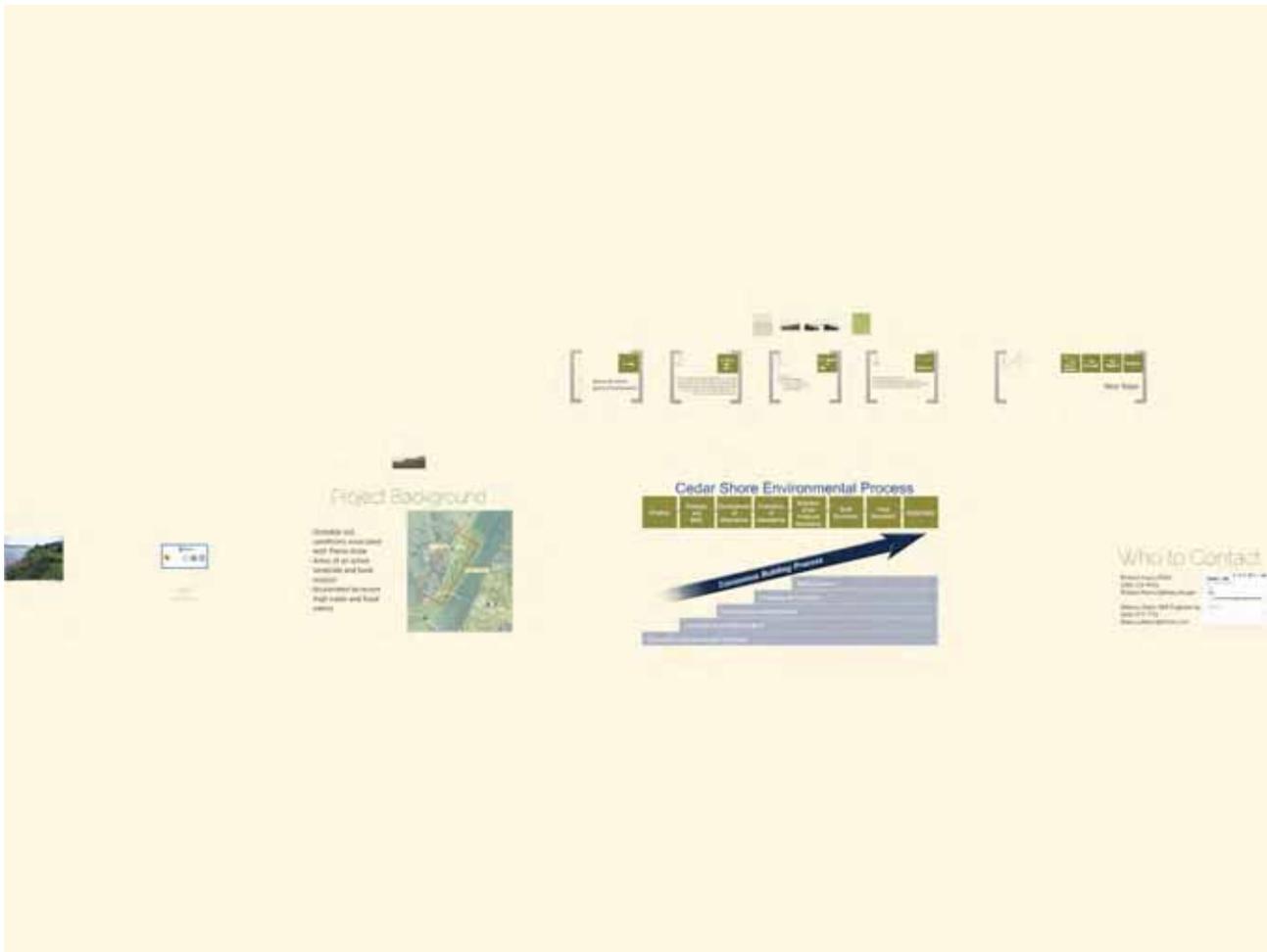
Please fold, fasten, and mail. No envelope necessary.



PLACE
STAMP
HERE

Rebecca Baker
HDR Engineering
6300 S. Old Village Place, Suite 100
Sioux Falls, SD 57108

Presentation



Cedar Shore Bank Stabilization
Draft Environmental Assessment



FEMA



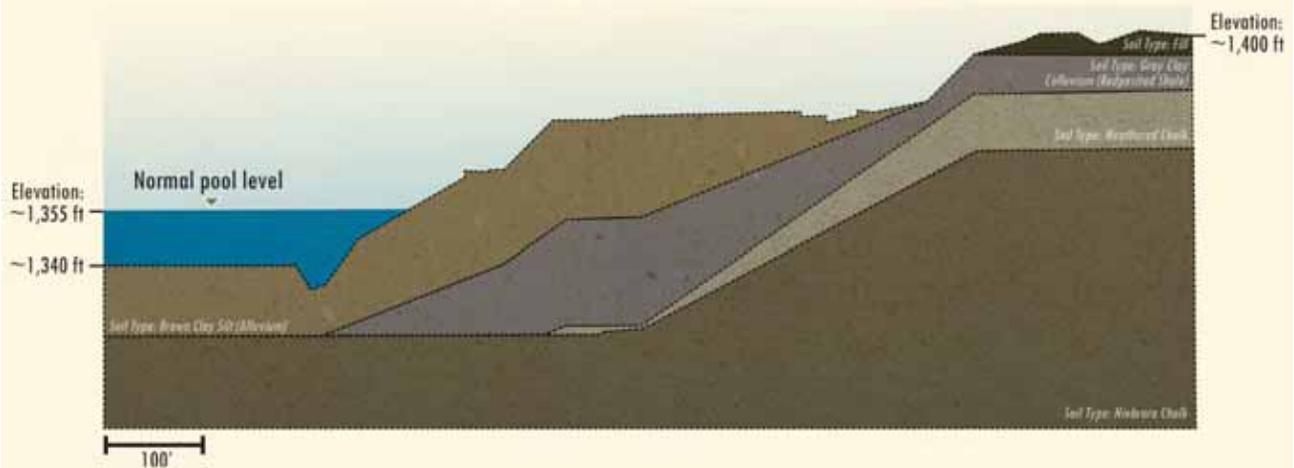
HDR

Al Erickson, PE
Project Manager

Becky Baker
Lead Environmental Scientist

Project Background

- Unstable soil conditions associated with Pierre shale
- Areas of an active landslide and bank erosion
- Accelerated by recent high water and flood events

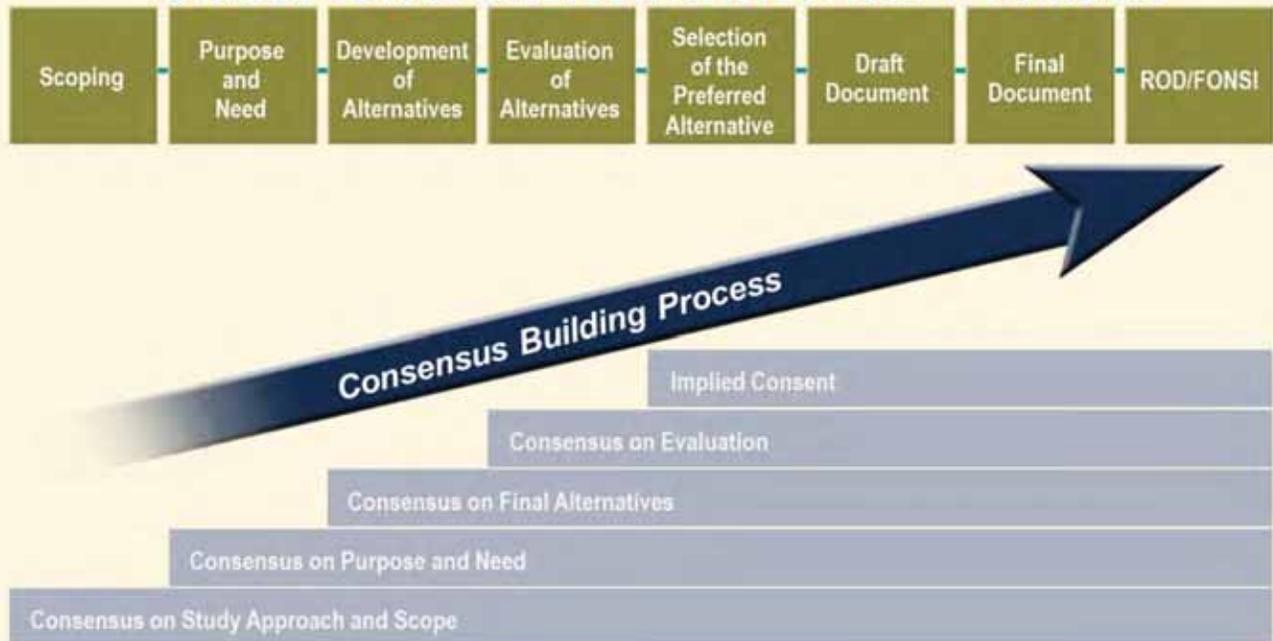


Project Background

- Unstable soil conditions associated with Pierre shale
- Areas of an active landslide and bank erosion
- Accelerated by recent high water and flood events



Cedar Shore Environmental Process



1.

SD GF&P
FEMA
SDDOT
USACE
US FWS
SD OEM
City of Oacoma
Lyman County
SD DENR
USCG
NRCS
SHPO

Scoping

Notice of Intent
Agency Coordination

2.

Purpose and Need

The purpose of the proposed action is to reduce the long-term risk of Lake Francis Case/Missouri River bank erosion and landslide to the existing infrastructure by stabilizing the shoreline from Hwy 16 to the Cedar Shore Resort.

3.

Development of Alternatives

Alternatives

- No Action Alternative
- Proposed Action Alternative
Cedar Shore Resort Area
Resort to Hwy 16



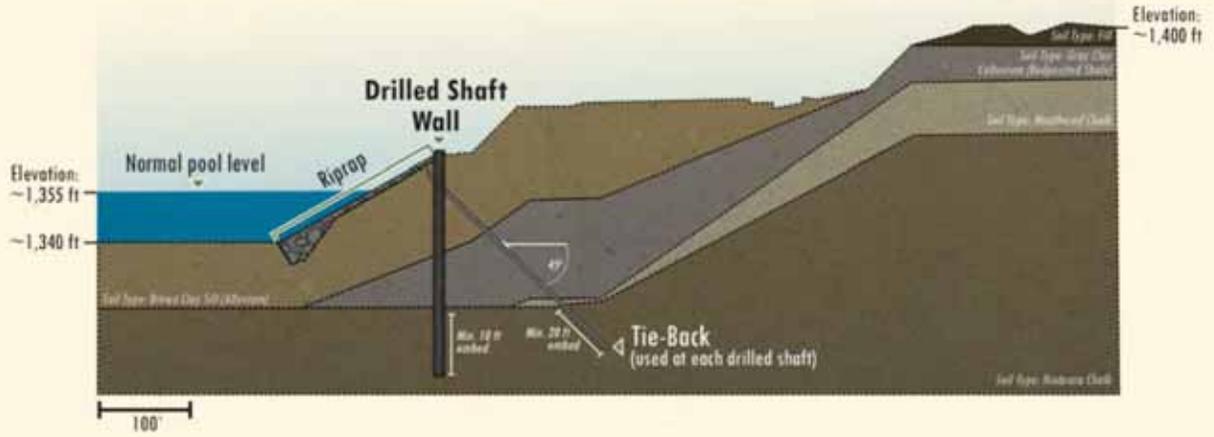
3.

Development of Alternatives

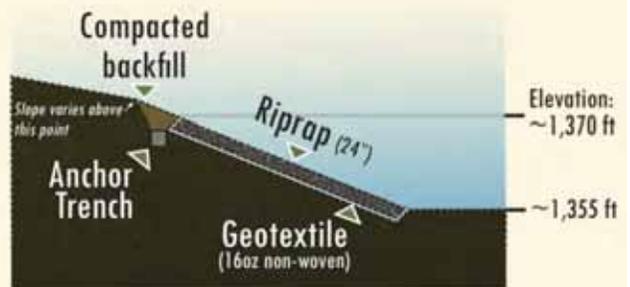
Alternatives

- No Action Alternative
- Proposed Action Alternative
 - Cedar Shore Resort Area
 - Resort to Hwy 16

Drilled Shafts and Riprap at Cedar Shore Resort



Riprap from Cedar Shore Resort to Hwy 16



5-8



Next Steps

Who to Contact

Richard Myers, FEMA
(303) 235-4926
Richard.Myers2@fema.dhs.gov

Rebecca Baker, HDR Engineering
(605) 977-7756
Rebecca.Baker@hdrinc.com

COMMENT FORM
Cedar Shore Bank Stabilization

Date: _____
Name: _____
Organization: _____
Address: _____
Email: _____ Phone: _____

Share your feedback:

Displays

WELCOME



Cedar Shore Bank Stabilization

- MEETING GOALS:**
- ✓ Help focus the Purpose and Need of the Project
 - ✓ Discuss Bank Stabilization Options
 - ✓ Share information with agency representatives
 - ✓ Sign-up to keep informed or participate



WHY IS THE PROPOSED PROJECT NEEDED?

PRELIMINARY PROJECT'S NEED & PURPOSE:

Problem:

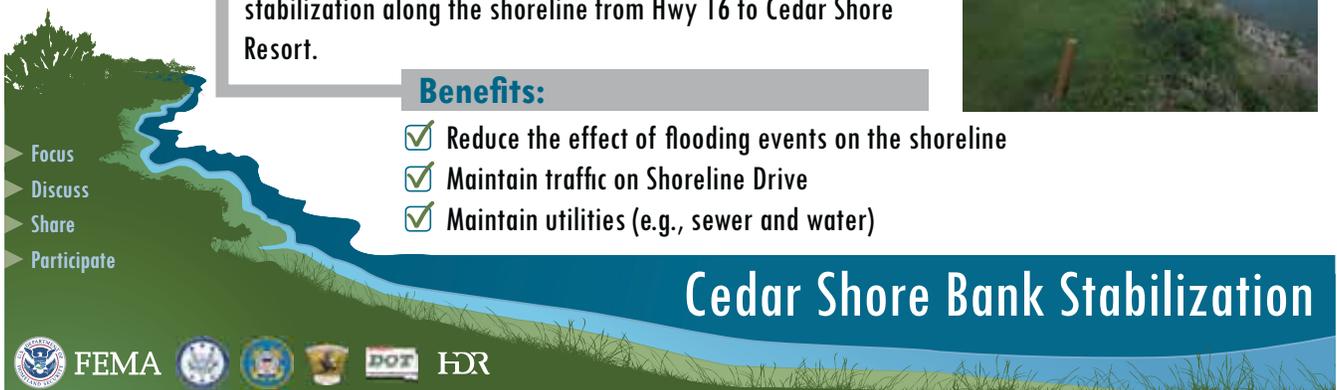
Continued risk of shoreline erosion and flooding from Lake Francis Case/ Missouri River, which flows adjacent to Shoreline Drive from Hwy 16 to Cedar Shore Resort. Shoreline Drive is the only access for traffic, including emergency vehicles, to approximately 28 residences, the Cedar Shore Resort, and a multi-use path.

Proposed Solution:

SDGFP and SDDOT have identified the need to perform bank stabilization along the shoreline from Hwy 16 to Cedar Shore Resort.

Benefits:

- ✓ Reduce the effect of flooding events on the shoreline
- ✓ Maintain traffic on Shoreline Drive
- ✓ Maintain utilities (e.g., sewer and water)



WHAT SHOULD THE IMPROVEMENTS LOOK LIKE?

DRILLED SHAFTS AND RIPRAP



Installation of Drilled Shafts. Drilled Shafts would be installed by Cedar Shore Resort.



Drilled Shafts after Installation.



Installation of Riprap. Riprap would be installed from Cedar Shore Resort to Hwy 16.



Riprap bank stabilization after installation.

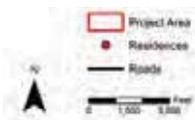
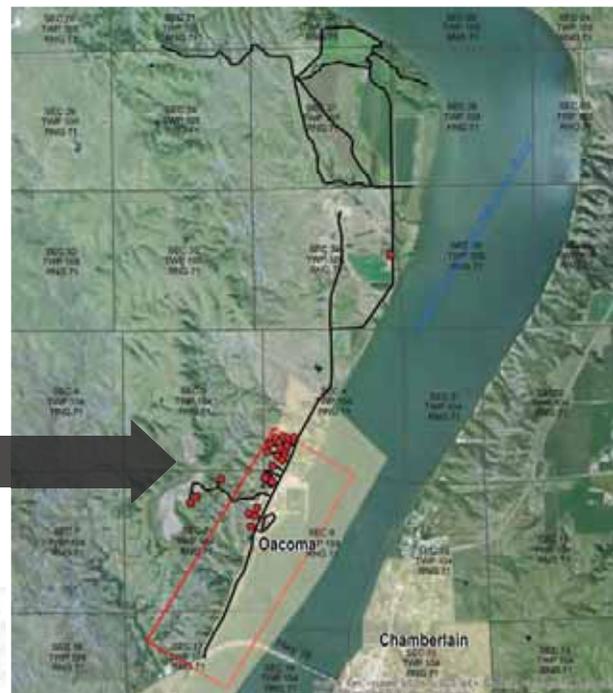
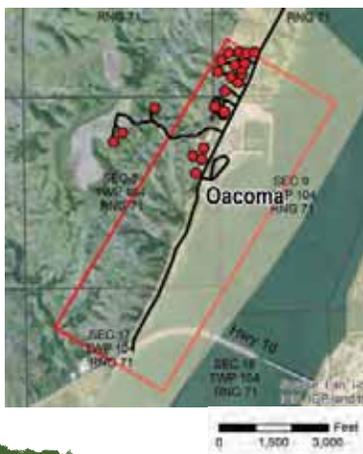
Focus
Discuss
Share
Participate

Cedar Shore Bank Stabilization



PROJECT NEED

ACCESS



Focus
Discuss
Share
Participate

Cedar Shore Bank Stabilization



CONSTRUCTION LIMITS

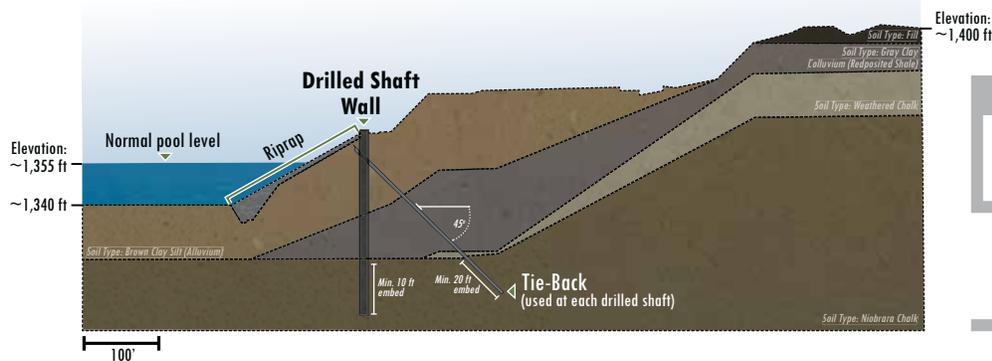


Focus
Discuss
Share
Participate

Cedar Shore Bank Stabilization

BANK STABILIZATION

DRILLED SHAFTS AND RIPRAP AT CEDAR SHORE RESORT



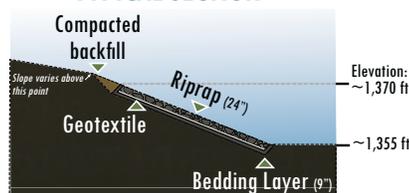
QUESTION:

Why does the riprap protect to an elevation of 1370?

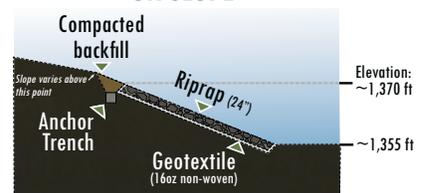
The elevation of 1370 was determined through wave analysis modeling completed by the USACE.

RIPRAP FROM CEDAR SHORE RESORT TO HWY 16

TYPICAL SECTION



ON SLOPE



Focus
Discuss
Share
Participate

Cedar Shore Bank Stabilization

Written Comments

