

**FEDERAL HIGHWAY ADMINISTRATION
ENVIRONMENTAL ASSESSMENT AND
SECTION 4(F) *DE MINIMIS* IMPACT FINDING**

REEVALUATION

FOR

East Side Corridor (SD100)
I-90 to South of Madison Street
Sioux Falls, Minnehaha County, South Dakota

Submitted Pursuant to 42 U.S.C. 4332(2) (c) and 49 U.S.C 303

By the
U.S. Department of Transportation
Federal Highway Administration
and
South Dakota Department of Transportation

August 2016

Submitted by:

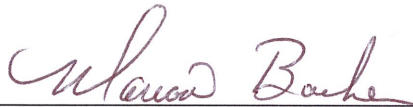


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This EA Reevaluation has been prepared in accordance with provisions and requirements of 23 CFR 771.129 (c) relating to the implementation of the National Environmental Policy Act of 1969, and 23 CFR 774 relating to Section 4(f) of the U.S. Department of Transportation Act of 1966.

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1.0 PROJECT BACKGROUND AND OVERVIEW

National Environmental Policy Act (NEPA) compliance for the proposed construction of a limited-access regional arterial roadway around the northeastern edge of the City of Sioux Falls (the Project) was previously documented in an Environmental Assessment and Section 4(f) *De Minimis* Analysis (2014 EA), prepared by the South Dakota Department of Transportation (SDDOT) and approved by the Federal Highway Administration (FHWA) on September 23, 2014. The 2014 EA was subject to public review, which included a public meeting on October 21, 2014. FHWA issued a Finding of No Significant Impact (FONSI) on January 27, 2015.

The Project would be constructed in four phases (see Figure 1). These scheduled construction phases include:

- Segment 1: South of Madison to Maple Street (PCN 00KB) - *currently under construction*
- Segment 2: Maple Street to Rice Street (PCN 01V5)
- Segment 3: Interstate (I) - 90 to Rice Street (PCN 00X8)
- Segment 4: I-90 Interchange (PCN 00WN)

Once completed, the Project would be referred to as Hwy 100, but for the purposes of this document, it is referred to as SD100 to be consistent with the 2014 EA and FONSI.

The purpose of this EA Reevaluation is to 1) incorporate Western Area Power Administration (Western), a federal agency within the U.S. Department of Energy, as a cooperating agency, 2) reconsider potential project effects of the 2016 Preferred Alternative, and 3) examine social, economic, and environmental conditions that may have changed. In this document the Preferred Alternative approved in the FONSI continues to be referred to as the Preferred Alternative. The Preferred Alternative that has been modified to include the design changes being evaluated in this EA Reevaluation is referred to as the 2016 Preferred Alternative.

The 2014 EA and FONSI included a thorough discussion of the project purpose and need and descriptions of the affected environment. These have not changed; therefore, discussions within this EA Reevaluation focus on resource impacts where differences were identified between the Preferred Alternative and the 2016 Preferred Alternative.

The 2014 EA, FONSI, and other supplemental documents used in this evaluation are incorporated by reference in accordance with 40 Code of Federal Regulations (CFR) Section 1502.21. The 2014 EA and FONSI are available for review electronically at the SDDOT Environmental website at: <http://www.sddot.com/business/environmental/assessments/>. Hard copies of the 2014 EA, FONSI, and other supplemental documents are also available for review at the SDDOT Becker-Hansen Building (700 E. Broadway Ave, Pierre, SD, 57501) and the SDDOT Sioux Falls Area Office (5316 W. 60th St. N, Sioux Falls, SD, 57107).

Preferred Alternative

The Preferred Alternative is Alternative 4a, as it is described in the 2014 EA and FONSI.

2016 Preferred Alternative

The 2016 Preferred Alternative is Alternative 4a identified in the 2014 EA and FONSI with the proposed revisions incorporated.

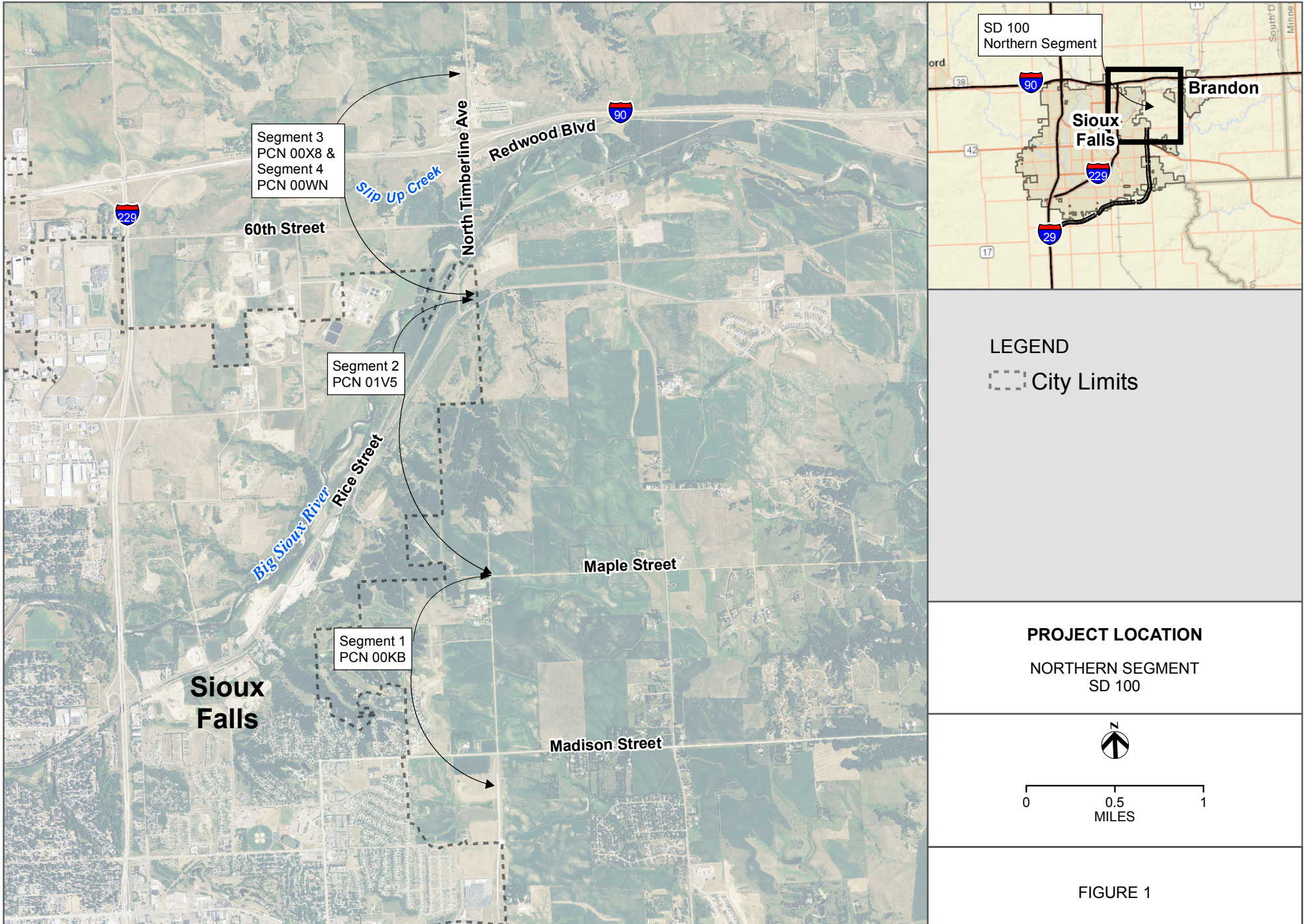


FIGURE 1

2.0 2016 PREFERRED ALTERNATIVE

The 2016 Preferred Alternative is the 2014 EA Preferred Alternative with updates in design. This section describes each of the design changes and reevaluation needs that are incorporated into the 2016 Preferred Alternative. Impacts to resources as a result of these changes are discussed in Section 3.0. The following is a list of revisions described in this EA Reevaluation:

- Earthwork Borrow Reduction
- Drainage Considerations in Cactus Hills
- Speed Limit Change on I-90
- Access Road to Conservation Area and Engineered Channel
- Eliminate Retaining Walls along SD100 and Rice Street
- Effects Related to Western Area Power Administration
- Relocation of Western's Transmission Lines
- Roadway-related Security Components
- 60th Street and Redwood Blvd. Realignment
- Residence Acquisition
- Tree Impacts and Mitigation

2.1 Earthwork Borrow Reduction

The need for this design change is to:

- Reduce the amount of earthwork borrow (borrow) required for the Project.

Based on the preliminary design for the Preferred Alternative, borrow needed for SD100 from Maple Street to I-90 totaled approximately 2 million cubic yards. The quantity of borrow was analyzed further during design to determine if these requirements could be reduced. It was determined the borrow needed for the segment of SD100 from Rice Street to I-90 could not be reduced due to current design standards for the interchange and associated topography.

However, multiple design revisions were considered to reduce borrow requirements for SD100 from Maple Street to Rice Street (see Appendix 1). The cross section within the 2014 EA is shown on Figure 2, Cross Section 1. The revised cross section chosen to reduce borrow requirements is shown in Figure 2, Cross Section 2. Revisions to the cross section show flattening the back slope from 3:1 to 5:1. Utilizing the revised Cross Section 2 would reduce borrow from 730,000 cubic yards to 254,000 cubic yards.

Within the 2014 EA, contractor furnished borrow sources were identified in the Chapter 3 Addendum. State furnished sources may be used by all bidders and could result in reduced construction schedule due to less material to move from offsite to the Study Area. This EA Reevaluation incorporates the state furnished borrow sources that may be utilized for construction into the 2016 Preferred Alternative.

To meet the needs for this design change, the 2016 Preferred Alternative includes:

- Lowering SD100 profile by 6 feet through the Ode property (see Appendix 1 and Figure 2).
- Utilizing 5:1 back slopes in cut sections instead of 3:1 back slopes.
- Identifying state furnished borrow sources in the contract.

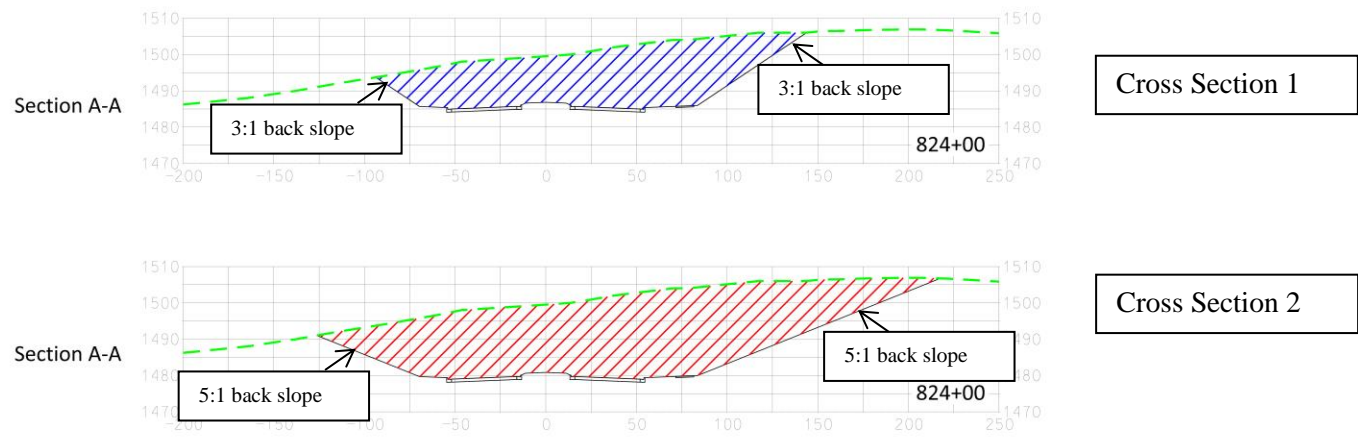
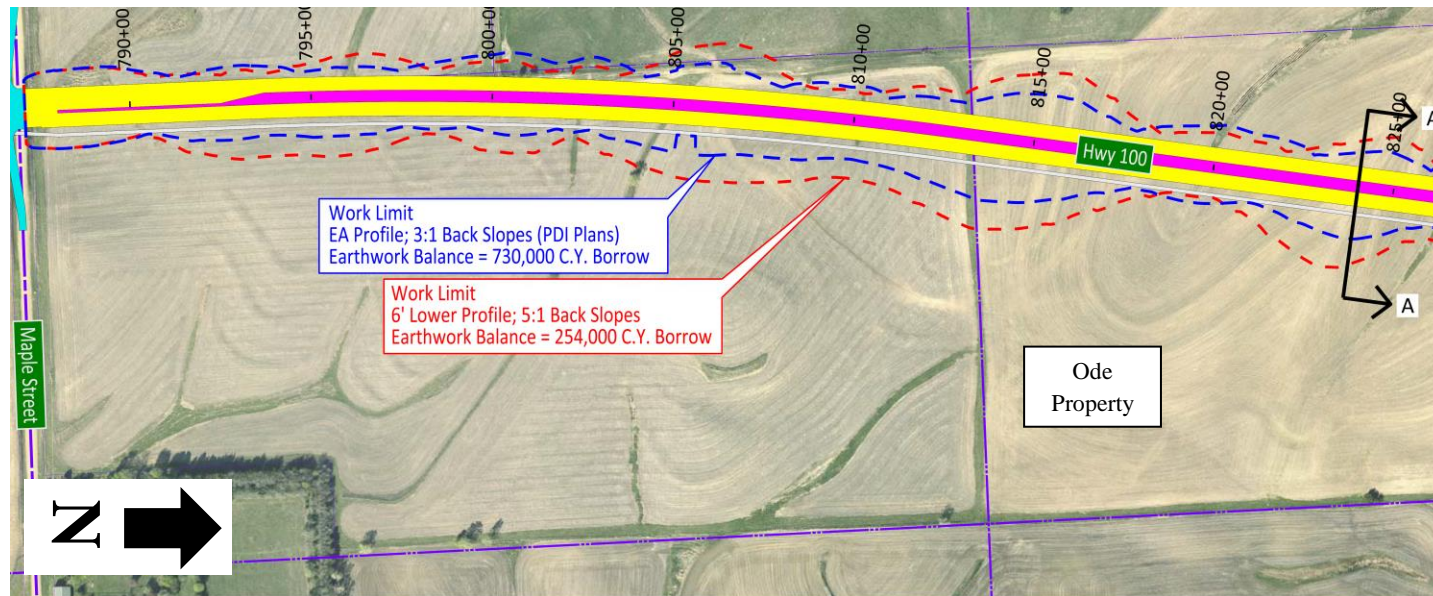
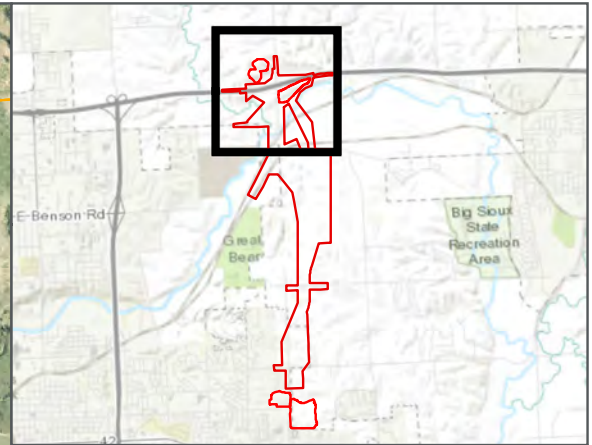
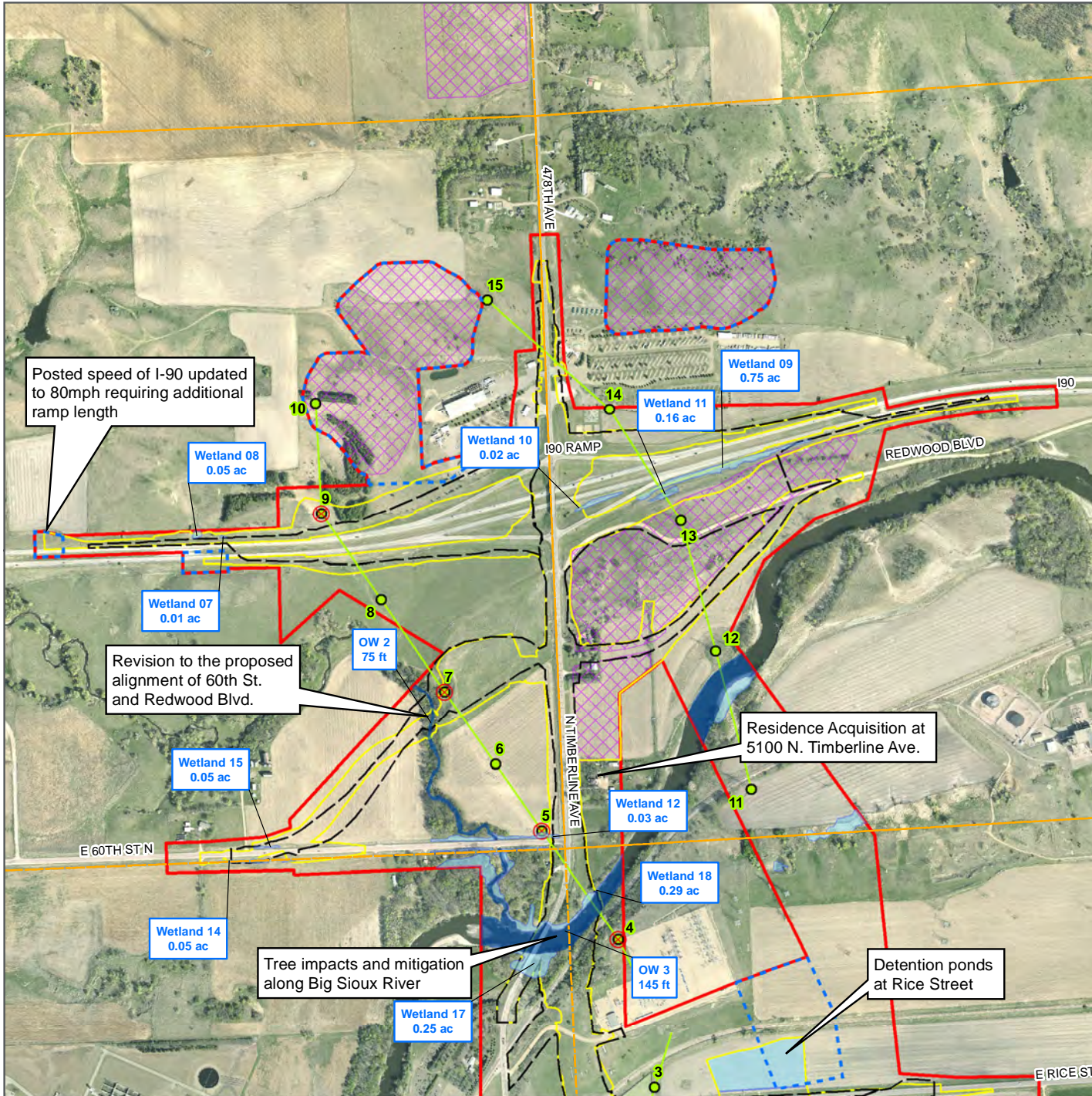


Figure 2. Proposed changes to 2014 EA cross section to reduce borrow requirements.



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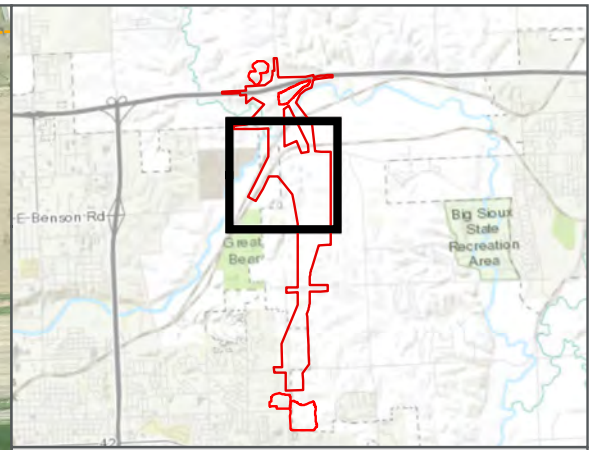
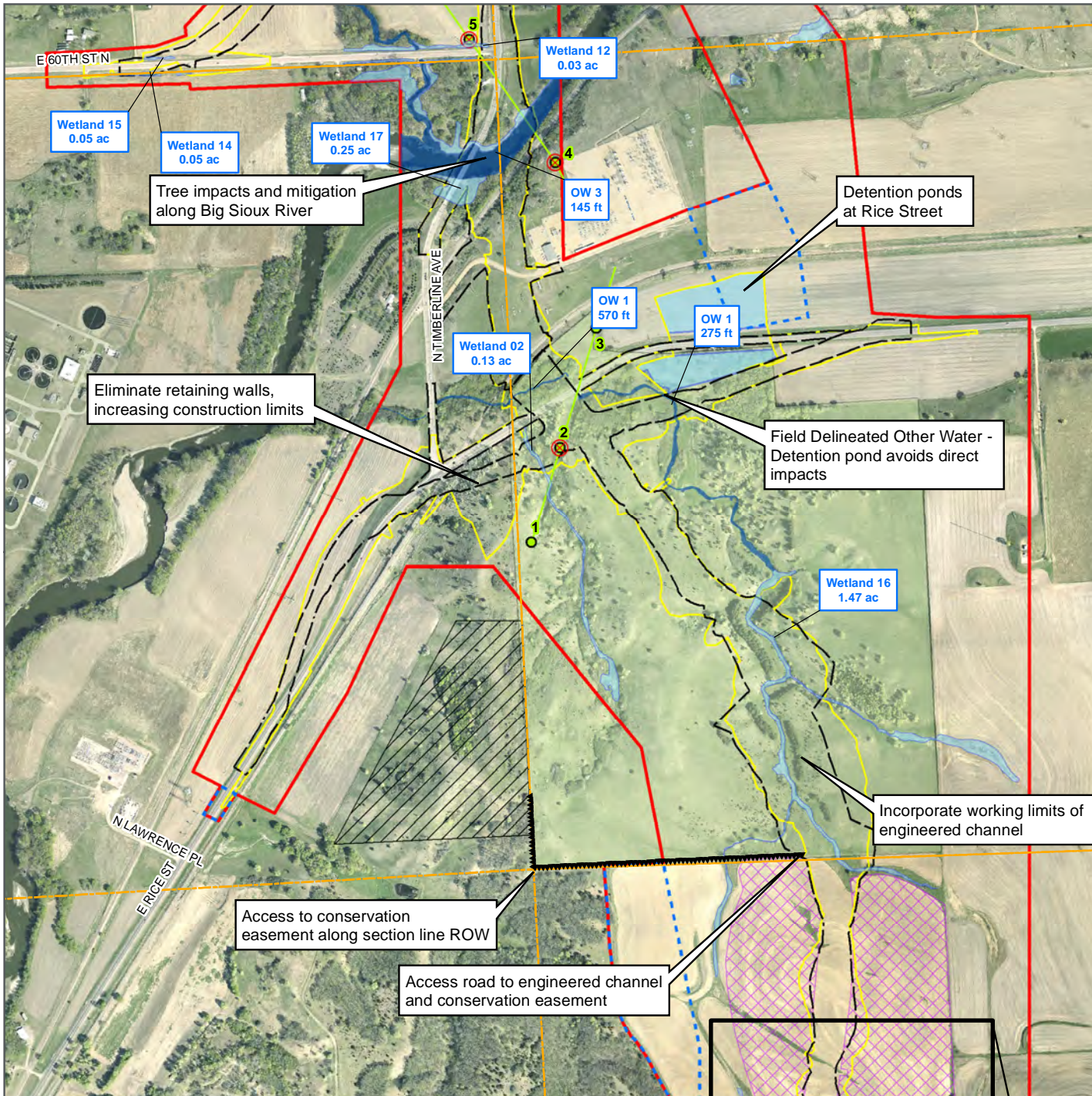
- 2016 Preferred Alternative Study Area
- Study Areas added since 2014 EA and FONSI
- 2016 Preferred Alternative Working Limits
- 2014 EA Working Limits
- Conservation Easement for the Lined Snake
- Proposed Detention Pond
- Field Delineated**
- Other Water (OW)
- Wetland
- Potential Borrow Areas
- Area referred to as Cactus Hills
- Western Utility Lines
- Western Poles
- Western Poles to be Relocated within Study Area
- PLSS

SUMMARY OF PROPOSED CHANGES

NORTHERN SEGMENT
SD 100



FIGURE 3-1



LEGEND

- 2016 Preferred Alternative Study Area
- Study Areas added since 2014 EA and FONSI
- 2016 Preferred Alternative Working Limits
- 2014 EA Working Limits
- Conservation Easement for the Lined Snake
- Proposed Detention Pond

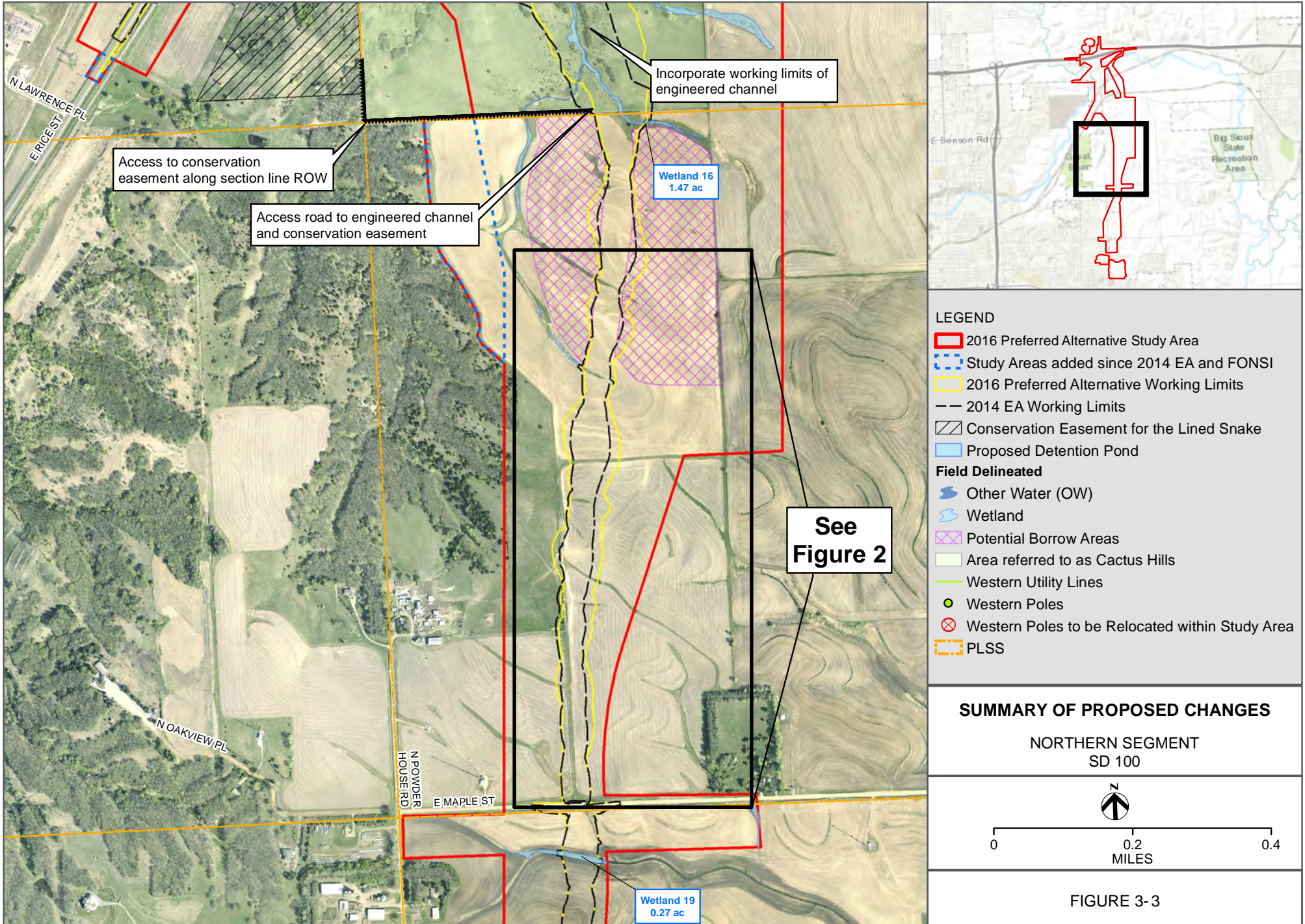
Field Delineated

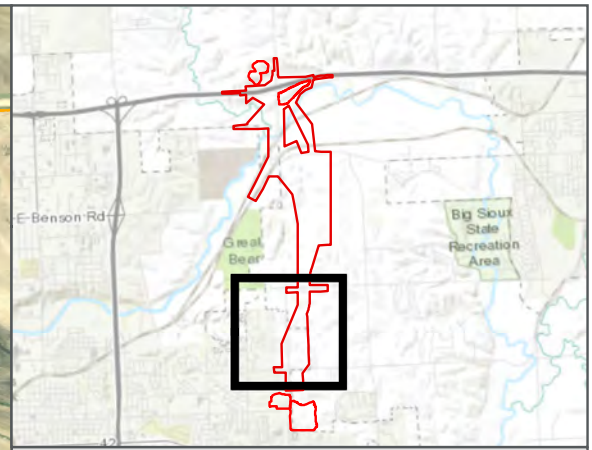
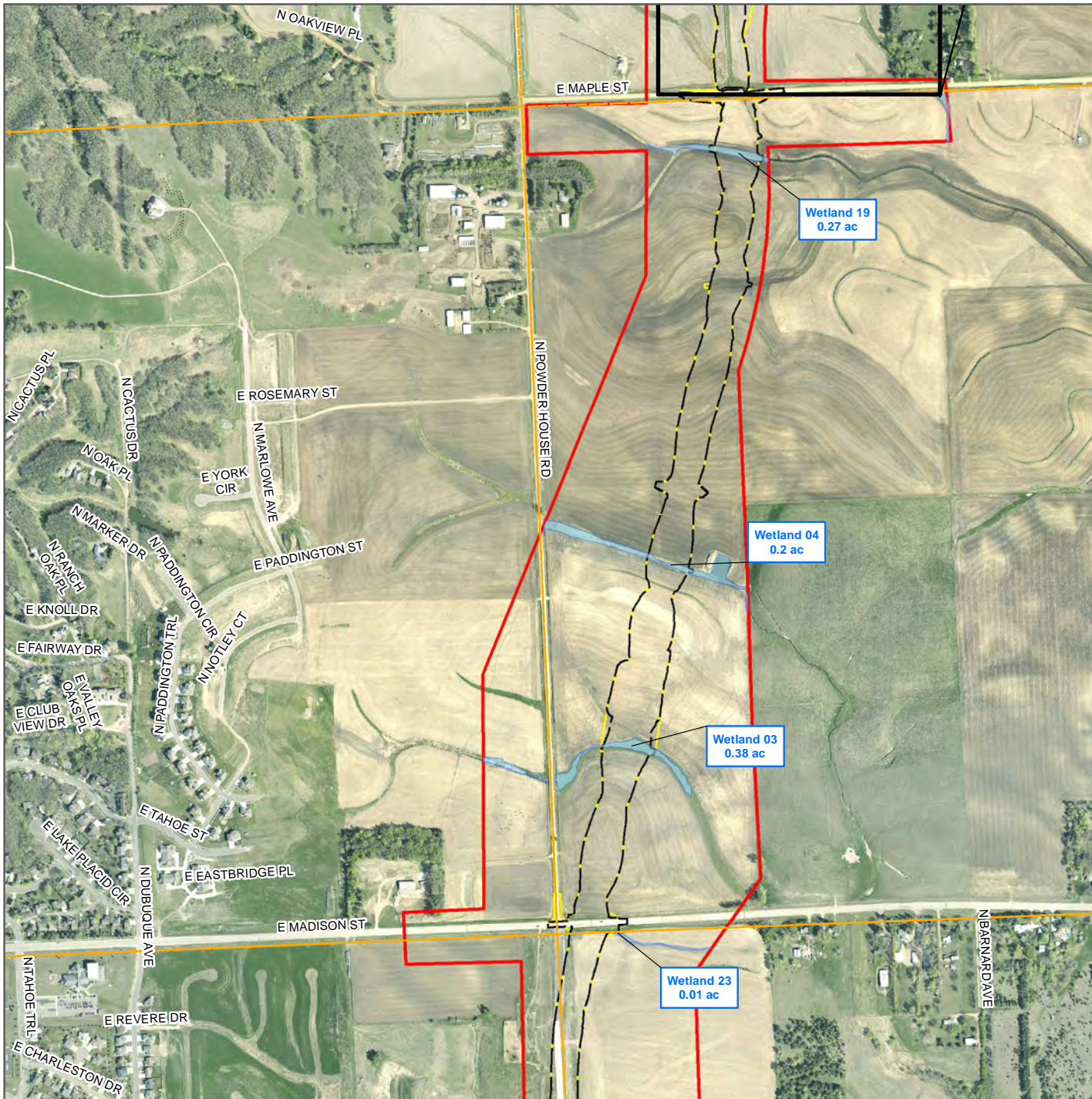
- Other Water (OW)
- Wetland
- Potential Borrow Areas
- Area referred to as Cactus Hills
- Western Utility Lines
- Western Poles
- ⊗ Western Poles to be Relocated within Study Area
- PLSS

SUMMARY OF PROPOSED CHANGES

NORTHERN SEGMENT
SD 100

FIGURE 3-2





LEGEND

- 2016 Preferred Alternative Study Area
- Study Areas added since 2014 EA and FONSI
- 2016 Preferred Alternative Working Limits
- 2014 EA Working Limits
- Conservation Easement for the Lined Snake
- Proposed Detention Pond

Field Delineated

- Other Water (OW)
- Wetland
- Potential Borrow Areas
- Area referred to as Cactus Hills
- Western Utility Lines
- Western Poles
- ⊗ Western Poles to be Relocated within Study Area
- PLSS

SUMMARY OF PROPOSED CHANGES

NORTHERN SEGMENT
SD 100

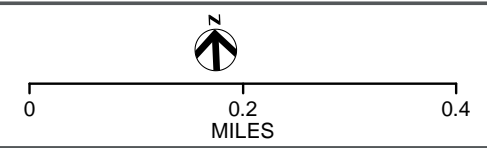
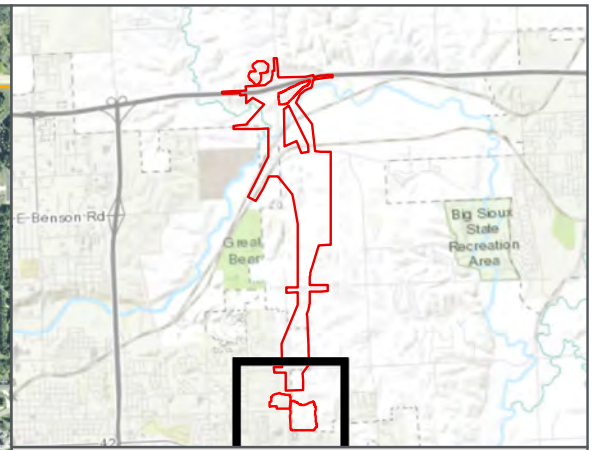
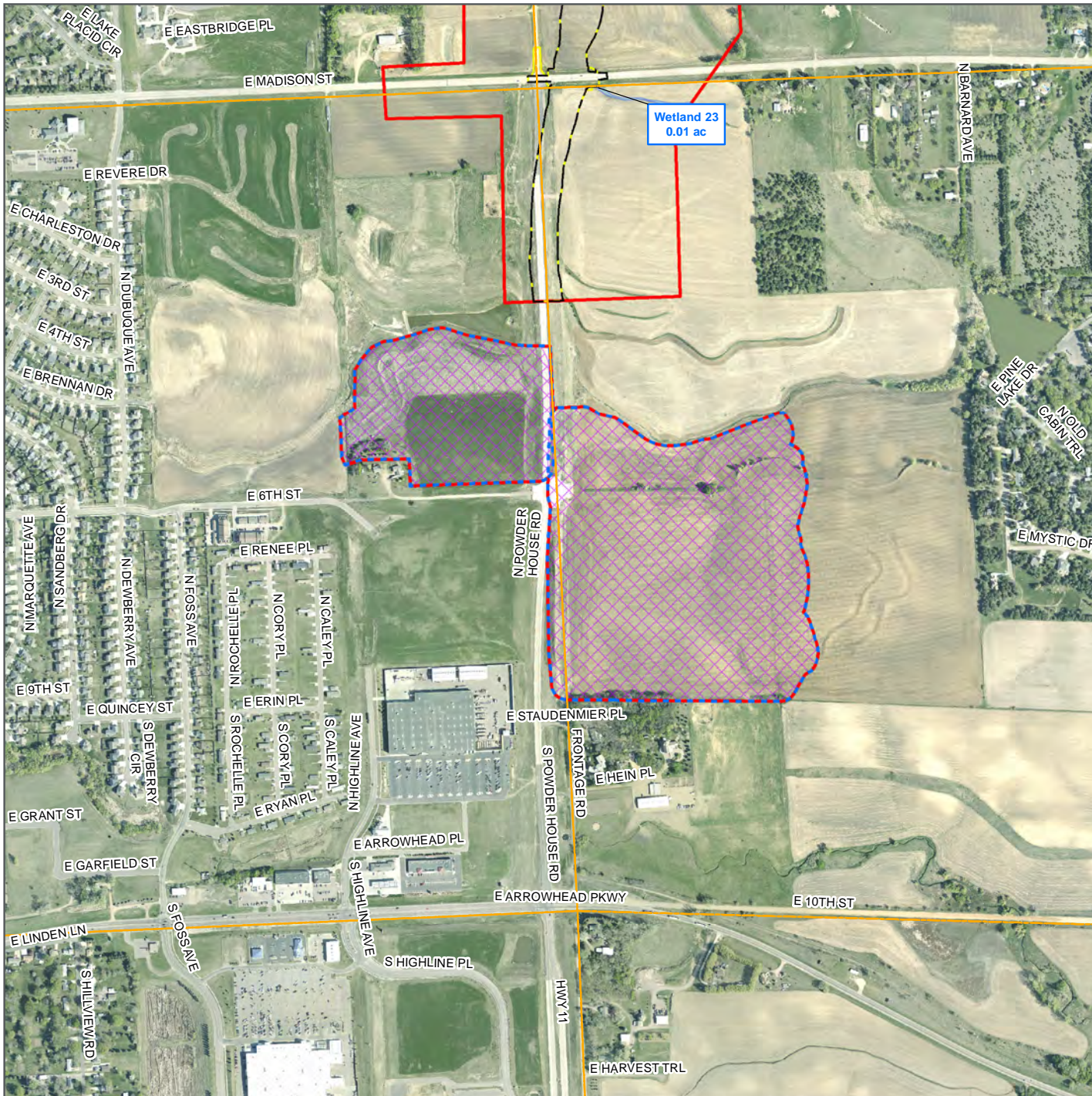


FIGURE 3-4



LEGEND

- 2016 Preferred Alternative Study Area
- Study Areas added since 2014 EA and FONSI
- 2016 Preferred Alternative Working Limits
- 2014 EA Working Limits
- Conservation Easement for the Lined Snake
- Proposed Detention Pond

Field Delineated

- Other Water (OW)
- Wetland
- Potential Borrow Areas
- Area referred to as Cactus Hills
- Western Utility Lines
- Western Poles
- ⊗ Western Poles to be Relocated within Study Area
- PLSS

SUMMARY OF PROPOSED CHANGES

NORTHERN SEGMENT
SD 100

N
↑

0 0.2 0.4
MILES

FIGURE 3-5

2.2 Drainage Considerations in Cactus Hills

The need for this design change is to:

- Minimize impacts to the existing sloped and linear wetlands.
- Minimize direct and secondary impacts to downstream wetlands.
- Increase drainage storage capacity.

The Preferred Alternative would require filling in an existing drainage way within the Cactus Hills area (see Appendix 2). Sloped and linear wetlands would be directly and indirectly impacted by this design. During discussions with the U.S. Army Corp of Engineers (USACE) regulatory office, indirect impacts were also referred to as secondary impacts (see Section 3.12 Wetlands and Other Waters of the U.S. for additional discussion)

During further design, a detailed review of potential minimization options was included to reduce impacts to Wetland 16, especially secondary impacts. Maintaining existing drainage patterns in this area was important when considering these options (see Appendices 2 and 3). Design changes include providing an engineered channel with a stepped slope to help reduce velocities within the drainage; providing detention ponds for high flow storage; and providing a culvert crossing that would allow for controlled flow volumes during storm events.

The engineered channel adjacent to the roadway would include maintaining a cross section similar to the existing drainage way and reducing the slope. The design would also maintain the existing groundwater seepage flow in the engineered channel, which is a current source of hydrology (see Appendix 2).

Due to existing erosion concerns with the Ellis and Eastern trestle bridge at the drainage outlet, the detention ponds were determined necessary in order to maintain post-construction stormwater flow rates and velocities at pre-construction levels. The preliminary location of the detention ponds are east of SD100, north and south of Rice Street, and are displayed in Figure 3-2 above. In order to avoid direct impacts to Wetland 16, the detention ponds were positioned northeast of the stream. One 42" reinforced concrete pipe (RCP) would be installed at the pond bottom elevation, one 36" RCP at the existing stream flowline elevation, and three 42" RCPs at various elevations above the stream flowline elevation.

To meet the needs for this design change, the 2016 Preferred Alternative includes:

- Extending construction limits to accommodate the engineered channel.
- Extending construction limits to include the detention ponds.

2.3 Speed Limit Change on I-90

The need for this design change is to:

- Revise interchange ramp lengths to accommodate a 50 mile-per-hour (mph) design speed.

The speed limit on much of South Dakota's interstate system was increased from 75 mph to 80 mph on April 1, 2015. This change increased the ramp lengths required at the I-90 Interchange to allow for sufficient acceleration and deceleration distance needed to meet the design standards.

To meet the needs for this design change, the 2016 Preferred Alternative includes:

- Extending the I-90 Interchange ramps 200 feet to meet design standards.

2.4 Access Road to Conservation Area and Engineered Channel

The need for this design change is to:

- Provide access to the conservation area for the lined snake habitat and the engineered channel adjacent to the roadway for long-term maintenance.

One new access road with a gated approach is being incorporated into the Project. The access would be a right in, right out design to provide access to the lined snake conservation area and the engineered channel (see Figure 3-2). The access road would be located on the south side of Cactus Hills, on the west side of SD100.

To meet the needs for this design change, the 2016 Preferred Alternative includes:

- One additional access approach road on SD100. The approach road would be gated and located at approximately Station 840+00.

2.5 Eliminate Retaining Walls along SD100 and Rice Street

The need for this design change is to:

- Provide reasonable and prudent design solutions to accommodate a large cut in the vicinity of the intersection of SD100 and Rice Street.

The design for the 2014 EA Preferred Alternative proposed extensive retaining walls to minimize impacts to existing drainage ways (see Appendix 3). During design, it was determined that the retaining walls would have global stability issues due to the wall foundation locations on the slope face. Relocating the walls down to ditch grade elevation to improve global stability was discussed; however, stability concerns remained due to the tall earthen back slope extending from the top of the wall. In this location, utilizing a back slope without retaining walls was determined to be the most feasible, reasonable, and prudent option. In addition, it was determined the retaining walls proposed north of SD100 and Rice Street to retain the fill slopes would create foundation soil settlement issues. Ultimately, SDDOT recommended eliminating the retaining walls from the design.

To meet the needs for this design change, the 2016 Preferred Alternative includes:

- Eliminating retaining walls from the design near the SD100 and Rice Street intersection.
- Extending the construction limits to accommodate the outer limits of the cut slopes.

2.6 Effects Related to Western Area Power Administration

The need for this EA Reevaluation is to:

- Consider NEPA impacts associated with actions required by Western, a federal agency within the U.S. Department of Energy, as a result of this Project.

Within the 2014 EA, Western was referred to as WAPA, a private utility provider. Coordination during design determined that Western is a federal agency. As such, this agency is required to perform NEPA analysis on its actions interrelated to the Project. This EA Reevaluation assesses the environmental impacts associated with Western's actions.

This EA Reevaluation includes:

- Western as a federal agency.
- Western as a cooperating agency for the purposes of NEPA.
- NEPA impacts associated with Western's actions.

2.7 Relocation of Western's Transmission Lines

The need for this EA Reevaluation is to:

- Provide for the relocation of wooden transmission poles operated by Western.

The 2014 EA noted the following:

On pages 2-5 and 2-6: Avoids impacts to WAPA and Xcel Energy towers and transmission lines.

On page 3-2: The build alternatives avoid all WAPA towers and transmission lines; however, conflicts remain with Xcel (transmission), L&O Power (distribution), East River Electric (distribution), and Sioux Valley Electric (distribution).

As they relate to Western, these statements were intended to note that the build alternatives would avoid all steel towers and associated transmission lines owned by Western. At a cost of approximately \$1,000,000 to relocate each steel tower, avoidance of these towers was critical. However, these statements did not clarify that Western would be required to relocate wooden transmission poles to accommodate the Project.

Twelve of Western's wooden transmission poles are located within the Study Area for the Project. As currently designed, the 2016 Preferred Alternative would impact up to five of these wooden transmission poles (see Appendix 4 and Figure 3-2). The estimated cost of relocating and adjusting the wooden poles is approximately \$20,000 for each pole relocation, not including any easement or ROW acquisition costs, if necessary.

This EA Reevaluation includes:

- Relocating or adjusting up to five wooden transmission poles (W-2, W-4, W-5, W-7, W-9).
- ROW transactions required for relocation of wooden transmission poles to locations outside of existing Western ROW.

2.8 Roadway-related Security Components

The need for this EA Reevaluation is to:

- Consider security concerns associated with the location of the new highway facility relative to Western's substation.

During coordination with Western, they raised concerns regarding vehicles inadvertently leaving the roadway near their substation. Due to the roadway elevation and horizontal alignment in relation to the Western substation, a vehicle that leaves the roadway could impact the substation and potentially interrupt power being supplied to customers. During final design, a vehicle barrier would be considered and coordinated further with Western.

This EA Reevaluation includes:

- A vehicle barrier to protect the Western substation.

2.9 60th Street and Redwood Boulevard Realignment

The need for this design change is to:

- Improve the stream crossing bridge skew at Slip-Up Creek

During design, SDDOT recommended the alignment of 60th Street and Redwood Boulevard be realigned from that proposed in the 2014 EA. The recommendation was based on incorporating a bridge into the design as opposed to a culvert, and improving the bridge skew over the stream (see Appendix 5). There would likely continue to be slight adjustments in the alignment as the design process continues.

To meet the needs for this design change, the 2016 Preferred Alternative includes:

- Realigning 60th Street and Redwood Boulevard.

2.10 Residence Acquisition

The need for this EA Reevaluation is to:

- Document an additional residential acquisition.

The 2014 EA did not include the residence at 5100 N Timberline Avenue as an acquisition. With design revisions, access change to the property, and the property owner's support, it was determined this residence should be acquired (see Appendix 6).

This EA Reevaluation includes:

- Acquiring 5100 N. Timberline Avenue for the Project.

2.11 Tree Impacts and Mitigation

The need for this EA Reevaluation is to:

- Clarify the tree impact commitment from the 2014 EA.

In the 2014 EA, a commitment was included that stated, “If trees or brush would be impacted by the Project, a ratio of at least 2:1 acres planted versus acres impacted would be incorporated into mitigation plans.” This commitment was clarified with the U.S. Fish and Wildlife Service (USFWS) on August 10, 2016 to be specifically for the riparian area along the Big Sioux River corridor.

This EA Reevaluation includes:

- Mitigating for riparian trees impacted by the Project along the Big Sioux River corridor at 2:1 acres planted versus impacted.

3.0 RESOURCE CATEGORIES THAT WERE REVIEWED FOR CHANGES IN EFFECTS

The purpose of this section is to note any changes in impacts to resources from the Preferred Alternative to the 2016 Preferred Alternative. Category headings and section numbers coincide with those given in the 2014 EA. Table 3 provides a comparison of resource impacts between the Preferred Alternative and 2016 Preferred Alternative. The changes in effects are noted based on the revisions described in Section 2.0 including:

- Earthwork Borrow Reduction
- Drainage Considerations in Cactus Hills
- Speed Limit Change on I-90
- Access Road to Conservation Area and Engineered Channel
- Eliminate Retaining Walls along SD100 and Rice Street
- Effects Related to Western Area Power Administration
- Relocation of Western’s Transmission Lines
- Roadway-related Security Components
- 60th Street and Redwood Boulevard Realignment
- Residence Acquisition
- Tree Impacts and Mitigation

3.1 Land Use

The 2014 EA noted that the City, along with Minnehaha County, has planned for land use conversion in the future to handle the increased need for residential and commercial development based on regional growth accommodation within the Sioux Falls metropolitan area. The Preferred Alternative would help accommodate the planned growth by providing controlled access locations. Access locations from south of Madison Street to Rice Street would be limited to a minimum of one-half mile spacing. The Preferred Alternative is consistent with land use plans.

Summary of changes in impacts to land use based on the 2016 Preferred Alternative:

- Access Road to Conservation Area and Engineered Channel: One access road, in addition to those identified in the 2014 EA, would be provided in order to access the conservation easement and engineered channel. This gated approach would be located at the section line that is between Cactus Hills and the Ode Property in order for the SDDOT and City to monitor and maintain the conservation easement for the lined snake habitat and engineered channel (see Figure 3-2). This access would continue to be utilized in the future by the City to access this area for maintenance activities. Overall, planned access roads would be consistent with the land use plans noted in the 2014 EA and the SD100 Access and Noise Plan (SDDOT, 2008).

3.2 Utilities

The 2014 EA stated that construction of the Project would likely require relocation of natural gas, sanitary sewer, stormwater sewer, water, and telecommunications lines. It is anticipated that many of these utilities could be relocated within existing ROW or ROW that would be acquired for the construction of the Project, but permanent easements may be needed for the relocation of some utilities. A new permanent access road to the Western substation was noted in the 2014 EA.

It was also noted in the 2014 EA that public utility infrastructure in the area was minimal. This was referring to the City's sewer and water pipelines. It was also incorrectly noted in the 2014 EA that the Preferred Alternative would require coordination and relocation of utilities, and that it avoided impacts to major transmission lines and towers. However, the Preferred Alternative would require the coordination and relocation of utilities and would avoid all Western steel towers and associated transmission lines.

Summary of changes in impacts to utilities based on the 2016 Preferred Alternative:

- Effects Related to Western Area Power Administration: Western noted during coordination that since their agency is a federal entity, their utility lines should be noted as public utilities. Western is included as a federal agency under the U.S. Department of Energy. Also, all references to Western utilities as private utilities in the 2014 EA are revised to public utilities. Approximately three acres of ROW would need to be acquired from Western adjacent to their substation for road ROW.
- Relocation of Western's Transmission Lines: The 2016 Preferred Alternative would avoid all Western steel towers and associated transmission lines. Twelve of Western's wooden transmission poles are located within the Study Area for the Project. Design currently notes up to five of the wooden poles (W-2, W-4, W-5, W-7, and W-9) in the Study Area would potentially be impacted by the 2016 Preferred Alternative (see Appendix 4 and Figure 3-1). Additional ROW would be required to relocate a maximum of two poles (W-9 and W-2). One pole (W-9) located in the northwest quadrant of the I-90/N Timberline Avenue interchange would be affected and would require the purchase of ROW to relocate. An additional Western wooden transmission pole (W-2) near the proposed SD100 and Rice Street intersection would also need to be relocated and may require purchase of additional ROW. If additional ROW for these poles and/or other pole relocations is needed, FHWA, Western, and SDDOT will

coordinate. Any additional ROW needed would be acquired by the utility company and then reimbursed by the SDDOT.

3.6 Archeological and Historic Resources

For the 2014 EA, the Study Area was surveyed and sites eligible for the National Register of Historic Places (NRHP) were identified. The eligible sites within the 2014 EA Study Area include: 39MH2000 (Great Northern Railroad), 39MH2003 (Chicago and Northwestern Railroad), 39MH231 (archeological site), and structures associated with a residence at 5100 N Timberline Avenue.

Multiple cultural resources surveys have been completed and coordinated with the South Dakota State Historical Preservation Office (SHPO) for the Project. In April 2014, a determination of “No Adverse Effect” was made for the Project and SHPO concurred with this finding on April 17, 2014.

Summary of changes in impacts to archeological and historic resources based on the 2016 Preferred Alternative:

- Earthwork Borrow Reduction, Access Road, and Speed Limit Change on I-90 - A cultural resources survey was conducted in October 2015 for areas that had not previously been surveyed. Additional coordination was required with FHWA and SHPO to determine if any impacts would occur to cultural resources. SHPO concurred on January 25, 2016 and July 13, 2016 with a finding of “No Adverse Effect” for properties within the updated survey areas (SHPO, 2016).
- Drainage Considerations in Cactus Hills- Additional Study Area is required for the proposed detention ponds and the inclusion of the adjacent private property in the revised engineered channel design. These areas were previously surveyed, therefore these changes did not require an additional cultural resources survey as part of this Project.
- Residence Acquisition: The 2014 EA did not include acquisition of the eligible structure at 5100 N Timberline Avenue. The owner of this structure has since requested their property, including the historic structure, be purchased as part of the Project due to hardship (see Appendix 6). Acquisition of this property changed the need for direct access to the property. Therefore, the 2014 EA conditions regarding impacts to this historic structure were coordinated with SHPO and the following conditions were eliminated:
 - This residence will continue to have direct access to N. Timberline Avenue
 - SDDOT will work with the property owner to plant trees and/or other landscaping to provide a buffer to the house to the road.

SHPO concurred with the removal of these stipulations on July 13, 2016 (SHPO, 2016)

3.7 Economic Resources

For the 2014 EA, design techniques were utilized to minimize, to the extent possible, impacts to the businesses adjacent to the Preferred Alternative. No permanent business acquisitions were anticipated, however the minor ROW acquisition of six businesses was included. The Project was also noted to require ROW on land owned by Xcel Energy, a majority of which is within the Cactus Hills area (see Figure 3-2). The 2014 EA also stated that all businesses north of the I-90/N. Timberline Avenue Interchange and Western would be temporarily impacted during construction, due to potential

modifications of their existing access roads and potential impacts to their existing landscaping. Overall, the Preferred Alternative would improve the existing I-90 interchange and would provide for better access to businesses through increased level of service within the Study Area.

Within the 2014 EA, it was stated that Western would be impacted temporarily during construction. However, Western would be impacted permanently by ROW acquisition.

Summary of changes in impacts to economic resources based on the 2016 Preferred Alternative:

- Relocation of Western's Transmission Lines: ROW will need to be acquired as part of the Preferred Alternative and 2016 Preferred Alternative. Project impacts may require wooden transmission poles to be relocated along with the purchase of additional ROW. See Section 3.2, Utilities, for further discussion of acquisitions. SDDOT and FHWA will continue to coordinate with Western throughout design and construction of the Project.

3.10 Relocations

The Preferred Alternative would require the minor ROW acquisition of six businesses (Baaad LLC., Allied Oil and Supply Inc., Interstate Auction Center, Blackjack Fireworks, Lantis Fireworks, and Yogi Bear's Jellystone Park Camp Resort). The Preferred Alternative would also require ROW on land owned by Xcel Energy, a majority of which is within the Cactus Hills area (Figure 3-2). A residence and pole barn located at 5400 N. Timberline Avenue and a residence at 4901 N. Timberline Avenue would be acquired due to the realignment of 60th Street North.

Summary of changes in impacts for relocations based on the 2016 Preferred Alternative:

- Residence Acquisition: The 2014 EA did not include the residence at 5100 N Timberline Avenue as an acquisition. With design revisions, including access changes to the property, and the property owner's support, it was determined this residence should be acquired (see Appendix 6). Relocation associated with this property will be in accordance with the Uniform Relocation Assistance and Real Property Acquisition Act (UA) of 1970, as amended by the Surface Transportation Assistance Act of 1987 and as codified in 49 CFR 24, effective April 1989.

3.11 Farmland

The 2014 EA stated that a total of 115 acres of farmland would be directly converted by the Preferred Alternative. A Farmland Conversion Impact Rating Form was completed for the Preferred Alternative and the NRCS determined that the Project would have no potential to adversely affect important farmlands and no further analysis was required under the Farmland Protection Policy Act.

Summary of changes in impacts to farmland based on the 2016 Preferred Alternative:

- Earthwork Borrow Reduction, Drainage Considerations in Cactus Hills, and 60th Street and Redwood Boulevard Realignment: The 2016 Preferred Alternative would require additional acres of farmland due to the inclusion of the SDDOT designated borrow sources, detention ponds, and realignment of 60th Street and Redwood Boulevard. An updated Farmland

Conversion Impact Rating Form was completed based on the 2016 Preferred Alternative and coordinated with the NRCS based on the 2016 Preferred Alternative. The 2016 Preferred Alternative would impact up to 215 acres of farmland for the Project. NRCS concluded the total Farmland Protection Policy Act points based on the 2016 Preferred Alternative is 92 and falls below the threshold of 160, and therefore no further consideration is required under the Farmland Protection Policy Act (NRCS, 2015).

3.12 Wetlands and Other Waters of the U.S.

Field wetland delineations were conducted to identify wetland boundaries within the Study Area for the 2014 EA. Table 1 displays preliminary wetland impacts and crossings of other Waters of the U.S. that were calculated for the Preferred Alternative.

As noted in the 2014 EA, Section 404 of the Clean Water Act (CWA) requires a permit for the placement of "dredged or fill materials" into "waters of the United States." A permit would be received from the USACE prior to commencement of construction activities for the Project. To issue this 404 permit, the USACE must ensure that the activity complies with Environmental Protection Agency's (EPA) 404(b)(1) Guidelines, set out in 40 C.F.R. section 230. These guidelines require there to be no practicable alternatives to the proposed placement that would have a less adverse effect on the aquatic environment, therefore the permitted alternative must be shown to be the Least Environmentally Damaging Practicable Alternative (LEDPA). A mitigation plan would be prepared through coordination with the resource agencies for the 404 permit and the 401 certification. For wetlands found not to be under the USACE jurisdiction, FHWA regulations (23 CFR 777.9) would apply and mitigation for permanent impacts to these wetlands would be required. All mitigation would occur through on-site, off site, or a mitigation bank as approved by the USACE.

Direct impacts are considered as impacts within the construction limits and are areas that would be filled or cut that would permanently alter the wetland. Secondary impacts are wetland areas outside of the construction limits that would be indirectly affected by the Project. Through coordination with the USACE regulatory office, the secondary impacts were determined from the 2014 EA analysis. The following is a summary of the anticipated secondary impacts:

- The Project would create additional impervious surfaces and decrease the topographic complexity of the wetlands within this watershed.
- The Project is predicted to affect the current sediment load within the Wetland 16 drainage way. For example, the increased impervious surfaces and areas with lower velocities will decrease the sediment suspended in the water. When sediment deprived water flows downstream, it may pick up more sediment, causing channel incision.
- The Project may decrease sinuosity, and thereby cause increased channel incision downstream.

Table 1. Summary of Impacts to Wetlands and Other Waters of the U.S.

Build Alternative	Total Acres of Wetland Impacts	Linear Feet of Other Waters of the U.S.- Culvert Crossing	Linear Feet of Other Waters of the U.S. –Bridge Crossing	Linear Feet of Other Waters of the U.S.- Realignment
Preferred Alternative	5.03	725	145	375
2016 Preferred Alternative	4.12	845	220	0
Change from LEDPA decision document	-0.91	+120	+75	-375

Summary of changes in impacts to wetlands and other waters of the U.S. based on the 2016 Preferred Alternative:

- Eliminate Retaining Walls along SD100 and Rice Street: The linear length of culvert crossings increased due to the removal of the retaining walls at SD100 and Rice Street. Because the retaining walls would have been removed with the other build alternatives, additional impacts would have occurred for all of the build alternatives. Linear length of culvert crossing impacts increased from 725 feet to 845 feet overall.
- Earthwork Borrow Reduction: SDDOT designated borrow sources were added but would not impact any additional wetlands or Other Waters of the U.S.
- Drainage Considerations in Cactus Hills- Completion of additional design since the 2014 EA has resulted in decreased wetland impacts from 5.03 acres to 4.12 acres from the Preferred Alternative to the 2016 Preferred Alternative. The detention ponds included in the 2016 Preferred Alternative would receive overflow from the adjacent stream (Wetland 16), while allowing the stream to continue to operate similar to existing conditions. A series of culverts, staged at differing elevations, are necessary to manage pond discharge rates and discharge rates from the intermittent stream during the 2 year, 5 year, 10 year, 25 year, 50 year, and 100 year storm events. Due to a minor shift in the roadway alignment in order to avoid realigning a portion of the stream, no stream realignment impacts would occur to Other Waters of the U.S. Overall, stream realignment impacts to Other Waters decreased from 375 feet to 0 feet. The engineered channel adjacent to the roadway would include maintaining a cross section similar to the existing drainage way (Wetland 16) and reducing the slope with the engineered channel compared to the existing drainage way. This will reduce or eliminate project effects downstream. The design would also maintain the existing groundwater seepage flow in the engineered channel, which is a source of hydrology for the existing drainage way (see Appendix 2).
- 60th Street and Redwood Boulevard Realignment- The total wetland impacts have also been reduced based on the 2016 Preferred Alternative with additional design. The linear length of crossing at the Slip-Up Creek was revised to a bridge, rather than the culvert considered in preliminary design. As a result, the total linear feet of bridge stream crossing increased from 145 linear feet to 225 feet due to the Slip-Up Creek.

FHWA is required to comply with EO 11990 for all wetland impacts, including those under the jurisdiction of the USACE. For any fill activities in jurisdictional wetlands or other waters of the U.S that cannot be avoided, in addition to the USACE Section 404 permit, a Section 401 Water Quality Certification is required from the South Dakota Department of Environmental and Natural Resources (SDDENR). Based on design and the impact analysis described above, the 2016 Preferred Alternative is recommended as the LEDPA.

3.14 Floodplain

For the 2014 EA, a preliminary hydraulics analysis was completed to assess the impacts of the Preferred Alternative. These results were coordinated with the Minnehaha County floodplain administrator who concurred with findings that the Preferred Alternative would have minimal rise and no cumulative effect to water elevations in this area. In the 2014 EA the structure at Slip-Up Creek was included as a culvert crossing.

Summary of changes in impacts to floodplains based on the 2016 Preferred Alternative:

- 60th Street and Redwood Boulevard Realignment: The proposed alignment for the bridge over Slip-Up Creek was shifted to be more perpendicular to the creek, reducing the skew (see Figure 3-1). This revision would result in fewer floodplain impacts.

3.15 Vegetation, Fish, & Wildlife

The 2014 EA noted the various habitat types that are within the Study Area for the Project and the impact type for each. The habitat types are: agricultural lands, forested corridor, wetlands, Big Sioux River, Slip-Up Creek, roadside ditches, and Cactus Hills. The Cactus Hills area was noted as marginal native prairie habitat that would be encroached on by all the build alternatives. Overall, the Preferred Alternative would result in a minor loss of habitat, with moderate loss in Cactus Hills. It was determined surveys would be required for the bald eagle and migratory birds in suitable habitat before construction. In the 2014 EA, it is stated that “If trees or brush would be impacted by the Project, a ratio of at least 2:1 acres planted versus acres impacted would be incorporated into mitigation plans.”

Summary of changes in impacts to vegetation, fish, and wildlife based on the 2016 Preferred Alternative:

- Eliminate Retaining Walls along SD100 and Rice Street: The retaining walls that were previously included in preliminary design of the Preferred Alternative along Rice Street and SD100 were removed. Due to this removal and necessary additional grading, the 2016 Preferred Alternative would include a wider footprint within the Cactus Hills area.
- Earthwork Borrow Reduction: Additional grading would also be included in the SDDOT designated borrow sources. The mitigation measures for the impacts are outlined in Section 3.16 Threatened and Endangered Species.
- Drainage Considerations through Cactus Hills: Additional grading would be included due to the construction of the detention ponds south of Rice Street, increasing the impact area in the Cactus Hills.
- Tree Impacts and Mitigation: The tree mitigation commitment noted previously was clarified with USFWS to be specific to locations along the Big Sioux River corridor (USFWS, 2016).

Therefore, trees impacted by the Project along the Big Sioux River corridor will be mitigated at 2:1 acres planted versus impacted. In current design, the Project would impact 2.6 acres of trees along the Big Sioux River corridor, resulting in these impacts to be mitigated with 5.2 acres of trees planted. A tree mitigation plan will be prepared during the final design of Segment 3 for the Project, I-90 to Rice Street, where trees will be impacted along the Big Sioux River corridor.

3.16 Threatened or Endangered Species

Section 7 Endangered Species Act (ESA) consultation was completed for the Project as part of the 2014 EA. The assessment considered impacts to threatened and endangered species within the region and evaluated the effects that the proposed roadway would have on federally listed threatened or endangered species utilizing the area. Coordination also occurred with South Dakota Game, Fish, and Parks (SDGFP) for state listed species, specifically the lined snake, a state endangered species, since potential habitat was noted within Cactus Hills. As discussed in the 2014 EA, the lined snake has been recorded in areas near the Project. The rufa red knot is not anticipated to occur within the Study Area. For the NLEB, the Study Area doesn't contain caves or mines that would serve as winter hibernacula; however the potential for summer roosting sites exists within the Study Area.

The 2016 Preferred Alternative required additional study area for the state furnished borrow sites, additional Study Area for the Project, therefore all species effect determinations were reconsidered. A coordination letter with the updated effect determinations listed in Table 2 has been coordinated with USFWS (USFWS, 2015).

Additionally, since the coordination for the 2014 EA, the statuses of two species have been changed from federally "proposed" to "listed": the rufa red knot and the northern long-eared bat (NLEB). Based on the Final 4(d) Rule published on January 14, 2016, coordination was re-initiated for the NLEB. The Project is located inside the white-nose syndrome zone and the range-wide programmatic consultation project submittal form was submitted to the USFWS. With the incorporation of the appropriate Avoidance and Minimization Measures (AMMs), the 2016 Preferred Alternative was determined it "May affect, not likely to adversely affect" the NLEB (USFWS, 2016).

Table 2. Federally Listed Species Effect Summary

Species	Status	Species or Suitable Habitat Within Study Area	SDDOT Effect Determination
Western Prairie Fringed Orchid (<i>Platanthera praeclara</i>)	Federally threatened	Yes	May affect, not likely to adversely effect
Topeka Shiner (<i>Notropis topeka</i>)	Federally endangered	Yes	May affect, likely to adversely effect
Northern long-eared bat (<i>Myotis septentrionalis</i>)	Federally threatened	Yes	May affect, not likely to adversely affect
Rufa red knot (<i>Calidris canutus rufa</i>)	Federally threatened	No	No effect

Although additional acres of Cactus Hills are proposed to be included in the Project's construction limits, the mitigation measures for habitat conservation, proposed in the 2014 EA would still be implemented. No additional impacts are anticipated to the lined snake based on the incorporation of the mitigation measures for habitat conservation. A coordination meeting with SDGFP was held on July 28, 2015. Following that meeting, SDGFP provided additional comments on the lined snake mitigation plan.

The additional comments included:

- Culvert crossings to allow lined snake passage would be installed across the roadway. These were originally noted in the 2014 EA and no changes to the approach are included for this EA Reevaluation.
- The exclusion barrier, previously included as a mitigation measure in the 2014 EA, is no longer considered by SDGFP to be effective. Therefore, it will not be included as part of the mitigation.
- Habitat conservation would be included as previously stated in the 2014 EA.
- SDGFP requested a study be conducted to consider the effects of SD100 on the lined snake and determine the effectiveness of the mitigation measures. The study would include monitoring animal and snake mortality and wildlife culvert use. Monitoring would begin one year after final construction, and continue annually in June and September. A report would be prepared annually in December for a period of three years and be submitted to the City, SDDOT, and SDGFP. Any additional details on monitoring and conducting the study are follow-up items for the City, SDDOT, and SDGFP to coordinate. If mortality rate is unacceptable, revising the protective measures may be necessary and would be coordinated with SDGFP.

Summary of changes in impacts to threatened and endangered species based on the 2016 Preferred Alternative:

- Earthwork Borrow Reduction, Drainage Considerations in Cactus Hills, and Speed Limit Change on I-90 – The addition of Study Area based on the 2016 Preferred Alternative required additional coordination with the USFWS for federally listed species. USFWS concurred with all recommended determinations (see Table 2). New coordination for the expanded range of white-nose-syndrome affecting the NLEB was conducted to add AMMs. Impacts to the state-listed lined snake were also reevaluated with the additional study area and expanded construction limits. No additional impacts are anticipated to this species.

3.17 Section 4(f) and 6(f) Resources

The 2014 EA noted four Section 4(f) properties:

- two rail lines identified as Site 39MH2000 and 39MH2003
- residential structures at 5100 N. Timberline Avenue
- archeological Site 39MH231

Previous coordination with the SHPO resulted in a "No Adverse Effect" determination for the Project. All measures were considered to avoid, minimize, mitigate, and enhance the Section 4(f) historic properties.

Therefore, in accordance with 23 CFR 774.3(b), use of these resources is determined to be a *de minimis* Section 4(f) impact. Because no Section 6(f) resources exist in the Study Area, the Preferred Alternative would not impact Section 6(f) resources

Summary of changes in impacts to Section 4(f) and 6(f) properties based on the 2016 Preferred Alternative:

- Earthwork Borrow Reduction, Drainage Considerations in Cactus Hills, and Speed Limit Change on I-90 - No additional Section 4(f) sites were recorded within the additional Study Area. SHPO concurred with a “No Adverse Effect” finding for the Project on July 13, 2016 (SHPO, 2016).

3.19 Construction

As noted in the 2014 EA, the impacts of construction would primarily be temporary and limited to the period of construction.

Summary of changes in impacts from construction based on the 2016 Preferred Alternative:

- Earthwork Borrow Reduction - The reduction in borrow requirements for the Project potentially results in fewer truck haul trips from offsite, which can reduce congestion in the Study Area. It can also increase safety by reducing conflict points of traffic with trucks hauling borrow to the project site.

3.20 Cumulative Impacts

The 2014 EA noted, under Section 3.20.1, Past Actions, that utilities are located within the area. This EA Reevaluation also updates Section 3.20.2, Present Actions, to include the effects of the Project to Western. The effects include the conversion of property for SD100’s ROW and the relocation of wooden transmission poles. Impacts from the Project on the Big Sioux River were minimized using the engineered channel in design. The inclusion of these effects does not change the discussion under Section 3.20.4, Cumulative Impact Conclusion.

4.0 APPROVAL OF THE REVISIONS TO THE PREFERRED ALTERNATIVE

Based on the impact analysis, the 2016 Preferred Alternative has been recommended as the preferred alternative. From a detailed comparison of the Preferred Alternative and the 2016 Preferred Alternative, the 2016 Preferred Alternative was selected for the Project as it meets the Purpose and Need and the difference in the impact categories described is within a reasonable range from the Preferred Alternative.

Table 3 summarizes the impacts of the Preferred Alternative and the 2016 Preferred Alternative.

Based on this EA Reevaluation of the proposed changes identified in the 2016 Preferred Alternative, the FONSI determination continues to remain valid.

Table 3. Summary of Impacts to Resource Categories

Resource	Preferred Alternative	2016 Preferred Alternative	Change in Impacts to Resources
	Summary		
3.1 Land Use	Consistent with Land Use Plans and SD100 Access and Noise Plan	Consistent with Land Use Plans and SD100 Access and Noise Plan	<i>No Change</i>
3.2 Utilities	It was incorrectly noted in the 2014 EA that the Preferred Alternative would require coordination and relocation of utilities, and that it avoided impacts to major transmission lines and towers. However, the Preferred Alternative would require the coordination and relocation of utilities and would avoid all Western steel towers and associated transmission lines.	Requires coordination and relocation of utilities. Avoids all Western steel towers and associated transmission line. Western would relocate up to five wooden transmission poles.	<i>Restated to clarify that the Project avoids all Western steel towers and associated transmission lines, but Western would relocate up to five wooden transmission poles.</i>
3.6 Archeological and Historic Resources	No Adverse Effect	No Adverse Effect	<i>No Change</i>
3.7 Economic Resources	Minor ROW acquisition of six businesses and ROW of land owned by Xcel Energy. All businesses north of I-90/N Timberline Avenue Interchange and Western would be temporarily impacted during construction, due to modifications to their existing access and potential impacts to their existing landscaping.	Minor ROW acquisition of six businesses and ROW of land owned by Xcel Energy. All businesses north of I-90/N Timberline Avenue Interchange and Western would be temporarily impacted during construction, due to modifications to their existing access and potential impacts to their existing landscaping. Western would be impacted permanently if ROW is acquired for relocation of wooden transmission poles. The impacts would be temporary if the wooden poles remain in the same location, or could be permanent if construction requires the wooden poles to be relocated.	<i>Western would be impacted permanently for ROW to be acquired by Western as part of the Preferred Alternative and now the 2016 Preferred Alternative. Western would also relocate up to five wooden transmission poles. The impacts may require the poles to be relocated, either within Western's existing ROW or ROW would need to be acquired.</i>
3.10 Relocations	Two residences would be acquired. Minor ROW acquisition from 6 businesses. ROW acquisition from Xcel Energy.	Three residences would be acquired. Minor ROW acquisition from 6 businesses. ROW acquisition from Xcel Energy and Western. ROW acquisition for relocation of Western's wooden poles.	<i>One additional residence would be acquired based on the 2016 Preferred Alternative.</i>

Resource	Preferred Alternative	2016 Preferred Alternative	Change in Impacts to Resources
	Summary		
3.11 Farmland	Farmland Conversion Impact Ratings indicate the proposed ~105 acres of conversion would not adversely affect important farmlands.	Farmland Conversion Impact Ratings indicate the proposed ~215 acres of conversion would not adversely affect important farmlands.	<i>Increased acres of farmland would be converted, but the 2016 Preferred Alternative would not adversely affect farmlands.</i>
3.12 Wetlands and Other Waters of the US	5.03 acres of wetland impact; 725 linear feet of Other Water of the U.S. culvert crossing, 145 linear feet of Other Water of the U.S. Bridge Crossing, 375 linear feet of Other Water of the U.S. Realignment, Crosses Big Sioux River, Slip Up Creek and intermittent streams	4.12 acres of wetland impact; 845 linear feet of Other Water of the U.S. culvert crossing, 220 linear feet of Other Water of the U.S. Bridge Crossing, 0 linear feet of Other Water of the U.S. Realignment, Crosses Big Sioux River, Slip Up Creek and intermittent streams	<i>-0.91 acre of wetland impact, +120 linear feet of culvert crossing, +75 linear feet in bridge crossing, -375 linear feet of realignment</i>
3.14 Floodplain	Coordination would occur with the Minnehaha County Floodplain Administrator to complete a floodplain development permit or CLOMR.	Coordination would occur with the Minnehaha County Floodplain Administrator to complete a floodplain development permit or CLOMR.	<i>Floodplain impacts at Slip-Up Creek reduced with 2016 Preferred Alternative with perpendicular creek crossing.</i>
3.15 Vegetation, Fish and Wildlife	Minor loss of habitat, moderate in Cactus Hills; Surveys required for the bald eagle and migratory birds in suitable habitat before construction	Minor loss of habitat, moderate in Cactus Hills; Surveys required for the bald eagle and migratory birds in suitable habitat before construction	<i>Additional habitat loss in the Cactus Hills area.</i>
3.16 Federal Threatened and Endangered Species	Topeka Shiner- <i>May affect, likely to adversely affect</i> ; Western prairie fringed orchid- <i>May affect, not likely to adversely affect</i>	Topeka Shiner- <i>May affect, likely to adversely affect</i> ; Western prairie fringed orchid- <i>May affect, not likely to adversely affect</i> , Rufa red knot- <i>No Effect</i> and Northern long-eared bat- <i>May affect, not likely to adversely affect</i> .	<i>Additional species listed: Rufa red knot and Northern long-eared bat Additional Study Area included: Topeka Shiner-<i>May affect, likely to adversely affect</i>; Western prairie fringed orchid- <i>May affect, not likely to adversely affect</i>, Rufa red knot-<i>No Effect</i> and Northern long-eared bat-<i>May affect, not likely to adversely affect</i>.</i>
3.17 Section 4(f) and 6(f) Resources	<i>De minimis</i> impact on the following cultural sites: Site 39MH2000, Site 39MH2003, Site MH03000001-MH030000010, and Site 39MH231.	<i>De minimis</i> impact on the following cultural sites: Site 39MH2000, Site 39MH2003, Site MH03000001-MH030000010, and Site 39MH231.	<i>No Change</i>

5.0 REFERENCES

The following are documents referenced in the preceding document. The reports that were prepared to examine the environmental resources in the additional Study Area are available upon request.

HDR. 2016. Hwy 100 Additional Study Areas - Wetland Delineation Memo. Sioux Falls, Minnehaha County, South Dakota.

Kogel Archaeological Consulting Services. 2015. A Level III Cultural Resources Survey of the Proposed Borrow Areas and Access Roads associated with Highway 100 in Sioux Falls, Minnehaha County, South Dakota.

NRCS. 2015. Farmland Coordination Response Letter. December 28.

SDDOT. 2008. SD100 Access and Noise Plan. January 15.

SDDOT. 2015. Federal Highway Administration Finding of No Significant Impact (FONSI) and Section 4(f) *De Minimis* Impact Finding for East Side Corridor (SD100). January.

SHPO. 2016. Section 106 Project Consultation Response Letter. August.

USFWS. 2002. Letter in Response to Environmental Comments Regarding the East Side Corridor. January.

USFWS. 2016. Additional coordination on tree impacts and mitigation commitment. August.

USFWS. 2016. Range-wide Programmatic Consultation for Indiana Bat and Northern long-eared Bat. August.