Environmental Scan

I-90 Exit 63 Interchange Modification Study and Highway Improvements between Exit 61 and Exit 67 Environmental Review & Design

Pennington County, South Dakota
IM 0902(111)62 N; PCN 3022
IM 0902(176)62 N; PCN 06VR

View west toward the Highway 1416 Bridge over I-90, from I-90.

Prepared for:
South Dakota Department of Transportation

Prepared by:
Felsburg Holt & Ullevig
6400 S Fiddlers Green Circle, Suite 1500,
Greenwood Village, CO 80111
303.721.1440

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1.0 INTRODUCTION

South Dakota Department of Transportation (SDDOT), in consultation with the Federal Highway Administration (FHWA), is proposing a 4R project (resurfacing, restoration, rehabilitation, reconstruction) that will regrade and resurface the eastbound and westbound lanes of Interstate 90 (I-90) beginning at mileage reference marker (MRM) 62.15 + 0.373 and ending at MRM 66.17 + 0.379. The project will also reconstruct the I-90 Exit 63 Interchange including the realignment of Highway 1416 over I-90 to facilitate a full interchange configuration in line with FHWA recommendations.

This Environmental Scan Report identifies environmental resources and environmentally sensitive areas. The purpose of this scan report is to identify resources early in the planning process to avoid fatal flaws and to consider sensitive environmental resources in the environmental study area. This Environmental Scan also connects the long-range transportation planning and the requirements of National Environmental Policy Act (NEPA) so that planning decisions can be carried forward into project development as well as to aid in determining the most reasonable and feasible option(s) to be advanced into further environmental studies. Potential environmental resource impacts will be considered in the alternatives analysis, to avoid and minimize impacts during subsequent study phases, while also developing alternatives that meet a project's purpose and need. The results of the Environmental Scan will be carried forward into NEPA.

1.1 Project Location

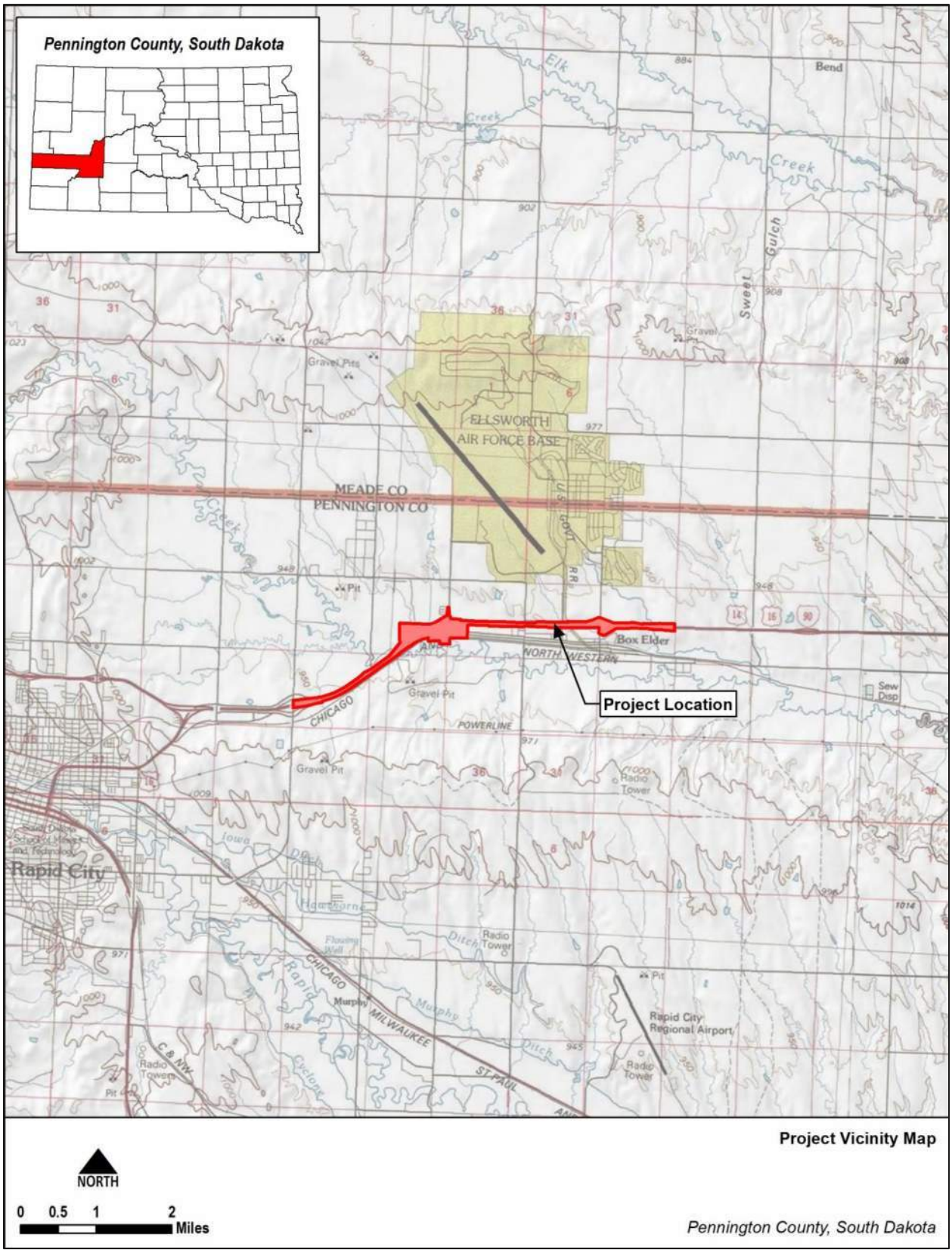
This project is located between Rapid City and the City of Box Elder, South Dakota and is within northern central Pennington County (see **Figure 1**). The project extent is between I-90 Exit 61 and Exit 67. The I-90 Exit 63 interchange is located in the city of Box Elder, South Dakota, just east of Rapid City. It serves as the western entrance to Box Elder and provides primary access to Ellsworth Air Force Base (AFB), which is located north of I-90. I-90 Exit 61 is approximately 1.75 miles west of Exit 63 and Exit 67 is approximately 3.6 miles east of Exit 63.

1.1.1 Logical Termini

FHWA regulations (23 Code of Federal Regulations (CFR) 771.111(f)(1)) require projects that are federally funded to have logical termini, which is defined as having rational end points for the transportation improvement and for the review of the environmental impacts. The logical termini for this project study consists of tying into Exit 61 (Elk Vale Road) to the west and Exit 67 (Liberty Boulevard) to the east. The project will tie into existing conditions prior to the on- and off-ramps at each exit, thus no changes to these interchanges will be required. These end points were selected by SDDOT because they are the nearest service interchanges to Exit 63 in both directions along I-90. FHWA policy and regulations state, "*The analysis should, particularly in urbanized areas, include at least the first adjacent existing or proposed interchange on either side of the proposed change in access*" (23 CFR 625.2(a), 655.603(d) and 771.111(f)).

The environmental study area contains the limits of the potentially affected human and/or natural environmental resources and extends along I-90 from Elk Vale Road to Liberty Boulevard. The environmental study area is further described in **Section 1.3**.

Figure 1. Project Vicinity Map



1.1.2 Independent Utility

Federal regulations also require projects to have independent utility (23 CFR 771.111(f)(2)). Projects must be usable and be a reasonable expenditure even if no additional transportation improvements in the area are completed. The project limits for this study were selected such that independent utility would be achieved and no other improvements would be necessary to meet the Purpose and Need or require the construction of further improvements on the surrounding transportation system beyond the project limits.

1.1.3 Other Reasonably Foreseeable Improvements

Under 23 CFR 771.111(f)(3), it requires projects to not restrict other reasonably foreseeable transportation improvement alternatives. Other reasonably foreseeable projects in close proximity to this project were included in the traffic analysis completed for the I-90 Exit 63 Interchange Modification Study and Highway Improvements. These reasonably foreseeable projects include:

- The Alpha Omega Development: Located south of I-90 and Highway 1416 adjacent to Exit 63. This development will take many years to reach full buildout, but the first stages of the project have received preliminary approval from the City of Box Elder. It is expected to significantly alter growth patterns shown on previous studies, including providing a new east-west connection between West Gate Road and Elk Vale Road, parallel to and south of I-90.
- City of Box Elder Upgrading Highway 1416: Includes a study of options for upgrading Highway 1416 east of the Exit 63 interchange area.
- City of Box Elder Extension of East Mall Drive: Adjustments to the roadway network north of I-90 between Exit 61 and Exit 63, potentially including the extension of East Mall Drive to Exit 63 and closing the frontage road. Currently, the project is planned to go to construction in 2025.
- Other local development projects and infrastructure projects, including Ellsworth AFB actions, which reflected a "high growth" scenario of about 5,000 additional troops on base.

This project does not restrict any of these other reasonably foreseeable projects from occurring. The list above includes projects likely to affect conditions within the study area that would likely proceed independent of any formal SDDOT action. These actions should consider the outcomes of this study so all efforts in the area can complement and work toward a common vision for the future of I-90.

1.2 Project Background

This project has been identified in previous planning studies including the 2010 Decennial Interstate Corridor Study (SDDOT, 2010), 2014 BESTPlan, Box Elder Strategic Transportation Plan (Box Elder, 2014), and the 2016 Ellsworth AFB Joint Land Use Study (Ellsworth AFB, 2016). In December 2017, the Interstate 90 (I-90) Exit 61 to Exit 67 Corridor Study (SDDOT, 2017) used these previous documents as references for the corridor study and provided a foundation for a purpose and need statement that defined the goals and objectives for the corridor and recommended alternatives. This proposed I-90 Exit 63 Interchange and Highway Widening project has been developed based on the findings of the 2017 Corridor Study.

The 2017 Corridor Study investigated two primary areas of need:

- **I-90 Corridor Capacity**. Which included the assessment for additional travel lanes along I-90, regional roadway network improvements, or other multimodal mobility enhancements to provide acceptable traffic operations and safety now and into the long-range future.
- **I-90 Exit 63 Full Interchange Access**. The study investigated options to bring Exit 63 into compliance with FHWA policy.

Recommended actions from the 2017 Corridor Study included:

- A recommended ultimate I-90 typical section and alignment to ensure that actions taken with the grading and surfacing project can be compatible with and advance the future ultimate plan for widening I-90 to provide six travel lanes.
- Three feasible options for reconstructing the Exit 63 interchange.
- Intelligent Transportation System (ITS) strategies that offer opportunities to provide improved traffic operations and safety.

The 2017 Corridor Study evaluated numerous alternatives and recommended three feasible options for detailed analysis in the 2021 Interchange Modification Justification Report (IMJR) (SDDOT, 2021a). Since the completion of the 2017 Corridor Study, the Alpha Omega development has been identified south of I-90 and Highway 1416 adjacent to Exit 63. And other study area changes include a study of options for upgrading Highway 1416 east of the interchange area and adjustments to the roadway network north of I-90 between Exit 61 and Exit 63, potentially including the extension of East Mall Drive to Exit 63.

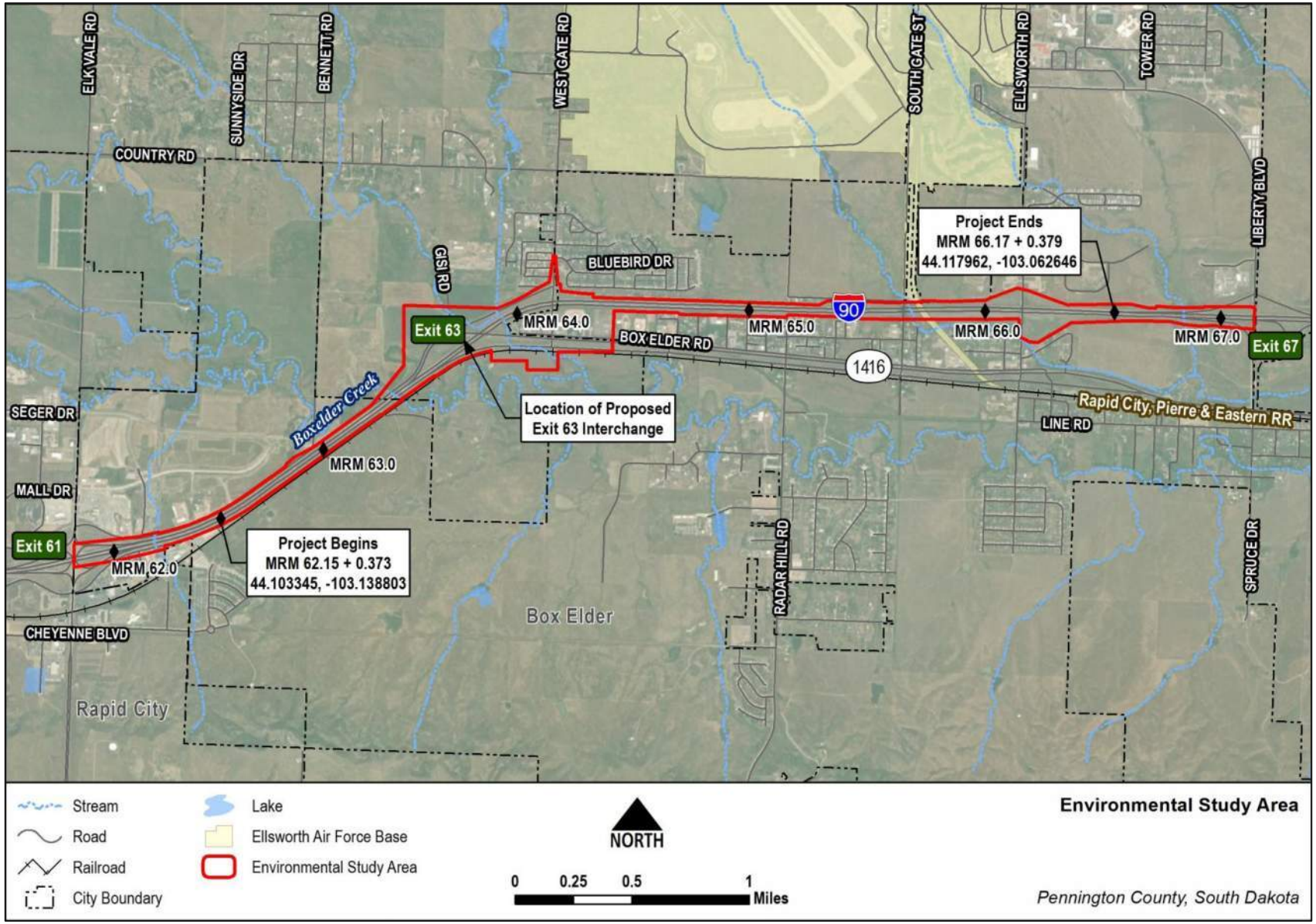
The IMJR reflects the three feasible options presented in the 2017 Corridor Study, adds detail related to Highway 1416 and East Mall Drive alternatives, and updates the Corridor Study traffic analyses to reflect the Alpha Omega development. The IMJR recommends a Most Technically Feasible Alternative for consideration at I-90 Exit 63. The alternatives analysis is further described in **Section 1.5.1**.

This project is not listed in the current 5-year Statewide Transportation Improvement Program (STIP). Long-range funding is currently being evaluated, and it is anticipated that Federal National Highway Performance Program funds will be used to complete the project. No state or local contributions have been identified to date. SDDOT has also created a Developmental STIP which is used to identify and develop future projects in years five through eight. This allows SDDOT to start its surveys, scoping, and designs earlier in the process and advance them as they progress into the Construction (years one through four) STIP. These developmental projects are only shown on the Statewide Improvement Map on page 37 of the 2022-2025 STIP or can be viewed on the interactive improvement map found on the Department's website (SDDOT, 2022). This project, PCN 3022 and PCN 06VR, are shown in the 2026-2029 Developmental STIP.

1.3 Environmental Study Area

The environmental study area in the 2017 Corridor Study encompassed approximately 1,000 feet along either side of the mainline I-90 alignment. The environmental study area for this environmental scan includes the footprint for the proposed project improvements, construction access, and temporary disturbance. The study area includes the I-90 right-of-way between Elk Vale Road (Exit 61) and Liberty Boulevard (exit 67) with an additional buffer at the Exit 63 interchange to include improvement areas. **Figure 2** provides an overview of the environmental study area.

Figure 2. Environmental Study Area Map



The I-90 corridor serves as the primary east-west connection across the State of South Dakota and beyond its borders. The environmental study area encapsulates the portion of I-90 that connects the City of Rapid City with the City of Box Elder and Ellsworth AFB. The environmental study area includes three freeway interchanges and roughly six miles of I-90. Within the environmental study area Exit 63 currently exists as a partial movement interchange providing westbound movements from Highway 1416 to westbound I-90 and eastbound movements from I-90 to eastbound Highway 1416. Highway 1416 is an east-west divided highway that connects between I-90 on the west at Exit 63 and Liberty Boulevard to the east. West Gate Road is a two-lane rural roadway that connects from Highway 1416 to the south and just north of Heppner Drive to the north.

The environmental study area is located entirely within Pennington County and includes portions of the City of Box Elder, unincorporated areas of the County, and Ellsworth AFB. Land uses within the study area are comprised of I-90 right-of-way, commercial development, industrial, agriculture, and residential uses.

1.4 Purpose and Need

NEPA and other environmental requirements rely on a decision-making process guided by the purpose and need for the study. The Purpose is a brief statement of the primary intended transportation objective and related goals to be achieved by a proposed transportation improvement. The Need is a condition sought to be relieved or a statement of the problem in need of a solution. The Need proves that the problem exists based on existing data and information. The Need for the proposed improvements is the basis from which a range of alternatives is developed, compared, and evaluated, ultimately leading to the preferred alternative.

The needs from the 2017 Corridor Study were developed by first compiling a comprehensive dataset describing existing conditions throughout the study area. The data included traffic volumes, available Geographic Information System (GIS) based mapping, current inventory of ITS, historical traffic crash data, and year 2045 traffic forecasts. Agency and public input were used to identify potential solutions along the I-90 corridor. The potential solutions were evaluated to assess the ability of each to address the needs, develop feasible build scenarios, and provide recommendations.

The 2017 Corridor Study identified the following needs:

- I-90 Corridor Capacity: A need for the I-90 typical section and alignment to be compatible with and advance the future ultimate plan for widening I-90 to provide six travel lanes.
- Interchange Access: The need for construction of easterly-facing ramps at Exit 63 to create a fully directional interchange, in accordance with FHWA policies. Which also would include the need for additional capacity at I-90 Exit 63.

Building upon the needs presented in the 2017 Corridor Study at Exit 63, SDDOT, in conjunction with the City of Box Elder, Pennington County, FHWA and Rapid City Area Metropolitan Planning Organization (RCAMPO) has conducted the I-90 Exit 63 IMJR Study (SDDOT, 2021a). The study revealed transportation issues and needs facing the I-90 corridor and Exit 63 Interchange. The study recommends feasible solutions to address those issues and needs that meet current design standards and/or traffic Level of Service (LOS) expectations under both the current and predicted future traffic conditions. The evaluation conducted as part of the IMJR was used to develop the Purpose and Need for this study.

1.4.1 Project Purpose

The purpose of this project is to bring the I-90 Exit 63 interchange into compliance with current FHWA policy which states that interchanges should provide for all traffic movements (i.e., full interchange) (23 CFR 625.2(a), 625.4(a)(2), and 655.603(d)) (NARA, 2022) and improve the I-90 corridor roadway/facility deficiencies between Exit 61 and Exit 67.

1.4.2 Project Need

Bring the Exit 63 Interchange into Compliance with Current FHWA Policy for a Full Interchange

I-90 Exit 63 currently exists as a partial movement interchange providing westbound movements from Highway 1416 to westbound I-90 and eastbound movements from I-90 to eastbound Highway 1416 as shown in **Figure 3**. The current interchange only provides for two access movements and is considered a partial interchange.

The existing interchange at Exit 63 does not meet current FHWA policy requiring that service interchanges provide for all movements (i.e., full interchange) under the following regulations (NARA, 2022):

- 23 CFR 625.2(a): Plans and specifications for proposed National Highway System (NHS) projects shall provide for a facility that will:
  - (1) Adequately serve the existing and planned future traffic of the highway in a manner that is conducive to safety, durability, and economy of maintenance.
  - (2) Be designed and constructed in accordance with criteria best suited to accomplish the objectives described in paragraph (a)(1) of this section and to conform to the particular needs of each locality.
- 23 CFR 625.4(a)(2): A Policy on Design Standards - Interstate System, American Association of State Highway and Transportation Officials (AASHTO) (paragraph (d) of this section).
- 23 CFR 655.603(d): Compliance:
  - (1) Existing highways. Each State, in cooperation with its political subdivisions, and Federal agency shall have a program as required by 23 U.S.C. 402(a), which shall include provisions for the systematic upgrading of substandard traffic control devices and for the installation of needed devices to achieve conformity with the Manual on Uniform Traffic Control Devices (MUTCD). The FHWA may establish target dates of achieving compliance with changes to specific devices in the MUTCD.
  - (2) New or reconstructed highways. Federal-aid projects for the construction, reconstruction, resurfacing, restoration, or rehabilitation of streets and highways shall not be opened to the public for unrestricted use until all appropriate traffic control devices, either temporary or permanent, are installed and functioning properly. Both temporary and permanent devices shall conform to the MUTCD.
  - (3) Construction area activities. All traffic control devices installed in construction areas using Federal-aid funds shall conform to the MUTCD. Traffic control plans for handling traffic and pedestrians in construction zones and for protection of workers shall conform to the requirements of 23 CFR part 630, subpart J, Traffic Safety in Highway and Street Work Zones.

In addition, FHWAs Policy on Access to the Interstate System (FHWA, 2017) states that the proposed access will connect to a public road only and will provide for all traffic movements and that the proposed access will be designed to meet or exceed current standards (23 CFR 625.2(a), 625.4(a)(2), and 655.603(d)).

The I-90 Exit 63 interchange currently provides two access movements to and from the west but does not provide the required two additional movements to and from the east. To be considered a full interchange, four access points to the interchange are required.

Figure 3. I-90 Exit 63 Interchange Movements

Basis for Meeting the Need

To meet the purpose and need, project alternatives must provide an interchange at Exit 63 that would meet the current FHWA policy on access to the interstate system to provide for all movements (four access points to the interchange), including I-90 access to and from the west, as well as I-90 access to and from the east and meet or exceed current standards (23 CFR 625.2(a), 625.4(a)(2), and 655.603(d)). The full interchange option would improve the performance in comparison to the existing partial interchange. Performance measures would include drivers to be able to access all movements to and from the I-90 interchange at West Gate Road. The project alternatives must minimize impacts to the surrounding human and natural environment and safely and efficiently collect, distribute, and accommodate traffic on the Interstate facility, ramps, intersection of ramps with crossroad, and the local street network (23 CFR 625.2(a) and 655.603(d)).

Improve the I-90 Corridor Roadway/Facility Deficiencies Between Exits 61 and 67

The I-90 corridor between Exit 61 and Exit 67 serves local commuting residents as the primary connection between Rapid City, Box Elder, and the Ellsworth AFB. I-90 is also used for interstate and inter-regional travel, and to transport goods. Areas near the interstate have been the setting of recent population growth and land development, which is expected to continue in the future. This project is needed to improve roadway/facility deficiencies for the I-90 corridor between Exit 61 and Exit 67.

Geometric Deficiencies: A review of the geometric deficiencies in the 2020 Decennial Interstate Corridor Study (SDDOT, 2020) indicated that the most common geometric elements on the mainline of I-90 between Exit 61 and Exit 67 that do not meet standards for new construction on the interstate is the inslope and minimum bridge section width. Bridge section widths that were less than the desirable 38 feet were common along the interstate within the study area and the inslope was 5:1, versus the desirable slope of 6:1.

I-90 Mainline Width Deficiencies: In accordance with 23 CFR 625.2(a)(1), the interstate highway must adequately serve the existing and planned future traffic of the highway in a manner that is conducive to safety, durability, and economy of maintenance. Currently, the existing mainline consists of two 12-foot thru lanes and shoulder widths range from 2 to 8 feet, which is less than the standard shoulder width of 10 feet. The future need of I-90 mainline within the study area is three 12-ft thru lanes with standard width of shoulders of 10 feet. Ten structures located between Exit 61 and Exit 67 have insufficient structure width to accommodate mainline I-90 widening for future capacity needs. The existing structures are currently wide enough to accommodate two thru lanes but have shoulders that have sub-standard width according to current DOT guidelines (23 CFR 625.2(a)(1)).

Pavement Deficiencies: Pavement condition on I-90 within the study area is expected to continue to deteriorate Replacing the existing road surface of I-90 between Exit 61 and Exit 67 due to pavement deficiencies would improve the highway, as well as improve driver experience. SDDOT stated that it is necessary to replace the pavement due to surface conditions of the roadway. **Table 1** and **Figure 4**, shows the pavement areas that are needing to be improved along I-90 between Exit 61 and Exit 67.

As indicated in **Table 1** (SDDOT, 2021b), pavement reconstruction is forecasted to be needed between MRM 62 and MRM 63.5 for both east and west lanes by 2026, pavement removal and replacement is forecasted to be needed between MRM 63.5 and MRM 66.17 for east lanes by 2030 and west lanes by 2032, and pavement reconstruction is needed between MRM 66.17 and MRM 67.5 for both east and west lanes by 2029.

Basis for Meeting the Need

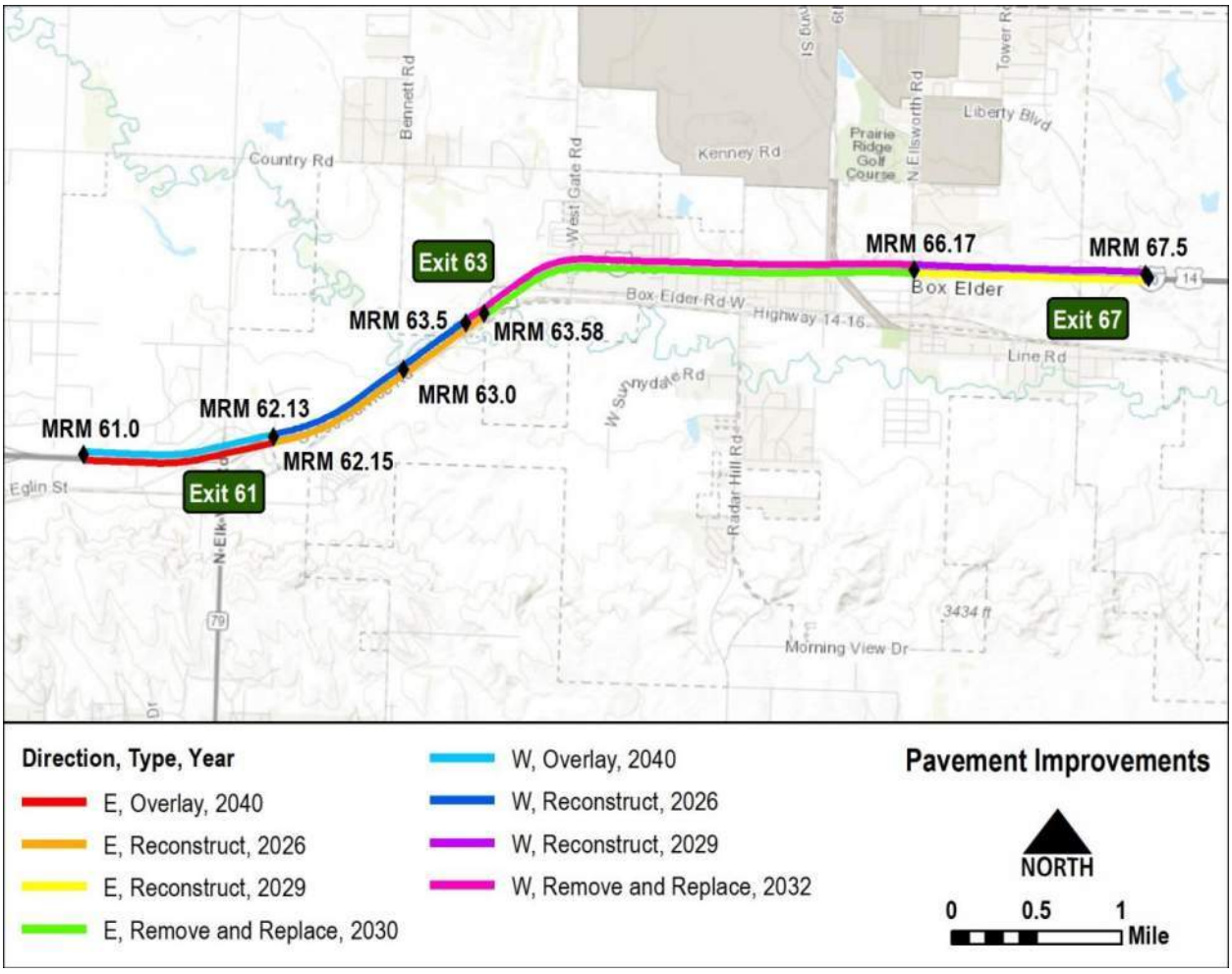
To meet the purpose and need, the selected alternatives should correct the geometric deficiencies including inslope and bridge section widths, accommodate future traffic needs for the I-90 mainline width, and correct pavement deficiencies between MRM 62 and MRM 63.5 by 2026 and between MRM 63.5 and MRM 67.5 by 2029/2030. Existing structures along I-90 will need to be wide enough to accommodate three thru lanes and standard shoulders. The project alternatives must minimize impacts to the surrounding human and natural environment and adequately serve the existing and planned future traffic of the highway in a manner that is conducive to safety, durability, and economy of maintenance (23 CFR 625.2(a)(1)).

Table 1. Pavement Summary

Begin MRM	End MRM	Dir	Distance	Work	Year
61	62.15	E	1.15	Overlay	2040
62.15	63	E	0.85	Reconstruct	2026
63	63.58	E	0.58	Reconstruct	2026
63.58	66.17	E	2.59	Remove and Replace	2030
66.17	67.55	E	1.38	Reconstruct	2029
61	62.13	W	1.13	Overlay	2040
62.13	63	W	0.87	Reconstruct	2026
63	63.5	W	0.5	Reconstruct	2026
63.5	66.17	W	2.67	Remove and Replace	2032
66.17	67.5	W	1.33	Reconstruct	2029

Source: PavingProjectSummary_05121.xlsx provided by SDDOT

Figure 4. I-90 Exit 63 Pavement Improvements



1.5 Project Goals

This section addresses goals for inclusion in the project that addresses concerns of the stakeholders and public. These goals are important to the project, but they do not rise to an actual transportation need for the project. These goals may result in the selection of alternatives when other needs are equal, and one alternative addresses the goals better than other alternatives.

- *Floodplains*:
  - Current conditions indicate a need for upsizing existing structures and constructing additional structures along the I-90 corridor to sufficiently accommodate floodplains through the City of Box Elder. A floodplain analysis was conducted to determine if there are potential floodplain impacts associated with roadway and interchange improvements within the study area. The study concluded that existing culverts would require upsizing and additional culverts would be needed to mitigate for floodplain impacts.
  - The goal of the selected alternative would be to result in a no rise designation for the 100-year floodplain within the study area. Existing culverts would need to be replaced or widened and additional structures constructed in order to accommodate the 100-year floodplain.
- *Driver Expectancy*
  - The existing Exit 63 interchange does not meet current driver expectancy since there is no access to and from the east. Adding a full interchange at Exit 63 will meet driver expectancy to be able to have access to and from the west, as well as to and from the east.
  - Ellsworth AFB is within 2.5 miles of the interchange and contributes substantial traffic to the local roadway network. Traffic flow between the Base and I-90 west of the interchange would need to meet driver expectations of improved movements and no out of direction travel for accessing the base.
- *System Linkage*
  - A full connection to Highway 1416 will be essential due to the City of Box Elder and Pennington County planning to reconfigure Highway 1416 into a 5-lane, bi-directional roadway in the future.
  - The Mall Drive extension from the west also requires a connection to the interchange area that would minimize impacts to surrounding neighborhoods.
- *Bicycle/Pedestrian*
  - West Gate Road crosses I-90 at a desired location for pedestrian and bicycle travel, connecting residential neighborhoods north of I-90 with residential and commercial uses south of I-90. However, the existing interchange configuration and surrounding infrastructure will not accommodate adequate pedestrian and bicycle facilities and/or access. The new interchange should be designed to accommodate pedestrian and bicycle facilities and access that may be needed in the future.
  - The City of Box Elder also has plans to connect pedestrian and bicycle access from schools and residential areas in north Box Elder to residential, recreation, and commercial areas to the south (Box Elder, 2014). The City of Box Elder Strategic Transportation Plan includes constructing a side path along Ellsworth Road between 225 Street and Highway 1416 and constructing a sidewalk along Ellsworth Road between Highway 1416 and Tower Road. The

widening of mainline I-90 should be designed to accommodate future pedestrian and bicycle facilities that are planned to cross under the I-90 mainlines.

- *Safety:*
  - As indicated in the I-90 Exit 63 IMJR Study and shown in **Figure 5** and **Figure 6**, multi-vehicle property damage only (PDO) crashes and single-vehicle PDO crashes were higher than the expected crash rate for this type of roadway. The type of crashes that were higher than expected included fixed object crashes along I-90 between Exit 61 and Exit 67 and median crossing crashes along I-90 between Exit 61 and Exit 63. With the addition of the full interchange, auxiliary lanes, median cable barrier, and a 30-foot clear zone, these types of crashes are expected to be reduced.

Figure 5. Multi-Vehicle PDO Crashes

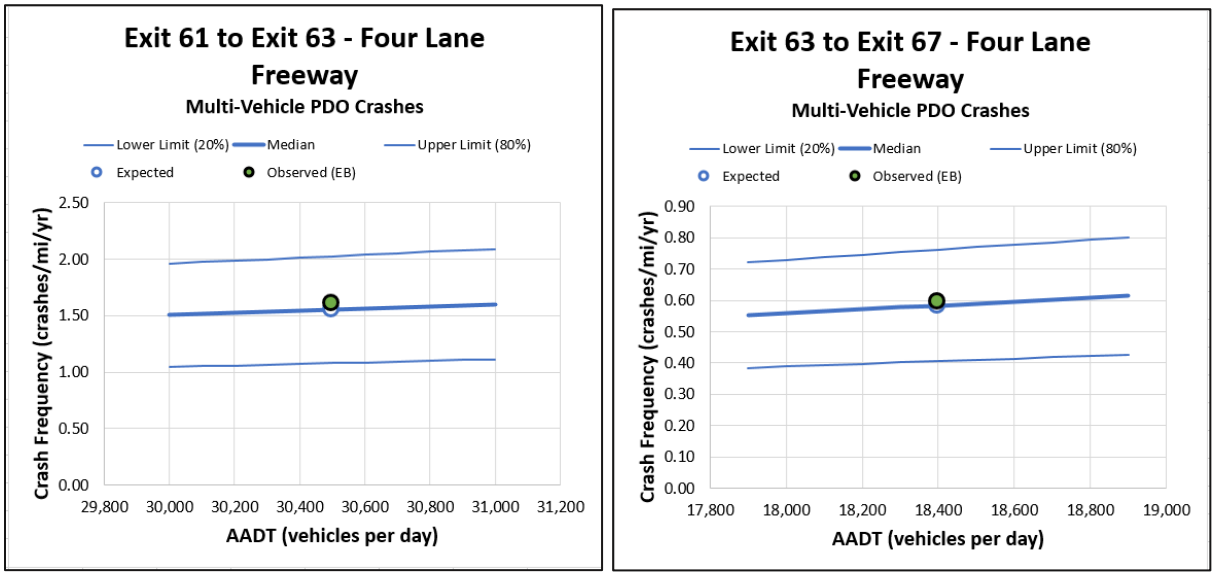
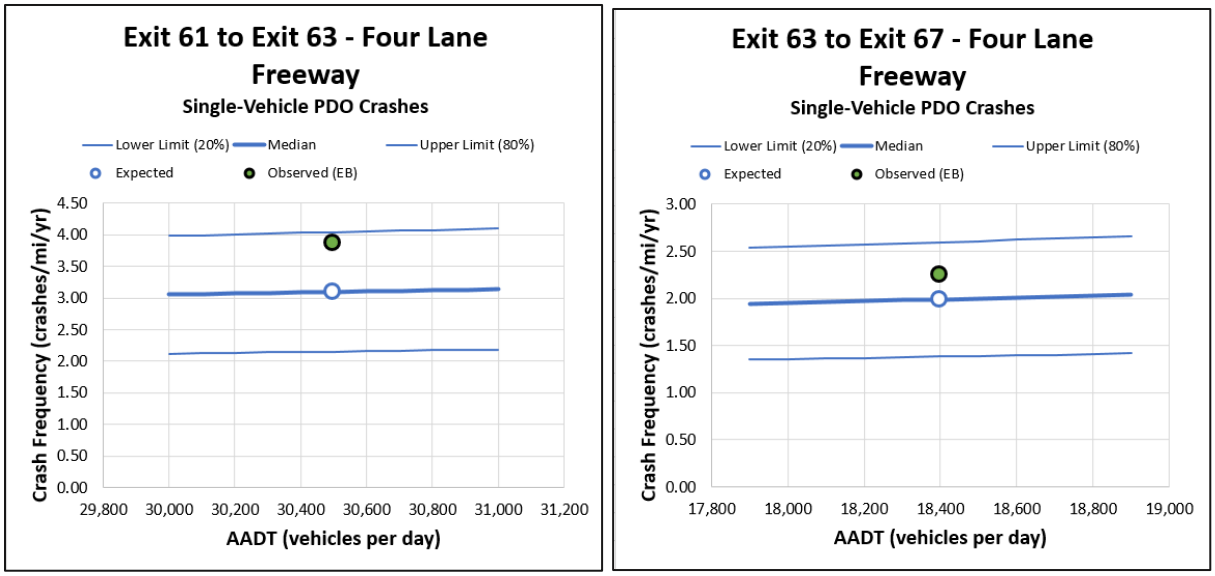


Figure 6. Single-Vehicle PDO Crashes



1.6 Proposed Project

The proposed 4R project (resurfacing, restoration, rehabilitation, reconstruction) will add an additional lane in each direction and regrade and resurface the eastbound and westbound lanes of I-90 between Exit 61 and Exit 67 beginning at MRM 62.15 + 0.373 and ending at MRM 66.17 + 0.379. The project will also reconstruct the I-90 Exit 63 Interchange including the realignment of Highway 1416 over I-90 to facilitate a full interchange configuration in line with FHWA policy.

1.6.1 Alternatives Analysis for the Exit 63 Interchange

As a result of the 2017 Corridor Study, three feasible options were evaluated. The three primary alternatives presented in the 2017 Corridor Study were considered for detailed analysis in the IMJR and each of the three primary alternatives were further divided into two sub-alternatives to connect with different alignments for Highway 1416—for a total of six alternatives or options. Each of the six alternatives provided additional capacity at Exit 63 and provided full movements within the interchange.

Option 1: Diamond Interchange at West Gate Road

Option 1 includes a new diamond interchange at the existing West Gate Road overpass over I-90. The new interchange would be approximately 0.5-miles east of the existing interchange. Highway 1416 traffic would have to turn north at the West Gate Road/Highway 1416 intersection in order to access the new interchange. Alternative 1a (see **Figure 7**) would connect to Highway 1416 at the southern connection and Alternative 1b (see **Figure 8**) would connect to Highway 1416 at the northern connection.

Figure 7. Alternative 1a: West Gate Road Diamond Interchange (South Highway 1416 Connection)

Figure 8. Alternative 1b: West Gate Road Diamond Interchange (North Highway 1416 Connection)

If the East Mall Drive extension uses the Highway 1416 alignment to access the City of Box Elder, rather than connecting to West Gate Road to the north, a new structure would be needed at the existing westbound Highway 1416 overpass; otherwise, the overpass would be removed. The two existing ramps (eastbound I-90 to eastbound Highway 1416 and westbound Highway 1416 to westbound I-90) would be removed. Due to the new location of the interchange, new and additional signage would be necessary.

Option 2: Diamond Interchange at Highway 1416

Option 2 includes a new diamond interchange located at the existing Highway 1416 overpass along I-90. This option does not relocate the existing interchange. The two existing ramps (eastbound I-90 to eastbound Highway 1416 and westbound Highway 1416 to westbound I-90) would be retained and reconstructed, and new east-facing ramps would be constructed.

Alternative 2a (see **Figure 9**) would connect to Highway 1416 at the southern connection and Alternative 2b (see **Figure 10**) would connect to Highway 1416 at the northern connection. Alternative 2a would require west bound traffic to merge with the southern connection alignment. Due to the new east-facing ramps at Exit 63, some signs will need to be removed and potentially relocated elsewhere. If the East Mall Drive extension uses the Highway 1416 alignment to access the City of Box Elder, it would connect to the west side of the interchange.

Figure 9. Alternative 2a: Highway 1416 Diamond Interchange (South Highway 1416 Connection)

Figure 10. Alternative 2b: Highway 1416 Diamond Interchange (North Highway 1416 Connection)

Option 3: Diverging Diamond Interchange at Highway 1416

Option 3 includes a new diverging diamond interchange at the existing Highway 1416 overpass along I-90. This option does not relocate the existing interchange. The two existing ramps (eastbound I-90 to eastbound Highway 1416 and westbound Highway 1416 to westbound I-90) would be retained and reconstructed, and new east-facing ramps would be constructed.

Alternative 3a (see **Figure 11**) would connect to Highway 1416 at the southern connection and Alternative 3b (see **Figure 12**) would connect to Highway 1416 at the northern connection. Alternative 3a would require west bound traffic to merge with the southern connection alignment. Due to the new east-facing ramps at Exit 63, some signs will need to be removed and potentially relocated elsewhere. If the East Mall Drive extension uses the Highway 1416 alignment to access the city of Box Elder, it would connect to the west side of the interchange.

Figure 11. Alternative 3a: Diverging Diamond Interchange (South Highway 1416 Connection)

Figure 12. Alternative 3b: Diverging Diamond Interchange (North Highway 1416 Connection)

1.6.2 Technical Feasibility Evaluation

As part of the IMJR, the Build Options were analyzed and compared to determine which alternatives may be feasible for carrying forward into the NEPA process. During the screening for technical feasibility the following evaluations were utilized:

Safety and Traffic Operations

- **Safety**: For the purposes of feasible option screening, a qualitative safety evaluation was conducted. Option 3 was considered to have the best safety performance with the diverging diamond eliminating left turn conflicts in the ramp terminal intersections. Option 1 was considered to have the worst safety performance due to the west-facing ramp connections located in a horizontal curve along I-90.
- **Traffic Operations**: The future year traffic evaluations are based on a 2025 opening day scenario and a 2050 horizon year scenario. Three metrics were used to evaluate operational performance: traffic operations (LOS), driver expectations, and local access issues. Based on these evaluations, Option 2 and Option 3 are very similar, with poorer results for Option 1. Within Option 2 and Option 3, the southerly Highway 1416 scenarios (Alternatives 2a and 3a) provide slightly better operational performance.

Ellsworth AFB Impacts

Ellsworth AFB was included in the IMJR's evaluation because it contributes a significant amount of traffic to the roadway network located within the study area. Two criteria were considered: Accident Protection Zone (APZ) conflicts and traffic flow between Ellsworth AFB and I-90 west of the Exit 63 interchange.

The APZ is a defined area approaching and along the airport runways. The APZ is used to manage development within the area that could be affected by an aircraft incident on approach or departure from the runways. The traffic flow movements between I-90 West and Ellsworth AFB is included in the driver expectancy goal.

- **Accident Protection Zone Conflicts**: None of the Options are within the APZ, but the West Gate Options (Option 1) are closer to the APZ and, therefore, ranked slightly lower than the Highway 1416 Options (Options 2 and 3).
- **Movements Between I-90 (West) and Ellsworth AFB**: Option 1 would require Ellsworth AFB traffic to travel out of direction from Highway 1416 north on West Gate Road to the proposed interchange and then back southwest along I-90. This would introduce several additional turns and traffic signals. Option 2 would require exiting Ellsworth AFB traffic to travel through two new traffic signals and would slow entering traffic at the east diamond ramp terminal. Option 3 would require exiting Ellsworth AFB traffic to travel through one new traffic signal and would slow entering traffic somewhat (although not at an intersection). Therefore, Option 3 provides the best movements for Ellsworth AFB traffic.

Physical Impacts

- **Environmental Concerns**: Environmental resources evaluated in the IMJR include historic properties, environmental justice, noise, wetlands, and hazardous materials. Based on these evaluations, the Options that connect to the northerly Highway 1416 alignment (the "b" Alternatives) perform better from an environmental perspective. Also, the favored alignment for the East Mall Drive connection is along the existing Highway 1416 corridor, rather than the connection to West Gate Road to the north in Option 1.
- **Property and Right-of-Way Concerns**: Property and right-of-way concerns were evaluated based on the potential number of parcels affected and the severity of those effects. Option 1 affects the most parcels (many along West Gate Road) and is considered the most impactful under this criterion. Option 2 affects fewer parcels but is expected to affect the RCP&E Railroad alignment, which is potentially historic, and these effects are considered substantial. Option 3 affects a similar number of parcels as Feasible Option 2 but has fewer substantial effects, therefore Option 3 is considered best under this criterion.
- **Railroad Impacts**: The railroad concerns are the result of two components: new railroad crossings and railroad right-of-way impacts. The Options that connect to the northerly Highway 1416 alignment (the "b" Alternatives) do not require an additional crossing. Option 2 is anticipated to have right-of-way concerns and is expected to affect the RCP&E Railroad, which is potentially historic. Therefore, Alternative 1b and Alternative 3b are best under this criterion, and Option 2 is the worst.

Compatibility with Existing Community Plans

This evaluation considered four components: the existing regional transportation plan, plans for Highway 1416, plans for the E Mall Drive extension, and compatibility with recent land use planning related to Ellsworth AFB.

- **Highway 1416 Plans**: The City of Box Elder has identified a northerly alignment as more feasible during the IMJR's stakeholder process, therefore, the Options that are designed to connect with

a northerly Highway1416 alignment (the "b" Alternatives) best align with the planned Highway 1416 improvements.

- **East Mall Drive Plans**: The City of Box Elder shared concept alignments for the East Mall Drive Extension which include various conceptual alignments that connect East Mall Drive to Highway 1416 via an alignment along the existing Highway 1416 overpass at I-90. Therefore, Option 2 and Option 3 best fit with the City's plans for East Mall Drive.
- **Compatibility with Ellsworth AFB**: There is a need for coordination between Ellsworth AFB and SDDOT as part of efforts to improve access in the study area for any of the Options.

Construction Phasing and Implementation

The construction phasing evaluation provides a snapshot of the constructability of the proposed Options. In general, the Exit 63 Options present construction phasing difficulties because both structures (Highway 1416 and West Gate Road) over I-90 already exist and would have to be modified or replaced to accommodate the respective Option configurations. Alternate routes for these bridges are limited given the limited number of I-90 crossings in the study area and lack of parallel route connectivity created by Ellsworth AFB north of I-90 and limited development south of I-90. Further, the "a" Alternatives (connecting to the south Highway 1416 alignment) require a new at-grade railroad crossing, necessitating railroad coordination that can be time-consuming and costly. Due to the lack of railroad coordination, the "b" Alternatives are considered slightly better.

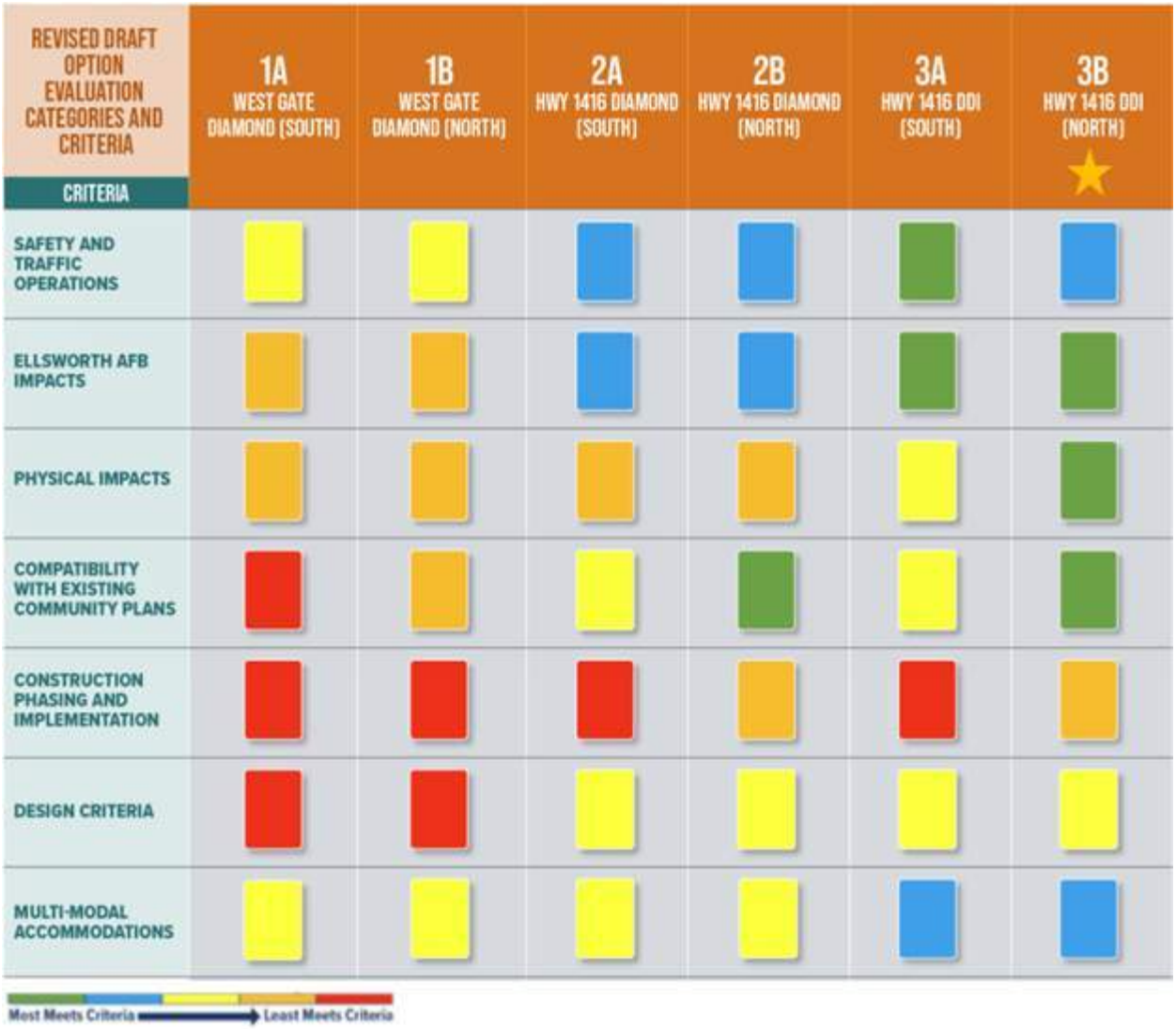
- **Design Criteria**: Compliance with policies and engineering standards was evaluated using two metrics: FHWA interstate access policies and SDDOT intersection / ramp terminal spacing requirements. The conceptual designs generally meet standards except for intersection / ramp terminal spacing, where Alternatives 3a and 3b performs the best and Alternatives 1a and 1b performs the worst.
- **Multi-Modal Accommodations**: The evaluation of multimodal accommodations considered the provision of fixed infrastructure (trails, sidewalks, and bike lane) and the potential for transit to use the new interchange. Based on recommendations from the Rapid City Metropolitan Area Bike and Pedestrian Master Plan Update (RCAMPO, 2020), Option 1 would raise concerns for the buffered bike lane project along West Gate Road between Country Road and Highway 1416. A buffered bike lane is typically incompatible with a diamond interchange.

  Similarly, Option 2 would raise concerns for the railway trail project along the RCP&E railroad corridor adjacent to the diamond interchange. Option 3 would also raise concerns for this project, but the diverging diamond is anticipated to be further away from the railroad alignment, reducing these concerns. Therefore, Option 3 results in the fewest concerns for the planned bicycle and pedestrian network.

Technical Feasibility Evaluation Summary

Figure 13 displays the alternatives, the evaluation categories and criteria, and how each alternative met the specified criterion.

Figure 13. Evaluation Categories and Criteria for Alternatives



1.6.3 Purpose and Need Evaluation

The technical feasibility evaluation conducted as part of the IMJR was used to develop the purpose and need for this Environmental Scan. Once the technical feasibility evaluation was conducted, the alternatives were then evaluated to determine if each alternative met the purpose and need. Each alternative is further discussed in the following sections.

Alternative 1a: West Gate Road Diamond Interchange (South Highway 1416 Connection)

This alternative does not meet the purpose and need because it does not meet or exceed current standards (23 CFR 625.2(a), 625.4(a)(2), and 655.603(d)). The spacing between interchange ramps and between the south ramp intersection and Highway 1416 on West Gate Road and along east side of Highway 1416 does not meet criteria and there are a substantial number of impacts to access along West Gate Road. This option does not meet project goals of driver expectations with out of direction travel. Also, Alternative 1a does not meet community plans and constructability was low. There is also a potential

to impact several wetlands along I-90 and Highway 1416 and the East Mall Drive connection would go through a mobile home park or have potential to impact environmental justice properties along West Gate Road.

Alternative 1b: West Gate Road Diamond Interchange (North Highway 1416 Connection)

This alternative does not meet the purpose and need because it does not meet or exceed current standards (23 CFR 625.2(a), 625.4(a)(2), and 655.603(d)). Spacing between interchange ramps on West Gate Road and spacing between the south ramp and Highway 1416 do not meet criteria and there are a substantial number of impacts to access along West Gate Road. This option does not meet project goals of driver expectations with out of direction travel. Also, constructability was low for Option 1b. There is also a potential to impact several wetlands along I- 90 and Highway 1416 and the E Mall Drive connection would go through a mobile home park or have potential to impact environmental justice properties along West Gate Road.

Alternative 2a: Highway 1416 Diamond Interchange (South Highway 1416 Connection)

This alternative does not meet the purpose and need because it does not meet or exceed current standards (23 CFR 625.2(a), 625.4(a)(2), and 655.603(d)). Spacing between the ramp intersections and spacing between Highway 1416 and Box Elder Road do not meet criteria. Does not meet community plans, and impacts to railroad right-of-way would be significant, and constructability would be more difficult. There is also a potential to impact several wetlands along I-90, along Highway 1416, and at the railroad crossing.

Alternative 2b: Highway 1416 Diamond Interchange (North Highway 1416 Connection)

This alternative does not meet the purpose and need because it does not meet or exceed current standards (23 CFR 625.2(a), 625.4(a)(2), and 655.603(d)). Spacing between east ramp and business access, and spacing between business access, west of West Gate Road, and West Gate Road, along Highway 1416, do not meet criteria. Impacts to railroad right-of-way would be significant and constructability would be more difficult.

Alternative 3a: Diverging Diamond Interchange (South Highway 1416 Connection)

This alternative does meet the purpose and need, however, impacts to railroad right-of-way would be substantial and a new railroad crossing approval would be difficult. Detours would be needed for building some of the interchange offline and railroad crossing detours will need to be phased. There is also a potential to impact several wetlands along I- 90, along the frontage road, westbound ramp, along Highway 1416, and at the railroad crossing. The railroad is also potentially historic, which would make this option not feasible.

Alternative 3b: Diverging Diamond Interchange (North Highway 1416 Connection)

Based on the IMJR evaluation, Alternative 3b was selected as the Most Technically Feasible Interchange Alternative that meets the project's purpose and need. This Feasible Alternative creates a new diverging

diamond interchange along the Highway 1416 alignment, connects to the northerly Highway 1416 project under consideration by the City of Box Elder, and allows the East Mall Drive extension to connect to the west side of the interchange. The diverging diamond configuration will provide full access to I-90 from both directions of Highway 1416 and a signalized intersection at Highway 1416 and West Gate Road will provide access for traffic along that corridor. This option improved safety, facilitates movements to and from the Ellsworth AFB, minimizes right-of-way impacts, and reduced impacts with the railroad.

The operational and safety evaluations presented in the IMJR show that the proposed diverging diamond interchange at Exit 63 (Alternative 3b) meets current standards (23 CFR 625.2(a), 655.603(d) and 771.111(f)). This option is not expected to adversely affect the safety or efficiency of the interstate system, including the I-90 mainline lanes; existing, new, or modified ramps; and ramp / crossroad intersections or on the local street network based on current conditions, opening day conditions, and horizon year (2050) future traffic conditions.

1.7 Agency and Public Involvement

1.7.1 Public Involvement

Involvement from area stakeholders and the general public was sought to enrich and secure broad input into the 2017 Corridor Study's finding. Public outreach during the Corridor Study process, included three public meetings. The Public Meetings were held on July 26, 2016, March 6, 2017, and September 13, 2017. The public meetings were attended by approximately 100 people, plus consultants, the Study Advisory Team (SAT) members and SDDOT representatives. The 2016 and 2017 public comments are located in **Appendix A**.

A study website was also made available to the public. Project information was regularly posted to the project website. Posted materials included public meeting documents and announcements and contact information. Project information was posted at locations throughout Ellsworth AFB, including the commissary, BX, health clinic, and service center. The information provided on-base viewers with access to the same material presented at public meetings and offered an opportunity to provide input if desired.

SDDOT held a virtual open house meeting from January 20, 2021 to February 20, 2021. The virtual open house was posted to the project website located at www.i90exit63.com. The public was encouraged to review a series of project videos and provide site-specific comments on the Technically Feasible Interchange Alternative. Three project videos were created for the virtual open house. The first video introduced the project and identified the purpose and needs and it received approximately 115 views. The second video highlighted the project alternatives and it received 85 views. The final video highlighted the screening evaluation process and next steps and it received approximately 55 views. Currently, the project website provides information about the project, events, and documents will be posted as they become available for review and download.

As an alternative to providing comments via the website, the City of Box Elder Town Hall hosted office hours for members of the public to provide input. Members of the public could use a computer to view the project materials and provide handwritten comments each Wednesday over the lunch break from 12:00-12:30 and Thursday from 4:00-4:30 for the duration of the comment period.

A total of six comments were received from three different people from the project website and Town Hall office hours. Primary concerns about the project included the railroad crossing, effects on school bus

pick-up, access to Box Elder Road, removal of trees, traffic noise, snow drifts, and the removal of the north service road. Public involvement and stakeholder engagement will continue as the project moves into the NEPA process in order to address concerns and understand needs. The 2021 public comments are located in **Appendix A**.

1.7.2 Agency Involvement

During the Corridor Study process, input from agencies was received via regular meetings of the SAT. The SAT met eight times during the project to provide input on study findings, discuss proposed solutions, and review public involvement materials. The SAT was comprised of representatives of SDDOT, FHWA, City of Box Elder, RCAMPO, Ellsworth AFB, and the Ellsworth Development Authority.

The 2017 Corridor Study involved coordination and correspondence with tribes and agencies for identifying issues and understanding needs and concerns in the corridor. A Solutions Workshop and Intelligent Transportation Systems (ITS) Stakeholder meeting were held in October 2016. At the workshop, SAT and additional agency representatives brainstormed options and articulated priorities for the future of the environmental study area. The ITS Stakeholder Meeting primarily included SAT members and provided a forum for the project team to share information about ITS enhancements for consideration as study recommendations.

Additional SAT meetings have occurred for this study beginning in July of 2019. Agency members included SDDOT, FHWA, City of Box Elder, Rapid City, RCAMPO, and Ellsworth AFB. These meetings were held to discuss the purpose and need, environmental resources, traffic and operations analysis, alternatives, utilities, floodplain analysis, and other items. Six SAT meetings have occurred between July 2019 and December 2021, as well as other agency meetings including scoping, environmental, utility, agency coordination, alternatives, and design. During the NEPA process resource agencies will be coordinated with, including tribal coordination, to further evaluate environmental resources that have the potential to be found within the proposed project(s) footprints and/or will be impacted directly or indirectly by the project(s).

2.0 ENVIRONMENTAL RESOURCES

An environmental overview was conducted for the 2017 Corridor Study (SDDOT, 2017). The overview provided preliminary insight (presence or absence) into the environmental resources potentially impacted by potential future corridor solutions. This environmental scan built upon the information presented in the 2017 Corridor Study. This overview is not an environmental findings document intended to comply with NEPA. However, the information presented will guide further evaluation and analysis during subsequent project development phases.

This chapter provides a review of known and potential social, economic, and environmental resources within the environmental study area that could be affected by construction of the proposed project. The review included a desktop analysis of the latest available data and a field survey of the environmental study area. The review specifically covers resources with the potential to delay or stop project development or permitting, including those resources with specific regulatory drivers such as the Endangered Species Act and Clean Water Act. Environmental resources evaluated include:

- Land Use/Community Planning
- Environmental Justice

- Social and Economic Resources
- Bicyclists and Pedestrians
- Air Quality
- Noise
- Contaminated Materials
- Climate Change/Equity
- Visual Resources
- Floodplain
- Wetlands and Other Waters of the U.S.
- Water Quality
- Vegetation and Wildlife
- Threatened and Endangered Species
- Historic and Cultural Resources
- Section 4(f) and Section 6(f)
- Right-of-Way, Acquisition, and Relocation Potential
- Utilities

Based on the 2017 Corridor Study and the desktop analysis for this environmental scan, the following resources were determined not to be present in the vicinity of the proposed project or not applicable at this point in the evaluation. During the NEPA process, these resources will be further reviewed:

- Federal and Tribal Lands
- Farmlands
- Invasive Species
- Wild and Scenic Rivers
- Soils and Geology
- Paleontological Resources
- Construction Impacts

Each of the following subsections provides an overview of the environmental resources; findings of this evaluation; and, where appropriate, additional considerations for the proposed project.

2.1 Land Use/Community Planning

2.1.1 Regulatory

Effects analysis under the purview of NEPA (40 CFR 1508) requires the evaluation of indirect effects caused by a project which may include "growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects. In association with social demands (e.g., school growth), economic development (e.g., new employment opportunities in the community), land use and community planning considerations are to be evaluated for changes that may indicate and/or support the need to improve highway operations or add to the highway capacity".

2.1.2 Existing Conditions

The environmental study area is located in the City of Box Elder as well as portions of unincorporated Pennington County. Settlers arrived in the Rapid City area around 1874 when gold was discovered in the Black Hills. In the early twentieth century, the environmental study area mostly contained small farming or mining communities. Population growth and increased water availability contributed to the expanding development that occurred throughout the 1940s and 1950s as communities began to devote more agricultural land to residential and employment uses. Ellsworth AFB was constructed in 1942 and grew to be among the largest employers in the area. Construction of I-90 then followed in the early 1960s. By the time the final segment was completed in 1968, low-density, suburban residential development was expanding outward from major city centers along the highway. Expansion of I-90 helped spur development along the corridor and contributed to land use change in the years that followed.

Several previous plans include consideration of transportation needs within and adjacent to the environmental study area. **Figure 14** from the 2017 Corridor Study provides a tabulation of entities possessing active interest in the future of the study area, along with a description of their goals, documented positions, and on how the I-90 project relates to the plans. The proposed project is consistent with local and regional plans.

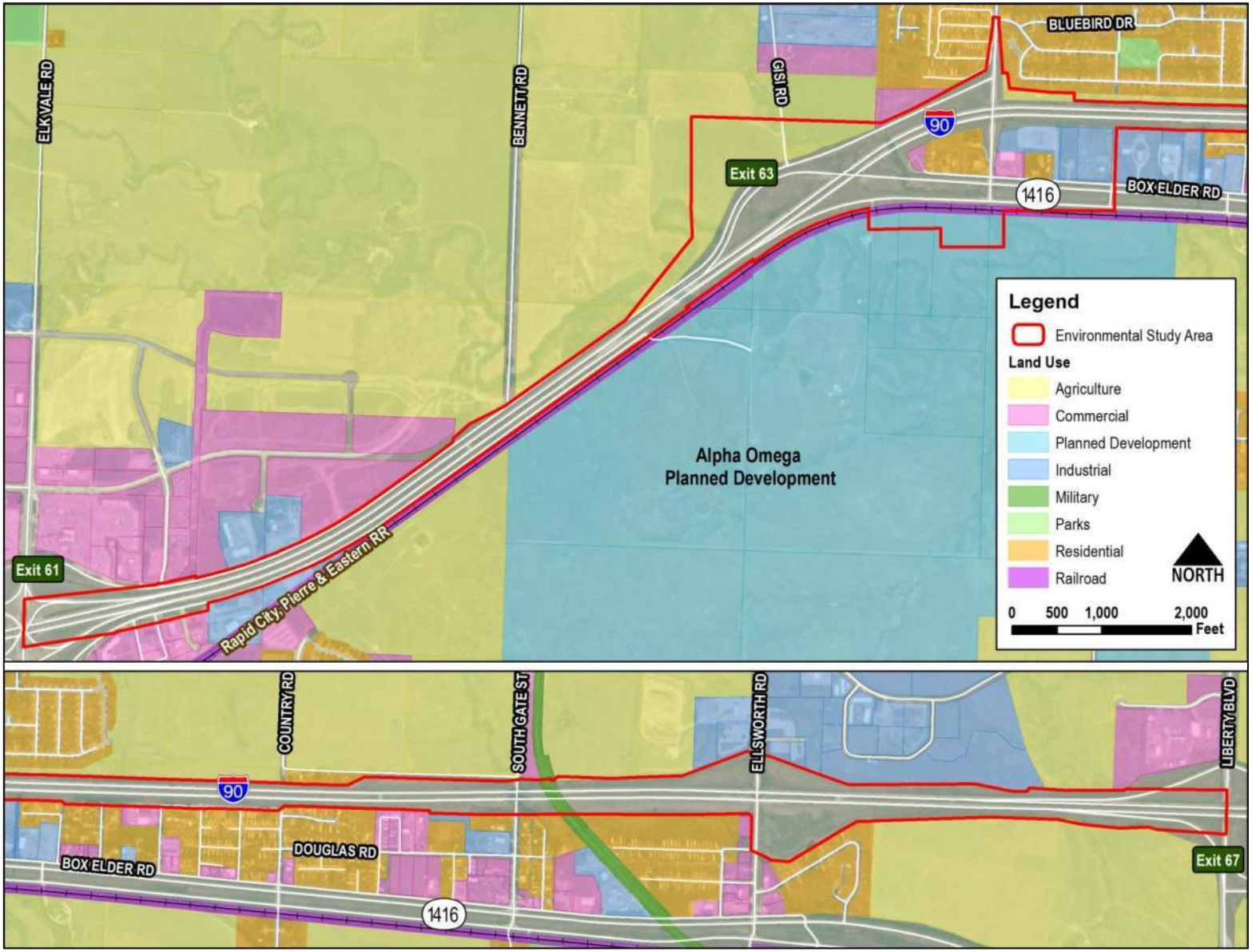
The environmental study area consists of mostly transportation use, with a mix of land uses including undeveloped/agricultural, residential, military and commercial (**Figure 15**). City of Box Elder land immediately adjacent to the interstate includes commercial development and residential subdivisions with numerous homes immediately adjacent to mainline I-90 right-of-way. The Alpha Omega planned development located south of I-90 Exit 63 (see **Figure 15**), was also identified, and incorporated into the traffic forecasts. The development will consist of a mix of uses including commercial, residential, light industrial, RV area, and a greenway park. Ellsworth AFB is located immediately north of the environmental study area's eastern portion and its accompanying Air Installation Compatible Use Zones (AICUZ) influence land use decisions beyond Ellsworth AFB boundaries within the environmental study area. The AICUZ is intended to identify and restrict land uses in locations that might obstruct or otherwise be hazardous to airfield operations and identify land areas which are exposed to health, safety, or welfare hazards due to airfield operations.

Figure 14. Planning Context

Entity	Goals	Documents	I-90 Input
SDDOT	Safe and effective transportation system	2000/2010 Decennial Interstate Corridor Study Involvement in Meade and Pennington County and BESTPlan Transportation Plans	Need for reconstruction/rehabilitation of pavement by 2024 Preserve opportunity for future widening Alternatives developed for Exit 63 interchange
Ellsworth Development Authority	Maintain the operational mission of EAFB while accommodating surrounding activity and protecting public health and safety	2009 Moving Forward with Ellsworth Transportation Work Plan 2016 Ellsworth AFB Joint Land Use Study (JLUS)	Prior documents support full interchange at West Gate Road as replacement for Exit 63 Interchanges should be located outside of protected zones
Ellsworth Air Force Base	Continuing success of operational mission		
City of Box Elder	Community vitality, sustainability, and financial health	2014 BESTPlan Zoning regulations	I-90 access instrumental to commercial viability, seek compatibility with local development
FHWA	Improve mobility through national leadership, innovation and program delivery	Design and planning standards for Interstate facilities, procedural documents	I-90 planning process should follow regulatory guidance, set stage for needed approvals and environmental document(s) Current Exit 63 not compliant with policy of all movements
Rapid City Area MPO	Focus on effective regional transportation planning/federal funding coordination	2015 RapidTrip 2040, Regional Long Range Transportation Plan	I-90 Growth forecasts in regional model Planning oversight/approvals

Source: SDDOT 2017

Figure 15. Existing Land Use



2.1.3 Next Steps

The proposed project resulting from this study are unlikely to directly alter land use within the project corridor. However, the proposed project could indirectly alter land use as future corridor improvements may facilitate residential, commercial, or industrial development and growth. Future development along the corridor would be guided by zoning and land use plans established by the City of Box Elder, Ellsworth AFB, RCAMPO, and Pennington County. During the NEPA process, the Alpha Omega planned development, the Ellsworth AFB AICUZ, as well as other planned developments within the area will be further evaluated for direct and indirect effects resulting from the proposed project(s). The proposed project(s) will be further investigated to determine if they would be consistent with local land use, growth management, and development plans, as well as population and employment projections by comparing the most recent plans established by Ellsworth AFB, as well as the City of Box Elder, the RCAMPO, and Pennington County.

2.2 Environmental Justice

2.2.1 Regulatory

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations, directs federal agencies to incorporate environmental justice in their decision-making process. In accordance with Council on Environmental Quality (CEQ) guidance (CEQ, 1997), environmental justice (EJ) populations occur where either:

- The minority or low-income population of the affected area exceeds 50 percent.
- The population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographical analysis.

Title VI of the Civil Rights Act of 1964 (Title VI) ensures that individuals are not excluded from participation in, denied the benefit of, or subjected to discrimination under any program or activity receiving federal financial assistance based on race, color, or national origin (42 United States Code [USC] 2000d et seq.). Executive Order 12898 on environmental justice directs that programs, policies, and activities not have a disproportionately high and adverse human health or environmental effect on minority and low-income populations (59 FR 7629).

When federal funding or a federal action is involved, the lead federal agency procedures for identifying EJ populations should be followed. The potential for disproportionately high or adverse impacts to be borne by EJ populations when compared to the non-EJ populations will need to be determined. Additionally, the opportunity for EJ populations to participate fully in the decision-making process must be provided. The denial, reduction, or delay of receipt of benefits by minority and low-income populations cannot occur.

2.2.2 Methodology

To be consistent with the requirements of Title VI and Executive Order 12898, demographic characteristics of the environmental study area were examined to determine whether the proposed project would affect minority or low-income populations (see **Appendix B**).

The demographic and economic character of the environmental study area was compared with that of Meade County and the state of South Dakota using data from the 2010 Census (USCB, 2020a) and the

2014-2018 American Community Survey (ACS) 5 Year Estimates (USCB, 2020b). The project was also investigated for the presence of Limited English Proficiency (LEP) populations to determine whether LEP outreach is warranted (USCB, 2020c). In general, a threshold of 5% of the population is considered the trigger level for LEP outreach.

2.2.3 Existing Conditions

Census tract and census block group data were analyzed to determine if minority, low-income, or LEP populations exist in the environmental study area, as presented in **Table 2**. Census Tract 114, Block Group 1 and Census Tract 115, Block Group 1 are considered EJ populations because the percentages of low-income households in these block groups exceed both county and state percentages. Census Tract 109.03, Block Group 1, Census Tract 115, Block Group 1, and Census Tract 116, Block Group 2 are all considered EJ populations because the percentages of minority populations in the block groups exceed the percentages of both Pennington County and the State of South Dakota.

Census Tract 115, Block Group 1 consists of the Ellsworth AFB. With relatively low LEP percentages, no census tracts within or adjacent to the I-90 Exit 63 project has more than 1%, which is well below the general threshold of 5% that would trigger outreach.

Census blocks with a higher percentage of minority and low-income populations were evaluated for effects. Mitigation measures, including outreach and engagement in implementing a given project, will be put into place in order to offset impacts to EJ populations.

This project would have positive impacts on residents, including the identified EJ populations, living in the neighborhoods surrounding the project corridor by improving the current conditions for vehicular traffic, regardless of demographics. All populations, regardless of demographics, will benefit from reduced congestion and more reliable travel times as a result of the project. The I-90 Exit 63 project will accommodate multimodal connections and increasing traffic demands, as well as improve traveler safety and operational efficiency.

Table 2. Environmental Justice Populations

Area	Minority Population*	Population Below Poverty Level**	LEP Population***
South Dakota	17.3%	20.8%	2%
Pennington County	19.5%	21.0%	1%
Census Tract 109.03, Block Group 1	9.8%	12.6%	1%
Census Tract 109.03, Block Group 2	**20.1%**	18.8%	1%
Census Tract 114, Block Group 1	15.8%	**28.6%**	1%
Census Tract 115, Block Group 1	**46.3%**	**54.2%**	0%
Census Tract 116, Block Group 2	**22.1%**	9.1%	1%

**Minority population includes all races other than white, plus Hispanics and Latinos regardless of race (USCB 2020a).*

***Data on low-income persons collected from American Community Survey 2014–2018 5-year estimates (USCB 2020b).*

****Data for the Census Tract level and reflects the population older than 5 years that speaks a language other than English and speaks English less than very well. (USCB 2020c).*

BOLD indicates minority population percentages which exceed both the state of South Dakota values as well as Pennington County percentages

As discussed in **Section 1.7.1**, SDDOT held a virtual open house meeting from January 20, 2021 to February 20, 2021. The following tools were used to make sure anyone interested in learning about the project and providing input were able to access the information:

- Press Releases: Notices were posted in the Native Sun and Rapid City Journal.
- Door Hangers: The project team hung door hangers within the EJ communities along the project corridor, which included a space for hand-written comments that could be returned to Box Elder City Hall.
- Social Media Posts: The City of Box Elder posted this project on their social media accounts a couple of times during the comment period.
- Postcards: Postcards were mailed to households within the project corridor.
- Electronic Flyer: An electronic flyer was sent to provide project information to inquiring members of the public.

The virtual open house was posted to the project website located at www.i90exit63.com and as an alternative to providing comments via the website, the Box Elder Town Hall hosted office hours for members of the public to provide input. Members of the public could use a computer to view the project materials and provide handwritten comments each Wednesday over the lunch break from 12:00-12:30 and Thursday from 4:00-4:30 for the duration of the comment period.

2.2.4 Next Steps

A detailed EJ analysis should be completed during the NEPA process to verify the projects resulting from this corridor study do not have a potential for disproportionately high or adverse impacts on EJ populations. The analysis should also identify ways to avoid and mitigate for any impacts.

During construction, temporary short-term impacts such as noise, air quality, traffic congestion, and access detours will affect business owners and nearby residents who use the corridor regularly. The temporary project impacts from construction will affect all residents and travelers, including the identified EJ populations; however, the mitigation measures and benefits of the widening project will offset the impacts to the minority or low-income populations. Mitigation measures for project information for those without internet access may include the following:

- Printed materials such as door hangers and project flyers
- Mailing comment sheets and postcards
- Posting meeting information in the local newspapers
- Provide internet access at public venues, such as the public library.

Mitigation for construction impacts shall consider implementation of the following measures, as appropriate:

- Community facilities within the Environmental Study Area (e.g., the recreation center, parks, trails, etc.) will remain open and accessible during construction.
- Access to local neighborhoods and businesses will be maintained. The exact location of detour notifications and signage will be determined during final design.

- Vehicular traffic and access to local businesses will be maintained throughout construction using construction traffic control methods.
- A phased-construction approach will be implemented to minimize the degree of disruption to business owners.
- During final design, access points (e.g., new, modified, or combined) will be identified in a formal access-control plan. The access points will be constructed in accordance with Americans with Disabilities standards.
- Access to sidewalks and trails will be maintained. The exact location of sidewalk detour routes and trails will be determined during final design.
- Identify methods to minimize delays and provide access to properties during construction through coordination with emergency-service providers.
- Two through lanes (one eastbound and one westbound) with a turn lane at all times will be maintained during the phased construction.

Construction activities shall comply with local noise ordinances such that noise will be minimized during construction. The following measures will be implemented as mitigation measures for noise:

- Notify neighbors in advance when construction noise may occur.
- Keep noisy activities as far from sensitive receptors, as possible.
- Keep exhaust systems on equipment in good working order. Maintain equipment on a regular basis and/or subject it to inspection by the construction project manager to ensure maintenance is being conducted.
- Use properly designed engine enclosures and intake silencers, if appropriate.
- Use new equipment, which is subject to new product noise emission standards.
- Perform construction activities in noise sensitive areas during hours that are least disturbing to nearby residents, as feasible.

Based on the results of this EJ analysis, the beneficial and adverse effects on EJ populations, needs to be addressed in NEPA and within the applicable resource analysis, such as, air, noise, water quality, property rights acquisition, etc.

Once right-of-way requirements and other impacts can be quantified and associated mitigation measures reviewed, the distribution of impacts should be evaluated to identify whether project activities have the potential to cause disproportionately high and adverse effects to minority and low-income populations. If disproportionately high and adverse effects are identified, additional mitigation measures would need to be considered.

2.3 Social and Economic Resources

2.3.1 Regulatory

Social impacts are modifications to the community that include issues such as travel patterns, accessibility, transit operations, school districts and their operations (e.g., busing), emergency services, induced development, or changes to community cohesion. Economic impacts may affect the regional or local economy and could include changes to tax revenues, public expenditures, employment opportunities,

retail sales, or other impacts to businesses. Socioeconomic impacts may be permanent or temporary. Evaluating the direct and indirect impacts that a transportation project has on socioeconomic resources requires consideration of land use impacts, as well as the consistency of the project with development and planning by a city or other public entity, as discussed in **Section 2.1.**

2.3.2 Methodology

A review was conducted of existing local planning documents to gain an understanding of the local economic conditions of the area. Planning documents included the Box Elder Comprehensive Plan (Box Elder, 2014), Ellsworth AFB Joint Land Use Study (Ellsworth AFB, 2016), Rapid City Comprehensive Plan Rapid City, 2014), and Pennington County Comprehensive Plan (Pennington County, 2020).

2.3.3 Existing Conditions

The I-90 corridor serves as a main thoroughfare for Box Elder, Rapid City, and Pennington County. Within Pennington County, employment and economic generation primarily occurs from tourism, value-added agriculture, the Rapid City Regional Airport, Regional Health, and Ellsworth AFB (Pennington County, 2020). Rapid City has the highest concentration of jobs in Pennington County and many Box Elder residents commute to Rapid City via I-90 (Box Elder, 2014). Much of the local economics along the project corridor in Box Elder appears to be driven primarily by Ellsworth AFB, the travel industry, retail businesses, and some heavy industrial developments.

It is expected that future growth will continue to be driven by Ellsworth AFB, Rapid City and Box Elder. Residential growth in the unincorporated areas surrounding Rapid City and Box Elder will continue, which will require joint planning between with cities, Ellsworth AFB, and the County in order to provide growth that fits the needs of all residents, current and future (Pennington County, 2020). Ellsworth AFB will require protections to ensure long-term compatibility between new development and air operations.

The proposed project would be expected to provide an overall benefit to the socioeconomic characteristics of the area. The project would address needed improvements to the interchange configuration and would improve traffic operations. These improvements would be beneficial to the traveling public by improving the safety and reliability of the transportation assets. The improvements in traffic operations would be an overall benefit to residences in the area, particularly those needing to access Ellsworth AFB and neighborhoods southeast of the intersection.

Potential negative impacts would primarily be temporary access restrictions and possible traffic detours during construction. However, because local access to individual properties would be accommodated through phasing, short-term impacts to local businesses from construction activities and detours would not be expected to result in the failure/closure of any of the existing businesses within the environmental study area. Parking at businesses is not anticipated to be impacted.

2.3.4 Next Steps

Careful consideration must be given to the needs of future residential developments and access requirements of local businesses and industry sectors driving growth within the community. It is anticipated that improvements would have positive impacts on social and economic resources by accommodating increasing traffic demands and improving traveler safety and operational efficiency. During the NEPA process, socioeconomic resources will be evaluated for direct and indirect impacts that could occur as a result of the transportation project(s).

2.4 Bicycle and Pedestrian Facilities

2.4.1 Regulatory

Bicycle and pedestrian facilities are important components in a community's transportation infrastructure. Promoting development of facilities for use by pedestrians and bicycles is an important consideration during transportation planning.

2.4.2 Methodology

A desktop analysis was performed to identify existing and proposed pedestrian and bicycle facilities within the study area. Various tools were used to identify these resources including GIS data, maps, aerial imagery, and local plans.

2.4.3 Existing Conditions

Currently, the study area is lacking pedestrian and bicycle facilities. The RCAMPO recently completed a bicycle and pedestrian plan (RCAMPO, 2020) and it identifies the area around the Exit 63 interchange as having low latent demand for both bicycles and pedestrians. However, the plan includes the following regional projects:

- Railway trail (bicycles and pedestrians) along the Rapid City, Pierre & Eastern (RCP&E) Railroad corridor between 1st Street (Rapid City) and ¼ mile east of West Gate Road (Box Elder), including the Exit 63 area.
- Buffered Bicycle Lane along Country Road and West Gate Road between Elk Vale Road and Highway 1416, including a crossing of I-90 along West Gate Road.
- Buffered Bicycle Lane along Highway 1416 between West Gate Road and Ellsworth Road.

The Box Elder Strategic Transportation Plan (BEST) also has plans to connect pedestrian and bicycle access from schools and residential areas in north Box Elder to residential, recreation, and commercial areas to the south (Box Elder, 2014). The Plan includes constructing a side path along Ellsworth Road between 225 Street and Highway 1416 and constructing a sidewalk along Ellsworth Road between Highway 1416 and Tower Road.

2.4.4 Next Steps

Consideration must be given to the future needs of bicyclists and pedestrians within the study corridor. During the NEPA process, these resources will be evaluated, and the projects will be designed to accommodate future bicycle and pedestrian use and will not preclude any planned bicycle and pedestrian improvements from occurring.

2.5 Air Quality

2.5.1 Regulatory

Through the Clean Air Act (CAA), National Ambient Air Quality Standards (NAAQS) were established for six criteria air pollutants: carbon monoxide, particulate matter, lead, sulfur dioxide, nitrogen dioxide and ozone. Each state has evaluated its air quality with respect to the NAAQS. Any areas that exceed the NAAQS are designated as nonattainment areas and are subject to more rigorous air pollution control measures. Over time and with air quality improvements, nonattainment areas may transition into NAAQS

maintenance areas or NAAQS attainment areas. Transportation sources are most closely associated with carbon monoxide, particulate matter, nitrogen dioxide and chemical precursors of ozone.

A group of hazardous air pollutants are regulated under the CAA; a subset of which are called mobile source air toxics (MSAT). The CAA also covers greenhouse gases (GHG).

The CAA established mandatory Class I federal areas, which receive extra protection and consideration from impairment from man-made air pollution. This primarily focuses on visibility/haze and aerosols from large industrial sources and includes prevention of significant deterioration to the air quality.

For reasons described in the following section, the CAA transportation conformity regulations do not apply in South Dakota. However, the SDDOT Environmental Procedures Manual (2019) states:

> "*Air quality is an environmental concern within the broad purview of NEPA and the thresholds/screening criteria included in the transportation conformity regulations and guidance can be helpful in deciding whether an air quality analysis of a proposed transportation project is warranted for NEPA purposes."*

SDDOT has the option to consider transportation conformity concepts voluntarily. Such voluntary analyses are determined case by case.

2.5.2 Existing Conditions

South Dakota currently has no air quality nonattainment or maintenance areas designated by the U.S. Environmental Protection Agency (USEPA) for NAAQS pollutants under the CAA. This is indicative of good overall air quality across the state. Consequently, the federal CAA transportation conformity regulations do not apply in South Dakota, and transportation projects, in general, would be expected not to be concerns regarding the NAAQS. Anticipated air quality impacts could be attributed to source and fugitive emissions. Fugitive emissions are not covered under State air quality regulations, though a common source of public concern.

2.5.3 Next Steps

If SDDOT decides to consider transportation conformity during the NEPA phase of this project, carbon monoxide and particulate matter guidance from the 2019 Manual should be referenced. Considerations may involve:

- **Carbon Monoxide**: Intersections operating at LOS A, B, or C do not require consideration of localized carbon monoxide hot-spots because hot-spots are only an issue at very congested intersections with high traffic volumes. Existing or future (2040) intersections operating at LOS D, E, or F are considered very congested and may warrant a hot spot analysis.
- **Particulate Matter**: The need for particulate matter analysis for projects that qualify for categorical exclusions is unlikely. Projects meeting one or more criteria for "projects of local air quality concern" could warrant consideration of PM hot-spot analysis. The likelihood of this project being considered a project of local air quality concern is very low.

The project is located outside of the area covered under South Dakota's Natural Events Action Plan - High Winds - for Rapid City (2005), so it will not apply. The west end of the project corridor is within the Rapid City Area Air Quality Control Zone (Rapid City, 2013). The project corridor is only within the Pennington County portion of the Zone, so construction and related activities of the I-90 improvements

in that area will need to comply with Pennington County Ordinance No. 12. During NEPA, these conditions will need to be reviewed and confirmed for the ultimate project design. Because the project is near Rapid City, SDDOT will determine as part of NEPA whether an air quality permit is necessary prior to construction.

The need for and extent of MSAT or GHG analyses generally depend on the NEPA class of action. These analyses may be either qualitative or quantitative (FHWA, 2016). An environmental assessment or an environmental impact statement generally requires progressively greater consideration of MSAT and GHG. The level of analysis needed for these will be determined when the NEPA decision for the corridor is made.

Analysis of construction emissions is not needed for most projects. Permits are likely to be needed for construction, and typical best practices should be required to minimize construction emissions and address air quality issues.

2.6 Noise

2.6.1 Regulatory

At the federal level, highway traffic noise is addressed under 23 CFR 772. The Noise Analysis and Abatement Guidance within the Environmental Procedures Manual (2019) is SDDOT's compliance with 23 CFR 772 and guides highway noise analyses in South Dakota. These regulations apply to projects that receive federal funding or are otherwise subject to FHWA approval. State-only actions do not require a noise analysis.

Some, but not all, federal-aid or federal-approval highway improvement projects will require a traffic noise analysis. Type I projects require a noise analysis; South Dakota does not participate in Type II projects; Type III projects are exempt. Because no new through lanes are currently planned, an improvement would most likely be considered a Type I due to a substantial vertical shift in the road surface near a receptor or a shift in the road alignment that halves the distance between the road and a receptor. In most other cases, the project is likely to be Type III.

2.6.2 Methodology

The project will be Type I as it will construct a new interchange and add lanes to I-90. Consequently, the evaluation was based on noise modeling of 2019 conditions using TNM Version 2.5 software following the procedures in the *SDDOT Noise Analysis and Abatement Guidance* (2011). No on-site noise measurements were taken for this effort.

The noise evaluation considered 2019 conditions in the noise study area. Traffic volumes and fleet mix data were obtained from the traffic IMJR study being completed by FHU for the project. Afternoon peak traffic volumes were used for the modeling because they were the highest and contained the greatest number of heavy trucks on I-90. Noise receptors were located in residential back yards, as they were concluded to be most representative of the exterior areas of frequent human use, or in applicable commercial areas. The modeling made use of common noise environments where multiple nearby receptors in similar settings were represented by a single modeled point (**Figure 16**).

Detailed existing topography data were available, including I-90 overpasses, and were included in the noise model preparation. Building rows were included where appropriate. Receptors were positioned 5 feet above ground surface.

The other substantive noise sources—Ellsworth AFB and RCP&E (**Figure 16**)—cannot be evaluated following the South Dakota DOT guidance or with TNM, so they have been qualitatively evaluated.

2.6.3 Existing Conditions

The project area along I-90 consists of a mix of land uses: undeveloped/agricultural, residential, a church and commercial. Residential areas were concluded to be the primary noise concern in the noise study area. The noise study area extends a minimum of 300 feet from road changes proposed for the project between Exit 61 and Exit 67 (see **Figure 16**).

The results from the 2019 noise modeling for the noise study area are summarized in **Figure 16**. Most modeled locations were calculated not to be affected by traffic noise levels according to the South Dakota DOT criteria. However, several residential locations along I-90 were calculated already to be above the noise level "approaching" the Noise Abatement Criterion (NAC) of 66 decibels from the South Dakota DOT guidance. Given this result, it seems likely that the future design year conditions will see traffic noise impacts from I-90, regardless of the interchange alternative selected or the widening of I-90. During the NEPA process, mitigation options may be analyzed if necessary, as a result of future conditions.

The published noise contours for Ellsworth AFB are presented in **Figure 17**. These noise contours are based on the annual average day-night level (DNL), which is a different metric than the 1-hour equivalent sound level used in TNM, so the values are not directly comparable, but are indicative of each other. Much of the noise study area is within the Ellsworth AFB 65 decibel DNL contour, which indicates that ambient noise levels in the noise study area may reach the approach level for the residential NAC just from Ellsworth AFB operations. The proposed project will not affect Ellsworth AFB operations, nor would there be practical abatement measures available to the project for aircraft noise.

The RCP&E and the at-grade crossings are shown in **Figure 16**. Locomotive horns nominally are required to be 104 decibels 100 feet in front of the locomotive, so these are powerful noise sources within the quarter-mile leadup to the crossings. The proposed project is not expected to affect RCP&E operations or facilities; therefore, these conditions are expected not to change.

I-90 was concluded to be the dominant traffic noise source in the noise study area due to the traffic volume, vehicle speeds and numbers of heavy trucks. Other important traffic noise sources were Highway 1416 and West Gate Road (**Figure 16**). Substantive non-traffic noise sources were also present in the noise study area. Ellsworth AFB is nearby and the RCP&E Railroad parallels I-90 and Highway 1416 through the noise study area (**Figure 17**).

The 2019 noise environment in the noise study area was evaluated with a combination of TNM modeling and qualitative assessment. Several receptors were calculated using TNM to be above the NAC approach noise level for residences from I-90 (**Figure 16**). Ellsworth AFB and RCP&E are substantive nearby transportation noise sources (**Figure 17**); however, neither will be changed by the proposed project.

Figure 16. Noise Study Area and Illustration of Existing Noise Levels

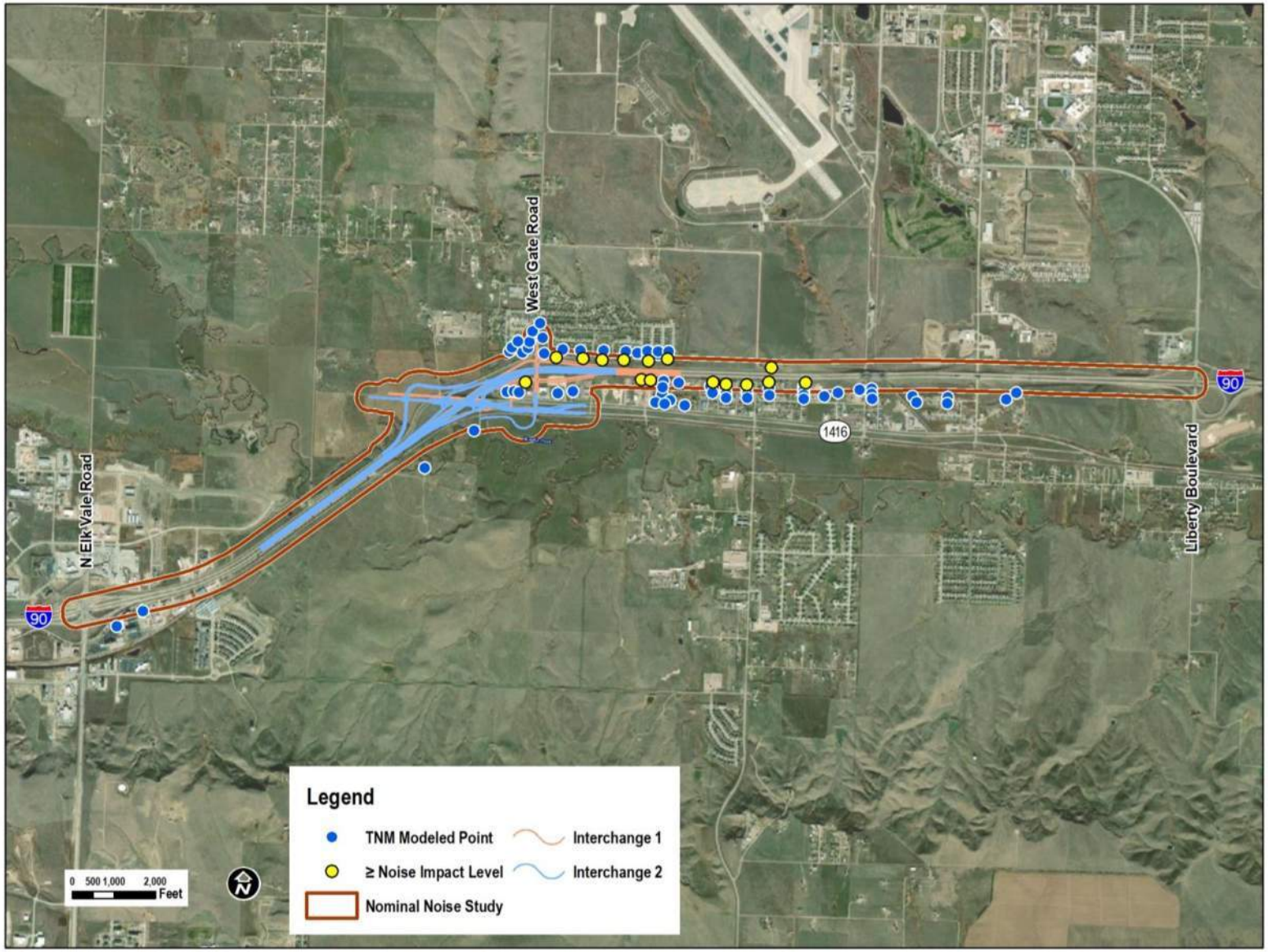
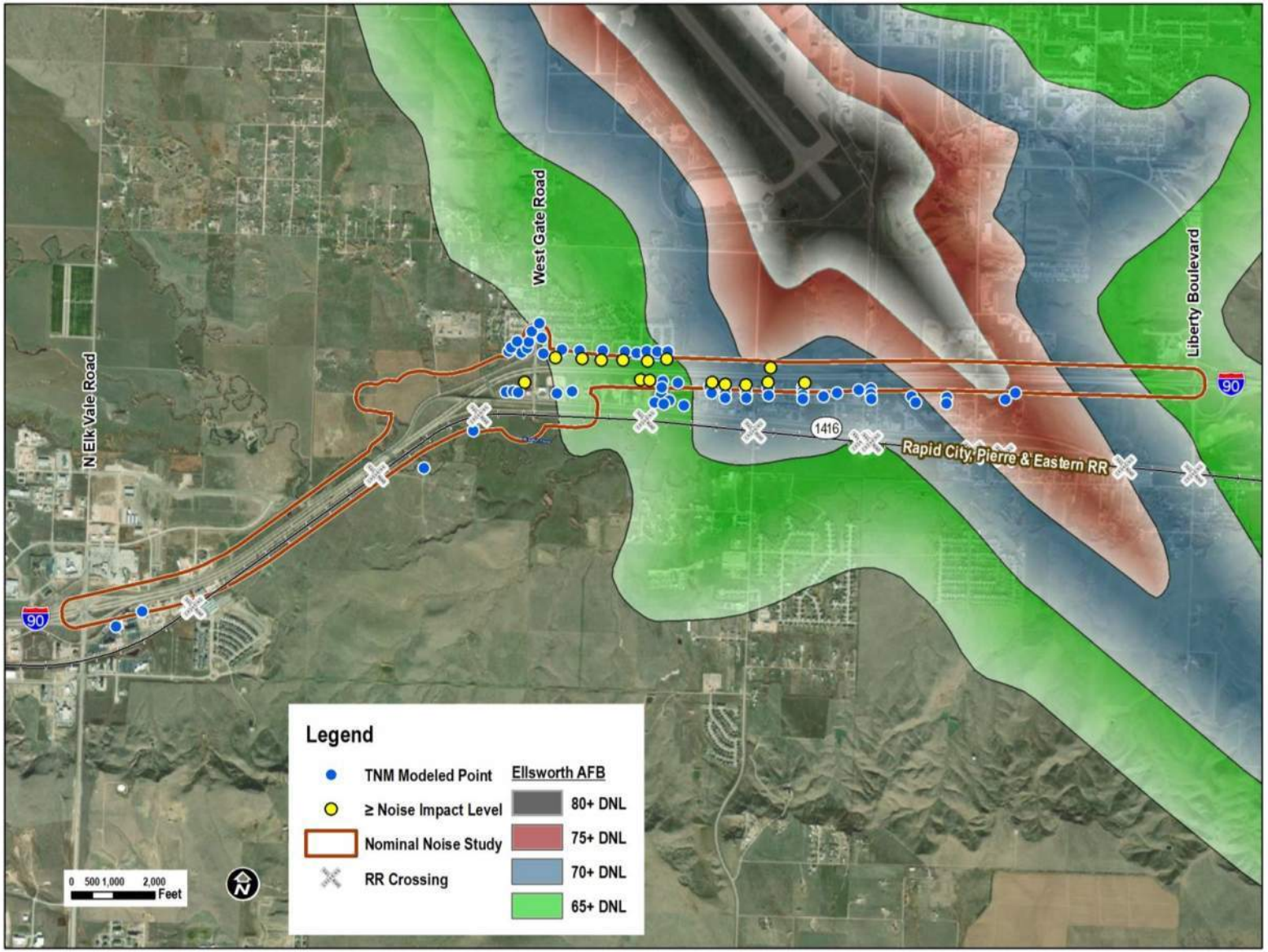


Figure 17. Other Substantive Noise Sources in the Project Area



2.6.4 Next Steps

Several noise analysis steps remain to be completed in the NEPA study based on development and analysis of specific alignment alternatives, including:

- Onsite noise measurements with model validation
- Model and assess the design year proposed action for noise impacts
- Evaluate prospective abatement measures for noise impacts, if necessary
- Determine via scoping whether/how to include Ellsworth AFB and RCP&E in noise analysis
- Prepare technical report with findings and recommendations

2.7 Contaminated Materials

2.7.1 Regulatory

The term contaminated materials is an all-inclusive term for materials regulated as solid waste, hazardous waste, and other wastes contaminated with hazardous substances, radioactive materials, petroleum fuels, toxic substances, and pollutants, as defined in the 2019 SDDOT Environmental Procedures Manual.

2.7.2 Methodology

FHU performed a Contaminated Materials Review (CMR) according to the recommended guidelines established by the ASTM International Standard 1527-13, "*Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*" (ASTM, 2013) to the extent feasible. However, since the project is currently within the Environmental Scan phase and due to the size of the environmental study area, some requirements of the ASTM E1527-13 standard were not met.

The purpose of the CMR was to identify and provide information regarding potentially contaminated materials which may impact or be impacted by the proposed construction activities. FHU evaluated the environmental study area for potentially significant on-site environmental contamination by reviewing maps and literature; environmental records available from local, state, and federal government agencies; aerial photography; and Google Street View. An Environmental Data Resources (EDR) Radius Map report was also obtained by FHU on October 30, 2019. This report provided the available environmental database records within the ASTM recommended search radii of the environmental study area. Additional details regarding regulated materials and the EDR Radius Map report can be found in the CMR located in **Appendix C**.

2.7.3 Existing Conditions

The evaluation of potential contaminated materials identified multiple minor contaminated materials concerns within and adjoining the environmental study area. One identified minor concern is the potential to encounter unreported petroleum contamination due to the operations of the fueling station in the area, potential releases from vehicle incidents, and other industrial activities in the project vicinity. Other identified minor concerns include potential contamination associated with electrical transformers and equipment (which may contain polychlorinated biphenyls (PCBs)), asbestos-containing materials (ACM) and heavy metal-based paints in older structures within and adjoining the environmental study area, and various property stockpiles/collected junk that may contain contaminated materials. These concerns can

be evaluated in the NEPA document once the interchange design has been finalized and impacts to utilities and properties in the project vicinity are identified.

A major project-wide and regional concern identified is due to the substantial contamination on the Ellsworth AFB that had continued remedial and monitoring activities over the past three decades. The Ellsworth AFB is currently listed on the Final National Priorities List and ongoing issues on the property and in the project vicinity are further discussed in **Appendix C**. Based on the information provided for the Superfund property listing by the Environmental Protection Agency (EPA) and South Dakota Department of Agriculture and Natural Resources (SDDANR), and an evaluation of data provided by the EDR, it is believed that groundwater contamination is present within the environmental study area.

2.7.4 Next Steps

A more detailed CMR, following SDDOT guidance, would be needed as part of any future project development. During the planning and design process, the environmental database records would be evaluated with respect to the status of the facility listing and its location within the study area boundaries. In addition to the environmental database review, an on-site visual inspection of the study area and surrounding areas should be completed by a qualified environmental professional, skilled and experienced in identifying hazardous materials and waste issues, to identify and evaluate present conditions.

A review of historical site information such as Sanborn fire insurance maps, U.S. Geological Survey (USGS) topographic maps, and readily available historical aerial photographs should be completed. This review of historical sources should include all obvious uses from the study area's first obvious developed use or 1940, whichever is earlier, to the present time.

The facilities identified in the environmental database would be ranked as having a high, medium, or low potential to impact based on the location of these facilities and known releases. This information can be used to identify avoidance options, when possible, and, if necessary, to assist with the development of specific materials management or mitigation measures.

If full acquisition of property rights might occur, and as mentioned previously, further assessment such as individual Phase I environmental site assessments before the right-of-way acquisition process may also be required. SDDANR does not expect that any hazardous waste sites would be encountered during road construction in rural areas, but urban areas would require additional coordination with their Hazardous Waste – Waste Management Program.

Required Actions

It is recommended that additional coordination with the Ellsworth AFB, SDDANR, and EPA regarding potential contamination in the environmental study area be conducted prior to construction activities. Dewatering activities associated with the project will likely require on-site treatment prior to discharge into natural water bodies or will need to be containerized and properly disposed of offsite. It is recommended that groundwater and soil analysis be conducted throughout the environmental study area to qualify the potential contamination present.

The Contractor shall be responsible for locating the existing underground utilities within the construction area prior to construction within that area. Underground utilities damaged by the Contractor due to negligence shall be repaired at the Contractor's expense.

The Contractor will give notice to the Engineer if contaminated soil is encountered on the project. The Engineer will contact the SDDOT Environmental Office so that contact with the SDDANR and consultant to inspect and monitor removal of any contaminated soil can be initiated

The following mitigation measures shall be carried forward through the NEPA documentation SDDOT environmental commitments for this project:

Hazardous Wastes and Solid Wastes:

- Should any hazardous waste be generated during the implementation of this project, the generator must abide by all applicable hazardous waste regulations found in ARSD 74:28 and 40 CFR Part 262.
- If any contamination is encountered during construction activities, the contractor, owner, or party responsible for the release must report the contamination to the SDDANR at 605-773-3296. Any contaminated soil encountered must be temporarily stockpiled and sampled to determine disposal requirements.
- It is not expected that any hazardous wastes sites will be encountered during road construction in any rural area. However, if road construction is planned for areas within a city or town, the DOT or contractor should contact SDDANR prior to construction.
- Some solid waste may be generated during this project. Any solid waste generated that will not be reused in some beneficial manner must be disposed or managed at a permitted solid waste facility.
- Regional landfills able to accept all solid waste generated are listed on the website available here: https://apps.sd.gov/NR60SolidWaste/main.html#. Only Regional landfills are permitted to accept all wastes generated. If you have any questions please contact Waste Management at 605-773-3153.
- Demolition or renovation of a building structure may be subject to asbestos abatement requirements. If demolition is part of the construction project please contact SDDANR's Asbestos Coordinator at 605-773-3153.

Potential Lead Based Material:

- Because the scope of work for this project involves demolition or other activities that would require the removal of paint from the existing bridges, a lead inspection will be required. There is potential for lead-based paint to be found on bridge's painted components. If the method of removal of the components generates paint debris, the waste shall be handled in accordance with SDDOT's Standard Specification for Roads and Bridges (Section 412), Environmental Procedures Manual, and SDDANR's Hazardous Waste Regulations. Extreme caution shall be taken to minimize the amount of potential lead-based painted material or debris from causing or threatening to cause pollution of the air, land, and waters of the State. The contractor shall develop a removal and disposal plan in coordination with a licensed Lead Removal Contractor and SDDOT. A list of Licensed Lead Testing and Removal Contractors can be found at: https://danr.sd.gov.

2.8 Climate Change/Equity

2.8.1 Regulatory

Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other elements of the earth's climate system. Extreme weather or environmental conditions can pose threats to transportation infrastructure and those that depend on it. Sustainability addresses current needs in consideration of future needs by balancing economic, environmental, and social values.

The Executive Order on Advancing Racial Equity and Support for Underserved Communities Through the Federal Government (EO 13985) pursues a comprehensive approach to advancing equity for all, including individuals who have been historically underserved and adversely affected by persistent poverty or income inequality. An important area for focus is the disproportionate, adverse safety impacts that affect certain groups on our roadways.

2.8.2 Methodology

The EPA Environmental Justice Screening and Mapping Tool (EJScreen) (EPA, 2022) was used to evaluate the area for Environmental Justice Indexes and Climate Change Data. The EJScreen Report evaluated the adjacent block groups (shown on **Figure 18**) around the I-90 corridor between Exit 61 and Exit 67. EJScreen can help identify areas that may warrant additional consideration, analysis, or outreach, which helps to identity potential areas of concern.

2.8.3 Existing Conditions

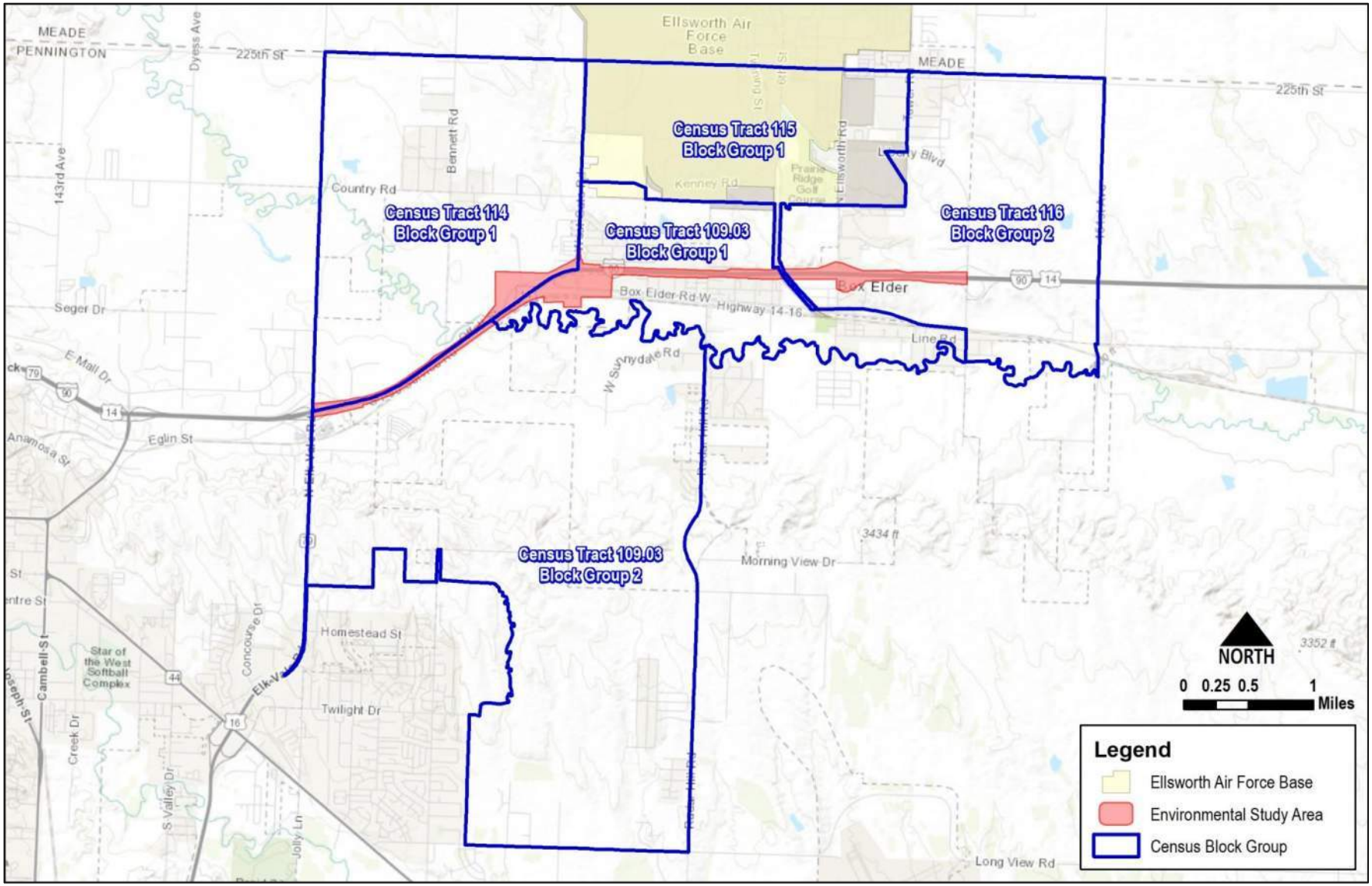
EJ communities including people of color, indigenous people, low-income individuals, and people living in polluted areas are often affected by climate change more than other groups. There are eleven EJ Indexes in EJScreen reflecting the twelve environmental indicators. **Table 3** presents the EJ indexes related to pollution sources to the State, EPA Region, and United States percentile.

Table 3. Environmental Justice Indexes

EJ Index	State Percentile	EPA Region Percentile	USA Percentile
EJ Index for Particulate Matter 2.5 ($\mu g/m^3$)	49	54	42
EJ Index for Ozone (ppb)	52	59	38
EJ Index for 2017 Diesel Particulate Matter ($\mu g/m^3$)	45	55	48
EJ Index for 2017 Air Toxics Cancer Risk (lifetime risk per million)	44	47	39
EJ Index for 2017 Air Toxics Respiratory HI	49	53	43
EJ Index for Traffic Proximity (daily traffic/distance to road)	16	31	18
EJ Index for Lead Paint (% Pre-1960 Housing)	63	43	39
EJ Index for Superfund Proximity (site count/km)	3	17	12
EJ Index for RMP Facility Proximity (facility count/km)	58	58	41
EJ Index for Hazardous Waste Proximity (facility count/km)	33	49	38
EJ Index for Underground Storage Tanks (count/km^2)	37	42	31
EJ Index for Wastewater Discharge	65	58	39

Source: EJScreen, EPA, 2022

Figure 18. Census Block Groups Evaluated in EJScreen



The EJ index is a combination of environmental and demographic information. The demographic information includes percent low-income and percent people of color (as the Demographic Index), and total population of the block group. The formula for calculating the EJ Index is as follows:

> *EJ Index = (Environmental Indicator) X (Demographic Index for Block Group – Demographic Index for US) X (Population Count for Block Group)*

The EJScreen shows the values for environmental and demographic indicators and EJScreen indexes. It shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed.

While none of the EJ indexes were close to the 80th percentile or higher in the State, EPA Region, or Nation, which may indicate a population of concern, the two highest percentiles consisted of the EJ Index for Lead Paint at the 63rd percentile for the State and the EJ Index for Wastewater Discharge at the 65th percentile for the State.

The EJ Index for Lead Paint is determined by the percentage of occupied housing units built before 1960. This was selected as an indicator of the likelihood of having significant lead-based paint hazards in the home (EPA, 2019). Certain demographic groups may be more susceptible to lead exposure. The study area block groups were at the 63rd percentile for the State, which means 37 percent of the State has a higher block group value than the average person in the block groups being analyzed for this study.

The EJ Index for Wastewater Discharge is determined by the toxicity-weighted concentration in stream reach segments within 500 meters of a block centroid, divided by distance in meters, presented as the population-weighted average of blocks in each block group (EPA, 2019). Pollutants in water can have human health or adverse ecological effects, depending on concentration in the water, exposure to the water, toxicity of the particular chemical and other factors. The study area block groups were at the 65th percentile for the State, which means 35 percent of the State has a higher block group value than the average person in the block groups being analyzed for this study.

The climate data from the EJScreen indicated that there was a low to moderate potential for wildfire hazard. The change in drought from 1900-2020 indicated a 0.49 on the Five-Year Standardized Precipitation Evapotranspiration Index (SPEI), which means that the area showed a slight increase in moisture. The climate data also showed the block groups contained the 100-year floodplain for Box Elder Creek and its tributaries and the area was not susceptible to sea level rise.

2.8.4 Next Steps

During the NEPA process, projects will evaluate climate change/equity in more detail including strategies for effective mitigation and adaptation in regard to resources such as greenhouse gas reduction, flood resiliency, and equity.

2.9 Visual Resources

2.9.1 Regulatory

Visual resources are the natural and cultural features of the landscape that define its aesthetic quality and form the overall impression, or visual character, of an area. Visual impacts can generally be defined in terms of the relationship between the area's physical characteristics, the presence and location of viewers, and the character and quality of the environment in which a project is located.

2.9.2 Methodology

This visual analysis follows guidance from FHWA's Guidelines for the Visual Impact Assessment (VIA) of Highway Projects (FHWA, 2015), for assessing impacts on visual resources, in context to the National Environmental Policy Act (NEPA). The following sections provide an overview of the landscape character and pattern of viewers within the I-90 project corridor; and outline next steps in the NEPA process.

2.9.3 Existing Conditions

This section describes the landscape character, viewers, and distinct viewsheds associated with the I-90 corridor between Elkvale Road (MRM 62.15) in Rapid City, and Liberty Rd (MRM 66.17) in Box Elder. As shown in Figure VR.1 Landscape Character, the I-90 corridor crosses three distinct landscape types or units:

- Unit A: I-90/Elkvale Interchange
- Unit B: Boxelder Creek wetlands and floodplain
- Unit C: Box Elder Community

Landscape Unit A

The I-90 interchange east of Elkvale Rd is bordered by a mix of hotels, commercial, and recreation complexes. The pattern of large-scale 1 to 4 story buildings are set back from the I-90 right-of-way, with frontage road access. The Black Hills form a rolling horizon line to the west, while the eastern horizon line is generally flat with vast, unlimited viewsheds.

Landscape Unit B

The meandering pattern of the Box Elder Creek, with a diversity of trees, shrubs, and native grasses form a visually harmonious landscape within the foreground of I-90. The Black Hills and rolling prairie grasslands create a distinctive panoramic backdrop to the west.

Landscape Unit C

The I-90 interchange bridges at Highway 1416 and West Gate Rd establish a western gateway into Box Elder, as shown on Figure VR.1. There is a continuous mix of residential, commercial/industrial, and agriculture adjacent to the south side of the I-90 corridor between West Gate Rd and Liberty Road. The residential community north of I-90 is concentrated between West Gate Rd and Country Rd, while the remainder of the landscape adjacent to I-90 is primarily in agriculture and limited industrial uses along the southern edge of Ellsworth Air Force Base. The Box Elder Interstate 90 Corridor Master Plan (2021) includes a landscape buffer adjacent to the residential and mixed-use development adjacent to I-90.

Summary

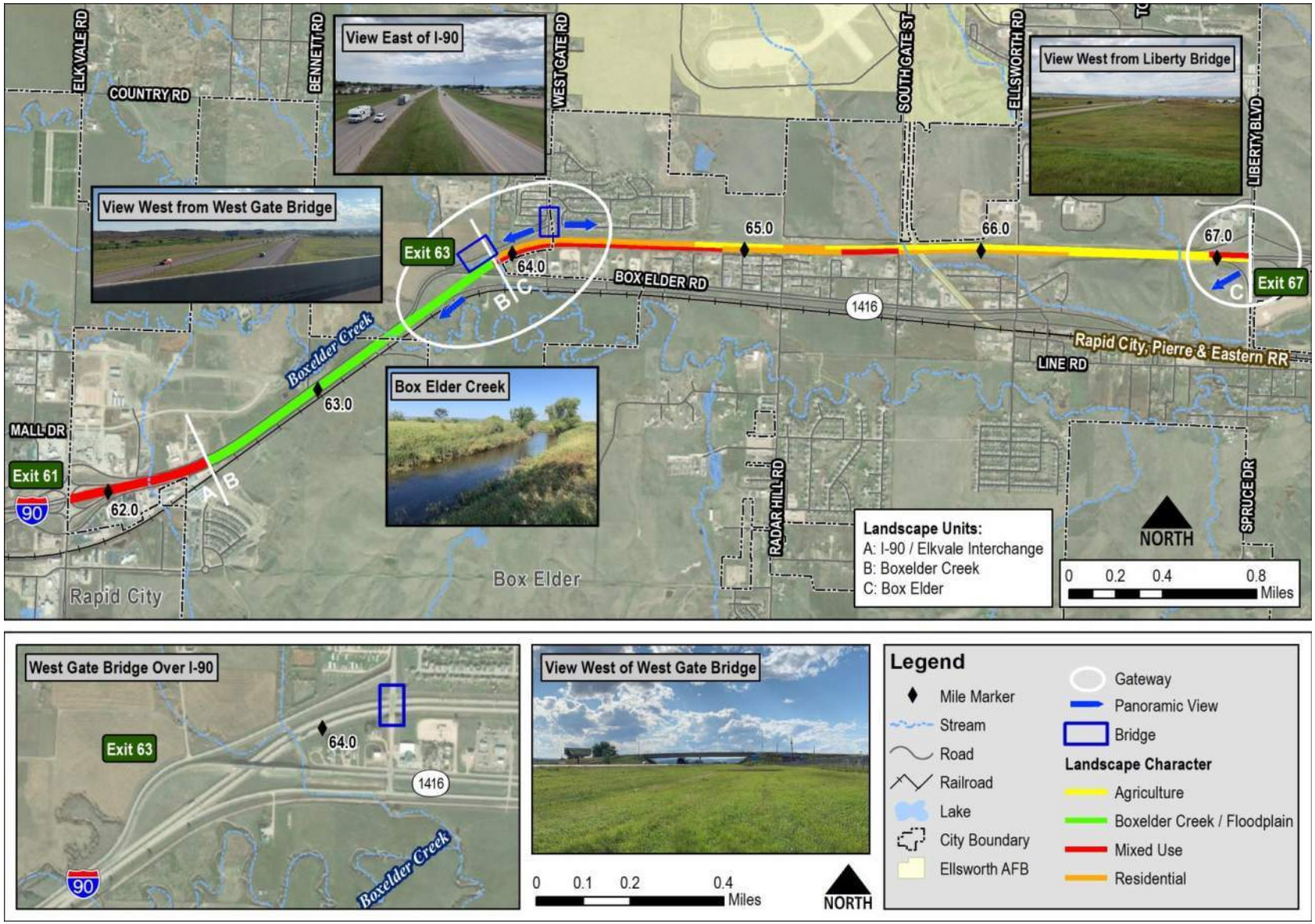
As shown in **Figure 19**, the section of I-90 proposed for future lanes traverses a diversity of landscape types and viewers within the limits of the proposed project between Elkvale Road (MRM 62.15) in Rapid City, and Liberty Rd (MRM 66.17) in Box Elder. The proposed I-90 & West Gate interchange improvements would be within foreground views from adjacent residents. The expansive Boxelder Creek riparian corridor is a distinctive and visually harmonious landscape, with panoramic views of rolling Black Hills horizon line to the west.

2.9.4 Next Steps

The following 4-phased approach outlined in the FHWA VIA Guidelines provides direction and criteria for conducting visual resource impact assessments for NEPA compliance:

- **Establishment Phase**: Initial steps involve preparing the Scoping Questionnaire to determine the appropriate level analysis and NEPA documentation; describing the visual characteristics of the proposed project; defining the study area or area of visual effect (AVE); and identifying the landscape unit(s).
- **Inventory Phase**: This phase includes characterizing the natural, cultural, and project environments within the study area; determining the visibility of the project to viewers; and evaluating the visual quality of the landscape setting.
- **Analysis Phase**: Evaluating impacts centers on the visual contrast or level of change the proposed project would have on the landscape character, viewers, and visual quality.
- **Mitigation Phase**: Developing effective mitigation measures for visual impacts is done in coordination with stakeholders, SDDOT, FHWA, and the design team.

Figure 19. Visual Resources



2.10 Floodplain

2.10.1 Regulatory

Floodplains are the lands on either side of a waterway that are inundated when a channel exceeds its capacity. The following regulatory requirements apply to floodplains:

- Executive Order (EO) 11988, Floodplain Management (1977), directs federal agencies to "provide leadership and take action to reduce the risk of flood loss, to minimize the impacts of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains." This EO assists in furthering the NEPA, the National Flood Insurance Act of 1968 (amended), and the Flood Disaster Protection Act of 1973.
- Code of Federal Regulations (CFR), Title 23 – Highways, prescribes the policies and procedures that FHWA is directed to implement in the location and hydraulic design of highway encroachments on floodplains.
- CFR, Title 44 – Emergency Management and Assistance, contains the basic Federal Emergency Management Agency (FEMA) policies and procedures to regulate floodplain management and to analyze, identify, and map floodplains for flood insurance purposes.

2.10.2 Methodology

The 100-year floodplains and floodways were identified using FEMA digital GIS data (**Figure 20**). For projects within the floodplains, local jurisdictions typically require floodplain development permits. The main floodways and floodplains within the environmental study area are those associated with Boxelder Creek and its tributaries. All floodplains within the environmental study area have been classified as "Floodzone A," the area covered by a 100-year flood.

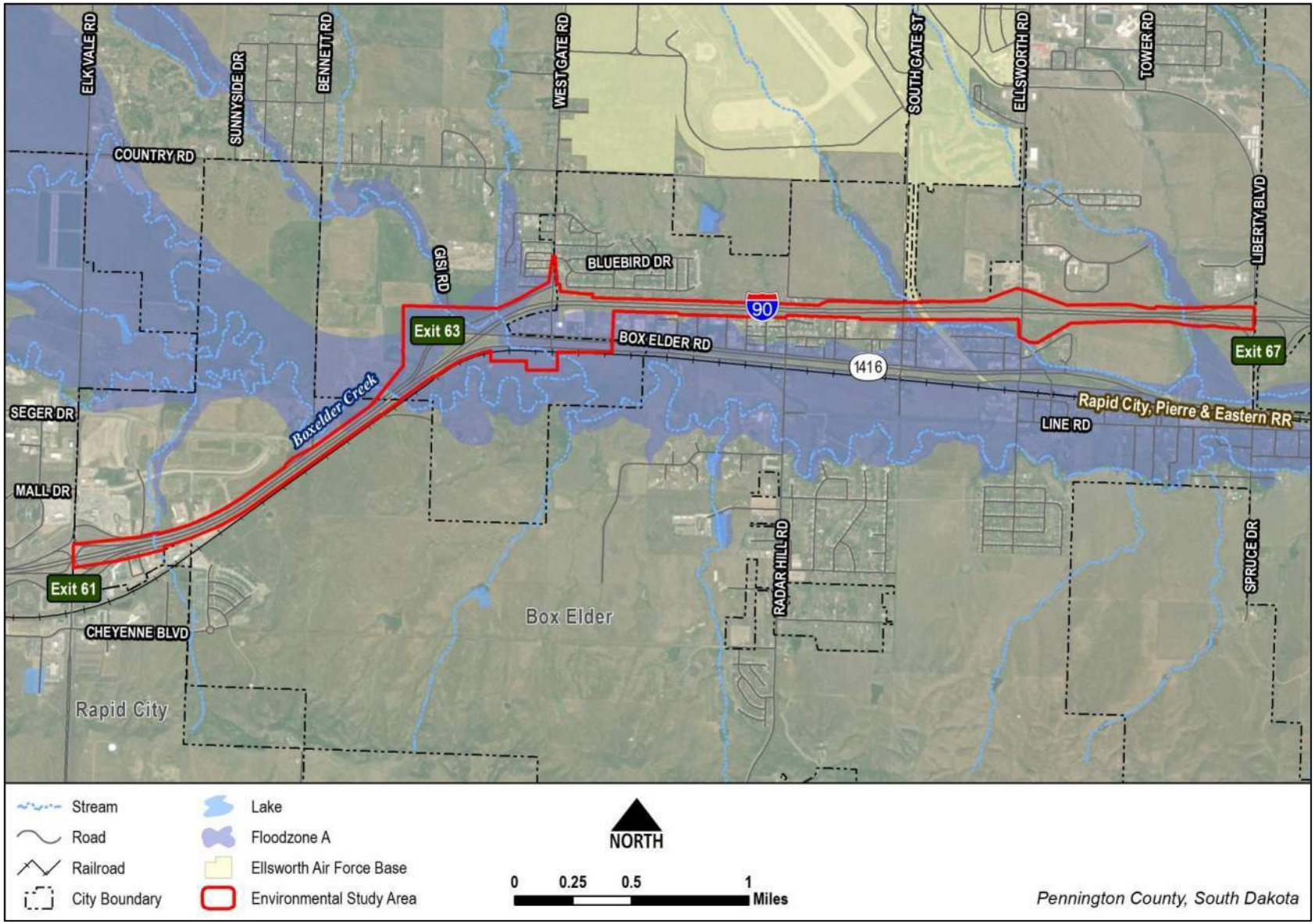
2.10.3 Existing Conditions

A floodplain analysis was conducted to determine if there are potential floodway impacts associated with roadway and interchange improvements within the study area. The study concluded that existing culverts would require upsizing and additional culverts would be needed to mitigate for floodplain impacts. Floodplain modeling was completed and confirmed that the floodplain limits are not substantially different from what is shown on the FEMA maps.

2.10.4 Next Steps

During the NEPA phase, the existing floodplain conditions should be refined during the design process and impacts will be evaluated to determine if measures to mitigate or eliminate impacts will be necessary. A hydraulic analysis should be conducted during the design process to determine if a Conditional Letter of Map Revision (CLOMR) / LOMR would be necessary for the project(s). Engineering design should take into account the floodplain and floodway issues, as well as the location of new culvert crossings, bridges and bridge piers within the floodplain and floodway. Piers located within the floodway would require a specialized hydrologic assessment and approval by FEMA. The proposed improvements should allow passage of the 100-year flood, to avoid or minimize encroachment into floodplains to the maximum extent possible. The placement of piers within the active channel of Boxelder Creek and its tributaries will be avoided or placed in a position to reduce impacts on the stream channel, stream habitat, and biota.

Figure 20. Floodplains



2.11 Wetlands and Waterways

2.11.1 Regulatory

Wetlands and Waters of the United States (WOUS) are protected under Section 404 of the Clean Water Act, as amended (33 USC 1344), and Executive Order 11990 of 1977 (Protection of Wetlands). Discharge of fill into wetlands and WOUS requires a Section 404 permit from the United States Army Corps of Engineers (USACE). Additionally, SDDANR reviews and issues certification for Section 401 of the Clean Water Act, which requires states to review federal projects for water quality certification.

Wetlands are defined as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328). Wetlands and riparian areas are important because they provide habitat for various plant, fish, and wildlife species; serve as groundwater recharge areas; provide storage areas for storm and flood waters; serve as natural water filtration areas; and provide protection from wave action, erosion, and storm damage.

2.11.2 Methodology

A wetland delineation was conducted September 9 and 10, 2019, as well as September 22, 2020 to investigate the possible presence of wetlands or other waters of the United States (WOUS) within the environmental study area (**Appendix D**).

2.11.3 Existing Conditions

Forty-two depressional wetlands, 4 riverine wetlands, and 2 slope wetlands totaling 7.29 acres were delineated within the environmental study area. Additionally, three stream channels (two intermittent, one perennial) were delineated. Encountered wetlands were classified as either palustrine emergent seasonally/temporarily flooded/semi permanently flooded (PEMA/C/F), palustrine scrub-shrub seasonally flooded (PSSA), or palustrine forested seasonally/semi permanently flooded (PFOA/F).

Based on preliminary design, the proposed project will impact wetlands and channels within the environmental study area. Most impacts are anticipated to occur for the construction of the Exit 63 interchange and the relocation of the frontage road on the northwest side of I-90 near Exit 63. Stream channel impacts are anticipated to Boxelder Creek and its tributaries located near Exit 63. Grading for the widening along I-90 could also impact wetlands located within the right-of-way. A USACE Section 404 permit would be required for impacts to wetlands and other WOUS.

2.11.4 Next Steps

A wetland delineation would be required during the NEPA phase of any future project(s). When wetland impacts cannot be avoided through design, adequate time must be built into the project schedule to allow wetland permitting and mitigation. During the NEPA process the impacts to wetlands or streams will be further evaluated. If wetlands or streams are present and would be affected, a USACE Jurisdictional Determination may be necessary. Impacts on jurisdictional wetlands or WOUS would require a Section 404 permit from USACE and may require mitigation. According to the Regulatory In-Lieu Fee and Bank Information Tracking System (RIBITS) the SDDOT Umbrella Instrument was approved on February 4, 2022. During the NEPA process, SDDOT and USACE would be coordinated with if mitigation for wetland impacts would be required.

2.12 Water Quality

2.12.1 Regulatory

Water Quality is regulated under the Federal Water Pollution Control Act Amendments of 1972 (CWA). The objective is to restore and maintain the chemical, physical, and biological integrity of the nation's waters by preventing point and non-point pollution sources, providing assistance to publicly owned treatment works for the improvement of wastewater treatment, and maintaining the integrity of wetlands. Each individual state has jurisdiction for managing water quality in its respective state. Section 303(d) of the CWA requires each state to evaluate water quality conditions in designated water bodies and list as impaired any water bodies not meeting water quality standards; this is to be reported every other year.

2.12.2 Methodology

The 2018 South Dakota Integrated Report was reviewed to determine if any Section 303(d) waterways were identified near or within the study area. The report lists five categories to present information on the Section 303(d) finding in a descriptive and comprehensive manner (SDDANR 2018). Category 5 waterbodies where one or more beneficial uses are determined to be impaired by one or more pollutants and a total maximum daily load (TMDL) has not been developed. States must develop and implement TMDLs (i.e., pollutant management plans) for waterbodies identified as having a Category 5 impairment.

2.12.3 Existing Conditions

The 2018 *South Dakota Integrated Report Surface Water Quality Assessment* (SDDANR, 2018) lists Boxelder Creek (ID Number SD-CH-R-BOX_ELDER_01), as a Category 5 303(d) waterbody impaired for *E. coli* bacteria. This segment of Boxelder Creek is located from the confluence with the Cheyenne River to Section 22, Township 2 N, Range 8 East, which includes the portion within the environmental study area (see **Figure 21**). The water is listed as impaired without an approved TMDL.

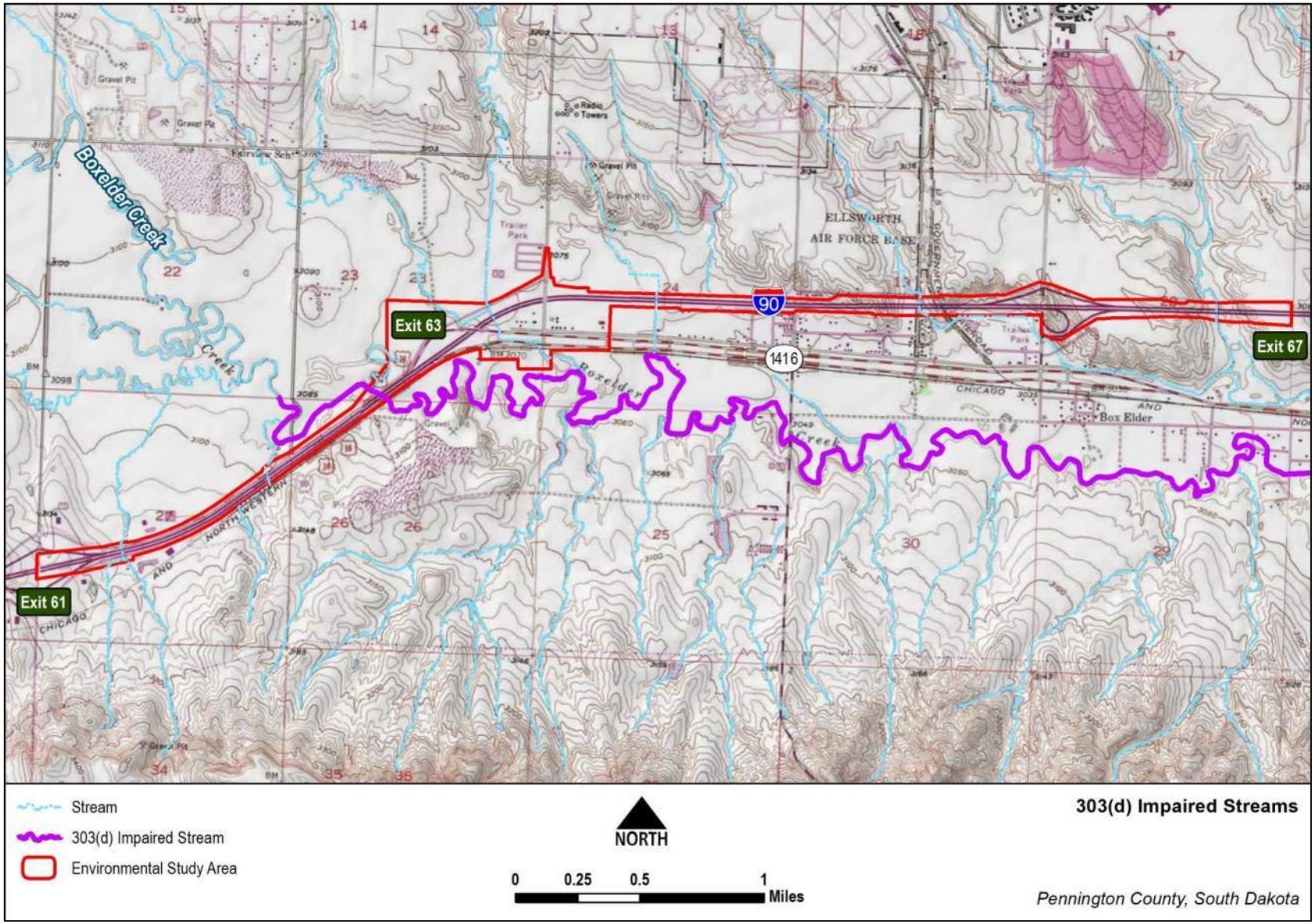
A major source of *E. coli* in the surface water of agricultural areas is runoff from livestock areas. The reconstruction of the Exit 63 interchange and mainline I-90 would not be expected to contribute any organic pollutants to Boxelder Creek or any unnamed drainages that lead to Boxelder Creek.

2.12.4 Next Steps

The proposed project would require a General Permit for Storm Water Discharges Associated with Construction Activities and the implementation of sediment and erosion control measures. Furthermore, best management practices (BMPs) from the SDDOT Erosion Control Guide would be implemented to minimize pollutants entering waterbodies.

A Storm Water Pollution Prevention Plan (SWPPP) would need to be prepared for the project and a National Pollutant Discharge Elimination System (NPDES) Construction Storm Water Permit would be required from the South Dakota Department of Environment and Natural Resources (SDDANR). The SWPPP will need to incorporate measures related to the potential groundwater contamination and need for onsite dewatering strategies.

Figure 21. Water Quality



2.13 Vegetation and Wildlife

2.13.1 Regulatory

The Migratory Bird Treaty Act (MBTA) of 1918 provides protection of birds classified as migratory birds by the USFWS. The Migratory Bird Permit memorandum issued in April 2003 stipulates there is no prohibition against destruction of inactive nests. Additionally, any disturbance to these nesting areas must follow the stipulations outlined in the MBTA. Most birds found in South Dakota and their nests are protected under the MBTA. Species not included in the MBTA are nonnative species whose occurrences in the United States are solely the result of intentional or unintentional human-assisted introduction. Disturbance of active migratory bird nests is prohibited (USFWS, 2022) and state law prohibits possessing or destroying active migratory bird nests or eggs (SDGFP, 2021).

Specific protection for Bald and Golden Eagles is authorized under the Eagle Protection Act (16 USC 668), which provides additional protection to these species from intentional or unintentional harmful conduct.

2.13.2 Methodology

A desktop survey was completed, as well as a field survey conducted in September 2019 to identify existing conditions for vegetation and wildlife within the environmental study area.

2.13.3 Vegetation Existing Conditions

The environmental study area is located in the Semiarid Pierre Shale Plains sub-ecoregion within the Northwestern Great Plains Ecoregion (USEPA, 2006). The Northwestern Great Plains Ecoregion consists of semiarid rolling plains of shale siltstone, and sandstone along with native grasslands in areas with steep or broken topography. The Semiarid Pierre Shale Plains sub-ecoregion consists of mixed-grass prairie with a predominance of shortgrass species.

Undeveloped areas within the environmental study area are primarily used as agricultural land. Developed areas include residential neighborhoods and some commercial areas. Much of the environmental study area consists of interstate right-of-way that is mowed and maintained, with a few scattered trees and shrubs, primarily in riparian areas. Wetlands are also present within or adjacent to Boxelder Creek and several unnamed drainages. The most common species within the upland communities included smooth brome (*Bromus inermis*), western wheatgrass (*Pascopyrom smithii*), little bluestem (*schizachyrium scoparium*), Kentucky bluegrass (*Poa pratensis*), ragweed (*Ambrosia artemisiifolia*), sweet clover (*Melilotus officinalis*), lesser burdock (*arctium minus*), and Canada thistle (*Cirsium arvense*). Dominate species within the wetland communities consisted of cattails (*Typha angustifolia, Typha latifolia*), foxtail barley (*Hordeum jubatum*), common threesquare bulrush (*Schoenoplectus pungens*), common spikerush (*Eleoacharis palustris*), barnyard grass (*Echinochloa crus-galli*), plains cottonwoods (*Populus deltoides*), coyote willows (*Salix interior*), peachleaf willows (*Salix amygdaloides*), and green ash.

Because much of the environmental study area is mowed and maintained, and this has generally suppressed noxious weeds. However, they are still possible throughout the environmental study area where vegetation is not maintained or frequently mowed. State-listed noxious weed species from the South Dakota Department of Agriculture (2016) include:

- Leafy spurge (*Euphorbia esula*)
- Canada thistle (*Cirsium arvense*)

- Perennial sow thistle (*Sonchus arvensis*)
- Hoary cress (*Cardaria draba*)
- Russian knapweed (*Centaurea repens*)
- Purple loosestrife (*Lythrum salicaria*)
- Salt cedar (*Tamarix ramosissima*)

No Russian knapweed has been reported in Pennington County, but the other six species have documented populations. Locally listed noxious weed species in Pennington County include:

- Common Tansy (*Tanacetum vulgare*)
- Houndstongue (*Cynoglossum officinale*)
- Oxeye Daisy (*Leucanthemum vulgare*)
- Puncturevine (*Tribulus terrestris*)
- Spotted Knapweed (*Centaurea maculosa*)
- Sulphur Cinquefoil (*Potentilla recta*)

Disturbance of soil due to project activities would have the potential to introduce or spread noxious weeds and other invasive plant species. Disturbed areas should be seeded with mixtures that comply with South Dakota Seed Laws in order to reduce the potential for invasive plant infestations and to comply with South Dakota laws regarding weed and pest control (South Dakota Code, 2005).

2.13.4 Wildlife Existing Conditions

The Fish and Wildlife Coordination Act of 1958, as amended, recognizes the vital contribution of wildlife resources to the Nation and requires equal consideration and coordination of wildlife conservation with water resources development programs.

Ungulate species known to occur in or near the environmental study area include mule deer (*Odocoileus hemionus*) and white-tailed deer (*Odocoileus virginianus*). During the field surveys, FHU staff observed visible signs of mule deer and/or white-tailed deer (tracks and multiple deer carcasses) along I-90.

Many carnivore species occur in the environmental study area, the most common being raccoon (*Procyon lotor*), coyote (*Canus latrans*), red fox (*Vulpes vulpes*), and striped skunk (*Mephitis mephitis*). The range of the mountain lion (*Puma concolor*) covers in the entirety of the environmental study area. Individuals of these species may use this area as a movement corridor, for hunting purposes, or for denning purposes.

Many rodent species may occur in the environmental study area. This group is very large, and species likely to be found in or near the environmental study area include the beaver (*Castor canadensis*) and plains pocket mouse (*Perognathus flavescens*). Various mice, voles, and woodrats (*Neotoma* spp.) could also use the environmental study area. A white-tailed jackrabbit (*Lepus townsendii*) was observed during the field survey.

Several bat species have the potential to occur in the environmental study area according to the South Dakota Game, Fish & Parks wildlife mapping tool. These species include the Long-eared Myotis (*Myotis evotis*), Northern Long-eared Bat (*Myotis septentrionalis*), and the Silver-haired Bat (*Lasionycteris noctivagans*).

Several reptile and amphibian species can be present in the environmental study area due to the presence of suitable habitat within the riparian area surrounding Boxelder Creek and the many unnamed streams crossing the environmental study area. Species such as: bull frogs (*Lithobates catesbeianus*), snapping turtles (*Chelydra serpentina*) common garter snakes (*Thanmophis sirtalis*), bull snakes (*Pituophis catenifer sayi*), and prairie rattlesnakes (*Crotalus viridis*), but none were observed during the field surveys.

According to traffic safety data collected between Exit 61 and Exit 67 during a five-year time period between January 2014 and December 2018, wildlife vehicle collisions occurred at a higher-than-expected rate for a typical four-lane urban freeway. Locations of the recorded wildlife vehicle collisions can be seen in **Figure 22** below. Our preliminary evaluation suggests that accidents occur in locations where streams cross the interstate.

FHU environmental scientists inspected the environmental study area for evidence of migratory bird and nesting activity during the site visits conducted in September 2019. During the field surveys, FHU staff observed swallow nests under bridges and in large box culverts. FHU staff also observed a northern harrier (*Circus hudsonius*) flying above Boxelder Creek during the field survey. Many more migratory bird species were seen and heard during the survey; however, they were not identified at the time.

Bald eagles (*Haliaeetus leucocephalus*) require mature trees near large, open bodies of water for nesting and winter roosting. No large water bodies are present in the vicinity of the project, and therefore bald eagle nesting and roosting habitat is not present. Golden eagles (*Aquila chrysaetos*) generally nest on cliffs or escarpments. Large cliffs and escarpments are lacking in the area adjacent to the project. Therefore, potential nesting habitat for golden eagles is not present.

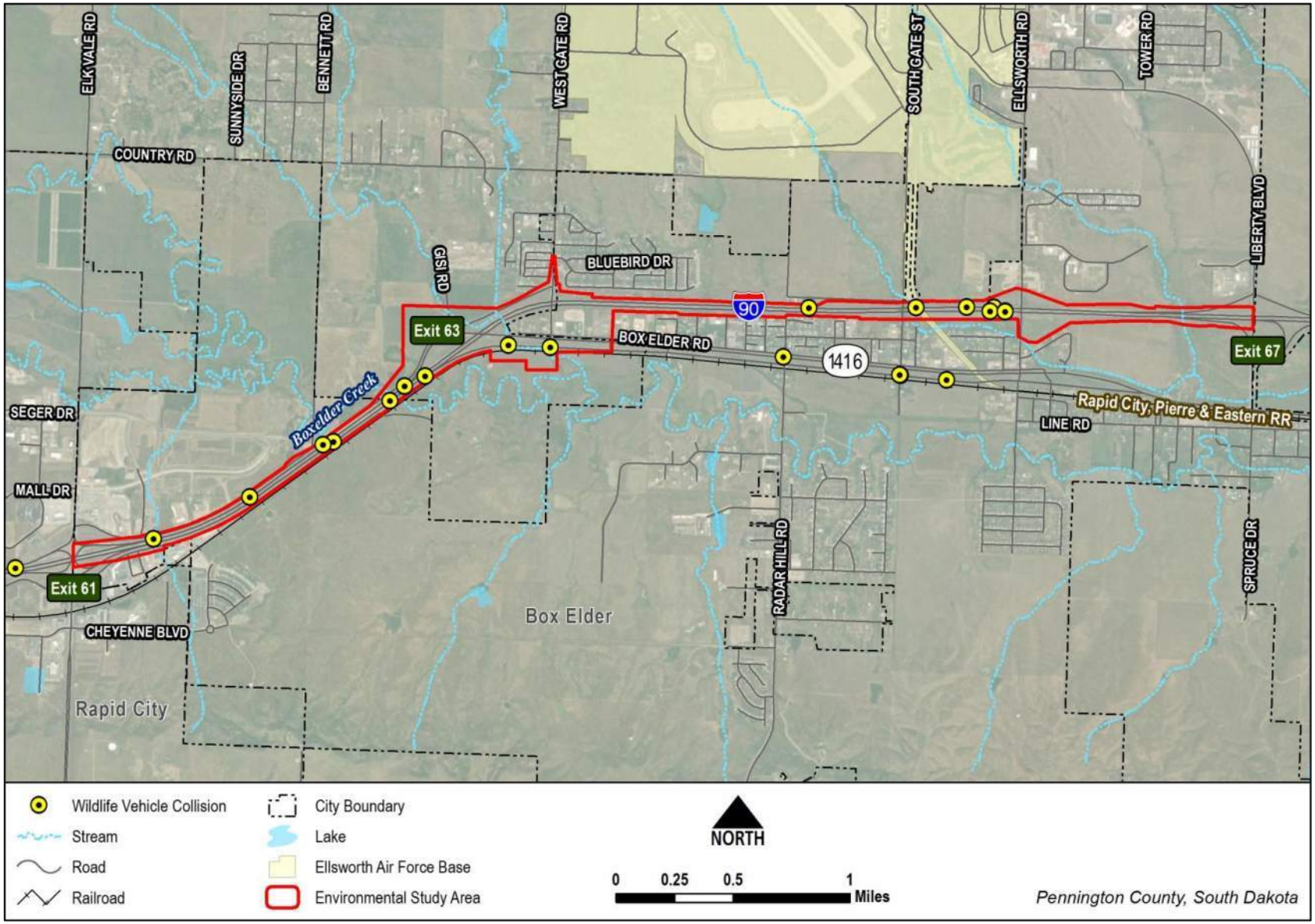
2.13.5 Next Steps

During a corridor visit in September 2019, FHU staff identified habitat suitable for several of the above-mentioned species within or adjacent to the environmental study area. A field survey would be required to establish the presence or absence of noxious weeds, migratory bird and raptor nests, and species-specific wildlife habitat during the NEPA phase of the project.

Disturbance of soil due to project activities would have the potential to introduce or spread noxious weeds and other invasive plant species. Mitigation measures should include seeding disturbed areas with mixtures that comply with South Dakota Seed Laws to reduce the potential for invasive plant infestations and to comply with South Dakota laws regarding weed and pest control (South Dakota Code, 1987).

During the NEPA phase of the project, the potential for including wildlife fencing and upsized culverts to be used as wildlife crossings will be evaluated in the project design.Proposed construction activities for future projects should seek to avoid areas of suitable habitat for nesting birds during the primary breeding season (April 1 to August 15). If work occurs in areas of potential habitat during the breeding season, then surveys should be conducted to determine if active nests are present before beginning clearing and grubbing or other disruptive construction activities.

Figure 22. Wildlife Vehicle Collisions



Although MBTA provisions are applicable year-round, most migratory bird nesting activity in South Dakota is from April 1 to July 15. Impacts should be avoided by either clearing vegetation outside the primary nesting season or surveying before construction activities in areas of potential nesting habitat. Work on bridges or large culverts should also occur outside the primary nesting season. Mowing before April 1 is also recommended to help limit use by nesting birds. A desktop and field review would be needed to identify potential bald eagle nests within 1 mile of the project improvements.

2.14 Threatened and Endangered Species

2.14.1 Regulatory

The Endangered Species Act (ESA), administered by the United States Fish and Wildlife Service (USFWS), provides protection to imperiled species and their habitats. Section 7 of the ESA requires federal agencies to consult with USFWS for federally funded or federally permitted projects that may affect a species listed under the ESA. South Dakota State Law (SDCL 34A-8), administered by South Dakota Department of Game Fish and Parks (SDGFP), protects state listed threatened and endangered species.

2.14.2 Methodology

FHU used the U.S. Fish and Wildlife Service (USFWS) Information, Planning, and Conservation System (IPaC) website to identify the latest information on threatened and endangered species that may occur in the environmental study area (USFWS, 2019). SDGFP county lists were also reviewed for threatened, endangered, proposed, and candidate species (SDGFP, 2019). Habitat was evaluated in the environmental study area for species listed as potentially present in Pennington County.

2.14.3 Existing Conditions

Due to the urban nature of the corridor, habitat is generally lacking for listed species within the environmental study area. **Table 4** lists Federal and State listed species potentially located in Pennington County.

Table 4. Threatened and Endangered Species List

Common Name	Status	Habitat	Comments
MAMMALS			
Northern long-eared bat (*Myotis septentrionalis*)	FT	Northern long-eared bats are typically found near water and dense forest conditions. Roost sites consist of shedding bark and tree cavities, open buildings, and caves or mines. Winter hibernacula are frequently caves and mines.	Potential summer roosting habitat for the northern long-eared bat exists along Boxelder Creek and other drainages that cross the environmental study area.
BIRDS			
Least Tern (*Sterna antillarum*) Interior population	FE/SE	Prefers open areas for feeding and nesting. Feeds in shallow water of lakes, ponds, and rivers that are near nesting areas and have an abundance of small fish. Nesting habitat is bare or sparsely vegetated sand, shell, and/or gravel beaches, dry mudflats, or sand and gravel pits along rivers.	Project lacks sand, shell, and/or gravel beaches, dry mudflats, or sand and gravel pits.

Common Name	Status	Habitat	Comments
Osprey (*Pandion haliaetus*)	ST	Lakes, rivers, and coastal bays are primary habitat. Builds nests at the tops of large living or dead trees, utility poles, cellphone towers, and other tall structures.	Suitable nesting habitat is present near Boxelder Creek; however, no nest sites have been identified.
Piping Plover (*Charadrius melodus*)	FT/ST	The Piping Plover prefers sandbars, sand and gravel beaches with little vegetation, gravel pits along rivers, or natural or dredge islands in rivers.	Project lacks sand or gravelly beach habitat.
Red Knot (*Calidris canutus rfa*)	FT	Red knots breed in dry tundra areas and winter at intertidal marine habitats near coastal inlets, estuaries, and bays.	Project lacks dry tundra areas and suitable intertidal marine habitats.
Whooping Crane (*Grus americana*)	FE/SE	Whooping Cranes migration habitat includes freshwater marshes, wet prairies, shallow portions of rivers and reservoirs, grain stubble fields and submerged sandbars in rivers with good horizontal visibility for feeding and resting.	Project lacks habitat due to the amount of urban development.
FISH			
Finescale dace (*Chrosomus neogaeus*)	SE	Cool spring-fed bogs, lakes and creeks; small, weedy, sluggish streams and small lakes. Sometimes associated with beaver ponds.	Potential habitat within Boxelder Creek west of the environmental study area in the Black Hills National Forest, but not within the environmental study area.
Longnose sucker (*Catostomus catostomus*)	ST	Habitat for longnose sucker may be lentic or lotic. They prefer cool, clear, spring-fed streams and lakes.	Project lacks cool, clear, spring-fed streams and lakes.
Sturgeon chub (*Macrhybopsis gelida*)	ST	Sturgeon chub prefer areas with moderate to strong current on large rivers with rocks, gravel or coarse sand substrates.	Project lacks large turbid rivers and tributaries directly connected to larger rivers.

FE = Federally Endangered
FT = Federally Threatened
ST = State Threatened
SE = State Endangered
References: SDGFP – Accessed December 2019
USFWS Species Profiles – ECOS, IPaC December 2019

In Pennington County, five federally listed species were identified through the USFWS IPaC. Potential northern long-eared bat (NLEB) summer foraging habitat is present at wooded habitats along Boxelder Creek and other drainages, which also includes adjacent non-forested habitats such as wetlands and agricultural fields. There are also several bridges within the environmental study area that could also be considered potential summer habitat.

The SDGFP listed seven state listed species as having potential to occur in Pennington County, South Dakota, including three species that are also federally listed. In general, habitat is lacking for state listed species within the environmental study area. While some species utilize stream habitat, channels present within the environmental study area lacks suitable habitat. There is potentially suitable habitat along Boxelder Creek for the osprey and the finescale dace.

2.14.4 Next Steps

As potential projects move into the NEPA phase, USFWS and SDGFP should be coordinated with for concurrence on effects to the listed species and to identify project-specific mitigation commitments. Since the study area contained suitable habitat for the NLEB, the initial project screening in accordance with the

Range-Wide Indiana Bat and Northern Long-Eared Bat Survey Guidelines (March 2022) should be followed. USFWS should be contacted regarding existing NLEB summer and/or winter occurrence information to determine if a survey would be required.

Avoidance and Minimization Measures (AMMs) were recommended to avoid impacts to species. Because this is an environmental scan, the AMM's would be recommended future projects located in areas within the environmental study area with suitable habitat for the northern long-eared bat, osprey and finescale dace. The following measures should be implemented during planning and construction of future projects within the environmental study area:

- Ensure all operators, employees, and contractors working in areas of known or presumed bat habitat are aware of all FHWA/FRA/FTA (Transportation Agencies) environmental commitments, including all applicable AMMs.
- Direct temporary lighting away from suitable habitat during the active season (April 1 to October 31).
- When installing new or replacing existing permanent lights, use downward-facing, full cut-off lens lights (with same intensity or less for replacement lighting); or for those transportation agencies using the Backlight-Uplight-Glare (BUG) system developed by the Illuminating Engineering Society, be as close to 0 for all three ratings with a priority of "uplight" of 0 and "backlight" as low as practicable
- Disturbance to riparian and wetland areas should be kept to an absolute minimum.
- If riparian vegetation is lost it should be quantified and replaced on site. Seeding of indigenous species should be accomplished immediately after construction to reduce sediment and erosion.
- A site-specific sediment and erosion control plan should be part of the project.
- A post construction erosion control plan should be implemented in order to provide interim control prior to re-establishing permanent vegetative cover on the disturbed site.

As the project moves into the NEPA phase, USFWS and SDGFP should be coordinated with for concurrence on effects to the listed species and to identify necessary mitigation commitments.

2.15 Historic and Cultural Resources

2.15.1 Regulatory

Cultural resources are defined as man-made features and physical remains of past human activity, generally at least 45 years old (properties constructed in 1975 or earlier). Cultural resources include historic buildings, bridges, railroads, roads, other structures, and archeological sites. Section 106 of the National Historic Preservation Act of 1966 requires evaluation of project effects on historic properties that are on, or eligible for, the National Register of Historic Places (NRHP). Criteria for determinations of eligibility are set forth in 36 Code of Federal Regulations (CFR) Part 60.4 (70) and are described in National Register Bulletin How to Apply the National Register Criteria for Evaluation (NPS 1995).

2.15.2 Methodology

A Historic and Cultural Resources Analysis for the project was conducted by Jake Lloyd, a historian with FHU. Due to confidentiality of the location of resources adjacent to the proposed project, the Historic and Cultural Resources Analysis is not available for public review.

An Area of Potential Effects (APE) was defined to include the I-90 right-of-way between Elk Vale Road and Liberty Boulevard as well as properties within and adjacent to the Exit 63 interchange where design alternatives are being developed for the interchange reconstruction project (see **Figure 23**).

The APE includes all properties potentially subject to direct or indirect impacts from the proposed project. Resources reviewed to determine whether any existing or potential historic and cultural resources were located in proximity to the APE include:

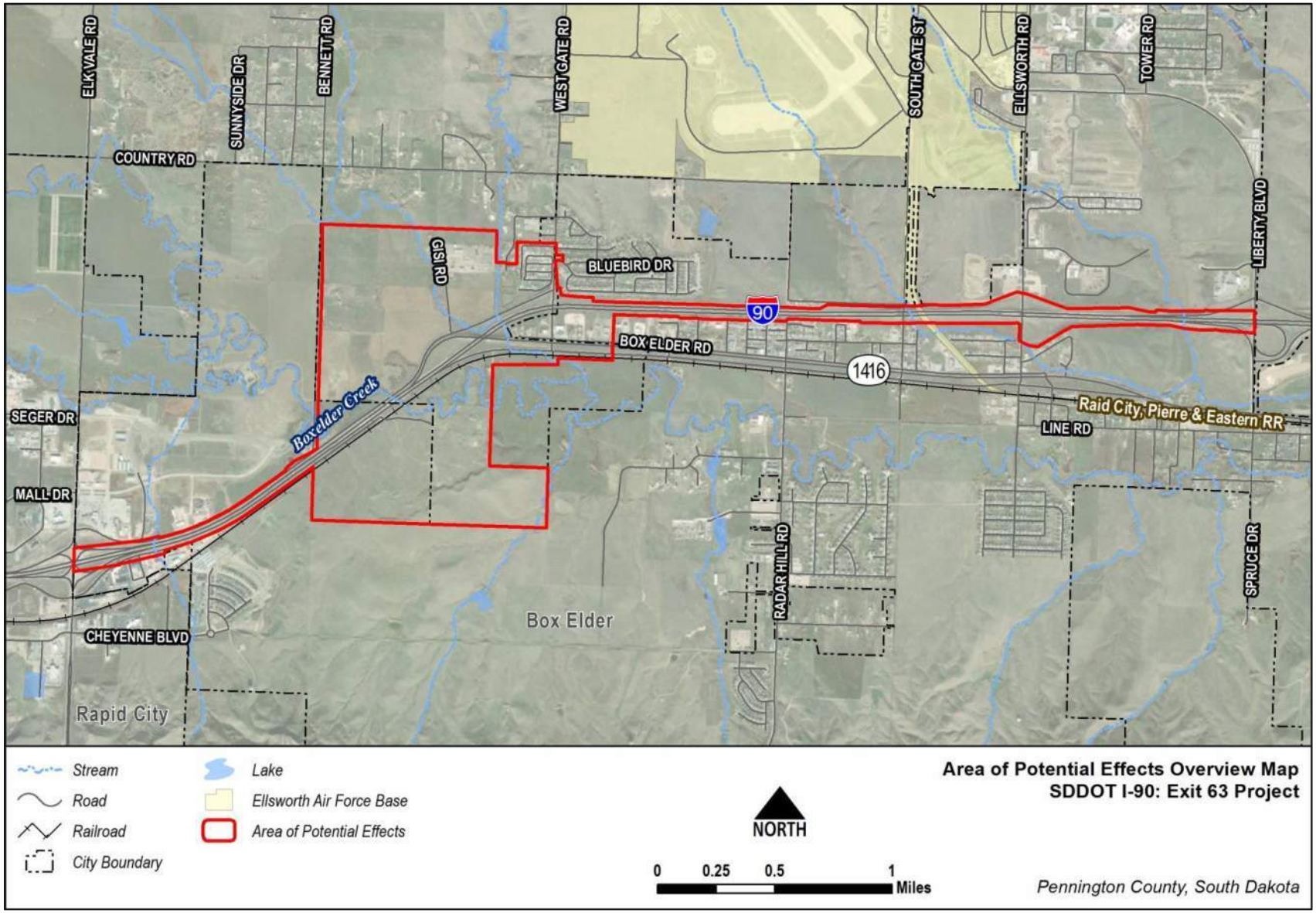
- The South Dakota Archaeological Research Center (SDARC) to identify all known historic and archaeological resources within a 1-mile buffer of the proposed undertaking.
- List of properties (with year constructed) from Pennington County Equalization Office – property information files.
- Historic and contemporary US Geological Survey (USGS) topographical quadrangle maps:
  - USGS Boxelder Quadrangle Maps (1953, 1971, 1978).
  - USGS Rapid City East Dakota Quadrangle Maps (1953, 1971, 1978).
- Additional records and reports from the South Dakota State Historic Preservation Office (SDSHPO).
- Bureau of Land Management General Land Office (GLO) original land patent records and early survey maps of the APE.
- Site visit to the environmental study area to determine the existing condition of known and potential historic resources within the APE.

2.15.3 Existing Conditions

Previously surveyed resources included buildings and structures that met the minimum age requirement of 50 years, based on 2019 as the study year. This analysis identified properties with buildings and structures that are 45 years and older (1976 and older) to provide a 5-year extension for design development and construction of the preferred alternative. Eligible or potentially eligible historic and cultural resources were present within the APE. These include:

- Chicago & North Western Railroad (RCP&E). A segment of the former Chicago & North Western Railroad, now RCP&E Railroad located southwest of the project APE was determined eligible to the NRHP when it was last surveyed. The segment located within the project APE has not been formally surveyed and evaluated and recordation of this segment will be needed to determine whether it is eligible. Direct impacts to this resource should be avoided, if possible, during final design and construction of the proposed interchange. Coordination with the State Historic Preservation Officer (SHPO) should occur regarding the resource.

Figure 23. APE Boundary



- Potentially Historic Buildings and Structures near the Exit 63 Interchange. Potentially eligible properties meeting the minimum age requirement for NRHP eligibility (built prior to 1976) are located adjacent to the proposed interchange reconstruction project. These properties have not been surveyed and evaluated and therefore have not been assessed for NRHP eligibility. Direct impacts are generally not anticipated to most of these properties. However, indirect impacts could occur due to changes in viewshed from construction of the new interchange. Coordination with SHPO should occur regarding potential impacts to these properties.
- Archeological Sites Northeast of RCP&E Railroad. Several archeological sites are present both east and west of the current project APE. Native American Artifact Scatter was determined not eligible to the NRHP. However, four other sites, including Native American Artifact Scatter, Euro-American Burial, Early/Mid Archaic Isolated Find, and Euro-American Isolated Find were either unevaluated or have not been reviewed by the SHPO. Since proposed project improvements will remain within the I-90 right-of-way, the likelihood of potentially impacting these sites is low. However, if proposed impacts change as the interchange design progresses, future survey may be warranted. It is recommended that the Native American Artifact Scatter is reviewed to confirm NRHP not eligible status.

In summary, review of known and potential historic and cultural resources within the I-90 Exit 63 Interchange Reconstruction Project APE determined that only one known NRHP eligible resource RCP&E is located within and adjacent to proposed improvements. Survey of the railroad segment adjacent to Exit 63 should be conducted to determine whether the segment supports of the overall eligibility of the railroad resource. It is not anticipated that the proposed roadway improvements would lead to an adverse effect to the RCP&E Railroad. Formal survey and evaluation of the railroad segment within the APE in conjunction with SHPO consultation will be needed in order to determine project effects. Direct impacts to the railroad should be avoided to minimize direct effects to the resource. Additional properties meeting the minimum age for potential NRHP eligibility are also located adjacent to the proposed interchange at Exit 63 and should be evaluated for NRHP eligibility and coordinated with SHPO to determine potential project effects. No historic districts were identified within the APE.

2.15.4 Next Steps

As a next step, the responsible agency would initiate a cultural resources survey to determine whether the undertaking (project) could affect these previously recorded historic and cultural resources that are NRHP listed or eligible. If so, the agency proceeds to define the APE, the area in which an undertaking may directly or indirectly cause changes in the character of use of historic resources. Once the APE has been defined, a cultural resources survey would be conducted, and the agency would consult with the appropriate SHPO and/or Tribal Historic Preservation Officer (THPO) on effects to historic or potentially historic resources located within the APE.

Local preservation advocates, including but not limited to nonprofit organizations, neighborhood groups, local historical societies, and local residents should be included in the Section 106 process to help identify potential resources adjacent to the proposed project. Coordination with the Ellsworth Heritage Foundation, which oversees the preservation of the Ellsworth Air Force Base, should be conducted to determine their level of interest in the proposed project. Further review of the list of Historic Preservation Commissions (HPC) provided by the SDARC indicate that the City of Rapid City HPC may have interest or information pertaining to potential resources adjacent to the project area.

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

2.16.1 Regulatory

Section 4(f) properties include publicly owned parks, recreational areas, wildlife and waterfowl refuges, or public and private historical sites as defined in the US Department of Transportation (DOT) Act of 1966. FHWA and other DOT agencies cannot approve use of these properties for transportation projects unless certain conditions apply.

Section 4(f) stipulates that FHWA and other USDOT agencies cannot approve the use of land from publicly owned parks, recreational facilities, wildlife and waterfowl refuges, or historic sites unless there is no feasible and prudent alternative to the use of the land and unless the action includes all possible planning to minimize harm to the property resulting from use. Historic sites that are on or eligible for the NRHP qualify for protection under Section 4(f).

Section 6(f) properties include recreational resources developed with federal funding through the Land and Water Conservation Fund (LWCF). Section 6(f) of the LWCF Act prohibits the conversion of these properties to anything other than public outdoor recreation uses.

Section 6(f) of the LWCF Act requires that the conversion of lands or facilities acquired with LWCF funds be coordinated with the Department of Interior. Usually, replacement in kind is required. Evaluation of Section 6(f) properties is completed for the following reasons:

- To preserve the intended use of public funds for land and water conservation
- To comply with several legal mandates that pertain to the LWCF and Section 6(f)

Section 6(f) of the Act assures that once an area has been funded with LWCF assistance, it is continually maintained for public recreation use unless the National Park Service approves a substitute property of reasonably equivalent usefulness and location and of at least equal fair market value.

2.16.2 Methodology

Section 4(f): Preliminary inventory included a review of available GIS data for parks, recreational facilities, wildlife and waterfowl refuges for non-historic Section 4(f) resources. For historic Section 4(f) resources, the information provided in **Section 2.12** was used to determine the presence of historic Section 4(f) resources.

Section 6(f): Information from LWCF (LWCF, 2022) was referenced to identify Section 6(f) properties potentially located near the study area.

2.16.3 Existing Conditions

No parks, trails, or other recreational areas are located within the environmental study area. In addition, there are no Section 6(f) properties located within the environmental study area. According to the LWCF Map (LWCF, 2022) the nearest Section 6(f) property is Boykin Park which is located north of the study area between Tuscany Drive and Plover Drive south of Bluebird Drive. It is unlikely this park would be impacted directly or indirectly by proposed project(s) along this corridor. At this time, there are no proposed parks, trails, or other recreational areas planned within the environmental study area.

Historic sites that are on or eligible for the NRHP qualify for protection under Section 4(f). One historic site, the Chicago & North Western Railroad (RCP&E), was identified as eligible for the NRHP. The railroad segment within the APE is located south of Highway 1416. The segment located within the project APE has not been formally surveyed and evaluated. Therefore, recordation of the segment within the APE will be needed to determine whether the segment is eligible for the NRHP.

2.16.4 Next Steps

Section 4(f): During future project development processes, if historic properties, parks, trails, or open space are impacted, the next steps of the Section 4(f) process require evaluations of publicly owned parks, trails, and open space lands to be conducted to determine if any properties qualify for protection under Section 4(f). The law says that FHWA (and other DOT agencies) cannot approve the use of land from publicly owned parks, recreation areas, wildlife refuges, or historic sites unless there is no feasible and prudent alternative to the use and the action includes all possible planning to minimize harm to the property. The substantive provisions of Section 4(f) apply only to agencies within the USDOT. A Section 4(f) evaluation would be required for the conversion of any publicly owned parks, trails, or open space lands for transportation improvements. Additional evaluation and agency coordination will be necessary in future project development phases, including NEPA.

Section 6(f): During the NEPA process, the Section 6(f) review would need to be completed to determine if there will be any impacts to Section 6(f) properties based on future project footprint(s) and/or activities. SDGFP should be coordinated with to verify there are no Section 6(f) properties or if there are any new projects that would be considered a Section 6(f) property within the proposed project(s) study area.

2.17 Right-of-Way, Acquisition, and Relocation Potential

The potential of right-of-way (ROW), acquisition, and relocation impacts are described in this section to evaluate how property owners and tenants (e.g., residential, business, non-profit, farm, ranch) may be directly and indirectly impacted by proposed right-of-way acquisition and associated business and residential displacements and relocations. The impacts may occur as a result of acquisition of specific businesses and residences or through disruption of business activity and neighborhood/community interaction characteristics that result in relocations.

2.17.1 Methodology

A desktop review of land use in the study area was conducted to identify areas that may require potential right-of-way use in the NEPA phase.

2.17.2 Existing Conditions

Land use adjacent to the mainline I-90 between Exit 61 and Exit 63 includes commercial, industrial, and agriculture, as well as the railroad on the south side of I-90. Land use between Exit 63 and Exit 67 consist of commercial, residential, agriculture, and some industrial areas. **Figure 15** in **Section 2.1 Land Use/Community Planning** displays the land use within and adjacent to the study area. It is likely that there would be right-of-way needed to be acquired for the construction of the full interchange at Exit 63. Additional right-of-way may also be needed for the widening of mainline I-90 between Exit 61 and Exit 63, as well as between Exit 63 and Exit 67.

2.17.3 Next Steps

The reconstruction of Exit 63 will have impacts to adjacent property owners. During the NEPA process, right-of-way needed for the construction of the project would be determined. It is likely that permanent right-of-way will be needed for the construction of the I-90 eastbound on ramp, however, currently it is anticipated that there are no full parcel takes or relocations of homes or businesses. To construct the I-90 westbound off and on ramp, a larger portion of permanent right-of-way may be needed from the agricultural properties along the west boundary of the project in order to provide adequate intersection spacing between the ramp terminals and adjacent frontage road. Permanent right-of-way may also be needed for the widening of I-90 mainline, West Gate Road and Highway 1416.

2.18 Utilities

Aboveground and buried utilities within the study area are outlined in this section.

2.18.1 Methodology

A desktop review was conducted to identify existing utilities in the area including, but not limited to, electric, gas, water, and wastewater. On December 14, 2021, a preliminary utilities meeting was held with SDDOT, City of Box Elder, Pennington County, and several local utility companies.

2.18.2 Existing Conditions

Table 5 lists the potential utility companies and utilities that could be within the project footprint and may pose a potential conflict. **Table 6** lists the known utility company contacts within the study area.

Table 5. Utility Companies/Potential Conflicts

Utility Company	Utilities	Potential Conflicts
Vast Broadband	Fiber	• Vast Fiber lines crossing the interstate at the Box Elder Creek Overflow, there is not any communications located presently. • Likely impacts to Fiber lines within SDDOT right-of-way through project, particularly through new interchange.
Century Link/Lumen	Fiber	• Copper running along north side of North Service Road. Copper crossing the Interstate near County Road 218.
MidContinent	Fiber	• Two fiber lines running along south side of North Service Road between WB I-90. Crosses I-90 from the south that feed the Ellsworth AFB. • Fiber lines running in South Ditch between Interstate and railroad. • Likely impacts to Fiber lines within SDDOT right-of-way through project, particularly through new interchange.
SDN Communications	Fiber	• Fiber on both sides of the road at Exit 61 continuing the through West Gate Road, the north fiber feeds the Ellsworth AFB and is very important. • Fiber in south ditch, running in parallel trenches between the Interstate and the railroad. • Fiber in North Ditch East of West Gate Road, separate conduits in the same trench. • Likely impacts to Fiber lines within SDDOT right-of-way through project, particularly through new interchange.

Utility Company	Utilities	Potential Conflicts
Golden West Communications	Fiber	• Fiber in southern ditch between the Interstate and Southern Service Road. • Likely impacts to Fiber lines within SDDOT right-of-way through project, particularly through new interchange.
Montana Dakota Utilities	Electric	• Has power at West Gate Road and Highway 1416 that could be impacted.
West River Electric	Electric	• Junction Box inside Private Easement, goes West and north up America's Way. Underground Electric crosses Interstate, not sure of depth. • New underground electric planned. There will be proposed poles located on the North and South Sides of the Interstate, outside of the current service roads. Currently planning for Spring 2022 installation. • Underground electric crossing under southern abutment at Box Elder Creek. Continues to North between Interstate and railroad, sharing trench with Fiber (Midcontinent & Lumen). • Overhead Electric Distribution line running along north side of north service road. • Overhead Electric crossing will likely need to be relocated due to regrading of entire area for new ramps and channel re-grading.
City of Box Elder	Water Sewer	• 24" PVC Water Main in 24" Steel Casing Line Crossing. • Sanitary Sewer line crosses the Interstate. Runs along south ditch from Courtyard Motel and then in ditch between Interstate and Service Road on the North east of this crossing. • 12" PVC Sanitary Sewer line crossing just east of Box Elder Creek Overflow. • 6" and 8" PVC Water lines crossing not currently shown at approximately same locations as above 12" PVC Sanitary Sewer.
Pennington County	Lighting	• Lighting at Exit 67 in conjunction with City of Box Elder.

Table 6. Known Utility Company Contacts

Utility Company	Utility Type	Contact	Phone/Email
Black Hills Power and Light Co.	Power	Travis Powrie	605.721.2642 (office) 605.381.2316 (mobile) Travis.Powrie@blackhillscorp.com
Lumen	Communications	Arthur Turner	605.645.3757 Arthur.turner@lumen.com
City of Box Elder	Water, Sanitary Sewer	Doug Curry Josh Sadler Bob Kauffman	
City of Rapid City	Water, Sanitary Sewer, Storm Drainage	James Dotson	605.484.1154 (office) James.Dotson@rcgov.org

Utility Company	Utility Type	Contact	Phone/Email
Ells Jet Terminal	Petroleum	Robert Grable	605.545.1950 (office) rgrable@parpacific.com
Ellsworth Air Force Base	Water	Kyle Heenan	605.381.1940 (office) jpul@rapidnet.com
Golden West Communications	Communications	Jason Ausmann	605.279.1295 (office) JasonAusmann@goldenwest.com
Midcontinent Communications	Communications, CATV	Terry Hofer Doug McIntosh Darin McIntosh	605.791.7123 (office) Terry.Hofer@midco.com 605-786-4187 Doug.mcintosh@midco.com Darin.mcintosh@midco.net
Montana Dakota Utilities (MDU)	Gas	Toby Bordewyk Andrew Morse	605.355.4054 (office), Toby.Bordewyk@mdu.com, Andrew.morse@mdu.com
Pennington County	Lighting	Jeff Huisken	605.394.2166, Ext. 2311 (office) 605.863.0517 (mobile) Jeff.Huisken@pennco.org
SDDOT	Lighting, Traffic, Storm Drainage	Steve Palmer	605.394.1636 (office) Steve.Palmer@state.sd.us
South Dakota Network (SDN)	Communications	Ryan Smith	605.978.1059 (office) 605.209.2338 (mobile) Ryan.smith@sdncommunications.com
Vast Broadband	Communications	Chad Lutz	605.716.3769 (office) 605.415.0692 (mobile) Chad.lutz@vastbroadband.com
West River Electric	Power	Mike Letcher Matt Schmahl	605.393.1500 (office) 605.381.0289 (mobile) Mike.Letcher@westriver.coop Matt.Schmahl@westriver.coop

2.18.3 Next Steps

During the NEPA process the utilities within the specific project footprint will be further evaluated and utility companies will be coordinated with to determine impacts to existing utilities and if relocations would be required.

2.19 Summary

This environmental review was prepared to evaluate the potential impacts to the human and natural environment from improvements to the I-90 corridor between Exit 61 and Exit 67 and the reconstruction of the Exit 63 interchange. **Table 7** includes a summary of the findings for each resource. Next steps would follow the SDDOT NEPA process in coordination with FHWA. The environmental scan report is intended to provide a starting point for the NEPA process.

Table 7. Summary of Findings

Environmental Resource	Findings/Mitigation
Land Use / Community Planning	The proposed project(s) resulting from this study are unlikely to directly alter land use within the project corridor. However, the proposed project could indirectly alter land use as future corridor improvements may facilitate residential, commercial, or industrial development and growth. Future development along the corridor would be guided by zoning and land use plans established by the City of Box Elder, Ellsworth AFB, RCAMPO, and Pennington County. During the NEPA process, the Alpha Omega planned development, the Ellsworth AFB AICUZ, as well as other planned developments within the area will be further evaluated for direct and indirect effects resulting from the proposed project(s). The proposed project(s) will be further investigated to determine if they would be consistent with local land use, growth management, and development plans, as well as population and employment projections by comparing the most recent plans established by Ellsworth AFB, as well as the City of Box Elder, the RCAMPO, and Pennington County.
Environmental Justice	EJ populations do occur within and adjacent to the environmental study area, however, no linguistically isolated populations were identified. A detailed EJ analysis should be completed during the NEPA process to verify the projects resulting from this corridor study do not have a potential for disproportionately high or adverse impacts on EJ populations. The analysis should also identify ways to avoid and mitigate for any impacts. During construction, temporary short-term impacts such as noise, air quality, traffic congestion, and access detours will affect business owners and nearby residents who use the corridor regularly. The temporary project impacts from construction will affect all residents and travelers, including the identified EJ populations; however, the mitigation measures and benefits of the widening project will offset the impacts to the minority or low-income populations. Mitigation measures will be implemented for project information for those without internet access, for construction impacts, and construction activities shall comply with local noise ordinances such that noise will be minimized during construction.
Social and Economic Resources	Potential negative impacts would primarily be temporary access restrictions and possible traffic detours during construction. However, because local access to individual properties would be accommodated through phasing, short-term impacts to local businesses from construction activities and detours would not be expected to result in the failure/closure of any of the existing businesses within the environmental study area. Parking at businesses is not anticipated to be impacted. Careful consideration must be given to the needs of future residential developments and access requirements of local businesses and industry sectors driving growth within the community. It is anticipated that improvements would have positive impacts on social and economic resources by accommodating increasing traffic demands and improving traveler safety and operational efficiency. During the NEPA process, socioeconomic resources will be evaluated for direct and indirect impacts that could occur.
Bicycle and Pedestrian Facilities	Consideration must be given to the future needs of bicyclists and pedestrians within the study corridor. During the NEPA process, these resources will be evaluated, and the projects will be designed to accommodate future bicycle and pedestrian use and will not preclude any planned bicycle and pedestrian improvements from occurring.
Air Quality	The project is located outside of the area covered under South Dakota's Natural Events Action Plan - High Winds - for Rapid City (2005), so it will not apply. The west end of the project corridor is within the Rapid City Area Air Quality Control Zone (Rapid City, 2013). The project corridor is only within the Pennington County portion of the Zone, so construction and related activities of the I 90 improvements in that area will need to comply with Pennington County Ordinance No. 12. During NEPA, these conditions will need to be reviewed and confirmed for the ultimate project design. Because the project is near Rapid City, SDDOT will determine as part of NEPA whether an air quality permit is necessary prior to construction. The need for and extent of MSAT or GHG analyses generally depend on the NEPA class of action. These analyses may be either qualitative or quantitative (FHWA, 2016). An environmental assessment or an environmental impact statement generally requires progressively greater consideration of MSAT and GHG. The level of analysis needed for these will be determined when the NEPA decision for the corridor is made.

Environmental Resource	Findings/Mitigation
	Analysis of construction emissions is not needed for most projects. Permits are likely to be needed for construction, and typical best practices should be required to minimize construction emissions and address air quality issues.
Noise	I-90 was concluded to be the dominant traffic noise source in the noise study area due to the traffic volume, vehicle speeds and numbers of heavy trucks. Other important traffic noise sources were Highway 1416 and West Gate Road. Substantive non-traffic noise sources were also present in the noise study area. Ellsworth AFB is nearby and the Rapid City, Pierre & Eastern (RCP&E) Railroad parallels I-90 and Highway 1416 through the noise study area. The 2019 noise environment in the noise study area was evaluated with a combination of TNM modeling and qualitative assessment. Several receptors were calculated using TNM to be above the NAC approach noise level for residences from I-90. Ellsworth AFB and RCP&E are substantive nearby transportation noise sources; however, neither will be changed by the proposed project. Several noise analysis steps remain to be completed in the NEPA study based on development and analysis of specific alignment alternatives, including: • Onsite noise measurements with model validation • Model and assess the design year proposed action for noise impacts • Evaluate abatement measures for noise impacts, if necessary • Determine via scoping whether/how to include Ellsworth AFB and RCP&E in noise analysis • Prepare technical report with findings and recommendations
Contaminated Materials	The evaluation of potential contaminated materials identified multiple minor contaminated materials concerns within and adjoining the environmental study area. A major project-wide and regional concern identified is due to the substantial contamination on the Ellsworth AFB that had continued remedial and monitoring activities over the past three decades. The Ellsworth AFB is currently listed on the Final National Priorities List. Based on the information provided for the Superfund property listing by the EPA and SDDANR and an evaluation of data provided by the EDR, it is believed that groundwater contamination is present within the environmental study area. It is recommended that additional coordination with the Ellsworth AFB, SDDANR, and EPA regarding potential contamination in the environmental study area be conducted prior to construction activities. Dewatering activities associated with the project will likely require on-site treatment prior to discharge into natural water bodies or will need to be containerized and properly disposed of offsite. It is recommended that groundwater and soil analysis be conducted throughout the environmental study area to qualify the potential contamination present. The hazardous waste and solid waste mitigation measures shall be carried forward through the NEPA documentation and SDDOT environmental commitments for this project.
Climate Change / Equity	While none of the EJ indexes were close to the 80th percentile or higher in the State, EPA Region, or Nation, which may indicate a population of concern, the two highest percentiles consisted of the EJ Index for Lead Paint at the 63rd percentile for the State and the EJ Index for Wastewater Discharge at the 65th percentile for the State. During the NEPA process, projects will evaluate climate change/equity in more detail including strategies for effective mitigation and adaptation regarding resources such as greenhouse gas reduction, flood resiliency, and equity.
Visual Resources	The section of I-90 proposed for future lanes traverses a diversity of landscape types and viewers within the limits of the proposed project between Elkvale Road (MRM 62.15) in Rapid City, and Liberty Rd (MRM 66.17) in Box Elder. The proposed I-90 and West Gate interchange improvements would be within foreground views from adjacent residents. The expansive Boxelder Creek riparian corridor is a distinctive and visually harmonious landscape, with panoramic views of rolling Black Hills horizon line to the west. During the NEPA process, the 4-phased approach outlined in the FHWA VIA Guidelines, will be used for conducting visual resource impact assessments for NEPA compliance.

Environmental Resource	Findings/Mitigation
Floodplain	During the NEPA phase, the existing floodplain conditions should be refined during the design process and impacts will be evaluated to determine if measures to mitigate or eliminate impacts will be necessary. A hydraulic analysis should be conducted during the design process to determine if a Conditional Letter of Map Revision (CLOMR) / LOMR would be necessary for the project(s). Engineering design should take into account the floodplain and floodway issues, as well as the location of new culvert crossings, bridges and bridge piers within the floodplain and floodway. Piers located within the floodway would require a specialized hydrologic assessment and approval by FEMA. The proposed improvements should allow passage of the 100-year flood, to avoid or minimize encroachment into floodplains to the maximum extent possible. The placement of piers within the active channel of Boxelder Creek and its tributaries will be avoided or placed in a position to reduce impacts on the stream channel, stream habitat, and biota.
Wetlands and Waters of the US	Forty-two depressional wetlands, 4 riverine wetlands, and 2 slope wetlands totaling 7.29 acres were delineated within the environmental study area. Additionally, three stream channels (two intermittent, one perennial) were delineated. A wetland delineation would be required during the NEPA phase of any future project(s). When wetland impacts cannot be avoided through design, adequate time must be built into the project schedule to allow wetland permitting and mitigation. During the NEPA process the impacts to wetlands or streams will be further evaluated. If wetlands or streams are present and would be affected, a USACE Jurisdictional Determination may be necessary. Impacts on jurisdictional wetlands or WOUS would require a Section 404 permit from USACE and may require mitigation. According to the Regulatory In-Lieu Fee and Bank Information Tracking System (RIBITS) the SDDOT Umbrella Instrument was approved on February 4, 2022. During the NEPA process, SDDOT and USACE would be coordinated with if mitigation for wetland impacts would be required.
Water Quality	Boxelder Creek (ID Number SD-CH-R-BOX_ELDER_01), is listed as a Category 5 303(d) waterbody impaired for *E. coli* bacteria. A portion of this segment of Boxelder Creek is located within the environmental study area. The water is listed as impaired without an approved TMDL. The proposed project would require a General Permit for Storm Water Discharges Associated with Construction Activities and the implementation of sediment and erosion control measures. Furthermore, best management practices (BMPs) from the SDDOT Erosion Control Guide would be implemented to minimize pollutants entering waterbodies. A Storm Water Pollution Prevention Plan (SWPPP) would need to be prepared for the project and a National Pollutant Discharge Elimination System (NPDES) Construction Storm Water Permit would be required from the South Dakota Department of Environment and Natural Resources (SDDANR). The SWPPP will need to incorporate measures related to the potential groundwater contamination and need for onsite dewatering strategies.
Vegetation and Wildlife; including Migratory Birds and Bald and Golden Eagles	Disturbance of soil due to project activities would have the potential to introduce or spread noxious weeds and other invasive plant species. Mitigation measures should include seeding disturbed areas with mixtures that comply with South Dakota Seed Laws to reduce the potential for invasive plant infestations and to comply with South Dakota laws regarding weed and pest control (South Dakota Code, 1987). During the NEPA phase of the project, the potential for including wildlife fencing and upsized culverts to be used as wildlife crossings will be evaluated in the project design. Trees and shrubs present within the environmental study area are potential nesting habitat for migratory birds. Impacts to migratory birds can be minimized by avoiding construction activities in areas of suitable habitat during the primary nesting season (April 1 – July 15) or by conducting pre-construction surveys. Suitable habitat for bald or golden eagles is not present.
Threatened and Endangered Species	In Pennington County, five federally listed species were identified through the USFWS IPaC. The northern long-eared bat is the only federally listed species with potential habitat is located within the environmental study area. There is also potentially suitable habitat along Boxelder Creek for the state listed species, osprey and the finescale dace. Measures should be implemented during planning and construction of the project to avoid impacts to these species. As potential projects move into the NEPA phase, USFWS and SDGFP should be coordinated with for concurrence on effects to the listed species and to identify project-specific mitigation commitments. Since the study area contained suitable habitat for the NLEB, the initial project screening in accordance with the Range-Wide Indiana Bat and Northern Long-Eared Bat Survey Guidelines (March 2022) should be followed. USFWS should be contacted regarding existing NLEB summer and/or winter occurrence information to determine if a survey would be required.

Environmental Resource	Findings/Mitigation
Historic and Cultural Resources	Review of known and potential historic and cultural resources within the APE determined that only one known NRHP eligible resource Chicago & North Western Railroad (RCP&E) is located within and adjacent to proposed improvements. Formal survey and evaluation of the railroad segment within the APE in conjunction with SHPO consultation will be needed in order to determine project effects. Direct impacts to the railroad should be avoided to minimize direct effects to the resource. As a next step, the responsible agency would initiate a cultural resources survey to determine whether the undertaking (project) could affect these previously recorded historic and cultural resources that are NRHP listed or eligible. If so, the agency proceeds to define the APE, the area in which an undertaking may directly or indirectly cause changes in the character of use of historic resources. Once the APE has been defined, a cultural resources survey would be conducted, and the agency would consult with the appropriate SHPO and/or Tribal Historic Preservation Officer (THPO) on effects to historic or potentially historic resources located within the APE. Local preservation advocates, including but not limited to nonprofit organizations, neighborhood groups, local historical societies, and local residents should be included in the Section 106 process to help identify potential resources adjacent to the proposed project. Coordination with the Ellsworth Heritage Foundation, which oversees the preservation of the Ellsworth Air Force Base, should be conducted to determine their level of interest in the proposed project. Further review of the list of Historic Preservation Commissions (HPC) provided by the SDARC indicate that the City of Rapid City HPC may have interest or information pertaining to potential resources adjacent to the project area.
Section 4(f) and Section 6(f)	No parks, trails, or other recreational areas are located within the environmental study area. In addition, there are no Section 6(f) properties located within the environmental study area. One historic site, the Chicago & North Western Railroad (RCP&E), was identified as eligible for the NRHP. The segment located within the project APE has not been formally surveyed and evaluated. Therefore, recordation of the segment within the APE will be needed to determine whether the segment is eligible for the NRHP. During future project development processes, if historic properties, parks, trails, or open space are impacted, the next steps of the Section 4(f) process require evaluations of publicly owned parks, trails, and open space lands to be conducted to determine if any properties qualify for protection under Section 4(f). A Section 4(f) evaluation would be required for the conversion of any publicly owned parks, trails, or open space lands for transportation improvements. Additional evaluation and agency coordination will be necessary in future project development phases, including NEPA. During the NEPA process, the Section 6(f) review would need to be completed to determine if there will be any impacts to Section 6(f) properties based on future project footprint(s) and/or activities. SDGFP should be coordinated with to verify there are no Section 6(f) properties or if there are any new projects that would be considered a Section 6(f) property within the proposed project(s) study area.
Right-of-Way, Acquisition, and Relocation Potential	The reconstruction of Exit 63 will have impacts to adjacent property owners. During the NEPA process, right-of-way needed for the construction of the project would be determined. It is likely that permanent right-of-way will be needed for the construction of the I-90 eastbound on ramp, however, currently it is anticipated that there are no full parcel takes or relocations of homes or businesses. To construct the I-90 westbound off and on ramp, a larger portion of permanent right-of-way may be needed from the agricultural properties along the west boundary of the project in order to provide adequate intersection spacing between the ramp terminals and adjacent frontage road. Permanent right-of-way may also be needed for the widening of I-90 mainline, West Gate Road and Highway 1416.
Utilities	During the NEPA process the utilities within the specific project footprint will be further evaluated and utility companies will be coordinated with to determine impacts to existing utilities and if relocations would be required.

2.20 NEPA Considerations and Likely Class of Action

The primary objective of the environmental scan report is to provide a planning-level overview of resources and determine the potential constraints and opportunities for the I-90 Exit 63 Interchange Modification Study and Highway Improvements between Exit 61 and Exit 67 Environmental Review and Design. During NEPA the public and agencies will have a chance to review and comment on the Purpose and Need, as well as the preferred alternative. The information provided in this report is intended to support the Purpose and Need and the selection of a preferred alternative of the Build Alternative. It is understood that the alternative presented in this study will be advanced as part of the SDDOT project development process. As defined below, there are three classes of action that may be initiated to comply with NEPA.

- An Environmental Impact Statement (EIS) is prepared for projects where it is known that the action will have a significant effect on the environment.
- An Environmental Assessment (EA) is prepared for actions in which the significance of the environmental impact is not clearly established. Should environmental analysis and interagency review during the EA process find a project to have no significant impacts on the quality of the environment, a Finding of No Significant Impact (FONSI) is issued.
- Categorical Exclusions (CEs) are issued for actions that do not individually or cumulatively have a significant effect on the environment.

The environmental setting and intensity of the impact on a particular resource are two considerations when determining the significance of impact. For the build alternative under consideration, no significant effects on the environment are known at the time. Thus, an EA has been selected to clarify the significance of the project's effects on the environment. The EA is used to provide sufficient environmental documentation to determine the need for an EIS or that a FONSI is the appropriate conclusion.

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