

US 89 Etna North



Environmental Assessment



September 2015

US 89 Etna North

Environmental Assessment



ENVIRONMENTAL ASSESSMENT

for

Etna North Section

Thayne to Alpine Junction

Lincoln County

WYDOT Project Number N103103

FHWA — WYDOT — EA-13-02

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List of Acronyms

AADT	Annual Average Daily Traffic
AASHTO	American Association of State Highway Transportation Officials
BMP	Best Management Practices
CAA	Clean Air Act
CFR	Code of Federal Regulations
CR	County Road
CWA	Clean Water Act
dba	A-weighted decibel
DEQ	Wyoming Department of Environmental Quality
EA	Environmental Assessment
EDR	Environmental Data Resources
E.O.	Executive Order
EPA	Environmental Protection Agency
ESA	Environmental Site Assessment
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
GAP	Gap Analysis Project
GIS	Geographic Information System
LOS	Level of Service
MBTA	Migratory Bird Treaty Act
mph	Miles Per Hour
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHS	National Highway System
NRHP	National Register of Historic Places
OWSA	Office of the Wyoming State Archaeologist
REC	Recognized Environmental Conditions
RM	Reference Marker

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SHPO	State Historic Preservation Office
START	Southern Teton Area Rapid Transit
SWPPP	Stormwater Pollution Prevention Plan
USACE	U.S. Army Corps of Engineers
USC	United States Code
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
UST	Underground Storage Tank
WGFD	Wyoming Game & Fish Department
WYDOT	Wyoming Department of Transportation

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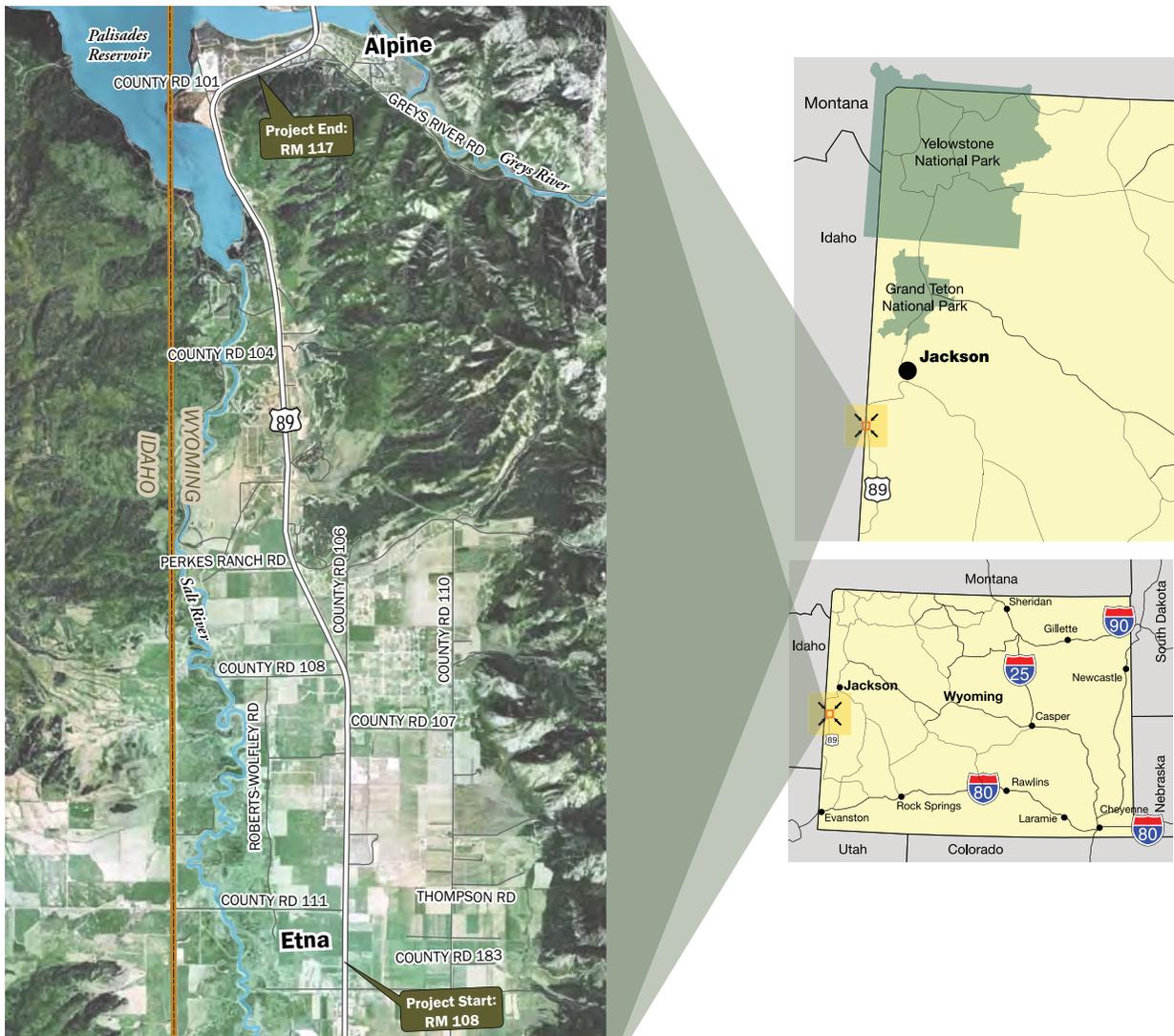
Executive Summary

ES.1 What are we proposing to do?

The Wyoming Department of Transportation (WYDOT) and the Federal Highway Administration (FHWA) are proposing improvements to 9.25 miles of US Highway 89 (US 89) in western Wyoming (Lincoln County) between Etna at reference marker (RM) 108.13 and

the Town of Alpine (RM 117.38), an area known as Lower Star Valley (the Project Area), located within the larger Star Valley. US 89 provides visitors a route from much of the western United States to the Jackson Hole region and two major national parks (Yellowstone and Grand Teton) (see **Figure ES-1**).

Figure ES-1 Project Vicinity



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US 89 is functionally classified as a Rural Principal Arterial. The primary function of US 89 as a Rural Principal Arterial is the safe and efficient movement of people and goods over long distances while allowing for limited access to adjacent lands. US 89 is also designated as part of the National Highway System (NHS). As part of the NHS, US 89 is considered a strategic national highway that is critical to national security and economic viability. See Chapter 1: Purpose and Need for Action for more information.

The alternatives development process began with the evaluation of the US 89 *Corridor Study*, conducted by WYDOT for Star Valley in January 2005. The *Corridor Study* conducted a detailed analysis of existing roadway conditions within and beyond the Study Area, and formulated a strategy and recommendations for improving and protecting the ability of US 89 to fulfill its intended function as a Rural Principal Arterial into the future. The overall purpose and need for this project, the recommendations presented in the 2005 *Corridor Study*, and the results of agency and public scoping were used to develop alternatives. See Chapter 2: Alternatives Analysis.

ES.2 Why are we proposing to do this?

The purpose of this project is to improve US 89 to fulfill its intended function as a Rural Principal Arterial. In general, the project is needed to:

- Increase highway capacity and improve mobility.
- Improve highway safety.
- Improve roadway conditions.

Increase Highway Capacity and Improve Mobility

US 89 traffic volumes, referred to as Annual Average Daily Traffic (AADT), have increased by approximately 16.4 percent (3,790 to 4,410) from 2004 to 2008. Traffic volumes increased in 2009 and 2010 to 4,770, followed by a recent decline to 3,600 in 2013. Depending on the year, trucks comprise approximately 6 to 7 percent of this volume. Increases and decreases that

have occurred since 2004 indicate that 2013 traffic volumes (3,600) are now only slightly below those experienced in 2004 (3,790).

To function properly and address potential safety issues, a Rural Principal Arterial should perform at Level of Service (LOS) C or better. The current LOS rating of C for US 89 is expected to degrade to LOS D by 2024 due to increased traffic volumes. During summer months, LOS could further degrade to E by 2024, which is 6,400 vehicles per day. LOS affects highway performance as well as safety by increasing the possibility of crashes, as drivers must continually avoid collisions with other vehicles.

Travelers on US 89 from 2004 to 2013 spent approximately 65 percent of the time following slower moving vehicles due to limited opportunities to safely pass and resume travel at the posted speed. Without improvements, the percent time spent following slower vehicles is expected to increase.

More than 100 uncontrolled (i.e., no traffic signal) approaches, such as driveways, provide access to and from the highway within the Project Area. These access points contribute to poor traffic flow and increase the potential for more frequent and more serious crashes. A variety of vehicles, including farm equipment traveling across US 89 from one field to another, use these access points throughout the corridor. As the slow-moving equipment enters the flow of traffic, it can cause collisions and slow normal traffic movement, increasing roadway congestion. Poor stopping distance related to these access points and mailboxes located along the highway cause unexpected turning movements that diminish the highway's safety.

Improve Highway Safety

Based on WYDOT crash history records, 206 crashes occurred on US 89 between 2004 and 2013 between Etna and Alpine, which is an average of 21 crashes per year. Of these 206 crashes, 22 (11 percent) involved alcohol and 60 (29 percent) were vehicle-animal collisions. Crashes in the Project Area showed a generally decreasing trend from 2005 to 2012. However, crashes

nearly tripled from 2012 to 2013, indicating a substantial increase in crashes and a need to address safety.

Of the 206 crashes that occurred from 2004 through 2013, nearly half (101) resulted in an injury or fatality. The number of fatalities decreased to zero in 2008 and has remained that rate since, and the number of injuries showed an overall declining trend until 2013. However, the number of injuries in 2013 doubled compared to 2012, also indicating a substantial increase in injuries and a need to address safety.

Improve Roadway Conditions

Several curves and dips or depressions (sags) along this section of US 89 require an upgrade to meet the standard 65 mph design speed. Left turns made from US 89 at county road intersections in the Project Area cause lines to form and traffic to slow during peak times (see **Figure ES-2**). In addition, the road's surface is subjected to severe annual winter freezing and thawing conditions, which has resulted in accelerated deterioration of surface conditions. The pavement was last rehabilitated in 2002 and now requires additional rehabilitation. See Chapter 1: Purpose and Need for Action for more information.

ES.3 Why do we think conditions will worsen?

There is no precise way to predict future economic and social events that can influence growth and traffic conditions, such as the 2008 economic recession that affected the entire country, as well as the Project Area. However, economic changes in the town of Jackson, 37 miles northeast of Alpine in Teton County, have strongly influenced changes in Star Valley and are expected to continue to do so. According to the 2012 *Lincoln County Economic Development Plan*, drops in home prices since the recession have fueled an influx of young families to Star Valley, which saw an increase of 575.9 percent over a 10-year period in the 25-34 age group. Retirement-aged individuals moving to the region have also increased Star Valley's population recently. These changing demographics and commuting patterns are reflected in increased bus use in the

area. Ridership on Southern Teton Area Rapid Transit (START), which provides commuter service through Star Valley between Etna and Jackson, has increased considerably, from approximately 150,000 passengers per year in 1993 to an average of over 840,000 passengers per year from 2008 to 2012. In 2013, START carried 899,318 riders, the highest in START history.

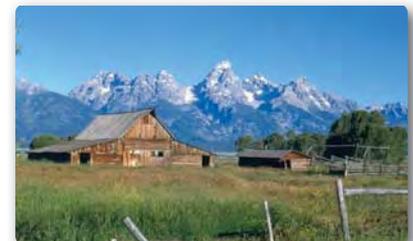
The 2012 *Lincoln County Economic Development Plan* also notes that "tourism has the potential to be a major economic benefit to the county, although the opportunities are under-realized at present." US 89 carries tourists to many of the state's most popular recreation destinations. Visitation to Yellowstone National Park has increased in recent years, with 2014 the second highest since visitation statistics were first recorded, starting in 1904. Visitation to Grand Teton National Park in 2014 was the 6th highest in the park's recorded history, and the highest in the past 10 years (since 2004). US 89 also provides access to Grand Targhee Ski Resort, Jackson Hole Mountain Ski Resort, and the Snow King Ski Area. On a grander scale, US 89 connects Mexico with Canada over nearly 2,000 miles, and was named by National Geographic in 2013 as the number one "Drive of a Lifetime" out of 500 "of the world's most spectacular trips." For these and other reasons, US 89 is expected to experience higher demand in coming years. See Chapter 1: Purpose and Need for Action for more information.



Star Valley



Southern Teton Area Rapid Transit (START)



Grand Teton National Park

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Figure ES-2 Project Area Major Intersections



ES.4 How are we proposing to do this?

Pursuant to the National Environmental Policy Act (NEPA), a range of reasonable alternatives was developed and evaluated to identify the alternative(s) that would best meet the purpose and need for the proj-

ect. Design guidelines were identified to provide the engineering basis for development of alternatives, and include the following:

- Maintain a 65 miles per hour (mph) design speed (65 mph posted speed) between Etna and Alpine.

- Maintain grades of six percent or less along the entire route of US 89.
- Provide sufficient cross-section to safely and efficiently handle traffic volumes forecasted to 2034.
- Maximize the use of existing infrastructure (bridges and culverts).
- Maximize the use of existing roadway alignment.

Six alternatives were considered and evaluated for their ability to address the purpose and need of this project:

- **Alternative 1:** No Build Alternative. Existing two-lane roadway maintained with spot safety improvements.
- **Alternative 2:** Improved Two-lane Roadway with Added Passing Lanes. Add passing lanes to the existing two-lane roadway.
- **Alternative 3:** Three-lane Roadway with Center Turn Lane. Develop a three-lane roadway with a center turn lane.

- **Alternative 4:** Four-lane Divided Roadway with Median, Eight-foot Outside and Four-foot Inside Shoulders. Develop a divided four-lane roadway.

- **Alternative 5:** Five-lane Roadway with Center Turn Lane. Develop a five-lane roadway with a center turn lane.

- **Alternative 6:** Four-lane Roadway with Center Turn Lane and Alternating Passing Lanes. Develop a four-lane roadway with a center turn lane that alternates depending on roadway segments that require additional passing opportunities.

Alternative 1 was retained as required by NEPA and to provide a baseline for comparison. Alternatives 2 through 4 were eliminated because they did not meet the project's purpose and need, or did not address the design criteria. Alternative 5 (5-Lane Alternative) and Alternative 6 (4-Lane Alternative) were retained as the build alternatives for analysis in this environmental assessment (**Figure ES-3** and **Figure ES-4**). See Chapter 2: Alternatives Analysis for additional information.

Figure ES-3 5-Lane Alternative

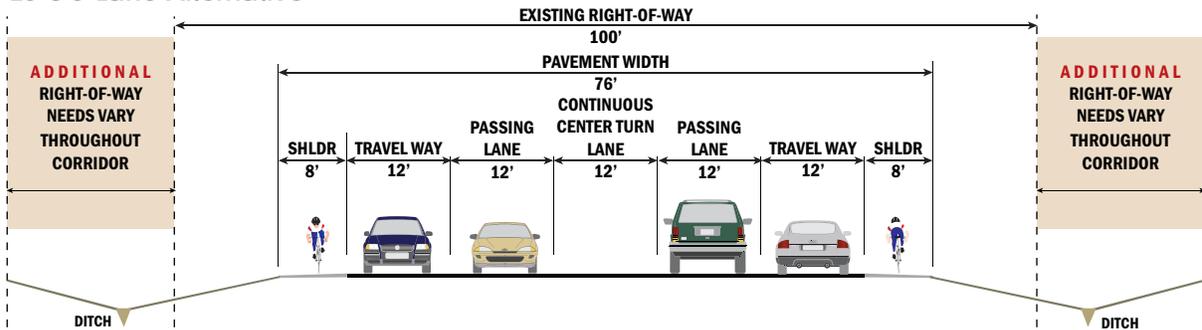
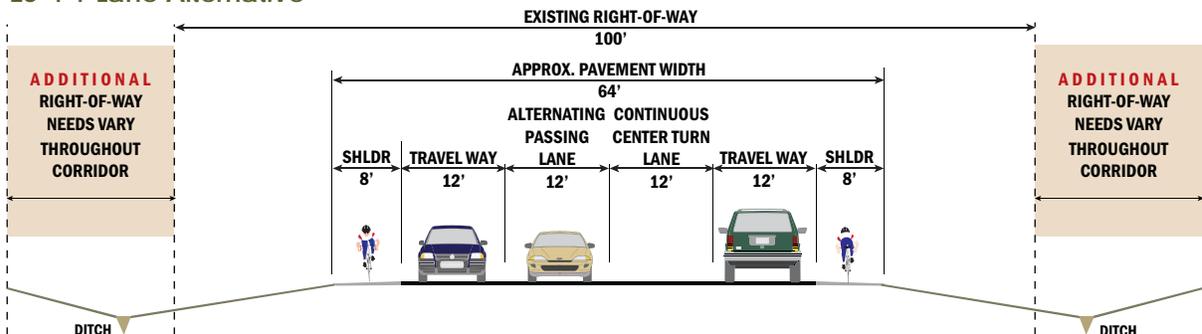


Figure ES-4 4-Lane Alternative



ES.5 Why not just increase bus service?

WYDOT supports the use of transit options, and increased bus service was considered as a standalone alternative. Although increased ridership from an expanded bus system would improve mobility and highway safety, it would not entirely satisfy or meet the project's purpose and need because it would not improve roadway conditions. As the department responsible for providing a safe transportation system for Wyoming's traveling public, WYDOT must also improve the conditions of the roadway for all users, including buses. Therefore, increased bus service as a standalone alternative was eliminated from analysis. However, the build alternatives include a new 1-acre transit park-and-ride on Sanderson Lane that would accommodate 27 parking spaces.

ES.6 Why not reduce the speed limit and make minor improvements to increase safety?

The standard 65 mph speed for a Rural Principal Arterial was set by the Wyoming state legislature.

The No Build Alternative includes spot safety improvements and maintenance actions. However, it would not address the project need to increase capacity and improve mobility.

ES.7 Why do these improvements need to be made now? 2034 is far away.

Improving a highway such as US 89 does not happen overnight. A substantial amount of planning, design, and engineering must occur before the first construction worker steps onto the site. In addition, FHWA guidance requires a 20-year traffic projection for widening projects when capacity and level of service are assessed.

ES.8 How much private property would be taken?

Some residences could be displaced under either build alternative. Both alternatives would require additional right-of-way, resulting in the direct conversion of some land to transportation use. The 5-Lane Alternative would require 41.7 total acres, and the 4-Lane Alternative would require 30.5 total acres. The majority of these lands would be agricultural under both alternatives. Actual property requirements would be determined at final project design. See Chapter 3: Affected Environment and Environmental Consequences for additional information.

ES.9 How much would noise increase?

Currently, seven noise-sensitive receptors are already impacted by traffic noise in the Study Area. If no action is taken, this number would increase to 11 in 2013. Under the 5-Lane Alternative, 23 receptors would be impacted by noise in 2034; 19 receptors would be affected under the 4-Lane Alternative in 2034. Noise barriers were considered to minimize effects on the impacted receptors. However, detailed analysis found that barriers would not be reasonable and feasible (for the cost). See Chapter 3: Affected Environment and Environmental Consequences and the *Noise Technical Memorandum* prepared for this project (in Appendix A) for additional information.

ES.10 Wouldn't widening the highway increase collisions with wildlife?

Research indicates that several factors influence how additional lanes could affect the frequency of wildlife collisions. It is not possible to accurately predict if the wider highway, traffic density, or speed limit would result in more or fewer impacts. Therefore, mitigation measures have been identified for the build alternatives to minimize wildlife-vehicle collisions to the extent practicable. Public education and the provision of a safety clear zone would help motorists avoid collisions with animals. Such collisions would be further reduced at the Greys River feedground by installing

wildlife fencing and an elk jump at that location. See Chapter 3: Affected Environment and Environmental Consequences and the *Wildlife and Fisheries Technical Memorandum* prepared for this project (in Appendix A) for additional information.

ES.11 Wouldn't widening the highway in just this section create a bottleneck effect at both ends?

Both the 5-Lane Alternative and 4-Lane Alternative would be wider than the highway at either end of the Project Area. The transition would occur gradually to help ensure a smooth conversion from two lanes to four or five lanes. The build alternatives would be designed to address potential future "bottlenecks" at these transition points, such as speed limit adjustments and lane merge signs posted in advance of these locations. See Chapter 3: Affected Environment and Environmental Consequences for additional information.

ES.12 Wouldn't a wider highway affect the area's rural nature?

The 5-Lane Alternative would change views for travelers to that of a wider roadway. Areas of straightened curves and vertical adjustments would be barely noticeable to motorists. Views for residents would change to those of a widened roadway, although the highway would continue to be a subordinate visual feature within the valley floor and surrounding landscape. Middleground and background views would remain unchanged. No new highway lighting would be included. Utilities would be relocated as necessary by the utility companies, who would determine if the lines would be above or below ground. Impacts would be similar under the 4-Lane Alternative, but to a lesser degree. Although a wider roadway would impact views under both build alternatives, the overall visual character of the area would likely remain rural. See Chapter 3: Affected Environment and Environmental Consequences for additional information.

ES.13 Who did we talk to about this project?

WYDOT conducted public and agency involvement throughout the NEPA process to ensure widespread public awareness of the project and to provide opportunities for timely input to project decision-making. Participants included interested citizens; property owners; representatives from the Town of Alpine, Etna, and Lincoln County; business owners and operators; and local, state, and federal agencies. In addition, WYDOT held four public meetings — a public scoping meeting in 2008, two public informational meetings in 2013, and one public informational meeting in 2014. A 30-day public and agency review period will accompany release of the EA to the public. See Chapter 4: Comments and Coordination and the *Public and Agency Coordination Report* (in Appendix B) prepared for this project for additional information.

ES.14 What happens next?

After release of the EA, a 30-day public review and comment period will begin, during which time WYDOT will host a public hearing to present the findings to the public. WYDOT will review public comments and address them in a document that identifies the decision made unless significant environmental impacts are identified. If a build alternative is selected for implementation, WYDOT will finalize consultation with appropriate agencies, finalize the design plans, initiate negotiation and purchase of property, prepare any necessary mitigation plans, and perform other tasks required prior to construction. It is estimated that construction would begin in 2021.

ES.15 What is the Preferred Alternative?

WYDOT evaluated the No Build Alternative, 5-Lane Alternative, and 4-Lane Alternative against the project's purpose and need statements, and reviewed the environmental impacts expected to resources within the Project Area to identify a Preferred Alternative (see **Table ES-1**).

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WYDOT has identified Alternative 5: Five-lane Roadway with Center Turn Lane as the Preferred Alternative. Although the No Build Alternative includes some actions to address safety and maintain roadway conditions, it would not fully meet the project's purpose and needs. Spot safety improvements under the No Build Alternative are not expected to sufficiently address safety issues associated with increased growth. Particularly, the No Build Alternative would not meet the project need to increase capacity and improve level of service. In addition, both build alternatives also include enhancements over the No Build Alternative that would improve overall quality of life in the valley, including creation of a new START bus park-and-ride and construction of a new pull-out and parking area for wildlife viewing at the Greys River feedground.

Both build alternatives would meet the project's purpose and need. Alternative 5 would have greater physical impacts due to its additional width compared to the 4-Lane Alternative. Specifically, more land would be converted to transportation use, more property would be acquired, more receptors would be impacted by noise, more runoff would occur, and more wetlands would be impacted (see **Table ES-1**). However, these effects would be offset by the safety advantages the 5-Lane Alternative would have over the 4-Lane Alternative. Although the 4-Lane Alternative would be expected to improve safety over existing conditions, its alternating passing lanes present more potential safety issues than one continuous passing lane. Therefore, Alternative 5 better meets the project's purpose to improve safety.

Table ES-1 Comparison of Impacts

Resource	Alternative		
	No Build	5-Lane	4-Lane
Land Use and Zoning	- No conversion to transportation use.	- Converts 41.7 acres to transportation use.	- Converts 30.5 acres to transportation use.
Social	- Adverse quality of life impacts from decreased LOS and safety, increased congestion.	- Increased quality of life through increased LOS and safety, decreased congestion. - Adverse impact from removal of individual mail-boxes.	- Same as 5-Lane Alternative.
Economic	- Adverse effects to tourism and ability to attract local investment. - Does not support Lincoln County's Tourism Concept.	- Beneficial effects to tourism and ability to attract local investment. - Supports Lincoln County's Tourism Concept.	- Same as 5-Lane Alternative. - Same as 5-Lane Alternative.
Transportation and Traffic	- Potential increased number of crashes. - Percent time following another vehicle increase from 60% to 71%. - Overall LOS D by 2034; LOS E during summer.	- Potential decreased number of crashes. - Percent time following another vehicle decrease to zero. - Overall LOS A by 2034.	- Potential decreased number of crashes compared to existing conditions, but potentially less so than 5-Lane Alternative due to alternating passing lanes. - Same as 5-Lane Alternative. - Same as 5-Lane Alternative.

Resource	Alternative		
	No Build	5-Lane	4-Lane
	<ul style="list-style-type: none"> - Increased congestion at access points. - 3-foot to 6-foot shoulders for cyclists. - Spot safety improvements. - No START park-and-ride facility. - Adverse safety impacts due to mail delivery, retrieval. - Adverse safety impacts from multiple access points to Alpine Hills. - Existing bottleneck effect at Alpine and Etna from speed reductions. 	<ul style="list-style-type: none"> - Decreased congestion at access points. - Increased safety with 8-foot shoulders for cyclists. - Increased safety with improvements to sags and curves. - Enhanced use of transit with new START park-and-ride facility. - Increased safety by removing mailboxes from corridor and consolidating them in two locations. - Increased safety from removal of an access point at Alpine Hills. - Potential increased bottleneck effect at Alpine and Etna from lane merges. 	<ul style="list-style-type: none"> - Same as 5-Lane Alternative.
Right-of-Way	<ul style="list-style-type: none"> - No right-of-way required. 	<ul style="list-style-type: none"> - Some property would be acquired; approximately 14.1 acres of residential use converted to transportation use. 	<ul style="list-style-type: none"> - Some property would be acquired; approximately 9.6 acres of residential use converted to transportation use.
Air Quality	<ul style="list-style-type: none"> - Increased emissions with increased traffic volumes; potential increased idling vehicles. 	<ul style="list-style-type: none"> - Increased emissions with increased traffic volumes; potential decreased idling vehicles. 	<ul style="list-style-type: none"> - Same as 5-Lane Alternative.
Noise	<ul style="list-style-type: none"> - 10 receptors impacted. 	<ul style="list-style-type: none"> - 23 receptors impacted. 	<ul style="list-style-type: none"> - 19 receptors impacted.
Water Resources and Water Quality	<ul style="list-style-type: none"> - Increased roadway pollutants in highway runoff with increased traffic volumes. - Potential increased impervious surface with spot safety improvements. 	<ul style="list-style-type: none"> - Increased roadway pollutants in highway runoff with increased traffic volumes. - Additional runoff from increased impervious surface. 	<ul style="list-style-type: none"> - Same as 5-Lane Alternative but to a slightly lesser degree.
Floodplains	<ul style="list-style-type: none"> - No impact. 	<ul style="list-style-type: none"> - No impact. 	<ul style="list-style-type: none"> - No impact.
Vegetation and Noxious Weeds	<ul style="list-style-type: none"> - No impact. 	<ul style="list-style-type: none"> - Minimal impacts with mitigation. 	<ul style="list-style-type: none"> - Same as 5-Lane Alternative.
Wildlife and Fisheries	<ul style="list-style-type: none"> - Increased vehicle-wildlife collisions with increased traffic volume. 	<ul style="list-style-type: none"> - Same as No Build plus converts 6.7 acres of Greys River feedground to transportation use. 	<ul style="list-style-type: none"> - Same as No Build plus converts 4.0 acres of Greys River feedground to transportation use.

US 89 Etna North

Resource	Alternative		
	No Build	5-Lane	4-Lane
Wetlands and Other Waters of the U.S.	- Increased roadway pollutants in highway runoff with increased traffic volumes.	- Same as No Build plus 0.02 acre temporary disturbance to wet meadow wetlands, 0.07 acre permanent impact to shrub swamp, 0.09 acre impact to Waters of the U.S.	- Same as No Build plus 0.01 acre temporary disturbance to wet meadow wetlands, 0.05 acre permanent impact to shrub swamp, 0.09 acre impact to Waters of the U.S.
Threatened and Endangered Species	- No impact.	- Not likely to adversely affect special status species.	- Same as 5-Lane Alternative.
Visual Resources	- No Impact.	- Changed views but subordinate to surrounding landscape.	- Same as 5-Lane Alternative.
Cultural Resources	- No Impact.	- No impact.	- No impact.
Hazardous Materials	- No Impact.	- No impact, but mitigation applied if hazardous materials found during construction.	- Same as 5-Lane Alternative.
Wild and Scenic Rivers	- No impact.	- No impact.	- No impact.
Parks and Recreation	- Potential impact from increased congestion at parking area for snowmobile use.	- Converts 0.3 acre of Palisades Wetlands Wildlife Viewing Area, 6.7 acres of Greys River feedground to transportation use. - Includes new parking and viewing area for feedground. - Decreased snowmobile parking area size and reduced congestion.	- Converts 0.3 acre of Palisades Wetlands wildlife Viewing Area, 4.0 acres of Greys River feedground to transportation use; remainder same as 5-Lane Alternative.

US 89 Etna North

Environmental Assessment



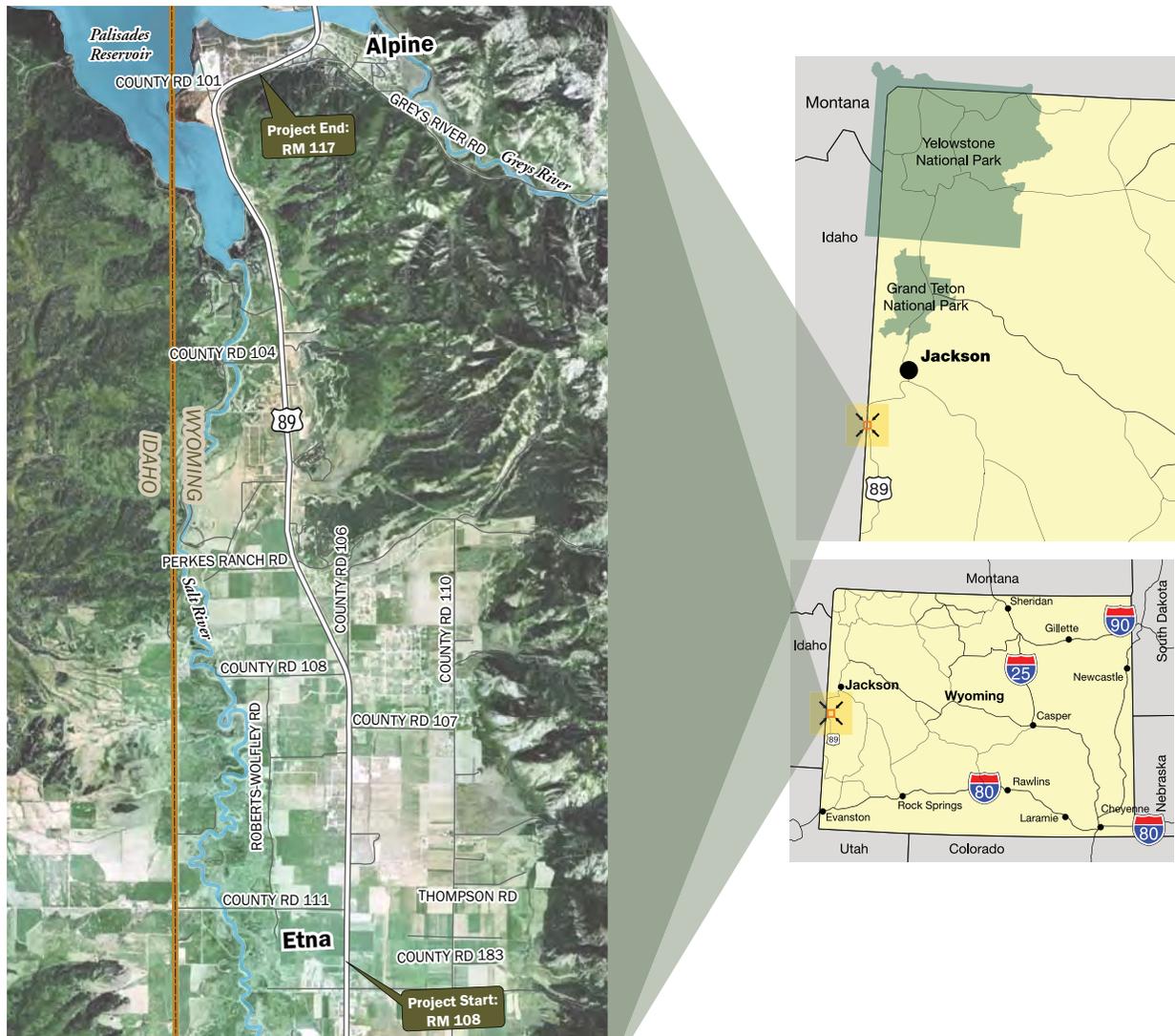
Chapter 1: Purpose and Need for Action

1.1 Introduction

The Wyoming Department of Transportation (WYDOT) and the Federal Highway Administration (FHWA) are proposing improvements to 9.25 miles of US Highway 89 (US 89) in western Wyoming (Lincoln County)

between Etna at reference marker (RM) 108.13 and the Town of Alpine (RM 117.38) (the Project Area). US 89 provides visitors a route from much of the western United States to the Jackson Hole region and two major national parks (Yellowstone and Grand Teton) (see **Figure 1-1**).

Figure 1-1 Project Vicinity



US 89 Etna North

In accordance with the National Environmental Policy Act (NEPA), this Environmental Assessment (EA) has been prepared to analyze impacts of proposed improvements.

1.2 Project Setting

US 89 provides a north-south connection through the entire country from Mexico to Canada, traveling from southern Arizona to northern Montana. Locally, US 89 extends through a rural area of Lincoln County known as Star Valley, which includes several communities of varying sizes, and provides a vital link to Interstate 80 (I-80) and Jackson, Wyoming. Star Valley is approximately 45 miles long and 12 miles wide, surrounded by the Bridger-Teton, Caribou, and Targhee National Forests. Alpine, Etna, and Star Valley Ranch comprise what is informally known as Lower Star Valley. Although outside of the actual Project Area, Star Valley Ranch influences the Project Area (Alpine to Etna). Therefore, the three communities that comprise Lower Star Valley (Alpine, Etna, and Star Valley Ranch) form the Study Area for this project.

According to the 2012 *Lincoln County Economic Development Plan*, Lincoln County has a high number of residents (80 percent) living in rural areas compared to the rest



Star Valley

of the state (35 percent). Lincoln County's population is also less dense than the state as a whole, with 3.6 people on average per square mile compared to 5.1 per square mile statewide (Lincoln County 2012). According to the Star Valley Chamber of Commerce, the current population of Star Valley, including Afton, Alpine, Thayne, and Star Valley Ranch, is approximately 4,700 (Star Valley Chamber of Commerce 2015).

Star Valley's rural setting defines the area's character (Star Valley Chamber of Commerce n.d.). The 2012 *Lincoln County Economic Development Plan* refers to the "rural charm and ambience of one of the most beautiful and attractive counties in the state," which

residents describe as "breathtaking, clean, refreshing, undiscovered, pristine, and untouched."

Highway Purpose and Current Use

US 89 is functionally classified by WYDOT as a Rural Principal Arterial, which provides the safe and efficient movement of people and goods over long distances while allowing for limited access to adjacent lands. US 89 is also designated as part of the National Highway System (NHS), which consists of roadways important to the nation's economy, defense, and mobility. This system was developed by the U.S. Department of Transportation in cooperation with the states, local officials, and metropolitan planning organizations. In addition to the Interstate Highway System, the NHS includes other Principal Arterials (such as US 89) in rural and urban areas that provide access between an arterial and a major port, airport, public transportation facility, or other intermodal transportation facility.

The 2012 *Lincoln County Economic Development Plan* recognizes US 89 as "the lifeblood corridor of the region and a critical link with areas beyond

US 89 is recognized as "the lifeblood corridor of the region and a critical link with areas beyond the county borders."

the county borders." As such, the highway's function as a Rural Principal Arterial is to provide for substantial statewide or interstate travel. A Rural Principal Arterial typically has high mobility and high access control, with a limited number of access points (such as intersections or driveways). In other words, this type of highway should have relatively smooth, uninterrupted flow with minimal entrances or exits. However, US 89 is also used by area residents for short, local trips within Star Valley's small towns, which affects mobility. The Project Area includes over 100 uncontrolled access points that affect traffic flow. **This means that US 89 is not currently functioning as it was intended.**

Changing Economics and Demographics

Economic changes in the town of Jackson, 37 miles northeast of Alpine in Teton County, have influenced changes in the Study Area. The wide differences in housing costs between Jackson and Star Valley have

resulted in a net outflow in the past decade of Star Valley residents commuting primarily to Teton County. In 2010, over 1,000 Teton County employees lived in Lincoln County, representing 5.6 percent of Lincoln County's 2010 population. According to the 2012 *Lincoln County Economic Development Plan*, the Jackson area has little room for future growth. Because of this, the plan notes, billionaires are "pushing out the [Teton County] millionaires, who are going to Star Valley." According to Lincoln County, **this demographic shift is expected to have "huge economic impacts"** through development of restaurants, entertainment, and recreational opportunities in or near Alpine (Lincoln County 2012).

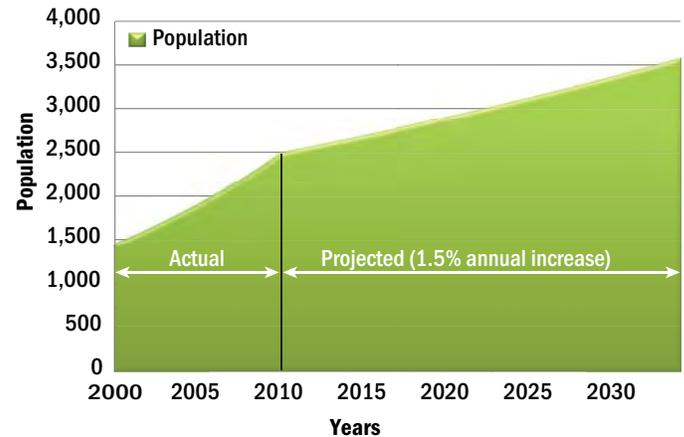
The wide differences in housing costs between Jackson and Star Valley have resulted in a net outflow of residents commuting primarily to Teton County.

Despite a sharp decline in annual population growth that began in 2010, average annual growth in Lincoln County for 2013 was comparable to 2000-2009.



Star Valley residential development

Figure 1-2 Population Growth in Lower Star Valley



Source: Census 2000 and 2010

Lincoln County's population has been climbing since 1970, indicating faster growth in recent decades than the state as a whole (Lincoln County 2012). **Figure 1-2** and **Table 1-1** show overall growth within the region and the state from 2000 through 2010 based on U.S. Census data. Overall growth in Alpine, Etna, and Star Valley Ranch (i.e., Lower Star Valley) outpaced that of Lincoln County and the state during that time-frame. Based on U.S. Census data's estimates of 2013 population (as of July 1, 2013), growth was expected to be significantly less.

Table 1-1 Overall Population Change, 2000-2013

Location	2000	2010	Percent Change 2000-2010	2013*	Percent Change 2010-2013
Alpine	550	828	50.5%	836	1.0%
Etna	123	164	33.3%	Not available	Not available
Star Valley Ranch	776	1,503	93.7%	1,527	1.6%
Lincoln County	14,573	18,106	24.2%	18,364	1.4%
Teton County	18,251	21,294	16.7%	22,268	4.6%
Wyoming	493,782	563,626	14.1%	582,658	3.4%

*U.S. Census Bureau estimate as of July 1, 2013

Source: U.S. Census 2010

Table 1-2 Average Annual Population Change, Lincoln and Teton Counties, 2000-2013

County	2000-2009		2010-2013		2013	
	Average Annual Percent Change	State Rank	Average Annual Percent Change	State Rank	Average Annual Percent Change	State Rank
Lincoln	2.4	3	0.4	16	2.3	4
Teton	1.9	5	1.2	5	2.9	2

Source: University of Wyoming 2014

US 89 Etna North

More recent population data analysis (November 2014) from the University of Wyoming, based on U.S. Department of Commerce Bureau of Economic Analysis data, provides similar county information for 2000-2009 as average annual change (see **Table 1-2**). Lincoln County's population grew by an average annual percent change of 2.4 percent from 2000 through 2009, the third highest growth rate in the state (out of 23 counties), and outpaced Teton County, which ranked fifth. Starting in 2010, Lincoln County's population grew at a much slower average annual rate of 0.4 percent, ranking sixteenth highest in the state. However, data for 2013 alone shows that **average annual growth in 2013 generally returned to 2000 through 2009 levels**, at 2.3 percent. This growth was the fourth highest in the state, just slightly behind Teton County, which ranked second (University of Wyoming 2014). Based on the average annual percent change shown in **Table 1-2**, average annual growth in Lincoln County overall from 2004 through 2013 was approximately 1.8 percent.

The 2012 *Lincoln County Economic Development Plan* notes that retirement-aged individuals moving to the region have increased Star Valley's population recently. Drops in home prices

Drops in home prices in recent years have fueled an influx of young families to Star Valley, which saw an increase of 576 percent over a 10-year period in this age group.

since the recession have fueled an influx of young families to Star Valley, which saw an increase of 576 percent over a 10-year period in the 25-34 year-old age group. Although initially started as a retirement association, Star Valley Ranch has also experienced major shifts to younger age groups in the last 10 years (Lincoln County 2012). **All of these demographic changes represent a change in the area's lifestyle and commuting patterns.**

According to a report prepared by the University of Wyoming, growth in the number of second homes plays an important role in driving residential development in Wyoming, particularly in rural areas of the state. Because second homes are not considered a primary residence, the people living in them are not

counted as part of the community's population. Therefore, the impacts of second homes are not readily apparent from examining changes in population, which only considers changes in the number of residents.

Lincoln County has the state's third highest percentage of housing units that are second homes, behind adjacent Teton County and Sublette County. The number of second homes in Lincoln County grew between 2000 and 2010, but the actual percentage of second homes in the county remained stable: 13.4 percent in 2000 and 13.3 percent in 2010. **However, nearly three-fourths of the state's second home growth from 2000 to 2010 was in Wyoming's four northwestern counties, including Lincoln** (University of Wyoming 2012).

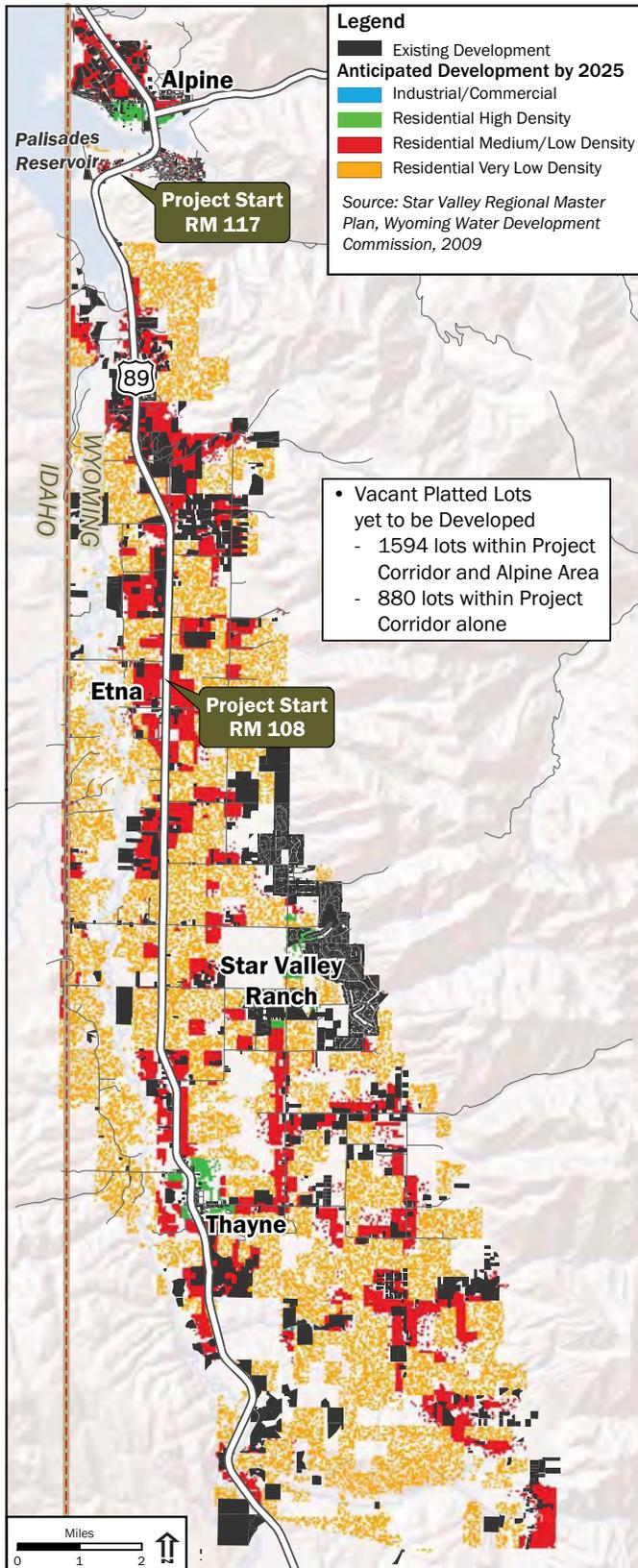
Although Alpine has limited room to expand due to natural constraints, 99.25 acres—almost 25% of its total acreage—of vacant residential land currently exists within the town. Star Valley Ranch is another example of recent growth with latent development potential that will influence traffic on US 89. Incorporated in 2005 as an association of primarily retired homeowners, Star Valley Ranch has since become a resort with golf courses and related activities (Star Valley Chamber of Commerce n.d.). Star Valley Ranch also has a large number of vacant acres; 654 acres, or 39.1% of the community, is vacant residential land. This is only slightly more than the 592 acres that are currently developed as residential (Lincoln County 2012) (see **Figure 1-3**). **New residential development throughout Star Valley is expected to place additional strain on US 89.**

The area's changing demographics and commuting patterns are reflected in increased bus use in the area. Ridership on Southern Teton

Although WYDOT cannot affect the changing demographics that have occurred in Star Valley and are expected to continue, WYDOT can affect highway performance within the valley, including safety.

Area Rapid Transit (START), which provides commuter service through Star Valley between Etna and Jackson, has increased considerably, from approximately 150,000 passengers per year in 1993 to over 840,000

Figure 1-3 Anticipated Development



passengers per year from 2008 to 2012, according to Michael Wackerly (Transit Director) of START (see **Figure 1-4**). In 2013, the START bus carried 899,318 riders, the highest ever in START history. Similarly, a 23-mile section of US 89 between Alpine and Hoback Junction was recently reconstructed to improve mobility and safety for commuters to Jackson and the traveling public in general. **Although outside the Study Area, these regional changes are expected to continue influencing growth in Star Valley, which in turn will further affect traffic and safety on US 89.**



Southern Teton Area Rapid Transit (START)

Tourism

The 2012 *Lincoln County Economic Development Plan* notes that “tourism has the potential to be a major economic benefit to the county, although the opportunities are under-realized at present.” The plan includes a Tourism Concept that “creates a unified tourism experience while focusing on improvements along the US 89 highway corridor,” under which US 89 becomes the county’s “primary tourism corridor.” The town of Alpine is identified in the plan as both a major stopover and a major destination, with nearby Grand Canyon of the Snake River another major destination.

Lincoln County’s Tourism Concept “creates a unified tourism experience while focusing on improvements along the US 89 highway corridor.”

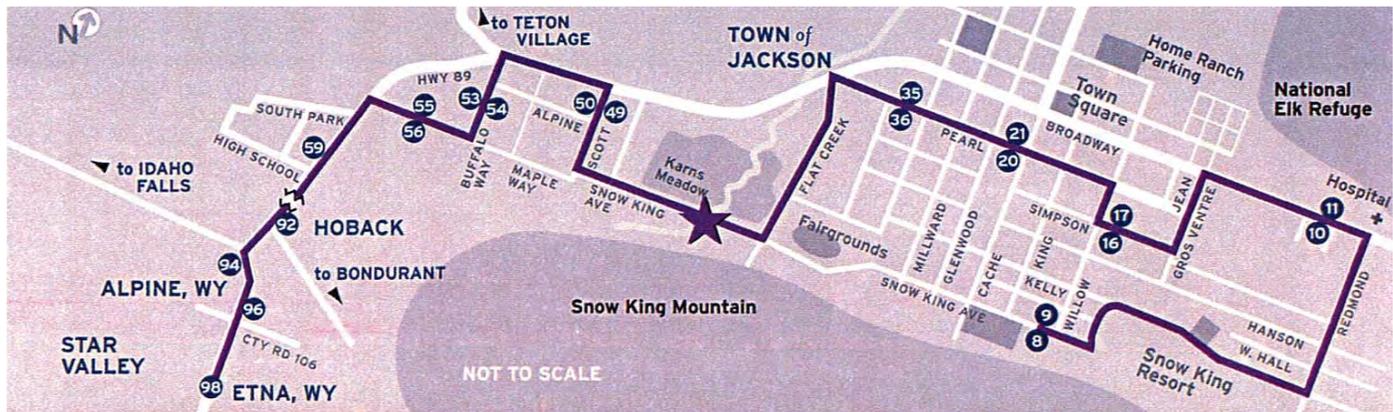
In addition to carrying commuter and commercial traffic through the valley to Jackson to the north and I-80 to the south, US 89 also brings tourists to many of the state’s most popular recreation destinations. Visitation to Yellowstone National Park has increased



Grand Teton National Park

US 89 Etna North

Figure 1-4 START Bus Route Map



in recent years, with 2014 the second highest since visitation statistics were first recorded, starting in 1904. Visitation to Grand Teton National Park in 2014 was the 6th highest in the park's recorded history, and the highest in the past 10 years (since 2004) (NPS n.d., Yellowstone Insider 2013). US 89 also provides access to Grand Targhee Ski Resort, Jackson Hole Mountain Ski Resort, and the Snow King Ski Area, which are popular winter destinations.

On a grander scale, US 89 is a destination unto itself. The highway connects Mexico with Canada over nearly 2,000 miles and was named by National Geographic as the number one "Drive of a Lifetime" out of 500 "of the world's most spectacular trips" (National Geographic 2013). The "US Route 89 Appreciation Society" provides detailed trip planning information for the highway's entire length, and other tourism web sites are devoted to it. In recognition of US 89's scenic qualities, the state of Wyoming recently designated the highway as the Star Valley Scenic Byway, including the section from Etna to Alpine (WY Travel and Tourism 2015).

Increasing tourism will place additional strain on US 89 in the Study Area.

Current and Future Highway Conditions

Estimating current and future highway conditions is important for designing solutions to transportation problems in the Study Area. WYDOT used Highway Capacity Software (HCS) to estimate quality of mobility in terms of level of service, traffic volumes, and percent time spent following another vehicle. The HCS is based on methodology presented in the Highway

Capacity Manual (HCM) published by the Transportation Research Board, and is a widely used traffic/transportation tool that is well adapted for the evaluation of these traffic parameters.

Highway conditions are basically a reflection of traffic volume, and are rated on a scale that assigns performance grades from A to F, with A being excellent and F being extremely poor. This measure of congestion is called level of service (LOS), and is based on average travel speed, percent time delay (i.e., the amount of time spent following a slower vehicle), and capacity utilization (i.e., the volume of vehicles using the highway versus the volume it was designed to handle). Currently, US 89 operates at LOS C within the Study Area. Performance under LOS C is stable, although movements are somewhat restricted due to higher volumes. Under LOS C, there is a noticeable increase in the formation, size, and frequency of vehicle groups, and percent time delays can be up to 60 percent (meaning 60 percent of travel time is spent following slower vehicles) (see Figure 1-5).

Level of Service is expected to degrade from a rating of C to D by 2024.

As residential development and associated commercial development continue in Star Valley, the performance of US 89 would be further compromised. **LOS for US 89 within the Project Area is expected to worsen to D by 2024** (see Figure 1-5). Under LOS D, traffic movements would be more restricted, and passing demand would be very high with few, if any, opportunities to pass. Vehicle group sizes of 5 to 10 vehicles

Figure 1-5 LOS Conditions

**Roadway Segment
Operating Characteristics**

Free flow, low traffic density, passing demand well below passing capacity, no groups of three or more vehicles, drivers delayed less than 30% of time by slow moving vehicles.

Minimum delay, stable traffic flow, passing demand equals passing capacity, drivers delayed up to 45% of time by slow moving vehicles.

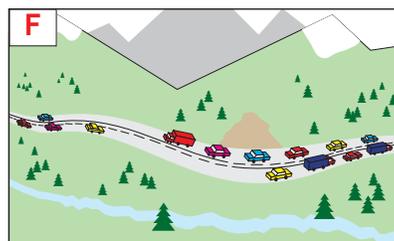
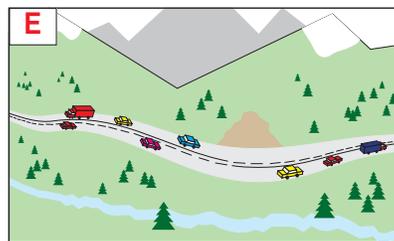
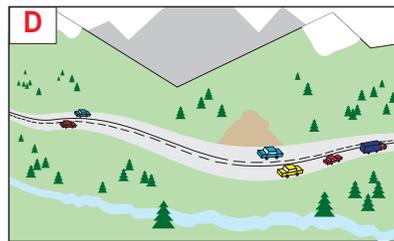
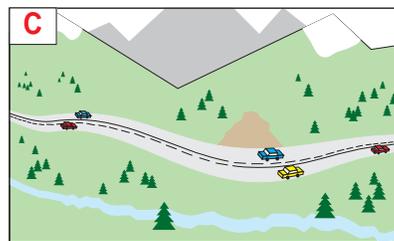
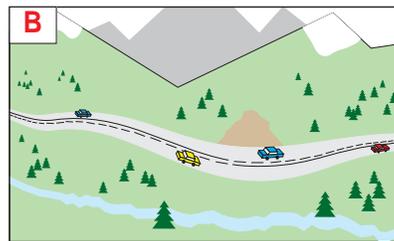
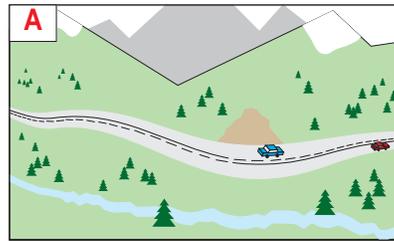
Stable condition, movements somewhat restricted due to higher volumes, but not objectionable for motorists, noticeable increases in group formation, size, and frequency, percent time delays up to 60%. Goal for traffic operations in rural areas.

Movements more restricted, passing demand is very high while passing capacity approaches zero, group sizes of 5 to 10 vehicles are common, turning vehicles cause “shock-waves” in traffic stream, percent time delays approach 75%.

Actual capacity of the roadway involves delay to over 75% of motorists, passing is virtually impossible, vehicle grouping becomes intense.

Forced flow with demand volumes greater than capacity, resulting in severe congestion, no passing opportunities, and long vehicle groups.

LOS



would be common as defined by LOS D, and turning vehicles would cause “shock waves” in the traffic stream. Time delays would approach 75 percent. LOS currently approaches E during the summer months. Under LOS E, motorists experience a delay of over 75 percent, passing becomes virtually impossible, and congestion becomes intense.

Options for an alternative transportation route are constrained by the Salt River, which parallels US 89 one to two miles to the west; the Salt River Range mountains, which parallel the highway one to two miles to the east; and residential development currently underway in the valley. Therefore, **US 89 will remain the only viable north-south Rural Principal Arterial through Star Valley.**

Quality of life for area residents and visitors is expected to degrade through increased roadway congestion, decreased traffic speed (falling consistently below the posted speed limit), increased potential for crashes and wildlife-vehicle collisions, and increased severity of crashes. Although WYDOT cannot affect the changing demographics that have occurred in the Study Area and are expected to continue, WYDOT can affect highway performance within the valley, including safety. Because FHWA guidance requires a 20-year traffic projection for widening projects when capacity and level of service are assessed, WYDOT needs to begin planning for these expected future conditions now. For these reasons, **WYDOT is proposing to address expected deficiencies within the Project Area before they intensify to help prevent injury and property damage, and to improve the flow of people and goods.**

1.3 Project Purpose

The purpose of this project as described above is to improve US 89 between Etna and the Town of Alpine to fulfill its intended function as a Rural Principal Arterial.

US 89 Etna North

1.4 Project Needs

The project setting, described above, drives the need for this project in several ways. In general, the project is needed to:

- Increase highway capacity and improve mobility.
- Improve highway safety.
- Improve roadway conditions.

A highway should be designed to accommodate traffic volume expected to occur within the life of the facility under reasonable maintenance. For widening projects when capacity and level of service are assessed, the analysis should be based on a 20-year traffic projection. Therefore, this project is designed to improve highway operations until 2034, the project's "design year." Design year is the year a project is expected to cease operating at the level for which it was designed. Interim design year is an approximate midpoint between construction and the design year (2024).

WYDOT gathered and analyzed highway data for the Project Area for the past 10 years, 2004 through 2013. This information was used to further refine the needs for this project, as described below.

Increase Highway Capacity and Improve Mobility

In order for a highway to safely handle increasing traffic volumes, its capacity must be increased. In order to improve mobility, level of service must be improved and the effects of slower moving vehicles on traffic flow must be addressed.

Traffic Volumes

Traffic volumes are referred to as Annual Average Daily Traffic (AADT). The AADT represents an average daily traffic volume for the entire year, although traffic volumes fluctuate seasonally, with volumes in the Project Area typically highest during summer as a result of tourism. Peak traffic volumes within the Project Area occur during June, July, August, and September. Automatic traffic counter stations located north and south of the Project Area recorded monthly average daily traffic for these peak months during 2013 and

2014. The results indicated a range of 4,639 to 6,221 vehicles per day, with most recordings well over 5,000 vehicles per day.

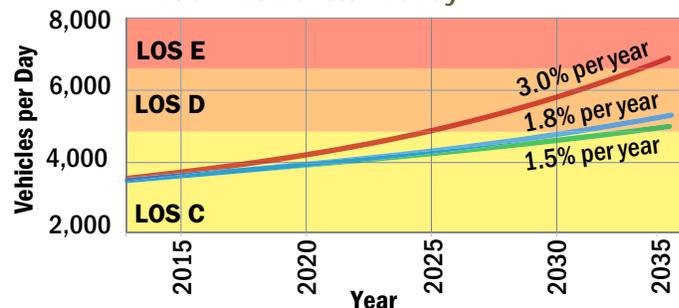
Overall, US 89 traffic volumes within the Project Area increased by approximately 16.4 percent (3,790 to 4,410) from 2004 to 2008. Traffic volumes increased in 2009 and 2010 to 4,770, followed by a recent decline to 3,600 in 2013. Depending on the year, trucks comprise approximately 6 to 7 percent of this volume. As shown in **Table 1-3**, increases and decreases that have occurred since 2004 indicate that 2013 traffic volumes (3,600) are now only slightly below those experienced in 2004 (3,790).

Table 1-3 Change in AADT, 2004-2013

Year	AADT	Percent Change
2004	3,790	not applicable
2008	4,410	16.4% increase
2010	4,770	8.2% increase
2013	3,600	24.5% decrease

A range of growth rates from 1 percent to 3 percent was analyzed based on current conditions to estimate future traffic volumes. As noted under Changing Economics and Demographics, above, average annual growth in Lincoln County from 2004 through 2013 was approximately 1.8 percent. WYDOT conservatively estimates annual traffic to increase in the Project Area from 1 to 1.5 percent by 2034, this project's design year. Using 2013 traffic volumes as the base year, AADT is expected to approach 4,250 in 2024 and 4,925 in 2034, thereby degrading to LOS D (described under Project Setting, above, and in more detail, below) (see **Figure 1-6**).

Figure 1-6 Historic and Projected Daily Traffic and LOS in Lower Star Valley



Level of Service

As mentioned above, the current LOS rating of C for US 89 is expected to degrade to LOS D by 2024 due to increased traffic volumes. During summer months, LOS could further degrade to E, which is 6,400 vehicles per day, as average daily summer traffic volumes currently reach as high as 6,221. LOS affects highway performance as well as safety by increasing the possibility of crashes, as drivers must continually avoid collisions with other vehicles under poor LOS conditions. To function properly and address potential safety issues, a Rural Principal Arterial should perform at LOS C or better. Because degraded LOS is generally the result of increased congestion, the capacity of the highway needs to be increased to handle the projected additional traffic volume (see **Table 1-4** and **Figure 1-6**).

Table 1-4 AADT and LOS

Year	AADT	LOS
2004	3,790	C
2008	4,410	C
2010	4,770	D
2013	3,600	C
Interim Design Year 2024	4,020 – 4,990	D
Design Year 2034	4,400 – 5,700	D

Source: WYDOT Traffic Program

Seven county roads (CRs) intersect US 89 at six intersections along the 9.25 miles between Etna and Alpine (see **Figure 1-7**). Left turns into these roads are made from the two-lane highway, which causes lines to form and traffic to slow. This congestion is expected to become worse as traffic volumes increase and LOS degrades.

Percent Time Spent Following

Travelers on US 89 within the Project Area from 2004 to 2013 spent approximately 65 percent of the time following slower moving vehicles due to limited opportunities to safely pass and resume travel at the posted speed. Without improvements, the percent time spent following slower vehicles is expected to increase to 67.1 percent dur-

Time spent following slower vehicles is expected to result in a driving speed that is lower than the posted speed.

ing the interim design year (2024) and 71.0 percent during the design year (2034) (see **Table 1-5**). This would result in a driving speed that is lower than the posted speed limit. Safety will also be compromised, as drivers must be vigilant in adjusting their speed and calculating passing opportunities to accommodate slower vehicles.

Table 1-5 Percent Time Spent Following a Vehicle

Year	Percent Time Spent Following a Vehicle
2013	64.5%
2024	67.1%
2034	71.0%

Source: WYDOT Traffic Program

Uncontrolled Access Points

More than 100 uncontrolled (i.e., no traffic signal) approaches, such as driveways, provide access to and from the highway within the Project Area.



Access Points

These access points include 41 residential approaches, 31 commercial approaches, 39 agricultural field approaches, and 14 major or large subdivision approaches. Many of these access points also serve as areas for emergency stopping or winter maintenance activities. The existing access points need to remain because no parallel local roadways, such as frontage roads, exist for alternate access routes.

However, these access points contribute to poor traffic flow and increase the potential for more frequent and more serious crashes. A variety of vehicles, including farm equipment traveling across US 89 from one field to another, use these access points throughout the corridor. As the slow-moving equipment enters the flow of traffic, it can cause collisions and slow normal traffic movement, increasing roadway congestion. Poor

More than 100 uncontrolled approaches provide access to and from US 89 within the Project Area.

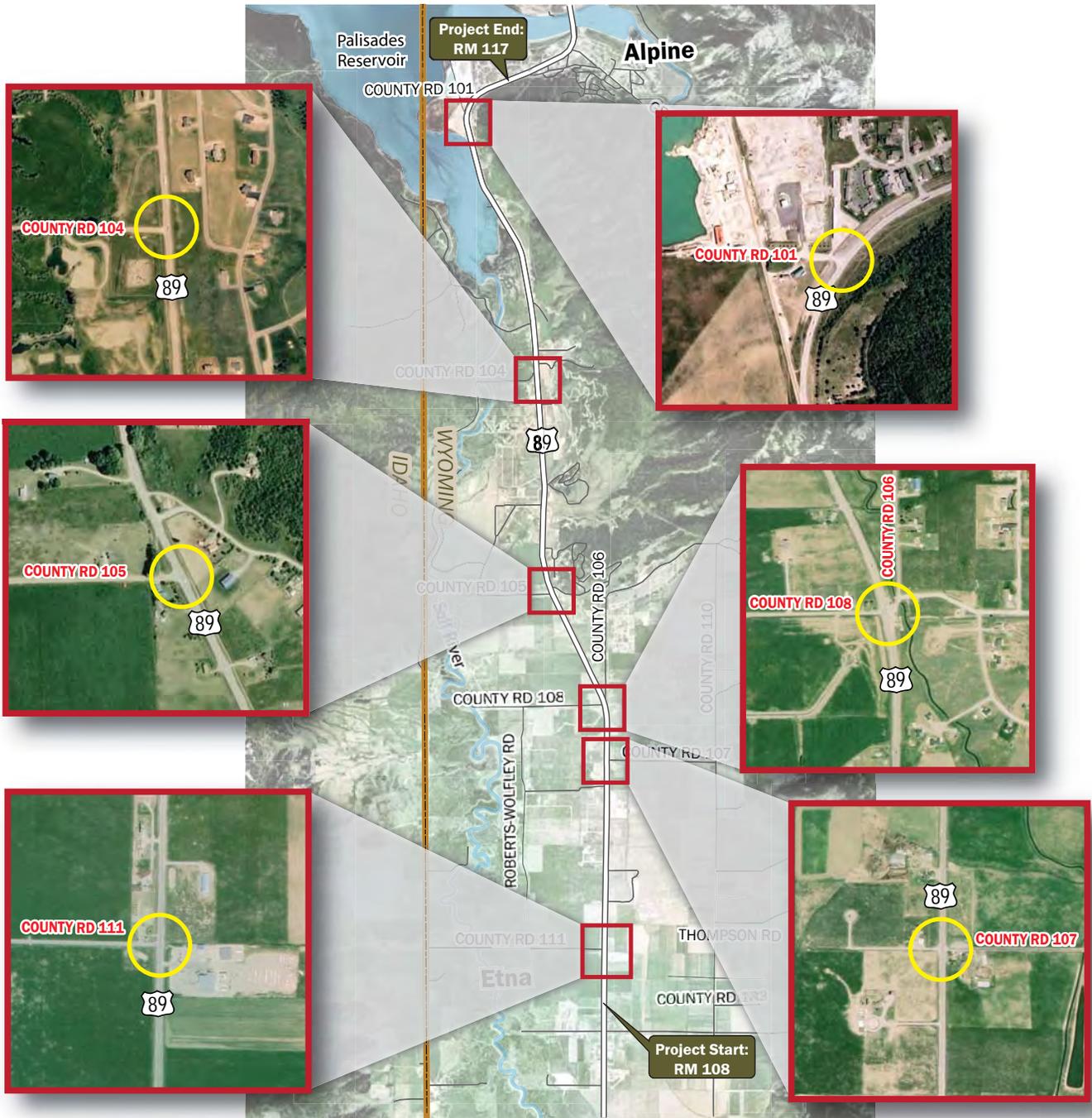
US 89 Etna North

stopping distance related to these access points and mailboxes located along the highway cause unexpected turning movements that diminish the highway's safety.

As US 89 is increasingly depended upon by commuters, tourists, and local traffic, as well as the agricultural community (particularly during harvest), access

points are expected to become more of a safety concern. In addition, roadways planned by others (e.g., the county and developers) or currently being developed outside the WYDOT right-of-way, are designed to use existing access points, which will place additional strain on US 89.

Figure 1-7 Project Area Major Intersections



Improve Highway Safety

Based on WYDOT crash history records, 206 crashes occurred on US 89 between 2004 and 2013 between Etna and Alpine, which is an average of 21 crashes per year (see **Table 1-6**). Of these 206 crashes, 22 (11 percent) involved alcohol and 60 (29 percent) were vehicle-animal collisions. Total crashes in the Project Area showed a generally decreasing trend from 2005 to 2012; however, total crashes nearly tripled from 2012 to 2013.

This segment of US 89 experiences an average of 21 crashes per year.

Table 1-6 US 89 Project Area Safety Record

Year	Injury Crashes	Property Damage Only Crashes*	Total Crashes
2004	11	11	22
2005	13	15	28
2006	6	22	28
2007	9	12	21
2008	6	18	24
2009	2	9	11
2010	3	16	19
2011	1	18	19
2012	2	7	9
2013	6	19	25
TOTAL	59	147	206

*No injuries, no fatalities

Source: WYDOT Highway Safety Department

The 206 crashes that occurred within the Project Area from 2004 through 2013 resulted in 101 injuries, including three fatalities (see **Table 1-7**). (The number of persons injured in **Table 1-7** is higher than the number of injury crashes in **Table 1-6** because more than one person could be injured in a crash.) The number of injuries showed an overall declining trend until 2013, which doubled over the previous year. The number of fatalities decreased to zero in 2008 and has remained that rate since.

Two of the three fatalities that occurred within the Project Area from 2004-2013 were head-on collisions; the third was a rollover. Rural two-lane roadways have a high incidence of head-on collisions, which can result from a variety of driver behaviors, including falling

Table 1-7 Number of Injuries and Fatalities, 2004-2013

Year	Number of Persons Injured	Number of Fatalities	Total
2004	18	1	19
2005	25	1	26
2006	7	0	7
2007	16	1	17
2008	7	0	7
2009	4	0	4
2010	5	0	5
2011	1	0	1
2012	5	0	5
2013	10	0	10
TOTAL	98	3	101

Source: WYDOT Highway Safety Department

asleep or traveling too fast in a curve. To a lesser extent, head-on collisions can also be related to passing maneuvers, where one vehicle attempts to pass a slower vehicle traveling ahead in the same direction. The danger occurs from the passing vehicle occupying the opposing lane of travel; as a result, passing accidents are more severe than non-passing accidents. Although passing-related accidents on rural two-lane roads are more commonly sideswipes, rear-ends, and running off the road than head-on collisions, head-on collisions account for more fatalities (FHWA 1994, Garder 2006).

The public has expressed safety concerns the US 89 intersection with CR 106, which is close to the highway's intersection with CR 108. A commuter parking area exists where CR 106 turns to the northeast near RM 111. This area has many turning movements, particularly during winter when the parking area is used by snow-mobilers. These conditions are expected to worsen as the area population increases with higher-density residential development.

Improve Roadway Conditions

Roadway deficiencies are strongly related to safety, and improving factors such as sharp curves and dips or depressions (sags), and pavement would improve roadway conditions while also enhancing safety.

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Sharp Curves and Sags

The operational efficiency of the roadway is affected in part by the ability of motorists to safely negotiate curves (horizontal alignment) and sags (vertical alignment). Several curves and sags within the Project Area require an upgrade to meet the standard 65 mph design speed for a Rural Principal Arterial. Motorists traveling at speeds such as this must slow down at curves and experience difficulty negotiating sags, resulting in inefficient traffic flow. Crash history for curves within this segment of US 89 is shown in **Table 1-8** and **Table 1-9**.

Table 1-8 Crash Data for Curves by Milepost, 2004-2013

Milepost	Number of Crashes
110.73-111.02	4
112.07-112.15	2
112.34-112.43	5
112.96-113.07	3
114.52-114.64	1
115.12-115.32	6
115.79-115.95	7
116.37-116.83	13
Total	41

Source: WYDOT Highway Safety Department

Table 1-9 Crash Data for Curves by Year, 2004-2013

Year	Number of Crashes
2004	4
2005	7
2006	6
2007	4
2008	6
2009	0
2010	3
2011	6
2012	2
2013	3
Yearly Average	4.1

Source: WYDOT Highway Safety Department

Pavement

The current surfacing for US 89 within the Project Area is four-inch asphalt and four-inch crushed base. The pavement was last rehabilitated in 2002 (3 miles of pavement north of Etna) and in 1988 (6 miles of pavement south of Alpine). The US 89 pavement is subjected to severe annual winter freezing and thawing conditions, which have accelerated deterioration of surface conditions. A pavement rehabilitation strategy is needed to effectively function as a rural principal arterial to the year 2034.

1.5 Who Was Involved in Development of This Project?

WYDOT conducted public and agency involvement throughout the NEPA process to ensure widespread public awareness of the project and to provide opportunities for timely input to project decision-making (see **Figure 1-8**). Participants included interested citizens; property owners; representatives from Alpine, Etna, and Lincoln County; business owners and operators; and local, state, and federal agencies. In addition, WYDOT held four public meetings — a public scoping meeting in 2008, two public informational meetings in 2013, and one public informational meeting in 2014. See Chapter 4: Comments and Coordination and the *Public and Agency Coordination Report* (Appendix B) prepared for this project for additional information.

1.6 Summary

The purpose of the proposed US 89 Etna North project is to improve the highway to fulfill its intended function as a Rural Principal Arterial.

Implementation of the project is intended to address the following US 89 corridor needs:

- Increase highway capacity and improve mobility.
- Improve highway safety.
- Improve roadway conditions.

These needs and the resultant purpose of the project guided the development of a reasonable range of alternatives identified for further evaluation in Chapter 2: Alternatives Analysis.

Figure 1-8 US 89 Chronology



**Based on the selection of a preferred alternative.*

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Chapter 2: Alternatives Analysis

Pursuant to the National Environmental Policy Act (NEPA), a range of reasonable alternatives was developed and evaluated to identify the alternative(s) that would best meet the purpose and need for the project, described in Chapter 1 (see **Figure 2-1**). This chapter presents the alternatives that were considered, eliminated, and/or carried forward for detailed environmental study, and why.

2.1 How Were Alternatives Developed and Evaluated?

The alternatives development process began with the evaluation of the US 89 *Corridor Study*, conducted by the Wyoming Department of Transportation (WYDOT) for Star Valley in January 2005. The *Corridor Study* conducted a detailed analysis of existing roadway conditions along US 89 from reference marker (RM) 69 (approximately 10 miles south of Smoot) north to Alpine Junction and through the Star Valley communities of Smoot, Afton, Grover, Thayne, Etna, and Alpine. The *Corridor Study* also included a short segment of US Highway 26 from the Idaho State line to Alpine Junction (RM 0.00 through RM 2.37). The subject of this

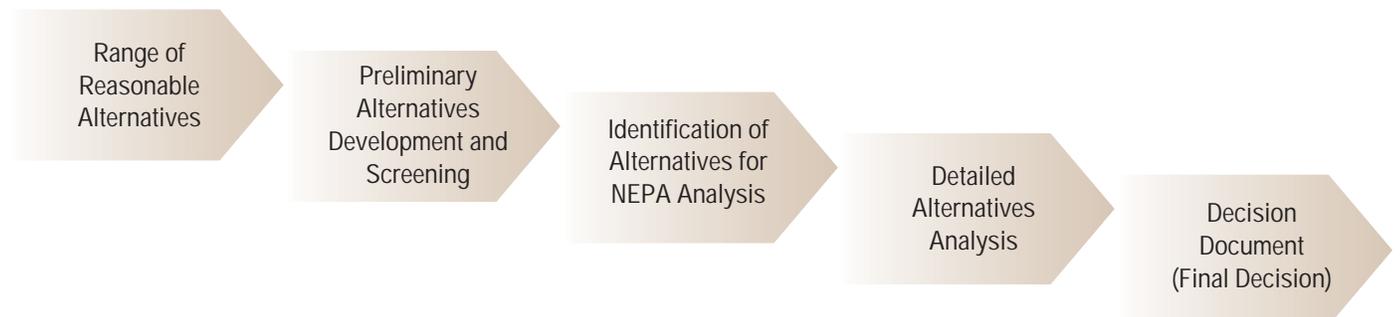
Environmental Assessment (EA) is the northern-most 9.25-mile segment (RM 108.13 to RM 117.38) of the US 89 corridor. Subsequent to the *Corridor Study*, current roadway operation data was compiled and evaluated for this EA.

The *Corridor Study* formulated a strategy and recommendations for improving and protecting the ability of US 89 to fulfill its intended function as a Rural Principal Arterial into the future. The overall purpose and need for the US 89 Etna North project (presented in Chapter 1 of this EA), the recommendations presented in the 2005 *Corridor Study*, and the results of agency and public scoping were used to develop alternatives.

Design guidelines applicable to US 89 were identified during early project development activities and provided the engineering basis for development of the alternatives. These are:

- Maintain a 65 miles per hour (mph) design speed (65 mph posted speed) between Etna and Alpine (to improve mobility and limit time spent following a slower vehicle).

Figure 2-1 Alternatives Development and Screening Process



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- Maintain grades of six percent or less along the entire US 89 route.
- Provide sufficient cross-sections to safely and efficiently handle traffic volumes forecasted to 2034.
- Maximize the use of existing infrastructure (bridges and culverts).
- Maximize the use of existing roadway alignment.

The current *WYDOT Access Manual* (2014) would be used to guide spacing of future access points along US 89. WYDOT would preserve existing access points (with the exception of the one-lane dirt “spur” road connecting US 89 with Alpine Hills Drive) unless land-owners choose to work with WYDOT to consolidate access points (see Chapter 1 for more information about access points).

Existing and projected traffic volumes and mobility were evaluated by WYDOT using the highway capacity software developed and endorsed by the Transportation Research Board.

In general, the project would address the need to increase capacity; improve mobility; improve highway safety; and improve pavement within the Project Area. Specifically, the project would:

- Increase roadway capacity by adding passing lanes, turn lanes, and/or additional travel lanes.
- Improve traffic operations by providing an acceptable Level of Service (LOS C or better) for the 2034 design year (defined in Chapter 1).
- Improve the roadway alignment by flattening horizontal and vertical alignments (sags and curves).
- Contribute to reducing vehicle crash rates.
- Rehabilitate pavement.

2.2 What Alternatives Were Considered?

Six alternatives, including the No Build Alternative and five build alternatives, were considered for their ability to address the purpose and need of this project.

- **Alternative 1:** No Build Alternative. Existing two-lane roadway maintained with spot safety improvements.
- **Alternative 2:** Improved two-lane roadway with center passing lane added.
- **Alternative 3:** Three-lane roadway with center turn lane.
- **Alternative 4:** Divided four-lane roadway.
- **Alternative 5:** Five-lane roadway with center turn lane.
- **Alternative 6:** Four-lane roadway with a center turn lane that alternates depending on need for additional passing opportunities.

Enhancing mass transit (bus service) was considered as a stand-alone alternative since a transit system currently operates in the corridor. As the population in Star Valley increases, the transit system would be expected to expand and increase in ridership, thus improving mobility and highway safety and removing some vehicles from the highway. However, mass transit alone would not improve safety as it relates to roadway conditions. Because improving roadway conditions is one of the needs identified for this project, enhancing mass transit as a standalone alternative was eliminated from further analysis. However, a new START bus park-and-ride facility would be included under all build alternatives, as described below.

A wildlife underpass and game-proof fencing were originally proposed for the build alternatives based on discussions with the Wyoming Game & Fish Department. Vehicle/animal collisions in the US 89 Study Area are lower than those in other areas in the state, which were given higher priority. Therefore, a wildlife crossing is no longer proposed for this project, but other methods (such as fencing) have been incorporated into the build alternatives.

No formal bicycle lanes were included under any of the build alternatives. However, cyclists would be able to use the wider paved shoulders identified for each build alternative.

2.3 How Were Alternatives Initially Evaluated?

WYDOT used highway capacity software to estimate quality of mobility for each of the six build alternatives carried forward for analysis in terms of level of service, traffic volume, and percent time spent following. Future forecasts were based on trends described in Chapter 1, which shows 1.8 percent overall average annual growth in Lincoln County from 2004 through 2013. Although traffic volume has recently decreased, WYDOT estimates annual traffic to increase in the Project Area from 1 to 1.5 percent by 2034 in response to long-term population trends.

The alternatives were first evaluated using criteria related to the three project needs stated in Chapter 1:

- The ability to increase capacity and improve mobility
- The ability to improve highway safety
- The ability to improve roadway conditions (alignment, intersections, and pavement structure)

2.4 Actions Common to All Alternatives

Each alternative would include a safety clear zone, which is an unobstructed, traversable roadside area that allows a driver to stop safely or regain control of a vehicle that has left the roadway. Typically, a safety clear zone for a facility such as US 89 is 30 feet, including the shoulder, which is the only paved part of the clear zone.

Under each alternative, utilities would be relocated as necessary by the utility companies, who would determine if the lines would be above or below ground.

Each alternative would include a pavement rehabilitation strategy, which would optimize pavement performance and preservation. Cost-effective pavement treatments would extend the life of the existing roadway and/or improve the serviceability of the pavement throughout the Project Area. This strategy would be designed to arrest deterioration, retard progressive failure, and improve the functional or structural condition of the pavement.

2.5 Alternative 1: No Build

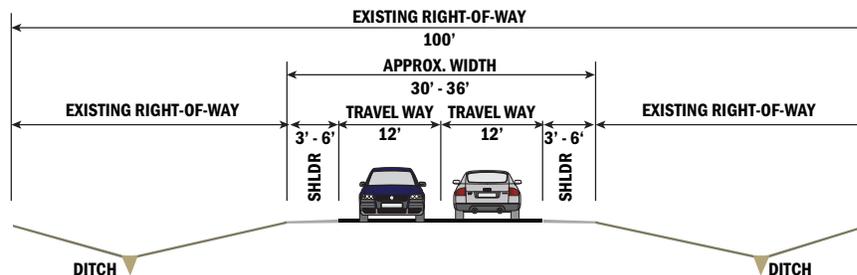
The No Build Alternative (see **Figure 2-2**) does not meet the purpose and need for this project, but is fully assessed in this EA and used as a baseline comparison for environmental analysis purposes. The No Build Alternative would maintain the current roadway cross-section, which includes:

- Two 12-foot travel lanes
- Shoulders of variable width (3 to 6 feet) on each side
- No turn lanes
- No passing lanes



Current US 89

Figure 2-2 Alternative 1: No Build



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However, the No Build Alternative includes spot safety improvements to be identified and implemented as needed in the future. Each spot safety improvement project would be individually permitted under a separate environmental clearance processes (e.g., Categorical Exclusions). When specific improvement opportunities are identified, the projects would be preliminarily designed and evaluated for environmental impacts and associated mitigation. These improvements may include the addition of left turn lanes where and when warranted. Alignment improvements to curves and roadway depressions that do not meet current 65 mph safety standards may also occur. Existing irrigation ditches would be retained.

The No Build Alternative would also provide long-term pavement performance.

The No Build alternative would include the following ongoing maintenance activities to provide continued service in the US 89 corridor:

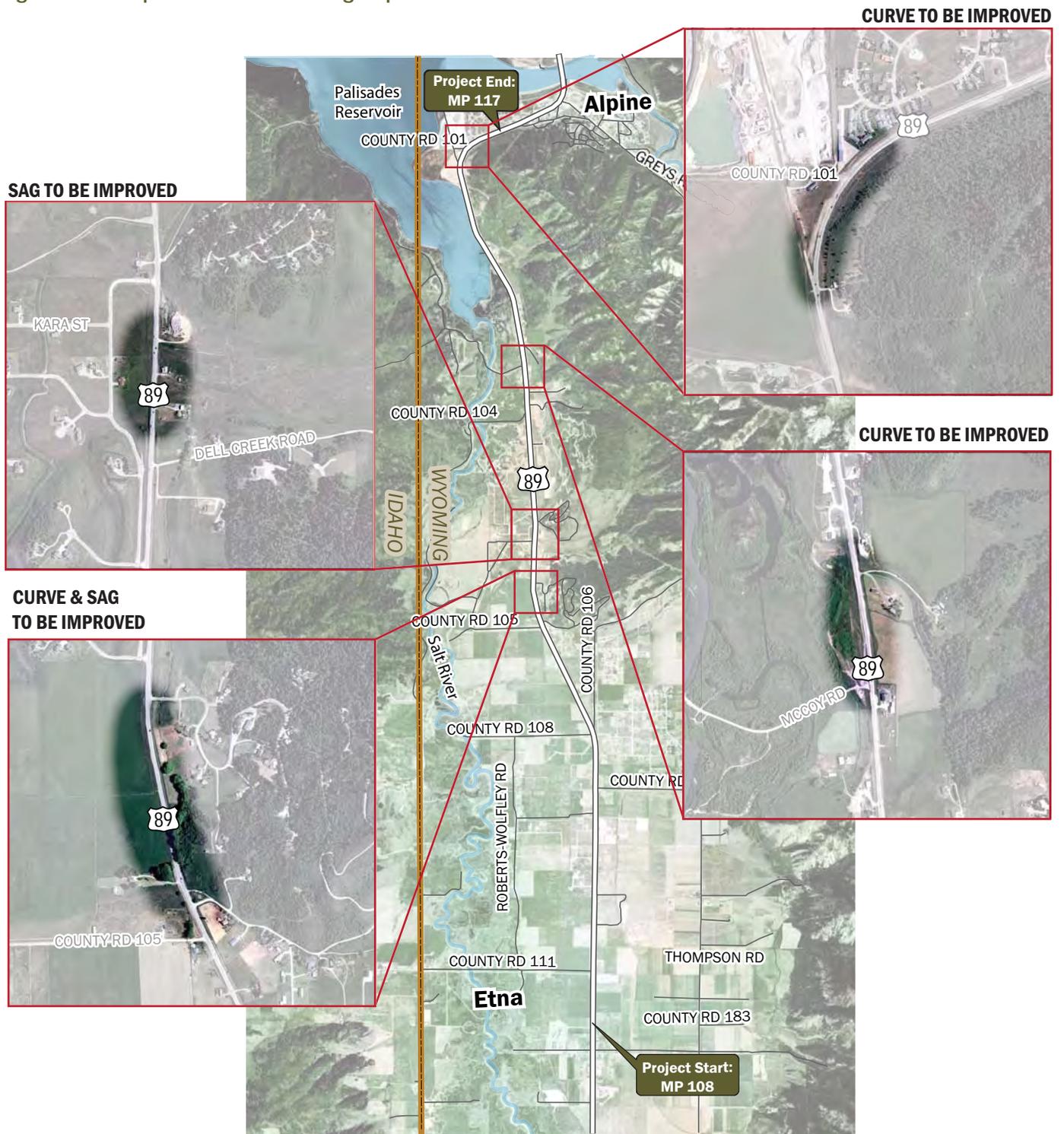
- Reactive maintenance – responding to safety inspections, complaints, or emergencies:
 - ◆ Repairing due to flooding and temperature extremes
 - ◆ Repairing potholes, cracks, guardrails, fences, shoulders as needed
 - ◆ Roadway sweeping
- Routine maintenance – maintaining a regular schedule:
 - ◆ Patching damaged areas
 - ◆ Inspecting, cleaning and repairing drainage systems (ditches, culverts, curb and gutter, drains)
 - ◆ Stabilizing embankments and cut areas
 - ◆ Repairing fences
 - ◆ Mowing
 - ◆ Cleaning and repairing road signs
 - ◆ Replacing road markings
- Programmed maintenance – more in-depth, planned resurfacing, reconditioning, or reconstruction.
- Winter service:
 - ◆ Pre-treating (e.g., applying traction sand/gravel)
 - ◆ Removing snow and ice
 - ◆ Snow plowing

2.6 Actions Common to All Build Alternatives

The same maintenance actions described under the No Build Alternative would apply to the build alternatives, as appropriate, described below. Other specific design elements that would apply to all build alternatives include:

- Improvements to three curves and two sags within the Project Area, including the curve just south of Alpine (see **Figure 2-3**). The purpose of these improvements is to enhance safety and help reduce the number of future accidents. In general, the improvements would include:
 - ◆ Slightly shifting the alignment no more than 50 feet to the east at the curve just south of the town of Alpine to help flatten the curve radius.
 - ◆ Slightly shifting the alignment no more than 50 feet to the west just north of McCoy Road.
 - ◆ Slightly shifting the alignment no more than 50 feet to the west between the two curves just north of County Road 105.
 - ◆ Slightly correcting slope irregularities at the sag just north of Dell Creek Road.
- A new START bus park-and-ride located on the northeast quadrant of the US 89/Sanderson Lane intersection. The one-acre park-and-ride would be accessed directly from Sanderson Lane (not US 89) and would accommodate 27 parking spaces (see **Figure 2-4**). WYDOT coordinated with START to determine the design and capacity requirements of this park-and-ride.

Figure 2-3 Proposed Curve and Sag Improvements



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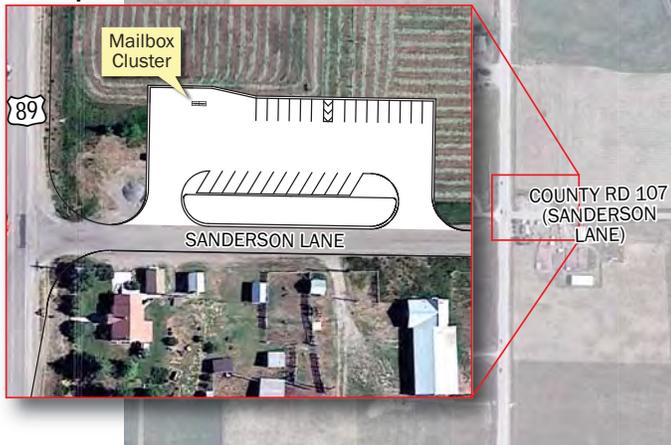
- Consolidation of all mailboxes along US 89 within the Project Area into two mailbox clusters. One would be located within the START Bus park-and-ride on County Road (CR) 107 (Sanderson Lane) and the other along a pull-out located on Stewart Trail Road approximately 300 feet north of US 89. Both CR 107 and Stewart Trail Road would be improved up to approximately 400 to 500 feet from US 89. The purpose of this consolidation is to improve safety by eliminating stop-and-start traffic along the corridor associated with mail delivery and retrieval (see **Figure 2-4**).

Figure 2-4 Proposed START Bus Park-and-Ride and Mailbox Clusters

Stewart Trail Road Mailbox Pullout



START park-and-ride



- Construction of a new pull-out and parking area to accommodate approximately 20 vehicles for wildlife viewing at the Greys River feedground. The Wyoming Game & Fish Department is proposing construction of a small observation building in conjunction with this viewing area (see **Figure 2-5**).
- Construction of a new parking area at the intersection of McCoy Road and US 89 on the west side of the highway.
- Removal of the single-lane dirt "spur" road north of Alpine Hills Drive that connects it to US 89. Access to Alpine Hills Drive would remain.

In addition, snow plows would accommodate existing access points. No additional snow would be piled at access points, which would remain unimpeded.

Figure 2-5 Proposed Wildlife Viewing Area



The same maintenance activities described for the No Build Alternative would also apply to all build alternatives.

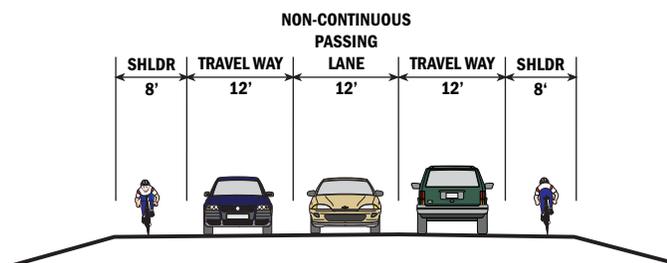
2.7 Alternative 2: Improved Two-lane Roadway with Added Passing Lanes

Alternative 2 (see **Figure 2-6**) would improve the existing two-lane roadway by adding periodically spaced (non-continuous) passing lanes. These lanes, as well as a 30-foot safety clear zone, would be contained within the existing right-of-way. In addition to the elements described under Actions Common to All Alternatives and Actions Common to All Build Alternatives, above, the design would include:

- Two 12-foot travel lanes
- Two 8-foot shoulders
- One 12-foot passing lane at certain sections along the existing roadway to provide safe passing opportunities where queueing is prevalent
- No turn lanes

Passing opportunities would be limited due to the opposing left-turn movements serving the frequent access points along US 89. In sections with an additional passing lane, these opposing left-turn movements would be made from the opposing travel lane and would require crossing both the passing lane and the travel lane. As a result, the opportunities to construct passing lanes would be limited in both length and frequency.

Figure 2-6 Alternative 2: Improved Two-lane Roadway with Added Passing Lanes



Ability to Increase Capacity and Improve Level of Service

Design Year Travel Demand

Alternative 2 would not provide the capacity improvements necessary to accommodate anticipated 2034 traffic volumes because traffic would continue to accumulate behind slower-moving vehicles, thereby impeding capacity. The time a vehicle attempts to pass a slower-moving vehicle increases with infrequent opportunities to pass. As that time spent following a slower-moving vehicle increases, so does the probability that other vehicles will catch up to the vehicle trying to pass. As the other vehicles catch up and are also unable to pass, queuing increases, creating a backup. Although passing lanes proposed under this alternative would alleviate some build-up behind slower vehicles, the length and frequency of the lanes would be insufficient to prevent traffic queueing behind slower-moving vehicles.

Design Year Level of Service

Alternative 2 would not provide the capacity improvements necessary to maintain a LOS C for the 2034 design year. Because of the increased traffic volumes and lack of additional continuous travel lanes, this alternative would result in LOS D for the 2034 design year.

Percent Time Spent Following

Alternative 2 would provide opportunities to pass slower-moving vehicles at specific locations and would reduce the percent time faster vehicles spend following slower vehicles. However, the low frequency of passing opportunities, relatively short segments for passing, and lack of additional travel lanes are expected to be insufficient for traffic volumes anticipated by 2034.

Ability to Improve Highway Safety

Alternative 2 could provide opportunities to reduce crashes through curve flattening and the addition of passing lanes, which would improve overall roadway safety and operations. Although adding periodic passing lanes may reduce vehicle-to-vehicle crashes, this alternative would not reduce the vehicle-to-vehicle crash type that typically involves rear-end crashes when the faster moving vehicles approach slower-moving

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ing vehicles, or sideswipe crashes involving multiple queued vehicles attempting to simultaneously pass a slower vehicle and/or turning vehicle.¹

Ability to Improve Roadway Conditions

Alternative 2 would correct both horizontal and vertical roadway alignments, and provide long-term pavement performance. Improving the three curves and two sags would increase safety by enhancing the driver's ability, while traveling the speed limit, to safely stop based on sight distance.

Evaluation Results

Alternative 2 would not provide the capacity improvements to accommodate 2034 traffic volumes, would result in LOS D by the design year (2034), would not appreciably reduce the percent time spent following slower vehicles, and would not reduce the rear-end or sideswipe vehicle-to-vehicle crash types that typically result from following or passing a slower vehicle and/or turning vehicle. Therefore, this alternative does not meet the project purpose and need and was **eliminated**.

2.8 Alternative 3: Three-lane Roadway with Center Turn Lane

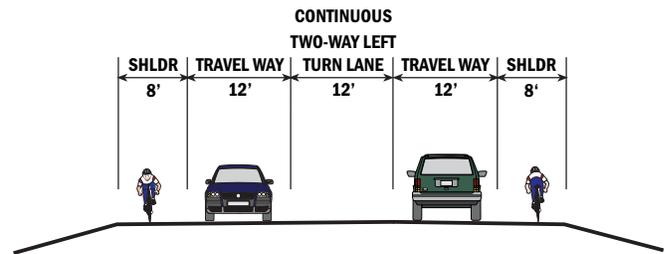
Alternative 3 (see **Figure 2-7**) would add a continuous center left-turn lane to the existing roadway. In addition to the elements described under Actions Common to All Alternatives and Actions Common to All Build Alternatives, above, the design would include:

- Two 12-foot travel lanes
- One 12-foot continuous center left-turn lane
- 8-foot shoulders

For safety reasons, mainly the differing speeds between a turning movement and a passing movement, this design would preclude the use of the center turn lane as a passing lane.

¹ Twenty-five rear-end crashes and 11 sideswipe crashes occurred within the Project Area from 2004-2013, representing 18 percent of all crashes in that time frame.

Figure 2-7 Alternative 3: Three-lane Roadway with Center Turn Lane



Ability to Increase Capacity and Improve Level of Service

Design Year Travel Demand

Alternative 3 would not provide the capacity improvements necessary to accommodate anticipated 2034 traffic volumes. Although the continuous center turn lane would remove left-turning vehicles from the travel lanes, thus increasing capacity of the roadway overall, this alternative would not increase capacity sufficiently to accommodate 2034 traffic volumes.

Design Year Level of Service

Alternative 3 would not provide the capacity improvements necessary to maintain a LOS C for the 2034 design year. Because of the increased traffic volumes and lack of additional continuous travel lanes, this alternative would result in LOS D for the 2034 design year.

Percent Time Spent Following

Alternative 3 would provide opportunities for left-turning vehicles to move out of the travel lane. However, the volume of through traffic anticipated by 2034 and the lack of additional travel lanes would result in slightly greater percent time spent following than current conditions.

Ability to Improve Highway Safety

Alternative 3 would improve highway safety and could reduce crash rates along the corridor. Curve flattening and the addition of a continuous turn lane would improve overall roadway safety and operations. Specifically, a 2008 study by FHWA found that installation of a center two-way left-turn lane on rural two-lane roads can be conservatively expected to reduce rear-end crashes by 36 percent, as well as injury crashes by 19 percent and total crashes by 29 percent. According

to the study, locations with a high frequency of rear-end collisions, especially those involving a lead vehicle making a turn into driveways along a two-lane road, would benefit the most from this type of installation (FHWA 2008).

Ability to Improve Roadway Conditions

Alternative 3 would correct both horizontal and vertical roadway alignments, and provide long-term pavement performance. Improving the three curves and two sags would increase safety by enhancing the driver's ability, while traveling the speed limit, to safely stop based on sight distance.

Evaluation Results

Alternative 3 would improve highway safety and roadway conditions but would not provide the capacity improvements to accommodate 2034 traffic volumes, would result in a LOS D by the year 2034, and would not appreciably reduce the percent time spent following slower vehicles. As a result, this alternative does not meet the project purpose and need and was **eliminated**.

2.9 Alternative 4: Four-lane Divided Roadway with Median, Eight-foot Outside and Four-foot Inside Shoulders

Alternative 4 (see **Figure 2-8**) would replace the existing two-lane roadway by constructing a divided four-lane roadway. Passing would be accomplished using travel lanes. In addition to the elements described

under Actions Common to All Alternatives and Actions Common to All Build Alternatives, above, the design would include:

- Four 12-foot travel lanes (two lanes in each direction)
- 8-foot shoulders on the outside lanes
- 4-foot shoulders on the inside lanes
- A depressed grassy median up to 76 feet wide (a 56-foot wide median where there is restricted terrain or right-of-way)
- Median cross-overs no closer than every mile to allow access to adjacent land uses

The median cross-overs would limit the number of full access intersections along the roadway to right-in and right-out only. This means that a motorist entering the roadway from a right-turn only access and wishing to proceed in the opposite direction must drive to a cross-over and make a U-turn.

Ability to Increase Capacity and Improve Level of Service

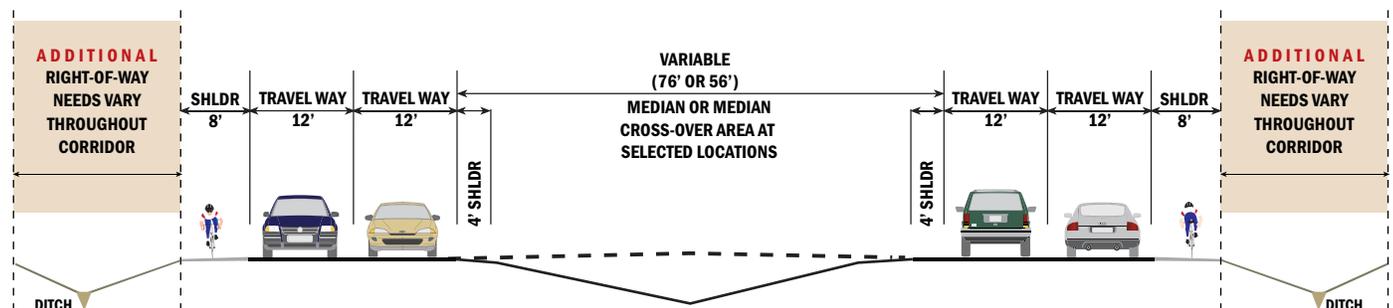
Design Year Travel Demand

Adding travel lanes in both directions would provide the capacity improvements necessary to accommodate increased traffic volumes.

Design Year Level of Service

Because the travel lanes would increase capacity and provide continuous passing opportunities, Alternative 4 would result in LOS A for the 2034 design year.

Figure 2-8 Alternative 4: Four-lane Divided Roadway with Median, Eight-foot Outside and Four-foot Inside Shoulders



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Percent Time Spent Following

Under Alternative 4, additional travel lanes and associated opportunities for faster-moving vehicles to pass slower-moving vehicles would eliminate the percent time spent following by 2034. This alternative would also allow the posted driving speeds to be maintained, thus increasing the efficiency of the roadway as a Rural Principal Arterial.

Ability to Improve Highway Safety

Alternative 4 would improve highway safety and reduce crash rates along the corridor. Curve flattening and the addition of travel lanes would improve overall roadway safety and operations. This alternative would address all crash types, including the vehicle-vehicle crash type, because the additional travel lanes would better accommodate right-turning vehicles.

Ability to Improve Roadway Conditions

Alternative 4 would correct both horizontal and vertical roadway alignments and provide long-term pavement performance. Improving the three curves and two sags would increase safety by enhancing the driver's ability, while traveling the speed limit, to safely stop based on sight distance.

Evaluation Results

Alternative 4 would provide the capacity improvements to accommodate 2034 traffic volumes; improve 2034 LOS; eliminate the percent time spent following slower vehicles; reduce crash rates; and provide roadway and pavement improvements for long-term performance. As a result, this alternative meets the project purpose and need and was **carried forward**.

2.10 Alternative 5: Five-lane Roadway with Center Turn Lane

Alternative 5 (see **Figure 2-9**) would improve the existing two-lane roadway by adding a continuous center left-turn lane and two travel/passing lanes to the roadway. Passing would be accomplished using travel lanes. In addition to the elements described under Actions Common to All Alternatives and Actions Common to All Build Alternatives, above, the design would include:

- Four 12-foot travel lanes (two lanes in each direction)
- One continuous 12-foot center left-turn lane
- 8-foot shoulders on the outside lanes

Ability to Increase Capacity and Improve Level of Service

Design Year Travel Demand

By adding travel lanes in both directions, Alternative 5 would provide the capacity improvements necessary to accommodate increased traffic volumes.

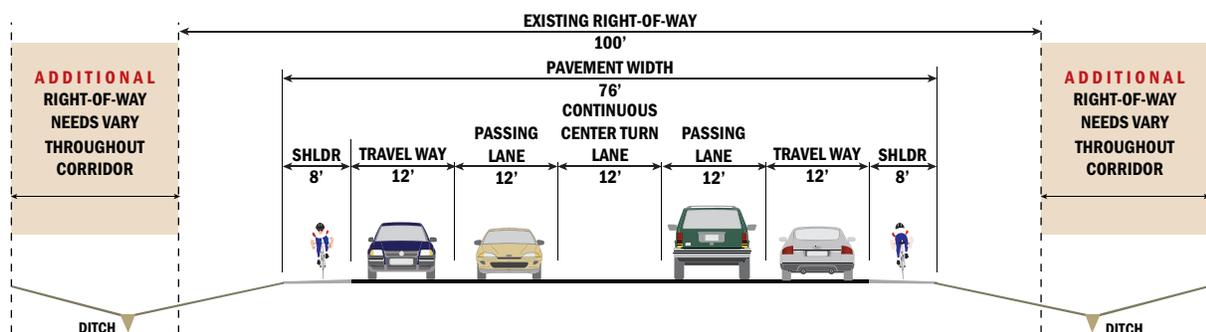
Design Year Level of Service

Because the additional travel lanes would increase capacity and provide continuous passing opportunities, Alternative 5 would result in LOS A for the 2034 design year.

Percent Time Spent Following

The additional travel lanes and associated opportunities for faster-moving vehicles to pass slower-moving vehicles would eliminate or considerably reduce the percent time spent following by 2034. Alternative 5

Figure 2-9 Alternative 5: Five-lane Roadway with Center Turn Lane



would also allow travelers to maintain posted driving speeds, thus increasing the efficiency of the roadway as a Rural Principal Arterial.

Ability to Improve Highway Safety

Alternative 5 would improve highway safety and reduce crash rates along the corridor. Curve flattening and the addition of travel lanes and turn lanes would improve overall roadway safety and operations. This alternative would address all crash types, including the vehicle-vehicle crash type, because the additional travel and turn lanes would better accommodate turning vehicles.

Ability to Improve Roadway Conditions

Alternative 5 would correct both horizontal and vertical roadway alignments, and provide long-term pavement performance. Improving the three curves and two sags would increase safety by enhancing the driver's ability, while traveling the speed limit, to safely stop based on sight distance.

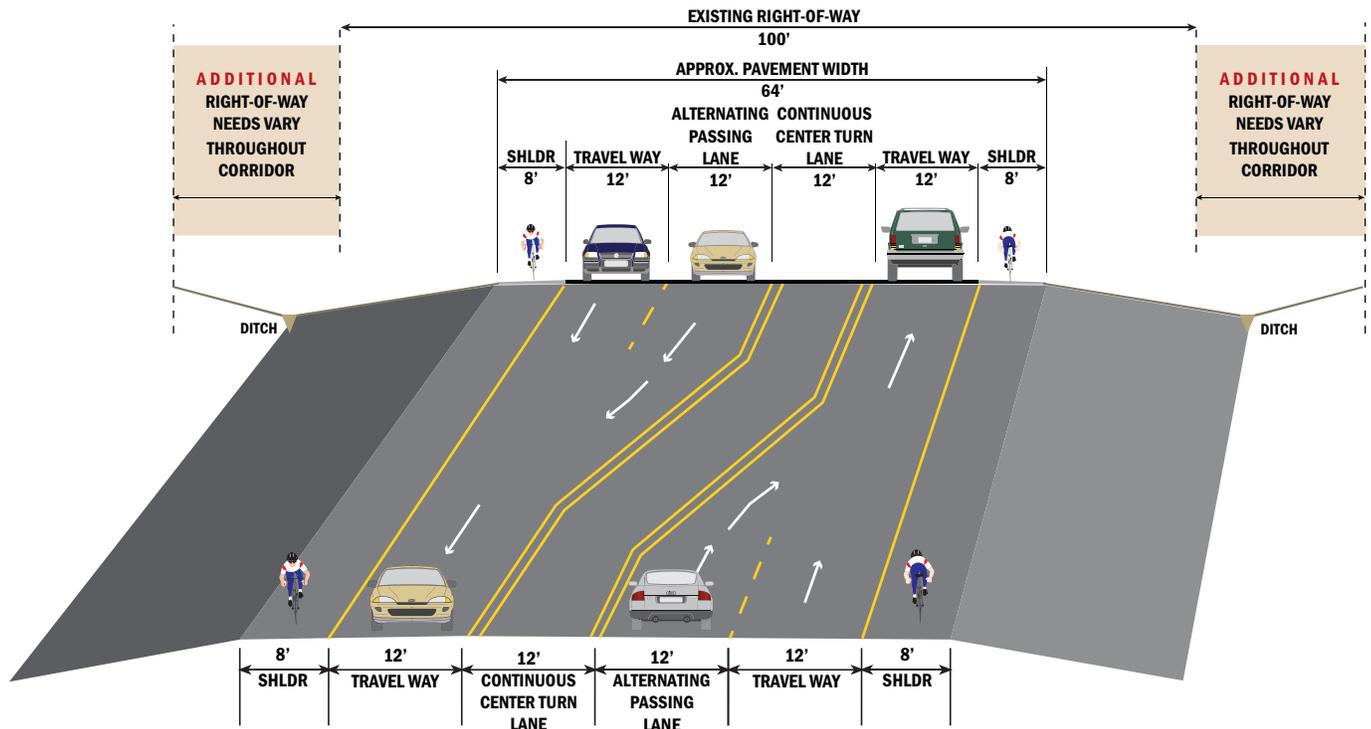
Evaluation Results

Alternative 5 would provide the capacity improvements to accommodate 2034 traffic volumes; improve 2034 LOS; eliminate or reduce the percent time spent following slower vehicles; reduce crash rates; and provide roadway and pavement improvements for long-term performance. As a result, this alternative meets the project purpose and need and was **carried forward**.

2.11 Alternative 6: Four-lane Roadway with Center Turn Lane and Alternating Passing Lanes

Alternative 6 was developed in response to public comments requesting an alternative that would result in fewer right-of-way acquisitions. Alternative 6 (see **Figure 2-10**) would improve the existing two-lane roadway by adding a continuous center left-turn lane and alternating passing lanes. The passing lanes would occur in sections of the roadway that provide additional opportunity to pass slower-moving vehicles. Passing

Figure 2-10 Alternative 6: Four-lane Roadway with Center Turn Lane and Alternating Passing Lanes



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would be restricted to where the passing lane occurs. The alternating passing lane for this alternative would be on the inside to maintain a consistent edge of pavement when a passing lane ends, as opposed to the outside, which would require the edge of pavement to shift when the outside passing lane ends. In addition to the elements described under Actions Common to All Alternatives and Actions Common to All Build Alternatives, above, the design would include:

- Two 12-foot travel lanes (one lane in each direction)
- An additional alternating 12-foot passing lane
- One continuous 12-foot center left-turn lane
- 8-foot shoulders on the outside lanes
- Designated center left-turn lanes at six county road intersections

Ability to Increase Capacity and Improve Level of Service

Design Year Travel Demand

By adding a passing lane in one direction and at various sections of US 89, Alternative 6 would provide the capacity improvements necessary to accommodate increased traffic volumes.

Design Year Level of Service

Because the additional passing lanes would increase capacity and provide passing opportunities, Alternative 6 would result in LOS A for the 2034 design year.

Percent Time Spent Following

The additional passing lanes and associated opportunities for faster-moving vehicles to pass slower-moving vehicles would eliminate or considerably reduce the percent time spent following by 2034. Alternative 6 would also allow travelers to maintain posted driving speeds, thus increasing the efficiency of the roadway as a Rural Principal Arterial.

Ability to Improve Highway Safety

Alternative 6 would improve highway safety and reduce crash rates along the corridor compared to existing conditions. Roadway realignment and the addition of passing lanes and turn lanes would improve overall roadway safety and operations. This alternative would address all crash types, including the vehicle-vehicle crash type, because the additional passing lane and center turn lane would better accommodate turning vehicles.

Ability to Improve Roadway Conditions

Alternative 6 would improve roadway conditions as described for Alternative 5.

Evaluation Results

Alternative 6 would provide the capacity improvements to accommodate 2034 traffic volumes; improve 2034 LOS; reduce the percent time spent following slower vehicles; reduce crash rates; and provide roadway and pavement improvements for long-term performance. As a result, this alternative meets the project purpose and need and was **carried forward**.

2.12 What Alternatives Were Carried Forward to the Next Level of Evaluation?

Based on the evaluation and comparison of alternatives (see **Table 2-1**), Alternatives 4, 5, and 6 met the project's purpose and need. Additional evaluation was used to determine which alternatives would better address design and construction issues. The design and construction criteria identified for this step of the screening process include:

- **Right-of-Way Width** – minimize the need to acquire additional right-of-way.
- **Access** – accommodate existing access to adjacent land use.
- **Infrastructure** – minimize the amount of new infrastructure (reduce project cost).

Table 2-1 Summary of Alternatives Analysis Related to Project Needs

Need Statement	Alternative					
	1	2	3	4	5	6
Ability to Increase Capacity and Improve Mobility	Does Not Meet	Does Not Meet	Does Not Meet	Meets	Meets	Meets
Ability to Improve Safety	Partially Meets	Does Not Meet	Meets	Meets	Meets	Meets
Ability to Improve Roadway Conditions	Partially Meets	Meets	Meets	Meets	Meets	Meets
	Carried Forward*	Eliminated	Eliminated	Carried Forward	Carried Forward	Carried Forward

*As required by NEPA and for comparison purposes.

Alternative 4: Four-lane Divided Roadway with Median, Eight-foot Outside and Four-foot Inside Shoulders

Right-of-Way Width

Alternative 4 would require the acquisition of sufficient right-of-way to accommodate 72 feet of roadway and a median of up to 76 feet. With the addition of four travel lanes and associated shoulders, and a median of up to 76 feet, this alternative would result in increased right-of-way acquisition and relocations.

Access

A four-lane divided roadway would have median cross-overs no closer than every mile to allow access to adjacent land uses, but would limit the number of full-access intersections along the roadway. Any access between the cross-overs would be limited to right-in and right-out only. This means that a motorist entering the roadway from a right-turn only access and wishing to proceed in the opposite direction must drive to a cross-over and make a U-turn.

Infrastructure

Alternative 4 would use the existing pavement structure for one direction of travel only. Additional right-of-way would be required for the wide median and the two opposite travel lanes. This alternative would require median cross-overs and extensive construction of culverts and irrigation facilities.

While Alternative 4 would meet the project’s purpose and need, it was **eliminated** because of the preliminary design issues with a four-lane divided roadway, which include:

- Excessive right-of-way requirements and relocations, which would be counter to WYDOT’s intrinsic desire to avoid or minimize acquisition of privately or publicly owned property.
- Limited ability to accommodate access to adjacent land use.
- Extensive infrastructure required.

Alternative 5: Five-lane Roadway with Center Turn Lane

Right-of-Way Width

Alternative 5 would include a 12-foot continuous left-turn lane requiring less right-of-way acquisition than the Alternative 4 four-lane divided roadway with median.

Access

A five-lane roadway would eliminate the need for median cross-overs and would provide full access to adjacent land uses. Motorists could enter the roadway directly from any access point without the need to make a U-turn and backtrack.

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Infrastructure

Alternative 5 would use the existing pavement structure width, but would require additional structure width to accommodate the addition of three lanes. Existing culverts would be replaced to accommodate the new roadway.

Alternative 5 would meet the project's purpose and need and better respond to each of the three design and construction issues compared to the other build alternatives. Therefore, Alternative 5 was **carried forward** for detailed environmental analysis in Chapter 3.

Alternative 6: Four-lane Roadway with Center Turn Lane and Alternating Passing Lane

Right-of-Way Width

Alternative 6 would construct a 12-foot continuous left-turn lane and alternating passing lane requiring less right-of-way acquisition than Alternative 4 or Alternative 5.

Access

This four-lane roadway design would eliminate the need for median cross-overs and would provide full access to adjacent land uses. Motorists could enter the roadway directly from any access point without the need to backtrack and make a U-turn.

Infrastructure

Alternative 6 would use the existing pavement structure width, but would require additional structure width to accommodate the addition of two lanes. Existing culverts would be replaced to accommodate the new roadway.

Alternative 6 would meet the project's purpose and need and respond to each of the three design and construction issues. Therefore, Alternative 6 was **carried forward** for detailed environmental analysis in Chapter 3.

2.13 What Alternatives Were Advanced for Detailed Environmental Analysis?

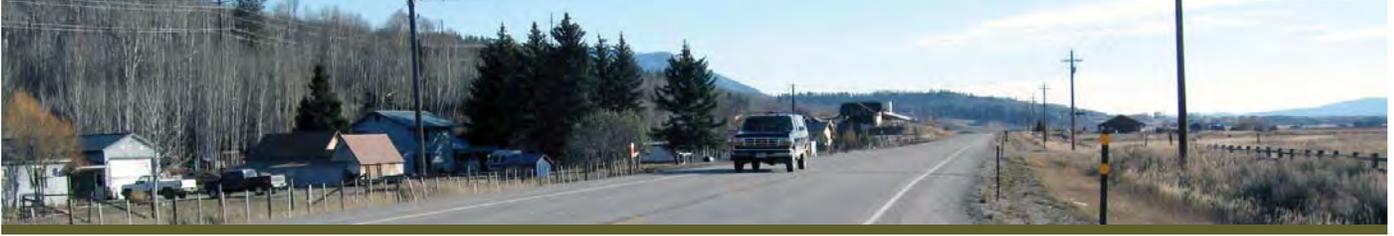
WYDOT and FHWA considered the range of reasonable alternatives and the advantages and disadvantages of each. Although Alternative 1 (No Build) did not adequately address the purpose and need, it is fully assessed in Chapter 3 as a baseline comparison for environmental analysis purposes. Alternative 5 (five-lane roadway with center turn lane) and Alternative 6 (four-lane roadway with center turn lane and alternating passing lane) were also advanced for detailed analysis of environmental resources in Chapter 3 of this EA (see **Table 2-2**).

Table 2-2 Summary of Alternative Analysis Related to Design and Construction Criteria

Criteria	Alternative 4	Alternative 5	Alternative 6
Does this alternative minimize the need for the acquisition of additional right-of-way?	No	Yes	Yes
Does this alternative accommodate existing access to adjacent land use?	No	Yes	Yes
Does this alternative minimize the amount of new infrastructure?	No	Yes	Yes
	Eliminated	Carried Forward	Carried Forward

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Chapter 3: Affected Environment and Environmental Consequences

3.1 What is Included in this Chapter?

Chapter 3 discusses the affected environment and environmental impacts from construction and operation of the proposed alternatives described in Chapter 2. It presents background, existing conditions, direct and indirect impacts, and commitments to mitigation.

Construction impacts associated with the Build Alternatives are discussed in Section 3.23.

Resources inventoried and described in this chapter:

- Land Use and Zoning
- Social Resources
- Economic Resources
- Transportation and Traffic
- Right-of-Way
- Farmlands
- Air Quality
- Noise
- Water Resources and Water Quality
- Floodplains
- Wildlife and Fisheries
- Wetlands and Other Waters of the U.S.
- Threatened and Endangered Species
- Visual Resources
- Cultural Resources
- Hazardous Materials
- Parks and Recreation

3.2 What Geographic Areas are Studied?

The limits of improvements extend along US 89 from reference marker (RM) 108.13 north of Etna to RM 117.38 within the southern portion of the Town of Alpine. The Project Area includes US 89 from Etna to Alpine. The Study Area extends farther south to include Star Valley Ranch. The Project Area includes the construction limit footprint and any construction staging areas or other planned improvements, and a 0.5-mile or other resource-specific buffer area that encompasses the project footprint.

3.3 How are the Resources Evaluated?

The public and agency scoping process helped identify the main resource issues. Resource specialists collected data through the use of geographic information systems (GIS), public databases, consultation with state and federal resource agencies, published resources, and field work. Government agencies and tribal governments that were notified and involved in the scoping process include:

- Eastern Shoshone Business Council
- Lincoln County
- Shoshone-Bannock Business Council
- State Historic Preservation Office
- Town of Alpine
- U.S. Army Corps of Engineers
- U.S. Bureau of Land Management
- U.S. Bureau of Reclamation
- U.S. Department of Agriculture, Natural Resources Conservation Service

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- U.S. Environmental Protection Agency
- U.S. Forest Service
- Wyoming Department of Environmental Quality
- Wyoming Game & Fish Department

All resources were evaluated to verify their presence or absence in both the No Build Alternative (used as a baseline comparison for environmental analysis purposes) and the build alternatives. The existing conditions; potential impacts; and avoidance, minimization, and proposed mitigation to offset unavoidable impacts associated with the alternatives were identified for those resources present.

Two types of impacts are discussed in this chapter:

- **Direct impacts** are those that occur at the same time and in the same place as the proposed action. For example, direct impacts can include the acquisition of property for transportation use.
- **Indirect impacts** occur later in time or distant from the proposed action. Examples include the shading of vegetation from a new bridge that changes the composition of plants over time, or a new road that attracts development to an area.

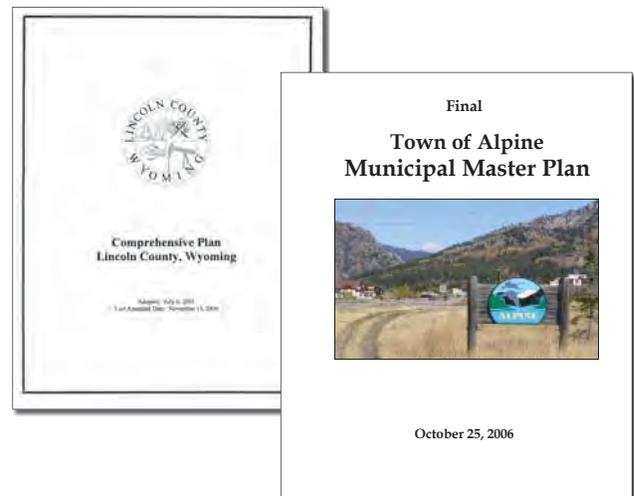
3.4 Land Use and Zoning

The Project Area is located primarily in unincorporated Lincoln County, with a small portion of the northernmost section located within the Town of Alpine. Information on existing and future land



Star Valley

use and zoning was gathered from the *Town of Alpine Municipal Master Plan* (Town of Alpine 2006), the *Comprehensive Plan, Lincoln County, Wyoming* (Lincoln County 2005, amended 2006), and the *Lincoln County Economic Development Plan* (Lincoln County 2012).



Existing Conditions

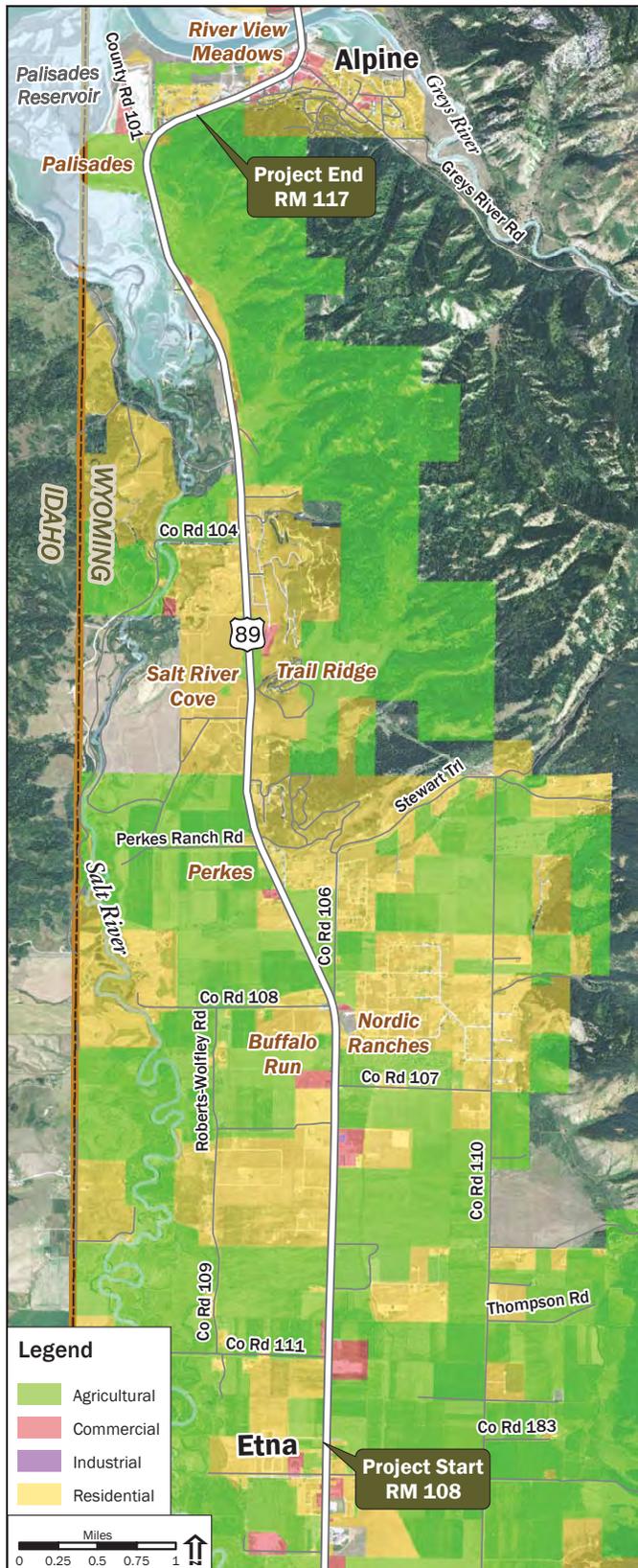
Existing land use within Lincoln County and Star Valley is predominantly rural; a large percentage of the Study Area is used as agricultural lands (see **Figure 3-1**). Portions of the Project Area located within the Town of Alpine primarily consist of residential and commercial uses. Areas adjacent to Alpine are federal- and state-owned lands (i.e., U.S. Forest Service, the U.S. Bureau of Reclamation, and the Wyoming Game & Fish Department) that are managed for conservation, recreation, water storage, and power generation.

The Town of Alpine is more densely developed than the rest of the Project Area, and many open parcels in the town are zoned to allow for development. Existing land uses include a newer suburban residential development of single-family homes, retail businesses, multi-family residential units, and public facilities. River View Meadows is a community in the Town of Alpine with over 90 residences. Star Valley Ranch, just south of and outside the Project Area, was incorporated in 2005 as an association of primarily retired homeowners, but has since become a resort with golf courses and related activities (Star Valley Chamber of Commerce n.d.). (See Section 3.5 Social Resources for more information.)

Future Conditions

Much of the lands both within and surrounding the Study Area are publicly owned. These lands likely will remain in public ownership as conservation, recreation, and resource protection uses.

Figure 3-1 Existing Land Use



Economic changes in the town of Jackson, 37 miles northeast of Alpine in Teton County, are expected to influence land use changes in Lower Star Valley. According to the 2012 *Lincoln County Economic Development Plan*, the Jackson area has little room for future growth, with residents looking to Alpine for housing alternatives. Developable lands within the Town of Alpine have been subdivided and platted for development predominantly as low-density residential uses. Although Alpine has limited room to expand due to natural constraints, 99.25 acres—almost 25 percent of its total acreage—of vacant residential land currently exists within the town. Substantial acreage of both residential and commercial vacant land also exists north of Alpine. Star Valley Ranch, located 3 miles southeast of Etna, also has a large number of vacant acres; 654 acres, or 39.1 percent of the town, is vacant residential land. This is slightly more than the 592 acres that are currently developed as residential (Lincoln County 2012). The community of Salt River Cove, located approximately 4 miles south of Alpine, includes 130 acres with lots designed for equestrian access to trails near Palisades Reservoir. Buffalo Run, located 6 miles south of Alpine, has 13 five-acre lots. The developed Trail Ridge subdivision, located approximately 3 miles south of Alpine, has approximately 80 two- to four-acre lots. As demographics in the area continue to change and these vacant parcels become developed, the current rural and agricultural land uses outside of the Town of Alpine will likely begin to transition to low-density residential uses similar to those that have recently begun to develop in the area.

Land use goals presented in the *Comprehensive Plan, Lincoln County, Wyoming* (Lincoln County 2005, amended 2006) are to:

- Promote the development of residential, commercial, and industrial land uses in and around established central services in the county.
- Reduce the impacts that new development has on county and community services.

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Goals presented in the *Lincoln County Economic Development Plan* (Lincoln County 2012) that are expected to influence land use include:

- Facilitate development of duplexes, condominiums, townhouses and apartments within cities and towns to meet rental shortages and affordability concerns throughout the county.
- Encourage quality residential housing communities near resort and high tourism areas.
- Develop shovel-ready business parks with fiber, water, sewer, and good transportation access.
- Create urban renewal areas.

Impacts

No Build Alternative: The No Build Alternative would not result in impacts to land use or zoning in the Project Area. The existing right-of-way is sufficient to accommodate any new left turn lanes. Lands would continue to develop from rural and agricultural uses to residential use.

5-Lane Alternative: The 5-Lane Alternative would require additional right-of-way, resulting in the direct conversion of some land to transportation use (see **Table 3-1**). As under the No Build Alternative, lands would continue to develop from rural and agricultural uses to residential use based on anticipated future conditions.

The 5-Lane Alternative would also be consistent with the county's land use goals regarding the promotion of orderly development. Although improving US 89 could help support potential development within the Project Area, decisions regarding the location, type, and extent of future growth would fall to the county and town governments.

4-Lane Alternative: The 4-Lane Alternative would require additional right-of-way, resulting in the direct conversion of some land to transportation use (see **Table 3-1**). As under the No Build Alternative, lands would continue to develop from rural and agricultural uses to residential use based on anticipated future conditions. The 4-Lane Alternative would also be con-

sistent with the county's land use goals as described above.

Table 3-1 Land Use Impacts

Type of Land Use	Approximate Acres to be Converted to Transportation Use	
	5-Lane Alt	4-Lane Alt
Agricultural	16.4	12.6
Residential	14.1	9.6
Commercial	2.8	2.1
Industrial	0	0
Exempt	1.7	1.3
Not Classified	6.7	4.9
Total	41.7	30.5

Mitigation

See Section 3.5 Social Resources.

3.5 Social Resources

Existing Conditions

Demographics

As noted in Chapter 1, Lincoln County's population has experienced substantial increases from 2000 to 2010. The wide differences in housing costs between Jackson and Star Valley have resulted in a net outflow in the past decade of valley residents commuting primarily to Teton County. In 2010, over 1,000 Teton County employees lived in Lincoln County, representing 5.6 percent of Lincoln County's 2010 population. According to the 2012 *Lincoln County Economic Development Plan*, the Jackson area has little room for future growth (Lincoln County 2012).

Despite a recent substantial population decrease, Lincoln County's growth is now comparable to levels that occurred from 2000 to 2010. **Table 3-2** shows overall growth within the region and the state from 2000 through 2010 based on U.S. Census data.¹ Growth in the towns of Alpine, Etna, and Star Valley Ranch outpaced that of Lincoln County and the state. Based on U.S. Census data's estimates of 2013 population (as of

¹ US Census data collection and estimation periods do not match the data collection date range (2004-2013) used throughout the remainder of this EA.

July 1, 2013), growth was expected to be substantially less.

More recent population data analysis (November 2014) from the University of Wyoming, based on U.S. Department of Commerce Bureau of Economic Analysis data, provides similar county information for 2000-2009 as average annual change (see **Table 3-3**). Lincoln County's population grew by an average annual percent change of 2.4 percent from 2000 through 2009, the third highest growth rate in the state, and outpaced Teton County, which ranked fifth. From 2000 through 2009, Lincoln County's population grew at a much slower average annual rate of 0.4 percent, ranking sixteenth highest in the state. However, average annual growth in 2013 generally returned to 2000 through 2009 levels, at 2.3 percent. This growth was the fourth highest in the state, just slightly behind Teton County, which ranked second (University of Wyoming 2014).

As mentioned under Section 3.4 Land Use and Zoning, retirement-aged individuals moving to the region have increased the population in Star Valley, and a substantial growth increase in the 25-34 year-old age group has also occurred. Drops in home prices in recent years have fueled an influx of young families to Star Valley, which saw an increase of 576 percent over

a 10-year period in this age group. Although initially started as a retirement association, Star Valley Ranch has also experienced major shifts to younger age groups in the last 10 years (Lincoln County 2012).

Population numbers do not account for residents living in second homes. Lincoln County has the state's third highest percentage of housing units that are second homes, behind adjacent Teton County and Sublette County. The number of second homes in Lincoln County grew between 2000 and 2010, but the actual percentage of second homes in the county remained stable: 13.4 percent in 2000 and 13.3 percent in 2010. However, nearly three-fourths of the state's second home growth from 2000 to 2010 was in Wyoming's four northwestern counties, including Lincoln (University of Wyoming 2014).

Lincoln County plans to "enhance Alpine as a place and a destination" through development of a town center. The town center will "reduce the sense of US 89 as a fast-moving highway leading to places beyond" and "knit together" various existing businesses. The plan also calls for reconsidering an "excessive" amount of commercial zoning in favor of higher-density resort, residential, and mixed-use development (see **Figure 3-2**) (Lincoln County 2012).

Table 3-2 Overall Population Change, 2000-2010

Location	2000	2010	Percent Change	2013*	Percent Change
Alpine	550	828	50.5 %	836	1.0%
Etna	123	164	33.3 %	Not available	Not available
Star Valley Ranch	776	1,503	93.7 %	1,527	1.6%
Lincoln County	14,573	18,106	24.2 %	18,364	1.4%
Teton County	18,251	21,294	16.7%	22,268	4.6%
Wyoming	493,782	563,626	14.1 %	582,658	3.4%

*U.S. Census Bureau estimate as of July 1, 2013

Source: U.S. Census 2010

Table 3-3 Average Annual Population Change, Lincoln and Teton Counties, 2000-2013

County	2000-2009		2010-2013		2013	
	Average Annual Percent Change	State Rank	Average Annual Percent Change	State Rank	Average Annual Percent Change	State Rank
Lincoln	2.4	3	0.4	16	2.3	4
Teton	1.9	5	1.2	5	2.9	2

Source: University of Wyoming 2014

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Figure 3-2 Proposed Community Enhancement, Alpine



Source: Lincoln County 2012

Star Valley Ranch, incorporated in 2005 as an association of primarily retired homeowners, has since become a resort with golf courses and related activities (Star Valley Chamber of Commerce n.d.). Star Valley Ranch also has a large number of vacant acres; 654 acres, or 39.1 percent of the town, is vacant residential land. This is slightly more than the 592 acres that are currently developed as residential (Lincoln County 2012).

Community Facilities

The Project Area is located primarily in unincorporated Lincoln County, with a small portion of the northernmost section located within the Town of Alpine. Few community facilities are located in the Project Area, aside from places of worship found along US 89. The north end of the Project Area includes the Alpine Fire Department, Alpine Police Department, and the Star Valley Medical Center-Alpine Clinic. The Etna Community Center and Etna Elementary School, shown in **Figure 3-3**, are located immediately south of the Project Area. US 89 is the primary route used to access all of these facilities.

Housing

The larger housing developments in the Project Area are Riverview Meadows, within the Town of Alpine, and Buffalo Run, located approximately midway between Alpine and Etna. Several smaller housing developments and individual homes are scattered throughout the Project Area. As discussed in Section 3.4 Land Use and Zoning, many planned developments within the Project Area are in varying stages of development. Twenty-five percent of the town of Alpine is vacant, and developable lands within the town have been subdivided and platted for residential development. Similarly, 39 percent of Star Valley Ranch (immediately adjacent to the Project Area) is vacant residential land, with potential for future housing development (Lincoln County 2012).

Environmental Justice

The purpose of an environmental justice evaluation is to ensure that minority and low-income communities do not receive disproportionately high and adverse human health or environmental impacts as a result of federal actions. U.S. Census data and information from

local sources were used to evaluate environmental justice concerns. Based on this information, the Project Area is comprised of 2.3 percent minority and 14.6 percent low-income populations (Census 2013). For additional information regarding the analysis of environmental justice populations, see the *Environmental Justice Technical Memorandum* (Jacobs 2013) in Appendix A.

Impacts

No Build Alternative: The No Build Alternative would result in no changes to community resources throughout the Project Area and would not affect populations of environmental justice concern. US 89 would continue to be the primary north-south route for local and regional traffic. However, as growth in Star Valley returns to pre-recession levels, particularly as vacant land is developed, the safety and efficacy of US 89 as a Rural Principal Arterial would decrease, despite incorporation of spot safety improvements and ongoing maintenance activities. An annual growth rate of 1.5 percent would result in LOS D by 2034, increase the time spent following another vehicle, and decrease safety. As more development occurs in Star Valley and demographics continue to shift toward a younger, more commuter-based population, impacts of growth on US 89 would degrade quality of life within the Project Area.

5-Lane Alternative: The 5-Lane Alternative would not affect population growth or housing development within the Study Area. Growth and housing development would continue to occur based on local and regional economic and demographic influences. However, the 5-Lane Alternative would accommodate increased growth and changing demographics in the Study Area, including development of vacant land and Lincoln County's future development plans.

The 5-Lane Alternative would improve safety, connectivity, and access along US 89 for all roadway users, including residents and emergency service providers. In addition, the new park-and-ride for the START bus service would also benefit local residents by better accommodating transit in the valley, potentially moti-

Figure 3-3 Community Facilities



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vating more people to use this service. These improvements would result in enhanced quality of life for all highway users.

All existing mailboxes along US 89 within the Project Area would be removed from the highway and consolidated into two areas. Although this would increase safety, residents who are affected would be required to drive to one of these clusters to drop off and retrieve their mail.

The 5-Lane Alternative would require right-of-way acquisition on both sides of US 89. As shown in **Table 3-1**, 16.4 acres of agricultural land and 14.1 acres of residential land would be converted to transportation use. Based on preliminary design, no actual buildings (e.g., residences) would be displaced. However, WYDOT would work with individual property owners who may choose to be relocated or displaced depending on the degree to which their land would be acquired for transportation use. See Mitigation section below for more information.

Although relocation or displacement may occur under the 5-Lane Alternative, this would not be disproportionately borne by minority and low-income communities. In addition, all residents and workers in the Study Area would experience the benefits of this alternative, such as improved connectivity, access to jobs, and reduced congestion. The 5-Lane Alternative would not result in high and adverse disproportionate impacts to environmental justice populations.

During construction, temporary detours and construction-related noise would impact the traveling public and residents immediately adjacent to the roadway.

4-Lane Alternative: Impacts under the 4-Lane Alternative would be similar to the 5-Lane Alternative because a narrower footprint would not affect demographics, community facilities, housing, or environmental justice. As shown in **Table 3-1**, 12.6 acres of agricultural land and 9.6 acres of residential land would be converted to transportation use.

Mitigation

The Wyoming Department of Transportation (WYDOT) will comply with the Uniform Relocation Assistance and Real Property Acquisition Policies Act, which provides protections and assistance for people affected by federally funded projects. This law was enacted by Congress to ensure that people whose real property is acquired, or who move as a result of projects receiving federal funds, will be treated fairly and equitably, and will receive assistance in moving from the property they occupy.

3.6 Economic Resources

Existing Conditions

The economy of Lincoln County is based primarily on construction, government enterprises, and retail trade industries. Farming and mining are also important industries to the region. Development in the Study Area accelerated as a result of its location near, and relatively easy access to, the town of Jackson, where the cost of living is much higher. According to the 2012 *Lincoln County Economic Development Plan*, the Jackson area has little room for future growth. Because of this, the plan notes “the billionaires in Teton County are pushing out the millionaires, who are going to Star Valley.” The wide differences in housing costs between Jackson and Star Valley have resulted in a net outflow in the past decade of valley residents commuting primarily to Teton County. In 2010, over 1,000 Teton County employees lived in Lincoln County. Economic effects similar to those that have occurred in Jackson are now becoming evident in Star Valley. Development of “fly-in” homes in Alpine has begun to attract billionaires, which is expected to have “huge economic impacts” through development of restaurants, entertainment, and recreational opportunities in or near Alpine (Lincoln County 2012).

Based on US Census data, employment increased by 74 percent from 2000 to 2011. During that time period, the primary employment industry changed from construction, which represented 25 percent of the labor force, to educational, health care, and social ser-

VICES, which represented 19 percent of the labor force, up from 14 percent. Thirteen percent of the labor force was in the construction industry by 2011. However, per capita and median household income rose by an average of 49 percent and 34 percent, respectively, from 2000-2011. Most of these economic indicators show a decrease by 2013. By 2013, 23 percent of the labor force was in the educational, health care, and social services industry, and 9 percent in construction. Also, retail trade became the second highest employment industry by 2013, for the first time in the date range analyzed. **Table 3-4** and **Table 3-5** show relevant economic data.

US 89 carries tourists through the Study Area to many of the state's most popular recreation destinations, including Yellowstone National Park and Grand Teton National Park, and visitation to these two parks has increased in recent years (NPS n.d., Yellowstone Insider 2013). US 89 also provides access to popular winter destinations, such as Grand Targhee Ski Resort, Jackson Hole Mountain Ski Resort, and the Snow King

Ski Area. In addition, US 89 is a destination unto itself. The highway connects Mexico with Canada over nearly 2,000 miles and was named by National Geo-



Grand Targhee Ski Resort

graphic as the number one "Drive of a Lifetime" out of 500 "of the world's most spectacular trips" (National Geographic 2013). As mentioned in Chapter 1, the 2012 *Lincoln County Economic Development Plan* notes that "tourism has the potential to be a major economic benefit to the county, although the opportunities are under-realized at present." The plan includes a Tourism Concept that "creates a unified tourism experience while focusing on improvements along the US 89 highway corridor," under which US 89 becomes the county's "primary tourism corridor." The town of Alpine is identified in the plan as both a major stopover and a major destination, with nearby Grand Canyon of the Snake River another major destination.

Table 3-4 Economic Trends for Lower Star Valley (Project Area)

	2000 ¹	2007-2011 ²	Change 2000-2011	2009-2013 ²	Change 2011-2013
Per Capita Income	\$19,369	\$28,844	48.9%	\$26,322	-8.7%
Median Household Income	\$42,909	\$57,500	34.0%	\$61,680	7.3%
Labor Force	1,849	3,247	75.6%	3,427	5.5%
Percentage in Labor Force	57.7%	68.4%	18.5%	65.1%	-4.8%
Employed	1,748	3,049	74.4%	3,057	0.3%
Employment Rate	54.6%	64.3%	17.8%	58.1%	-9.6%
Unemployed	101	198	96.0%	370	86.9%
Unemployment Rate	5.4%	4.2%	-22.2%	7.0%	66.7%
Persons Below Poverty Level	4.7%	2.7%	-42.6%	4.7%	74.1%

¹ Based on US Census Summary File 3 Sample Data

² Based on US Census American Community Survey (ACS) 5-year estimates.

Table 3-5 Employment Trends by Industry for Lower Star Valley (Project Area)

	2000 ¹	2007-2011 ²	2009-2013 ²
Agriculture, forestry, fishing/hunting, mining	6.9%	7.3%	7.9%
Construction	24.9%	12.7%	9.4%
Retail Trade	8.9%	12.0%	16.8%
Educational, health, and social services	13.6%	18.8%	22.6%

¹ Based on US Census Summary File 3 Sample Data

² Based on US Census American Community Survey (ACS) 5-year estimates.

Impacts

No Build Alternative: The No Build Alternative would not directly affect economic conditions in the Study Area. However, under this alternative, increased congestion and travel time would potentially affect local governments' ability to attract economic development and reinvestment. These conditions would also adversely affect tourists who stop in Star Valley en route to other destinations, and would affect the county's goals of realizing Alpine as a major destination. Visitors traveling in the summer months would be particularly affected, as level of service during summer is currently approaching LOS E, and would likely reach LOS E by the interim design year (2024) or earlier. Any resulting change in visitation could affect the area's growing retail economy. In addition, it would be difficult to implement the improvements along the US 89 highway corridor that Lincoln County envisions under its Tourism Concept.

5-Lane Alternative: The 5-Lane Alternative would result in short-term construction impacts that could temporarily affect access to local businesses. However, construction of this alternative would potentially generate temporary construction-related employment. Sales of locally sourced construction materials could also experience a minor increase, as would local supporting retailers, such as local convenience stores and restaurants. Over the long term, improvements in system connectivity and increased mobility would benefit local businesses and local economic development efforts by better accommodating increased traffic volumes. US 89 would remain in its current configuration in the towns of Alpine and Etna, where visitors would continue to stop for goods and services as they do currently. Construction of the 5-Lane Alternative would also support Lincoln County's Tourism Concept by "focusing on improvements along the US 89 highway corridor" to create "a unified tourism experience." Improving US 89 would benefit tourists to the area by enhancing safety and reducing congestion, and in turn, benefit retail trade.

4-Lane Alternative: Impacts under the 4-Lane Alternative would be similar to the 5-Lane Alternative because short-term construction impacts would occur

and system connectivity and increased mobility would also result from implementation of this alternative.

3.7 Transportation and Traffic

Existing Conditions

Roadway Classification

Roadways are grouped according to the relative importance of the movement and access functions they provide. Higher functional classifications are assigned to roadways that provide regional mobility at higher speeds with more restrictive access control. Those roadways that provide access to adjacent properties are generally assigned a low functional classification and typically have low speeds and less restrictive access controls.

The current configuration of US 89 is generally two 12-foot lanes with variable shoulder widths. US 89 is classified as a Rural Principal Arterial and is included on the National Highway System, which consists of roadways important to the nation's economy, defense, and mobility. The primary purpose of the Rural Principal Arterial is the safe and efficient movement of goods and people. Arterials serve traffic having trip length and travel density characteristics indicative of interstate travel, with high access control and high mobility. The American Association of State Highway and Transportation Officials (AASHTO) guidelines call for this type of highway to be designed to at least Level of Service (LOS) C. (See Chapter 1 for existing traffic volumes and LOS descriptions.)

Existing and Future Traffic Volumes

US 89 carries commuter, tourist, and commercial traffic through Star Valley to such destinations as Jackson to the north and I-80 to the south. Commuter traffic to Jackson has increased with growth in outlying communities, such as Alpine and Etna. Recreation destinations include many areas to the north of Star Valley, such as Yellowstone National Park, Grand Teton National Park, Grand Targhee Ski Resort, Jackson Hole Mountain Ski Resort, and the Snow King Ski Area. As mentioned in Chapter 1, US 89 is also a tourist destination unto itself. The highway connects Mexico with Canada over

nearly 2,000 miles and was named by National Geographic as the number one “Drive of a Lifetime” out of 500 “of the world’s most spectacular trips” (National Geographic 2013). Commercial traffic also uses US 89 year-round to transport goods and services throughout Star Valley.

Safety

As mentioned in Chapter 1, 206 crashes occurred on US 89 between 2004 and 2013 within the Project Area, which is an average of 21 crashes per year. Of these 206 crashes, 22 (11 percent) involved alcohol and 60 (29 percent) were vehicle-animal collisions. Crashes in the Project Area showed a generally decreasing trend from 2005 to 2012; however, crashes nearly tripled from 2012 to 2013 (see **Table 3-6** and **3-7** and **Figure 3-4**, **3-5**, and **3-6**).

From 2004 through 2013, 101 people were injured or killed within the Project Area (see **Table 3-7**). (The number of persons injured is higher than the number of injury crashes because more than one person could be injured in a crash.) The number of injuries showed an overall declining trend until 2013, which doubled over the previous year. The number of fatalities decreased to zero in 2008 and has remained that rate since.

Presently, numerous unrestricted access points to private properties occur along US 89 between Etna and Alpine. More than 100 uncontrolled (i.e., no traffic signal) access points for residential, commercial, agricultural fields, and large subdivisions provide access to and from the highway within the Project Area. Many of these access points also serve as areas for emergency stopping or winter maintenance activities. **Figure 3-4** shows accident density within the Project Area in relation to access points. Three of the five fatalities within the Project Area from 2004-2013 occurred between RM 112 and RM 114, which has a high density of crashes related to access points.

Figure 3-4 depicts crash information by reference marker segments. The highest concentration of crashes occurs between RM 112 and RM 112.5 (27 crashes), with a large number of crashes between RM 114.5 and

Table 3-6 Highway Safety Record

Year	Injury Crashes	Property Damage Only Crashes*	Total Crashes
2004	11	11	22
2005	13	15	28
2006	6	22	28
2007	9	12	21
2008	6	18	24
2009	2	9	11
2010	3	16	19
2011	1	18	19
2012	2	7	9
2013	6	19	25
TOTAL	59	147	206

*No injuries, no fatalities

Table 3-7 Number of Injuries and Fatalities

Year	Number of Persons Injured	Number of Fatalities	Total
2004	18	1	19
2005	25	1	26
2006	7	0	7
2007	16	1	17
2008	7	0	7
2009	4	0	4
2010	5	0	5
2011	1	0	1
2012	5	0	5
2013	10	0	10
TOTAL	98	3	101

RM 115 (21 crashes).² A total of 41 crashes occurred at curves within the Project Area from 2004 through 2013. The majority of these crashes (13) occurred between reference marker 116.37 and 116.83 (see **Figure 3-5**). The remaining 28 crashes occurred at seven locations along the corridor, with an average of four per location from 2004 through 2013. The ability of motorists to negotiate curves (horizontal alignment) and sags (vertical alignment) affects safety in these areas.

The public has expressed concern for safety at one location in particular. The US 89 intersection with CR 106 is close to the highway’s intersection with CR 108, and a commuter parking area exists where CR 106 turns to

² The number of crashes identified by RM differs slightly compared to those indicated by year because the RM data only considers 5 or more crashes within a 0.5-mile segment.

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Figure 3-4 Accident Density

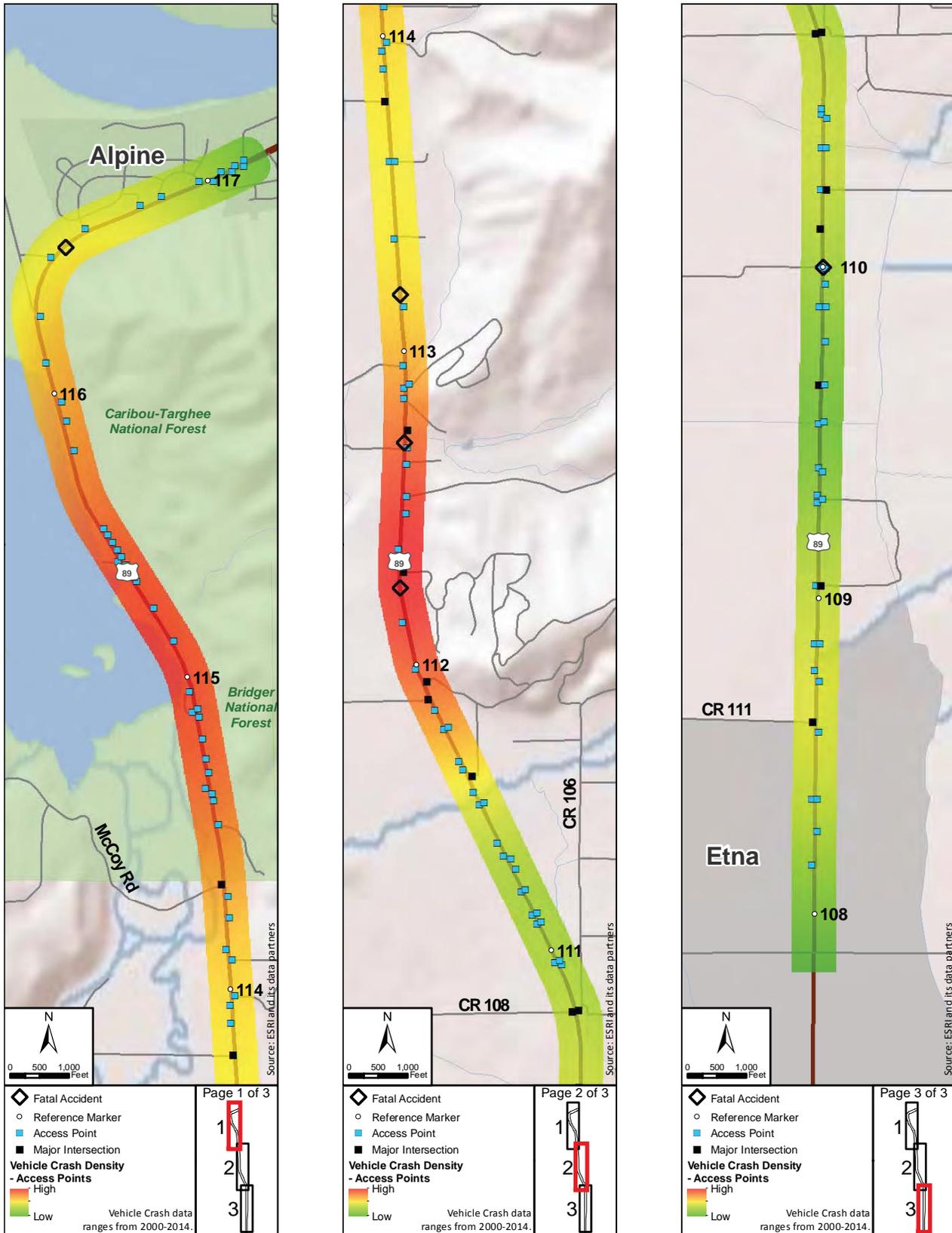


Figure 3-5 Crash Density by Reference Marker and Curves, 2004-2013

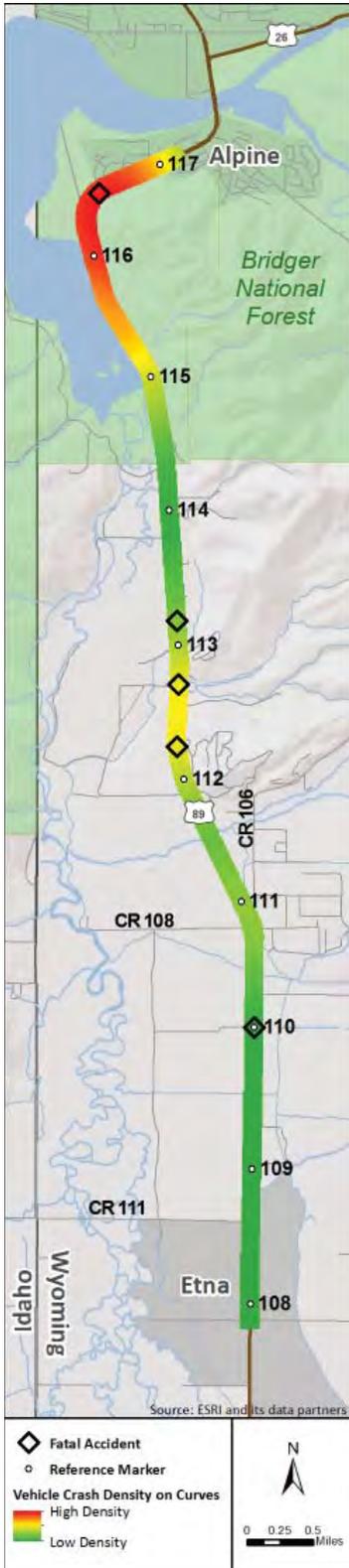
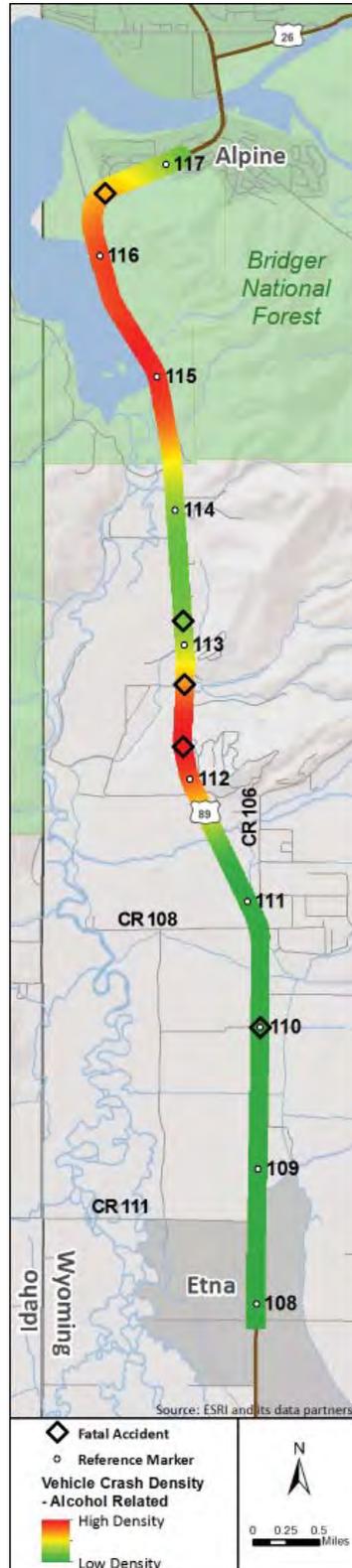


Figure 3-6 Alcohol-Related Crashes, 2004-2013



the northeast near RM 111. This area has many turning movements, particularly during winter when the parking area is used by snowmobilers.

US 89 passes through crucial elk and moose winter range at the northern end of the Project Area. Approximately three vehicle/animal collisions were reported each year from 2000 to 2009 (the most recent data available) between milepost 114 and 117. No wildlife fencing or escape ramps exist to facilitate wildlife crossings.

Access

The high number of access points within the Project Area affects congestion as well as safety. For example, farm equipment often travels US 89 from one field to another in Star Valley. As the slow-moving equipment enters the flow of traffic, it can cause collisions and slow normal traffic movement, increasing roadway congestion. Poor stopping distance and mailboxes located along the highway also cause unexpected turning movements that diminish the highway's safety. Traffic lines often form while vehicles stop and wait to turn.

Seven county roads intersect US 89 at six intersections along the 9.25 miles between Etna and Alpine. Left turns made from US 89 at county road intersections in the Project Area cause lines to form and traffic to slow during peak times.

Mobility and Level of Service

Highway conditions are basically a reflection of traffic volume. As mentioned in Chapter 1, US 89 traffic volumes, referred to as Annual Average Daily Traffic (AADT), have fluctuated since 2004, as shown in **Table 3-8**. Increases and decreases that have occurred since 2004 indicate that 2013

Table 3-8 Change in AADT, 2004-2013

Year	AADT	Percent Change
2004	3,790	not applicable
2008	4,410	16.4% increase
2010	4,770	8.2% increase
2013	3,600	24.5% decrease

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traffic volumes (3,600) are now only slightly below those experienced in 2004 (3,790).

As mentioned in Chapter 1, travelers on US 89 within the Project Area currently spend approximately 65 percent of the time following slower moving vehicles because there are limited opportunities to safely pass and resume travel at the posted speed.

Highway conditions are rated on a scale that assigns performance grades from A to F, with A being excellent and F being extremely poor. This measure of congestion is called Level of Service (LOS), and is based on average travel speed, percent time delay (i.e., the amount of time spent following a slower vehicle), and capacity utilization (i.e., the volume of vehicles using the highway versus the volume it was designed to handle). As noted in Chapter 1, the current LOS rating of C for US 89 is expected to degrade to LOS D by 2024 due to increased traffic volumes. During summer, US 89 currently approaches LOS E. Degraded LOS affects highway performance as well as safety by increasing the possibility of crashes, as drivers must continually avoid collisions with other vehicles. To function properly and address potential safety issues, a Rural Principal Arterial should perform at LOS C or better.

Public Transit Facilities

Southern Teton Area Rapid Transit (START) is a public bus service that has operated since 1987 and is funded partially by the Town of Jackson, Teton County, and the federal government. The current routes are shown in **Figure 3-7**. Ridership has increased considerably, from

approximately 150,000 passengers per year in 1993 to over 840,000 passengers per year from 2008 to 2012, according to Michael Wackerly (Transit Direc-



START bus

tor) of START. In 2013, the START bus carried 899,318 riders, the highest ever in START history. Ridership for the Star Valley route has increased from approximately 13,250 riders per year to almost 30,000 in 2013 – an overall increase of 125 percent. Despite a considerable decrease of 22.3 percent in 2009, ridership in Star Valley has since recovered and currently exceeds 2009 levels by 21 percent (see **Table 3-9**).

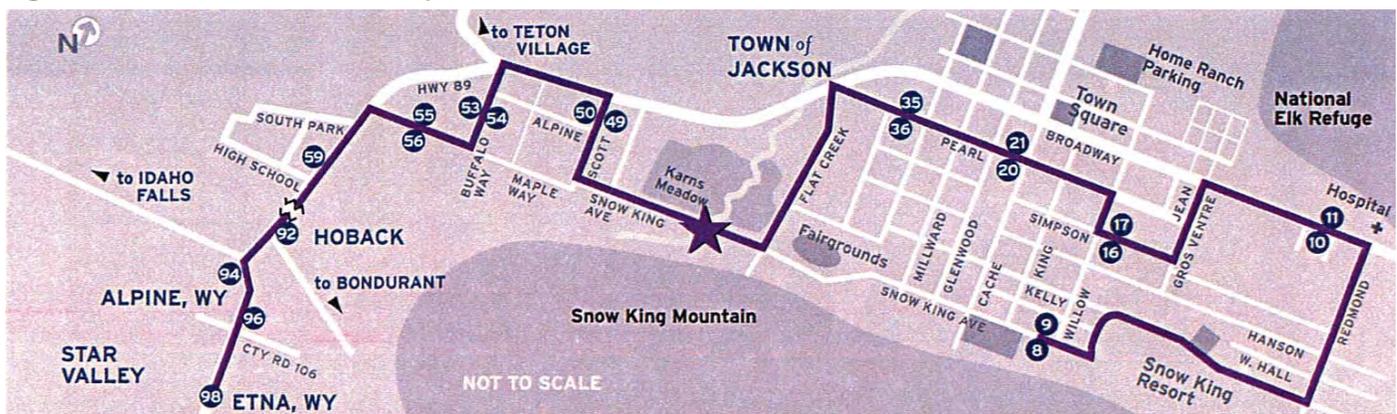
START distributed a transit survey in 2003 to residents of Alpine, Star Valley, and Afton to help estimate the

Table 3-9 START Bus Annual Riders

Year	Star Valley Route	Percent Change
2004	13,249	Not Applicable
2005	17,797	34.3%
2006	17,523	-1.5%
2007	19,676	12.3%
2008	27,760	41.1%
2009	24,632	-11.3%
2010	28,911	17.4%
2011	30,615	5.9%
2012	29,482	-3.7%
2013	29,831	1.2%

Source: Wackerly 2014.

Figure 3-7 START Bus Route Map



demand for bus service to Jackson. The results helped to determine the appropriate location, timing, and frequency of buses at future transit stops. Based on the survey, START began four trips per day between Alpine and Jackson in December 2003—two in the AM rush hour and two in the PM rush hour. The service was increased to three AM runs and three PM runs in 2007. The three buses collectively carry roughly 60 passengers to Jackson each morning.

Impacts

No Build Alternative: The No Build Alternative includes spot safety improvements, pavement rehabilitation, and various types of maintenance activities and winter service for the existing two-lane roadway, as described in Chapter 2. These activities, specifically the addition of left turn lanes where and when warranted, alignment improvements to curves and roadway depressions that do not meet current 65 mph safety standards, repair of potholes, planned resurfacing, and patching of damaged areas, would enhance safety within the Project Area. However, as congestion increases due to anticipated development (described in Section 3.4 Land Use and Zoning, above) and increased AADT, the number of crashes per year is expected to increase. Safety issues would continue to intensify at the commuter parking area at the intersection of US 89 with CR 108 and 106, particularly as the population increases and demographics potentially shift to a more commuter-oriented lifestyle. Wildlife collisions are also expected to increase with increased roadway use due to the lack of wildlife fencing or other measures to minimize impacts.

Traffic volumes are expected to increase as the 2034 design year approaches. Without improvements, percentage of time following another vehicle would increase from 67.1 percent to 71 percent. As a result, driver frustration would increase and passing would become more difficult.

AASHTO guidelines call for Rural Principal Arterials on the National Highway System to be designed to operate at a minimum of LOS C. US 89 currently approaches LOS E in summer months. LOS is expected to reach E by 2034 during the summer, especially given Lincoln

County's plans to increase tourism. US 89 would operate at LOS D throughout the remainder of the year by 2034. Under LOS E, over 75 percent of motorists would experience a delay, and passing would be virtually impossible. Under LOS D, freedom to maneuver in the traffic flow would be noticeably limited, and speeds would be subject to sudden change. Passing slower vehicles would become difficult, thus increasing the risk of crashes. As a result, drivers would experience reduced physical and psychological comfort.

Both controlled and uncontrolled access points within the Project Area would continue to experience an increase in congestion and the potential for collisions. Traffic lines would form behind vehicles entering and exiting the highway from these access points. Although local drivers are accustomed to these access points and may be alert for these conditions, visitors are not, therefore increasing the potential for collisions, particularly during summer months when visitation is high and is expected to increase.

Transit service would be impacted by increasing congestion in the form of increased travel times. Increased congestion could lead more people to use the transit service, thereby removing some vehicles from US 89 and potentially decreasing congestion. However, any such decrease is not expected to be sufficient to prevent level of service from degrading to category D by 2034. In addition, a continued lack of a dedicated park-and-ride facility would adversely affect commuters. The commuter parking area at the US 89 intersection with CR 106 would experience a potential increase in use, with associated safety issues.

Cyclists could use the existing road shoulders, which vary in width from 3 feet to 6 feet. However, safety would be a concern in the narrow sections.

5-Lane Alternative: The 5-Lane Alternative would increase traffic capacity and improve safety between Etna and Alpine. Within the past 10 years, WYDOT converted approximately 33 miles of principal arterial roads throughout the state from 2 lanes to 5 lanes. The majority of miles (14) were between Cody and Powell; the remainder were between Lander and Hud-

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son, Riverton and Shoshoni, and Wright and Gillette. These conversions resulted in an average 46 percent decrease in fatal/injury crashes and 13 percent decrease in non-injury crashes overall. Although these roadways do not share identical conditions to US 89 (e.g., terrain, traffic volumes, etc.), WYDOT anticipates a decrease in crashes from applying the same type of conversion to this project.

FHWA conducted a study on the conversion of two-lane, undivided roadways to two-way left-turn lanes (i.e., similar to the 5-Lane Alternative) on two-lane roads. The study found that reductions of at least 29 percent, 19 percent, and 36 percent can be conservatively expected in total, injury, and rear-end crashes, respectively, at rural installations. The study also found that locations with a high frequency of rear-end collisions³, especially those involving a vehicle turning into driveways along a two-lane road, would experience a greater safety benefit from installing a five-lane design (FHWA 2008b). In addition, the wider 8-foot shoulders would provide more room for disabled vehicles to move out of the traffic flow, and would provide additional safety for cyclists.

By accommodating the expected increase in traffic volume, the 5-Lane Alternative would eliminate the time spent following a vehicle, which would enhance safety related to following too closely and attempting to pass.

Widened shoulders would also provide an area for slower moving farm equipment to travel outside of the main traffic stream. The passing lane would be continuous for both directions, allowing for safer passing. A continuous passing lane would better meet driver expectations compared to existing conditions, especially when visibility is low. Additional travel lanes would better accommodate turning vehicles,



Continuous lanes better meet driver's expectations, especially when visibility is low.

³ Twenty-five rear-end crashes occurred within the Project Area from 2004-2013.

reducing the potential for crashes. Improved horizontal and vertical alignments would enhance the ability of motorists to safely negotiate curves. Improvements to curves would also decrease

the number of severe crashes at curves within the Project Area compared to current conditions, particularly the improvements between RM 112 and RM 113, and those at the southern approach to Alpine near RM 116. Implementation of a pavement rehabilitation strategy would also enhance safety.

Under the 5-Lane Alternative, the continuous center turn lane would serve as designated turn lanes at the six intersections with county roads. These turn lanes would reduce lines that form by vehicles turning onto the county roads at these intersections, thereby improving traffic flow and accommodating future increases in traffic volume. These improvements would be particularly beneficial at the US 89 intersection with CR 106 and CR 108, where a commuter parking area exists.

The LOS within the Project Area would attain an A rating, a substantial improvement over the current C rating and E rating that is approached during summer months, as well as the overall D rating that is expected by 2034. LOS A is the highest quality of service for two-lane highways. Under LOS A, there would be free traffic flow with few restrictions on maneuverability or speed. Improved LOS would improve transit travel times as a result of the additional lanes. Greatly improved LOS, along with the other benefits described above, would increase the efficiency of the roadway as a Rural Principal Arterial.

As with the No Build Alternative, collisions with wildlife would increase due to increased traffic volumes. Actions to reduce wildlife-vehicle collisions would help improve safety, but the extent to which the number of collisions would change is difficult to predict (see Wildlife and Fisheries section, below).



A continuous passing lane in both directions allows for safer passing.

Although no formal bicycle lanes were included under this alternative, cyclists would be able to use the wider paved shoulders, which would improve safety for both cyclists and motorists.

The provision of a new START bus park-and-ride under the 5-Lane Alternative would benefit commuters, re-direct use of the existing commuter parking area to a safer location, and potentially influence transit ridership, thus helping reduce congestion within the Project Area.

Elimination of private mailboxes along US 89 within the Project Area would increase safety by reducing the amount of traffic stopping on the highway to deliver and retrieve mail. The mailbox clusters would be located a sufficient distance from the highway intersection to accommodate safe entry and exit.

Removal of the single-lane dirt spur road that connects to US 89 north of Alpine Hills Drive would increase safety. The spur road is too close to Alpine Hills Drive to accommodate safe highway entrance, and is redundant to Alpine Hills Drive.

The 5-Lane Alternative would be wider than the existing highway at either end of the Project Area. The project would connect in Alpine and Etna at locations where US 89 currently becomes a two-lane highway with a center left turn lane. At Alpine, the speed limit drops to 45 mph just south of the curve west of Alpine, and drops further to 35 mph near Elk Run Drive, just west of the project end point. At Etna, the speed limit drops to 35 mph as the highway approaches the community. These decreases in speed limits where the lane configuration would change already provide "speed harmonization," reducing the traffic "shock wave" and resulting in more uniform driver behavior, which indirectly benefits bottlenecks and chokepoints (FHWA 2011). A multi-lane design would allow traffic to sort and dissipate, potentially decreasing the bottleneck effect entering the towns of Etna and Alpine. Changing from a multi-lane section to three lanes on each end of the Project Area would provide a natural transition to the slower speed in the urban areas. Further, the existing center turn lanes at Alpine and Etna allow left-

turning vehicles to move through traffic rather than block it, helping expedite traffic flow. This alternative would be designed to address potential future bottlenecks at these transition points, such as speed limit adjustments and lane merge signs posted in advance of these locations.

During construction of the 5-Lane Alternative, two lanes of roadway would be operated at all times. Although occasional interruptions to traffic flow may occur due to the movement of heavy equipment or installation of drainage structures, there would be minimal impacts to the overall mobility of travelers within Star Valley. Traffic closures and traffic maintenance during construction would be determined during the design phase (see Section 3.23 Construction Impacts.)

4-Lane Alternative:

The 4-Lane Alternative would increase traffic capacity and improve safety between Etna and Alpine compared to existing conditions, as described for the 5-Lane Alternative. Although it is expected that safety would be improved, alternating passing lanes would introduce the potential for crashes, primarily because passing lanes would merge on both the northbound and southbound directions, requiring driver vigilance to avoid collisions with oncoming traffic. The potential for vehicles in the no-passing zone to cross the no-passing centerline when a gap is perceived would also increase the risk of colliding with oncoming traffic (see **Figure 3-8**). In addition, the changing passing lanes would be difficult to see during inclement weather and when covered in snow. Transition areas would be clearly defined to prevent crossovers. All other impacts would be as described for the 5-Lane Alternative, above.



Transition areas would be clearly defined to prevent crossovers

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Mitigation

Either build alternative would improve transportation conditions between Etna and Alpine. To mitigate the potential for head-on collisions under the 4-Lane Alternative, transition areas would be clearly defined to prevent crossing into oncoming traffic.

3.8 Right-of-Way

Existing Conditions

Existing US 89 right-of-way within the Project Area is approximately 100 feet wide. The total width of paved highway ranges from 30 to 36 feet, which includes two 12-foot lanes and two 3.5-foot shoulders. The remaining right-of-way is located beyond the edge of pavement and consists of ditches and other roadway infrastructure, as shown on **Figure 3-9**.

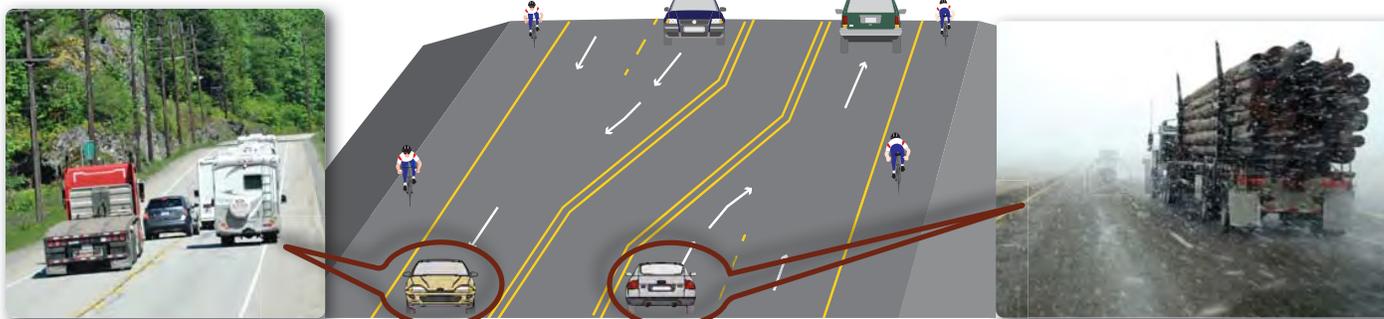
Impacts

Impacts to right-of-way were determined based on preliminary roadway design and parcel mapping.

No Build Alternative: The No Build Alternative would not result in impacts to land use or zoning in the Project Area. The existing right-of-way is sufficient to accommodate any new left turn lanes. Lands would continue to develop from rural and agricultural uses to residential use.

5-Lane Alternative: The 5-Lane Alternative would include four 12-foot travel lanes, one 12-foot center turn lane, and two 8-foot shoulders. The total proposed paved cross-section would be 76 feet wide (see **Figure 3-10**). The right-of-way needs for ditches and other roadway infrastructure located beyond the edge of pavement would vary throughout the corridor to minimize right-of-way impacts.

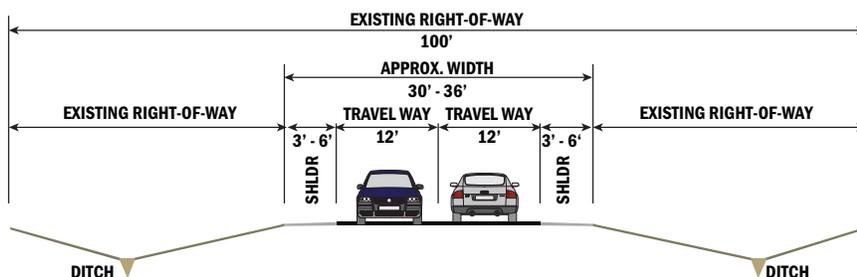
Figure 3-8 Safety Concerns Associated with Four-Lane Roadway



Potential for vehicle in no-passing zone to cross "no-passing" center-line when gap is perceived.

Passing lanes are not consistent with driver expectations.

Figure 3-9 Existing Typical Section



Under the 5-Lane Alternative, approximately 14 acres of residential use would be converted to transportation use (Table 3-10). Some properties would be acquired. Actual property requirements would be determined at final project design. The 5-Lane Alternative would require the acquisition of approximately 42 acres of permanent right-of-way.

4-Lane Alternative: The 4-Lane Alternative would include four 12-foot travel lanes and two 8-foot shoulders. The total proposed paved cross-section would be 64 feet wide (see Figure 3-11). The right-of-way needs for ditches and other roadway infrastructure located beyond the edge of pavement would vary as described above.

Some properties would be acquired. Approximately 10 acres of residential use would be converted to transportation use (see Table 3-10). Actual property requirements would be determined at final project design. The 4-Lane Alternative would require the acquisition of approximately 31 acres of permanent right-of-way (Table 3-10).

Table 3-10 Land Use Impacts from Proposed Action

Type of Land Use	Approximate Acres to be Converted to Transportation Use	
	5-Lane Alt	4-Lane Alt
Agricultural	16.4	12.6
Residential	14.1	9.6
Commercial	2.8	2.1
Industrial	0	0
Exempt	1.7	1.3
Not Classified	6.7	4.9
Total	41.7	30.5

Mitigation

The acquisition of property interests will comply fully with the Uniform Relocation Assistance and Real Property Acquisition Policies Act (Uniform Act) for any person(s) whose real property interests will be impacted by the project. The Uniform Act is a federally mandated program that applies to all acquisitions of real property or displacements of persons resulting from federal or federally assisted programs or projects. It was created to provide for and ensure the fair and equitable treatment of all such persons.

Figure 3-10 Proposed 5-lane Alternative Typical Section

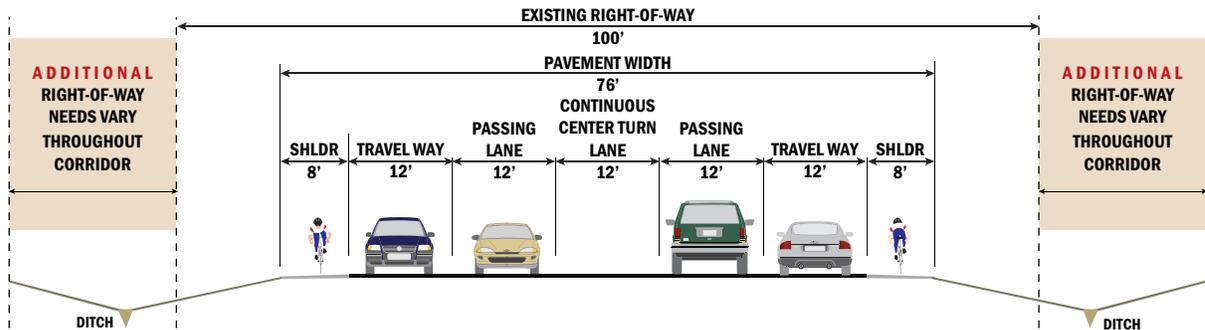
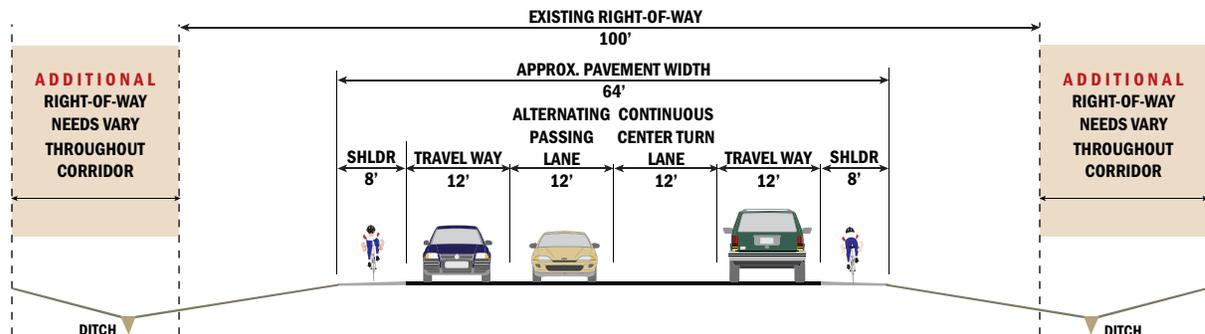


Figure 3-11 Proposed 4-Lane Alternative Typical Section



3.9 Prime and Unique Farmland

In a letter dated November 24, 2008, the Natural Resources Conservation Service confirmed there is no prime or unique farmland located in the Project Area.

Because there is no prime or unique farmland in the Project Area, there would be no impacts under the No Build Alternative and the build alternatives, and no mitigation is required.

3.10 Air Quality

The Clean Air Act (CAA) of 1970, which was last amended in 1990, requires the U.S. Environmental Protection Agency (EPA) to establish national ambient air quality standards (NAAQS) for six criteria pollutants: ozone, nitrogen dioxide, carbon monoxide, particulate matter less than 10 and 2.5 microns in aerodynamic diameter, sulfur dioxide, and lead. The State of Wyoming has adopted the NAAQS as the state ambient air quality standards. Geographic regions that have been designated as not meeting one or more of the NAAQS are defined by the CAA as nonattainment areas. Areas that have been designated as meeting the NAAQS are known as attainment areas. A portion of southeast Lincoln County is designated as a nonattainment area for ozone and attainment area for all other criteria pollutants; however, the build alternatives are not located in this area.

Impacts

No Build Alternative: No impacts under the CAA would occur with implementation of the No Build Alternative. However, traffic volumes would increase, resulting in associated increase in emissions. Air quality would be further affected as LOS degrades, particularly to LOS E during summer months. Under LOS E, the amount of idling vehicles would potentially increase, with emissions as much as 20 times greater than those from vehicles traveling at 32 mph (Missoula County 2014).

5-Lane Alternative: No impacts under the CAA would occur. Traffic volumes would increase as under the No

Build Alternative. However, a LOS rating of A would be maintained, which would essentially eliminate the potential for idling that could occur under the No Build Alternative.

4-Lane Alternative: Impacts under the 4-Lane Alternative would be similar to the 5-Lane Alternative.

3.11 Noise

Traffic noise is typically a concern for residents living adjacent to heavily traveled roadways. Traffic noise tends to be loudest when a large volume of traffic flows at high speeds. Loudest traffic noise can be expected just before and after the peak travel period, when volumes are still heavy but speed is not diminished.

FHWA's approved Traffic Noise Model (TNM 2.5) was used to analyze noise impacts. The basic inputs to noise modeling include roadway network layout, site characteristics, traffic volume projections, fleet mix, and vehicular operating speeds. According to the *Wyoming Noise Analysis and Abatement Policy* (WYDOT 2011), which is consistent with federal guidance, a noise impact results when forecasted future noise levels approach or exceed the Noise Abatement Criteria (NAC) for land activity categories (i.e., 67 A-weighted decibels [dBA] at residences and 72 dBA for noise-sensitive commercial uses) or experience an increase in 15 dBA or more over existing noise levels, which is considered "substantial." When noise impacts are identified, WYDOT considers and evaluates measures to mitigate them, such as noise barriers, and whether such mitigation is reasonable and feasible. FHWA defines reasonableness as the combination of social, economic, and environmental factors. Feasibility is the combination of acoustical and engineering factors.

Existing Conditions

Noise measurements were taken at three monitoring locations within the Project Area to determine ambient noise levels. These measurements were used to validate the traffic noise model and ensure noise level predictions are as accurate as possible. Locations were

selected that best represent the Project Area, which has relatively flat topography, no existing noise barriers, and no significant changes in traffic and speeds. Therefore, three locations were selected for modeling due to the relative sameness of conditions within the Project Area.

Noise-sensitive receptors include residences, campgrounds, recreational vehicle parks, places of worship, and commercial properties. Numerous noise-sensitive receptors occur within the Project Area and were included in the noise model developed to predict existing and future noise levels, identify potential impacts, and assess noise abatement as necessary. Under existing conditions, seven noise-sensitive receptors are already impacted by traffic noise (see **Figure 3-12**).

Impacts

No Build Alternative: In 2034, 10 receptors would be impacted by traffic noise under the No Build Alternative. However, since actual spot safety improvements have yet to be identified, noise abatement measures were not considered with the No Build Alternative.

5-Lane Alternative: In 2034, 23 receptors would be impacted by traffic noise under the 5-Lane Alternative. These 23 receptors would approach or exceed the NAC. Therefore, noise abatement was considered for all impacted receptors. However, no receptors would experience a noise increase of 15 dBA over existing conditions, which is defined by WYDOT as a substantial increase.

4-Lane Alternative: In 2034, 19 receptors would be impacted by traffic noise under the 4-Lane Alternative. These 19 receptors would approach or exceed the NAC. Therefore, noise abatement was considered for all impacted receptors. However, no receptors would experience a noise increase of 15 dBA over existing conditions, which is defined by WYDOT as a substantial increase.

Mitigation

Noise mitigation was considered for all receptors impacted by traffic noise. The analysis of the feasi-

bility and reasonableness of providing noise mitigation was carried out according to WYDOT's Wyoming Noise Analysis and Abatement Policy (WYDOT 2011). A feasible noise barrier must achieve at least a 5 dBA noise reduction by at least one impacted receptor in predicted future noise levels. Constructability, engineering, maintenance, and other design issues must also be considered. For example, a noise barrier cannot create a safety or unacceptable maintenance problem or engineering fatal flaw, such as reduction of line-of-sight, accessibility deficiencies, icing, or other notable roadway maintenance concerns.

Noise abatement is considered reasonable if it meets the noise reduction design goal, meets an acceptable cost per benefited receptor, and considers the benefited receptor's desires.

- The noise reduction design goal of 7 dBA must be met by at least one benefited receptor, and 5 dBA noise reduction for additional receptors (impacted or not).
- The cost per benefited receptor cannot exceed \$23,000.
- Fifty-one percent of the benefited receptors must agree to the noise abatement measures.

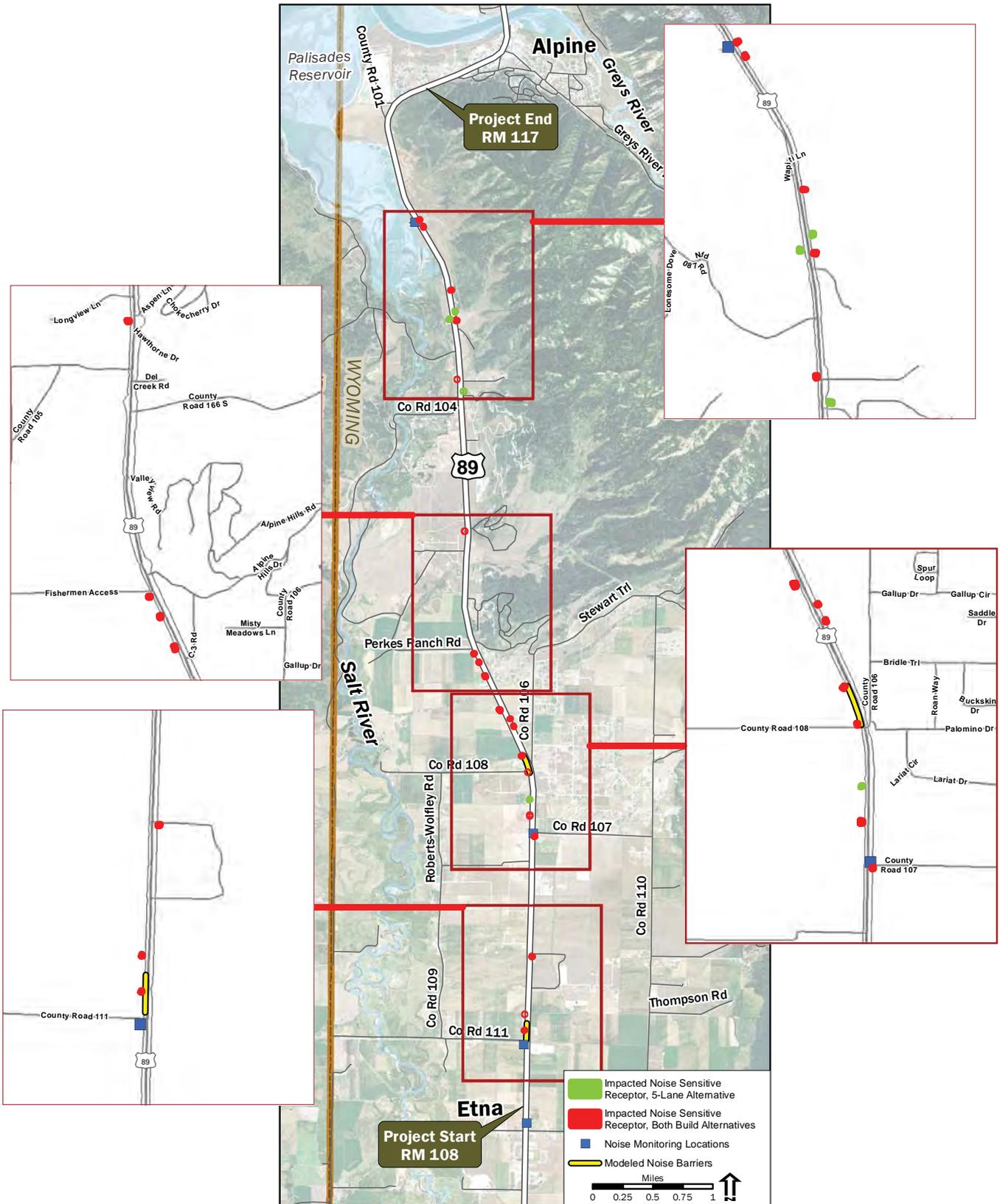
Noise barriers were not modeled for individual residential receptors with driveways adjacent to US 89 because gaps would be required for these access points, rendering the barriers ineffective. Further, placing walls close to access points would result in inadequate sight distance, which would be a safety concern, and therefore would not meet the feasibility criteria for construction. However, noise barriers at heights up to 12 feet were evaluated for two areas within the US 89 right-of-way. None of the noise barriers evaluated met both the reasonable and feasible criteria. Therefore, noise barriers are not recommended for either build alternative.

Additional information regarding the noise analysis is included in the *Noise Technical Report* (Jacobs 2014) in Appendix A.

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Figure 3-12 Noise-Sensitive Receptors



3.12 Water Resources and Water Quality

Existing Conditions

The Project Area lies within two watersheds of the Snake River Basin: The Greys-Hoback Sub-basin and the Salt River Sub-basin. Water resources in the Project Area are shown in **Figure 3-13** and include.

- Salt River
- Palisades Reservoir
- Dry Creek
- Agricultural ditches
- Unnamed ephemeral drainages

Section 303(d) of the federal Clean Water Act (CWA) requires states to publish an annual list (the “303(d) list”) of water bodies that are not meeting their beneficial uses because of excess pollutants. These pollutants can be naturally occurring or a result of human activity. A 7.5-mile section of the Salt River, located 3.4 miles northwest of Etna, is listed on the 2012 303(d) list as impaired for exceedances of E. coli. No other surface waters in the Project Area are 303(d)-listed for impairments.

Impacts

No Build Alternative: Depending on spot safety improvements identified, there could be increased impervious surfaces within the Project Area under the No Build Alternative. Impervious surfaces, which include asphalt roadways, do not allow the passage of water through them, and therefore, contribute to increased stormwater runoff.

A major factor that determines concentrations of pollutants in highway stormwater runoff is the volume of traffic carried by a roadway. Incremental increases in traffic volumes and congestion would result in associated increases in nonpoint source pollutant loadings entering water bodies from highway runoff. Indirect impacts could result over time as traffic and roadway-related pollutants increase. These pollutants could

include herbicides, road salts, and fertilizers intentionally placed in the environment to promote safety or roadside vegetation. Also, the incidental release of small amounts of petroleum products and metals could occur from trucks and cars due to roadway use.

Impervious surfaces, which include asphalt roadways, do not allow the passage of water through them and, therefore, contribute to increased stormwater runoff.

5-Lane Alternative: The 5-Lane Alternative would increase the amount of impervious surface along US 89 within the Project Area. Impervious surfaces do not allow for filtration of rainfall, resulting in rainfall running off these surfaces as stormwater. Without mitigation, runoff from the highway would increase following construction. The amount of runoff from the roadway reaching the streams or rivers is subject to the amount and intensity of rain events, the proximity of water bodies, topography and vegetative features, and the effectiveness of best management practices (BMPs). The 5-Lane Alternative would increase impervious surface to 85 acres (see **Table 3-11**).

Table 3-11 Impervious Surface Area

No Action Alternative (Existing)	37 acres
5-Lane Alternative	85 acres
4-Lane Alternative	73 acres

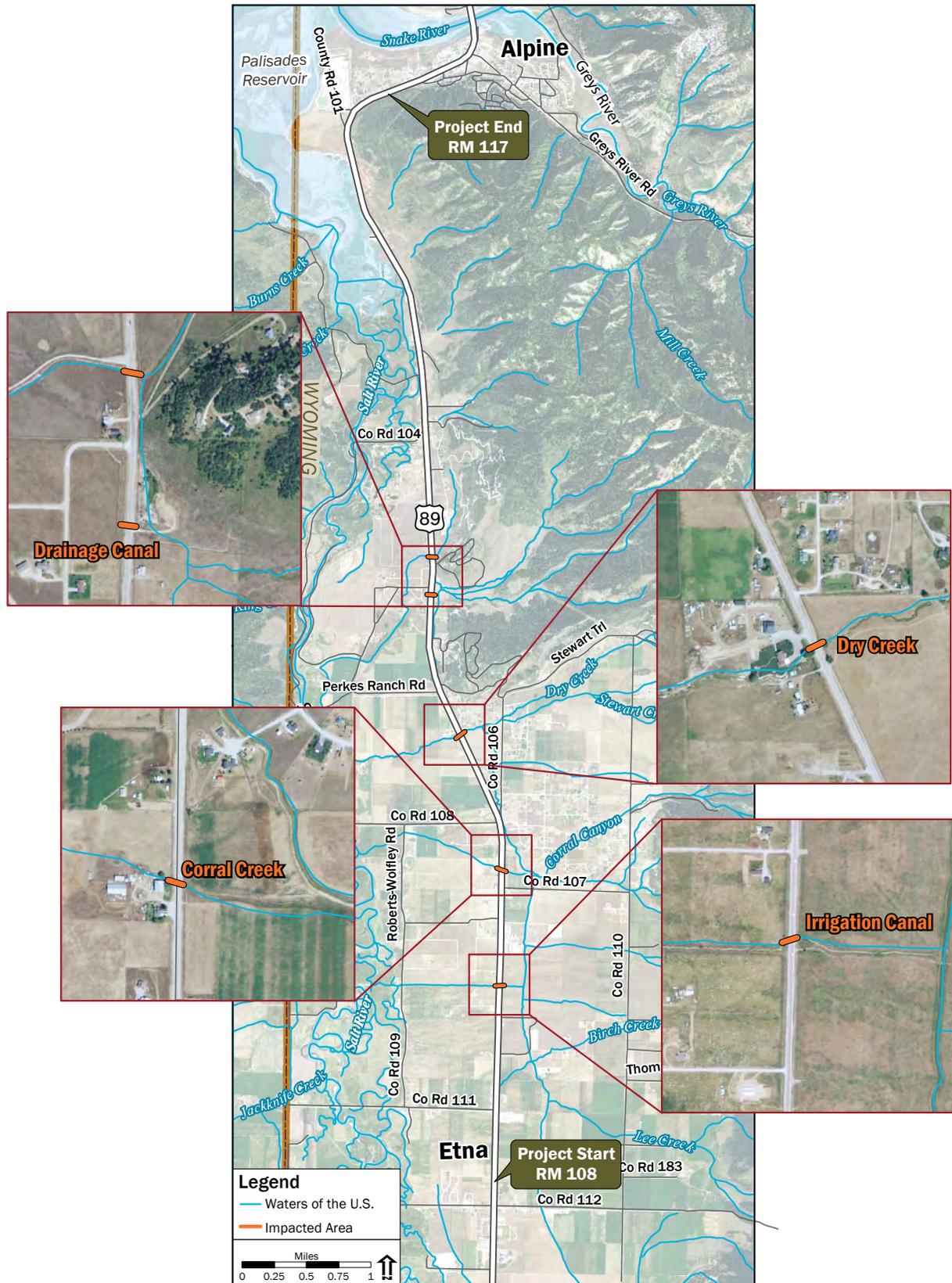
Because the 5-Lane Alternative would add lanes, the use and volume of sand/gravel/deicing salts during the winter months would increase. Sand/gravel/deicing salts applied to the highway have the potential to be deposited into the river via runoff. The use of these materials on the roadway is dependent on weather and is expected to vary over time. After successful revegetation of the roadway right-of-way following construction, the migration of off-stream sediment, such as sand/gravel/deicing salts, to the river would be slowed. However, the overall long-term effect would be an increase in sediment in the river.

The same indirect impacts related to increased traffic described for the No Build Alternative would apply to this alternative as well.

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Figure 3-13 Water Resources



During construction, short-term effects, such as clearing and grubbing, earth moving and grading, and other construction-related activities, can lead to erosion of soils. These soils would be carried into water bodies as runoff.

Through the implementation of appropriate mitigation measures and BMPs, discussed under Mitigation, below, operation of the 5-Lane Alternative would not result in measurable degradation of water quality.

4-Lane Alternative: The 4-Lane Alternative would increase the amount of impervious surface along US 89 as described for the 5-Lane Alternative, but to a lesser degree, increasing impervious surface to 73 acres (see **Table 3-11**). Like the 5-Lane Alternative, an increase in sediment would occur from the addition of lanes and increase in sand/gravel/deicing salts. Indirect and construction-related impacts would also be similar to the 5-Lane Alternative because a narrower footprint would not meaningfully change the overall effects.

Mitigation

As part of construction, WYDOT will require preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP). This plan will describe and list the BMPs necessary to improve stormwater quality while meeting the following goals:

- Control and minimize erosion and sedimentation during and after the construction phase of the project.
- Minimize the potential for contaminants entering stormwater and receiving waters during construction activities.
- Reduce pollutants in post-construction stormwater runoff (stormwater quality management). Implement permanent erosion control and stormwater measures to address cut and fill slope erosion and highway runoff.
- Continue maintenance BMPs. Construction, operational, and maintenance BMPs will include both nonstructural and structural erosion control mea-

asures, as needed, along the project corridor right-of-way, including stream crossings. BMPs would include erosion control grading techniques, such as slope drains, sediment control, and vehicle tracking control pads.

- Develop a spill prevention and emergency response plan for use during construction concerning the storage, handling, and use of chemicals and other such products.

The SWPPP will be developed during the design phase of the project and implemented during construction. The temporary erosion control and stormwater management measures will be described in the SWPPP for use during construction and will be removed either by the contractor or WYDOT maintenance crews. In addition to SWPPP requirements, WYDOT and its contractors will adhere to criteria set in WYDOT's *Standard Specifications for Road and Bridge Construction* (WYDOT 2010).

3.13 Floodplains

Existing Conditions

A flood zone is a geographic area that the Federal Emergency Management Agency (FEMA) defines according to varying levels of flood risk. An area designated as floodplain Zone AE, which is defined as an area with a 1 percent annual chance of flooding (referred to as the 100-year floodplain), is considered a High Risk Area by FEMA. According to FEMA GIS data, US 89 crosses two FEMA-regulated 100-year floodplains within the Project Area—Dry Creek and Corral Canyon (an ephemeral drainage)—which are shown in **Figure 3-14**.

Impacts

No Build Alternative: The No Build Alternative crosses the 100-year floodplain at Dry Creek and the Corral Canyon drainage. Any modifications to the existing culverts at these locations would not result in an increased flood risk to either traffic or property.

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Figure 3-14 100-Year Floodplains



5-Lane Alternative: The 5-Lane Alternative would cross the 100-year floodplain at Dry Creek and the Corral Canyon drainage. Modifications to the existing culverts at these locations would not result in an increased flood risk to either traffic or property.

4-Lane Alternative: The 4-Lane Alternative would cross the same 100-year floodplain as the 5-Lane Alternative. Although the 4-Lane Alternative would be slightly narrower, the same modifications to existing culverts would be required, resulting in no increased flood risk to traffic or property.

Mitigation

WYDOT will obtain a floodplain development permit, as needed, from Lincoln County for culvert extensions within the 100-year floodplain.



Floodplain adjacent to US 89

3.14 Vegetation and Noxious Weeds

Existing Conditions

General vegetation types (land cover types) have been mapped for the State of Wyoming as part of the Wyoming Gap Analysis Project (WY-GAP), a GIS database describing vegetation types for the entire state. The WY-GAP project, as well as field reconnaissance, is the basis for the description of vegetation in the Project Area.

The pattern of vegetation across the landscape in the Project Area is largely influenced by climate, topography, elevation, aspect, and soils. The continental climate results in relatively dry conditions with brief summers and long, cold winters. Dominant vegetation types in the Project Area are irrigated crops and riparian forest along the Salt River and Palisades Reservoir, and grassland and big sagebrush in upland areas.

Both the federal and state governments have regulations concerning noxious weeds. Executive Order (E.O.) 13112, signed in February 1999, requires federal agencies (whose actions may affect the status of invasive species) to prevent the introduction of invasive species, detect and control populations of such species, monitor invasive species populations, and restore native species and habitats that have been invaded to the extent practical and permitted by law. At the state level, the 1973 Wyoming Weed and Pest Control Act establishes each Wyoming county as a Weed and Pest Control District to address specific weed or pest concerns in each county.

Impacts

No Build Alternative: Impacts to vegetation or increases in the spread or presence of noxious weeds could result from the No Build Alternative, depending on the nature and extent of spot safety improvements to be identified, particularly the addition of turn lanes. Short-term impacts would include the disturbance of areas due to construction activities. However, impacts are expected to be minor.

5-Lane Alternative: Long-term impacts to vegetation would include conversion of native vegetation to pavement or other permanent features. Short-term impacts would include the disturbance of areas due to construction activities, such as vegetation and topsoil removal to construct the road and slope. These areas typically would recover over time and provide similar vegetation types to conditions that existed prior to construction.

Most noxious and invasive species are aggressive pioneers that have a strong competitive advantage over other species on disturbed sites. Disturbance to soils where these species exist can greatly increase seedling establishment, creating a potential outbreak in areas that are being reclaimed. Therefore, all areas disturbed by the 5-Lane Alternative are potential habitat for these species. Severity of impacts depends on the species, degree of invasion, and control measures

employed. Adverse impacts from noxious and invasive species could include, at a minimum, loss of wildlife habitat and reduction in livestock forage and crop production.

4-Lane Alternative: Native vegetation would be converted to pavement or other permanent features as described for the 5-Lane Alternative, but to a lesser degree. Impacts related to noxious weeds would be similar to the 5-Lane Alternative because any soil disturbance would potentially increase habitat for these species.

Mitigation

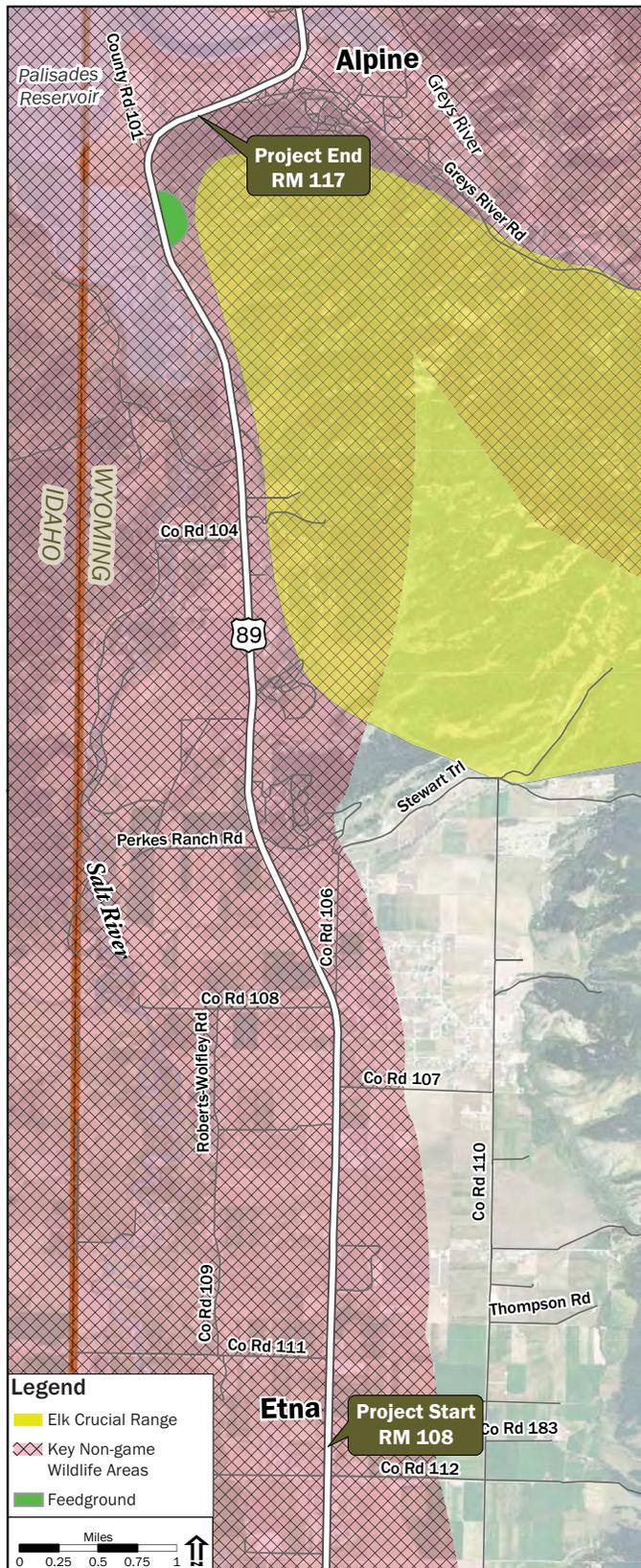
WYDOT will implement the following mitigation measures during construction of a build alternative to minimize impacts to vegetation and the spread of noxious weeds:

- Reclaim disturbed ground with a seed mix composed of species appropriate to site conditions, as developed by the WYDOT agronomist.
- Require all equipment brought onto U.S. Forest Service land, U.S. Bureau of Reclamation land, and WYDOT right-of-way be washed prior to entry to minimize the potential for transporting noxious weed seeds.
- Require all seed, straw, erosion control blankets, mulches, or hay used on the project to be free of noxious weeds, as required by WYDOT standard specifications, state seed law, and Wyoming Department of Agriculture Certification Program.



Grassland and big sagebrush

Figure 3-15 Wildlife Areas



3.15 Wildlife and Fisheries

Existing Conditions

Elk crucial winter range extends along the north end of the Project Area near the Greys River elk feedground (see **Figure 3-15**). Moose crucial winter range exists approximately one mile north of the Project Area (along the Snake River at the mouth of the canyon), but not in the Project Area. The Wyoming Game and Fish Department (WGFD) has identified the area between Etna and Alpine along US 89 as an important seasonal migration corridor for a segment of the Wyoming Range mule deer herd, Afton elk herd, and Sublette moose herd. No wildlife fencing or escape ramps currently exist along US 89 within the Project Area to facilitate wildlife crossings.

The Greys River feedground located within the Greys River Wildlife Habitat Management Area (along the east side of US 89 south of Alpine) serves to maintain the elk population in the Alpine area through a supplemental feeding operation. Elk migrate from the west and east to the feedground during the winter. The Greys River Wildlife Habitat Management Area also includes a Big Game Crucial Range for elk. Crucial ranges were developed by WGFD to help understand habitat use patterns and increase the ability to maintain and enhance populations and important habitats (WISDOM 2014).

The 2005 *Lincoln County Comprehensive Plan* identifies the entire Project Area as rangeland for mule deer for spring, summer, and fall. The northernmost mile of the Project Area is identified as rangeland for moose during spring, summer, and fall (Lincoln County 2005).

WYDOT data from 2004 through 2013 indicates an average of six animal-vehicle collisions were reported each year between RM 114 and 117 (see **Table 3-12**). The majority of these collisions — 70 percent — were with deer. Approximately 17 percent were with elk. One collision was with a moose and one with other wildlife. The remaining 10 percent were with domestic animals and livestock (cows). Animal-vehicle collisions in the Project Area experienced a generally decreasing

Table 3-12 Animal-vehicle Collisions, 2003-2014

Year	Number of Animal-vehicle Collisions
2004	4
2005	8
2006	8
2007	10
2008	4
2009	4
2010	5
2011	4
2012	4
2013	9
10-Year Average	6

trend from 2008-2012. However, the number of these types of collisions more than doubled in 2013 compared to 2012.

The Project Area is located within the Salt River Key Non-game Wildlife Area as designated by WGFD (see **Figure 3-15**). Such areas were created to focus on management and monitoring efforts for Species of Greatest Conservation Need (SGCN), and were developed based on faunal diversity and density, uniqueness of habitat, intactness of habitat, and their importance to maintaining native SGCN fauna in Wyoming. Wildlife values are to be maintained in these areas. The Salt River Key Non-game Wildlife Area includes 22 bird and 18 mammal species. A large portion of the area is classified as the highest ranking for species diversity (WISDOM 2014).

The Project Area is also within a WGFD Aquatic Conservation Area. The Wyoming Stream Mitigation Procedure (WSMP), promulgated by the US Army Corp of Engineers (USACE), ensures that aquatic conservation areas are weighted relatively high when the USACE mitigates adverse effects under its Clean Water Act Section 404 permit authority (WGFD 2013, USACE 2013).

A variety of fish species, predominately trout, occur in the Salt River and the Palisades Reservoir. Although several small streams or creeks exist within the Project Area, they do not have the hydrology to support fish, according to WGFD and the Wyoming Department of

Environmental Quality (WDEQ) classifications (WDEQ 2012).

The southern portion of the Project Area is within breeding range for sage grouse; however, there are no grouse leks within two miles of the Project Area and no documented occurrences of sage grouse in the Project Area. The Project Area is not a Sage Grouse Core Area, as designated in Executive Order 2011-5, and is not a Sage Grouse Connectivity Area.

Osprey are known to reside in Star Valley near US 89, and nests have been established adjacent to the highway. Osprey using these nests have acclimated to the existing traffic noise and other human activities.

The Migratory Bird Treaty Act (MBTA) is a federal statute (16 USC Section 703 et. seq.) under the jurisdiction of the U.S. Fish and Wildlife Service (USFWS) with the original intent to curtail international trade in birds and bird parts. The MBTA provides protection to 861 species based on the most recent revised list (U.S. Fish and Wildlife Service - 50 Code of Federal Regulations [CFR] Part 10).

The USFWS published the Birds of Conservation Concern list in 2002 (USFWS 2002) to identify species that may be in need of conservation measures to prevent or remove the need for future Endangered Species Act listings. The Birds of Conservation Concern list considers all bird taxa, including species not protected under the MBTA. There are 40 species of migratory birds on the list of Migratory Nongame Birds of Management Concern for USFWS Region 6, which includes Wyoming. Of these, 30 species occur in or migrate through Wyoming, and 13 potentially occur in the Project Area based on habitat and known distribution. For additional information regarding wildlife and fisheries in the Project Area, see the *Wildlife Technical Memorandum* (Jacobs 2013) in Appendix A.

Impacts

No Build Alternative: Under the No Build Alternative, the number of vehicle/animal collisions would increase as traffic volumes increase. No additional measures,

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such as wildlife fencing, would be provided to control wildlife crossings, thereby increasing the potential for collisions. Vehicle-bird collisions would also increase as traffic volumes increase.

5-Lane Alternative: The 5-Lane Alternative would result in the acquisition (reduction) of approximately 6.7 acres⁴ of the Greys River feedground property as a result of the required expansion of right-of-way and avoidance of the Palisades Reservoir, thereby reducing the amount of habitat at the feedground.

The number of vehicle/animal collisions would increase as traffic volumes increase, as described for the No Build Alternative. In addition, the 5-Lane Alternative would include a wider pavement footprint for wildlife to cross, potentially impeding the annual elk migration from the Palisades Reservoir bed, west of US 89, to the Greys River feedground. Studies have shown that most wildlife-vehicle collisions (89.7 percent) occur on rural two-lane roads and highways. In comparison, 52 percent of *all* crashes occur on two-lane roads. However, this does not necessarily mean that upgrading two-lane roads to more lanes would reduce such collisions long-term. One study found that upgrading a highway from two to four lanes initially resulted in a 500 percent increase in collisions with deer. Over time, this number steadily decreased, potentially due to wildlife being initially unfamiliar with the new character of the roadway and eventually adapting to it (FHWA 2008).

Traffic volume has a large effect on successful wildlife crossings, especially for slow moving species. However, the impact of traffic density on wildlife-vehicle collisions is complex. Lower traffic volumes do not necessarily equate with fewer collisions. Wildlife-vehicle collisions actually decrease when traffic volume increases to a high enough level that the volume is, in effect, a barrier (i.e., animals do not attempt to cross) (FHWA 2008).

Numerous reports have attempted to correlate increased speed to increased wildlife-vehicle collisions. However, FHWA notes that such correlations can be

misleading. As an example, FHWA notes that wildlife-vehicle collisions occur less frequently on low speed roadways, which could lead to a conclusion that lowering the posted speed limit would decrease the number of such collisions. However, the high number of collisions on 55 mph roadways (nearly 60 percent) is believed to more likely be a result of higher populations of wildlife on rural two-lane roadways with this design speed, rather than the design speed itself (FHWA 2008).

As described above, research indicates that several factors influence how additional lanes could affect the frequency of wildlife collisions. It is not possible to accurately predict if the wider highway, traffic density, or speed limit would result in more or fewer impacts. Therefore, mitigation measures have been identified for the build alternatives to minimize wildlife-vehicle collisions to the extent practicable. Public education, the provision of a safety clear zone, implementation of wildlife fencing and an elk jump located at the Greys River feedground would help motorists avoid collisions with animals (see Mitigation section, below).

Construction and operation of the 5-Lane Alternative are not expected to impact aquatic resources within the Project Area because the streams that would be crossed do not support fish. Construction activities could increase the potential for erosion of disturbed soils adjacent to Palisades Reservoir and, in turn, sedimentation within the reservoir itself. However, implementation of standard BMPs (see Section 3.12 Water Resources and Water Quality) would minimize or eliminate this potential effect.

Highway projects generally have minimal impacts on migratory birds. While vehicle-bird collisions can be common, this direct impact on migratory birds is difficult to quantify. Typically, habitat loss impacts associated with highway widening are not considered substantial enough to cause population declines of migratory birds. However, vehicle-bird collisions would increase as traffic volumes increase under all alternatives. In addition, the wider highway would increase the number of vehicle-bird collisions.

⁴ Actual acreages would be determined during final design.

The habitat loss associated with the 5-Lane Alternative would be confined to areas adjacent to the existing roadway that are not considered prime nesting habitat or stopover habitat for migratory birds. The most likely impacts to migratory birds would be from construction during the breeding or migration seasons, causing disturbance or displacement-related impacts on migratory birds nesting or migrating near construction areas.

The 5-Lane Alternative could impact osprey nesting by increasing the level of disturbance to which nesting osprey are subjected. WYDOT would evaluate the nests more closely to determine appropriate mitigation measures.

For additional information regarding wildlife impacts resulting from the 5-Lane Alternative, see the *Wildlife Technical Memorandum* (Jacobs 2013) in Appendix A.

4-Lane Alternative: Similar to the 5-Lane Alternative, the 4-Lane Alternative would include a wider pavement footprint for wildlife to cross compared to existing conditions, potentially impeding the annual elk migration from the Palisades Reservoir bed to the Greys River feedground. As with the 5-Lane Alternative, it is not possible to accurately predict if the wider highway, traffic density, or speed limit would result in more or fewer impacts. Therefore, the same mitigation measures described for the 5-Lane Alternative would also be implemented to minimize impacts to the extent practicable.

The 4-Lane Alternative would result in the acquisition (reduction) of approximately 4.0 acres of the Greys River feedground property. Remaining impacts to wildlife and fisheries are expected to be similar to the 5-Lane Alternative.

Mitigation

WYDOT and WGFD worked together to identify design modifications that would avoid or minimize impacts to big game movement and to the Greys River feedground. As a result of the collaborative negotiations between WYDOT and WGFD, the following measures will be incorporated into the build alternatives:

- Public education through various outreach methods, which may include general messages in the media, videos, brochures, posters, and bumper stickers.
- Safety clear zone (described in Chapter 2).
- Wildlife fencing on both sides of US 89 at the Greys River feedground area. Wildlife fences in North America typically consist of 6.5- to 8-foot-high wire mesh fence material. Page wire or cyclone fence material is most common. Wooden or metal fence posts are typically used, the latter when fencing over rock substrates.

- An “elk jump,” which is a raised ramp that contains animals within the feedground and allows any animals that may be trapped in the WYDOT right-of-way to easily return to the feedground.



Elk Jump and Wildlife Fence

Source: CDOT

Ramps are typically built on relatively level terrain with a wall erected up to 6 feet, behind which fill is used to create a sloping ramp on the corridor side of the fence. An opening in the fence allows animals to jump out and down off the ramp, yet prevents them from jumping up and breaching the corridor. Perpendicular wing fences help facilitate animals slowing down and seeing the opening in the fence through which they can escape the fenced corridor.

A nest survey will be conducted prior to construction to determine osprey nest activity. Nests will be relocated outside the nesting season unless a nest has been confirmed to be inactive during the nesting season. WYDOT will continue to evaluate the possible need for buffer zones and timing restrictions for the osprey nests. These mitigation measures will be implemented during construction, if necessary.

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3.16 Wetlands and Other Waters of the U.S.

Existing Conditions

Wetlands are a protected resource under the Clean Water Act and E.O. 11990. Under Section 404 of the Clean Water Act, the U.S. Army Corps of Engineers regulates the placement of fill material into wetlands and other Waters of the U.S. (navigable Waters of the U.S. and adjacent wetlands, all tributaries to navigable waters and adjacent wetlands, interstate waters and their tributaries and adjacent wetlands).

Wetlands and other Waters of the U.S. in the Project Area were identified and mapped by Hydro Logic LLC, a water resources consultant, in August 2009 and again in August 2012. The surface water resources investigated within the Project Area are primarily wetlands associated with the upper floodplain of Palisades Reservoir (see **Figure 3-16**). Numerous irrigation channels are also present in the corridor.

Seven wetland sites were identified in the Project Area. An irrigation canal and two drainage canals crossing the US 89 corridor were identified as meeting the criteria of Waters of the U.S. These surface water resources aid in groundwater recharge, dissipation of erosive sources from surrounding uplands, sediment trapping, and nutrient retention and removal.

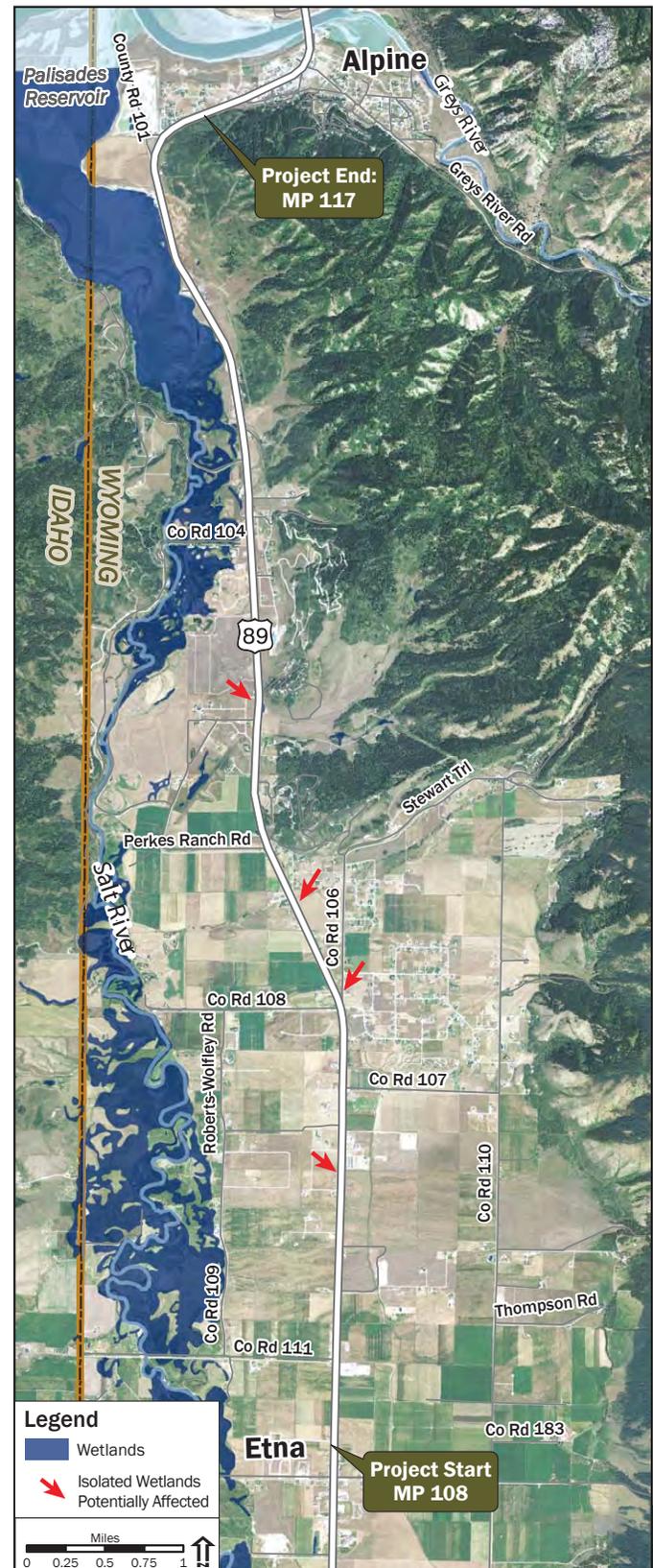
Impacts

Impacts on wetlands and other Waters of the U.S. were determined by overlaying preliminary roadway design onto the mapped wetlands and other Waters of the U.S.

No Build Alternative: The No Build Alternative would result in no new impacts to wetlands or other Waters of the U.S. Indirect impacts from increased pollutants in highway runoff as described under Section 3.12 Water Resources and Water Quality could affect wetlands and other Waters of the U.S. that are adjacent to the corridor.

5-Lane Alternative: Wetlands and other Waters of the U.S. potentially affected by the 5-Lane Alterna-

Figure 3-16 Wetlands



tive are shown in **Figure 3-16**. The 5-Lane Alternative would result in approximately 0.07 acre of permanent impact to shrub swamp wetlands and 0.02 acre of temporary impacts to wet meadow wetlands near US 89. The 5-Lane Alternative would also impact approximately 0.09 acre of non-wetland Waters of the U.S. (drainage channel and irrigation canal). Indirect impacts would be similar to the No Build Alternative.

The 5-Lane Alternative would qualify for Section 404 Nationwide Permit(s) for wetland and Waters of the U.S. impacts.

4-Lane Alternative: The 4-Lane Alternative would result in approximately 0.05 acre of permanent impact to shrub swamp wetlands and 0.01 acre to wet meadow wetlands near US 89. The 4-Lane Alternative would also impact approximately 0.09 acre of non-wetland Waters of the U.S. (drainage channel and irrigation canal). Indirect impacts would be similar to the No Build Alternative.

The 4-Lane Alternative would qualify for Section 404 Nationwide Permit(s) for wetland and Waters of the U.S. impacts.

Mitigation

During final design, WYDOT will attempt to further reduce impacts to wetlands and other Waters of the U.S. If mitigation is necessary, it will be designed such that the total functional units lost as a result of the project will be replaced at a minimum ratio of 1:1. During construction, WYDOT and its contractor will comply with applicable Nationwide Permit conditions.

3.17 Threatened and Endangered Species

Existing Conditions

A request was sent to the USFWS for a list of federally protected species potentially occurring in the Project Area. Two species were identified as potentially inhabiting the Project Area: the federally threatened Ute ladies'-tresses orchid (*Spiranthes diluvialis*) and the

federally listed candidate yellow-billed cuckoo (*Coccyzus americanus*).

The only known occurrences of Ute ladies'-tresses orchid in Wyoming have been in Laramie, Goshen, Niobrara, and Converse Counties. This species is not expected to occur in the Project Area.

The yellow-billed cuckoo is found primarily along the eastern edge of Wyoming, with scattered reports from elsewhere in the state. The only areas in Wyoming that currently support the preferred habitat of the yellow-billed cuckoo are Seedskafee National Wildlife Refuge and isolated stands along the Bighorn, Powder, and North Platte Rivers. None of these locations are within the Project Area, and the species is not expected to occur within it.

Impacts

No Build Alternative: No impacts to threatened and endangered species would occur under the No Build Alternative.

5-Lane Alternative: The 5-Lane Alternative is included in the Programmatic Biological Assessment (PBA) for WYDOT's 2010-2014 program. The 5-Lane Alternative is not expected to impact yellow-billed cuckoo given the lack of suitable habitat in the Project Area. The USFWS issued a subsequent Biological Opinion for the PBA with "not likely to adversely affect" determinations for both the yellow-billed cuckoo and the Ute ladies'-tresses orchid (pers. comm. Hart 2013).

4-Lane Alternative: Impacts would be similar to the 5-Lane Alternative. A narrower roadway footprint would not change the USFWS "not likely to adversely affect" determinations.

Mitigation

Because no adverse effects are expected to threatened and endangered species, no mitigation is required.

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3.18 Visual Resources

Star Valley's rural setting defines the area's character. The 2012 *Lincoln County Economic Development Plan* refers to the "rural charm and ambience of one of the most beautiful and attractive counties in the state," which residents describe as "breathtaking, clean, refreshing, undiscovered, pristine, and untouched." In recognition of US 89's scenic qualities, the state of Wyoming recently designated the highway as the Star Valley Scenic Byway, including the section from Etna to Alpine (WY Travel and Tourism 2015).

Concern over the appearance of a highway project is often based on how it will affect the overall visual character of an area rather than the particular visual resources affected. Area plans and public comments received during project scoping indicate that scenic resources are important to the community within the Study Area. The *Lincoln County Comprehensive Plan* (Lincoln County 2005, amended 2006) includes the goal of identifying and protecting scenic resources. In addition, public comments revealed concerns about visual impacts of the proposed highway improvements, with suggestions for opportunities to improve existing visual conditions. These included concerns about increased lighting associated with highway improvements, and a request that power lines be buried near the wildlife viewing area to improve views of that area.

Physical elements of a landscape form visual patterns that can strongly influence a viewer's response to that

landscape. These elements include landform and vegetation; water and wildlife features; and human-made modifications, such as residential and commercial development.

Both the project and the project setting can be assessed according to pattern elements (form, line, color, and texture) and pattern character (dominance, scale, diversity, and continuity). If the visual character of the project is similar to the setting, compatibility of the project will be high. If the visual character of the project contrasts strongly with the setting, visual compatibility will be low (FHWA 1988).

Foreground elements are those immediately visible to the viewer and that define the local character of the area. The foreground is defined as the area within 0.0 to 0.5 mile of the viewer. The middleground is defined as 0.5 to 4.0 miles from the viewer, and background views are 4.0 miles or greater from the viewer.

Existing Conditions

The natural landscape dominates views throughout the Project Area. The southern portion of the Project Area near Etna is located in a wide, flat valley surrounded by mountains in the background. This area is rural, with views of agricultural fields and intermittent residential development. For people traveling along US 89 in this area, the roadway itself is a strong visual feature. Foreground and middleground views from US 89 are dominated by agricultural areas. Sparsely



View of study corridor from US 89 north of Etna, looking north

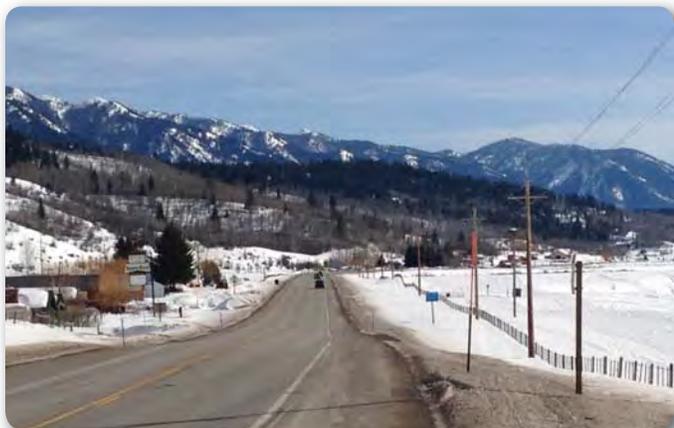


Example view of residence east of US 89 looking west (US 89 and roadway traffic are visible in the middleground)

scattered farm houses, barns and other outbuildings, farming equipment, fencing, livestock, and power lines and power poles create a visual intrusion on views of the natural landscape. From US 89, views of distant forested hills from the open valley floor are partially intruded upon by power poles and power lines, but those views remain generally unobstructed and dominate the background views in all directions. In the southern portion of the Project Area, the dominant vegetation in the foreground and middleground views consists of short agricultural crops, with views of mature trees and shrubs clustered near residences and outbuildings.

Because of the relatively flat topography in the valley floor and the flat grade of US 89, views of US 89 in this area are mostly limited to the scattered residences located nearer the highway. From residences, the roadway is a subordinate visual feature among views of agricultural areas, scattered farm houses and outbuildings, power poles and power lines, and the surrounding natural landscape.

Moving north on US 89 toward Alpine, the valley narrows, bringing wooded hillsides closer into the middle-ground view on the east, partially blocking background views of mountains in some areas. Views of sparsely scattered residences, outbuildings, agricultural uses, fencing, some commercial uses, and power poles and power lines continue to be present in the foreground and middleground. The roadway continues to be a strong visual element to motorists and recreationists



View of narrowing valley approaching Alpine from US 89, looking south

(e.g., snowmobilers) who travel along the west side of the roadway in this area.

In the Town of Alpine in the northern portion of the Project Area, more densely developed areas are visible in the foreground and middleground to the north, with newer suburban residential development consisting of single-family and multi-family homes and retail businesses. To the south, forested foothills dominate the middleground view, partially blocking background views of distant hills.

Impacts

No Build Alternative: The No Build Alternative, including spot safety improvements, would not noticeably change the existing visual conditions within the Project Area.

5-Lane Alternative: The 5-Lane Alternative would widen US 89, straighten curves by shifting the roadway in some areas, and raise/lower the roadway in some areas.

The 5-Lane Alternative would change views for motorists and snowmobilers to views of a wider roadway. Areas of straightened curves, as well as wildlife mitigation measures such as fencing, would be barely noticeable to motorists. For residents, views would change to those of a widened roadway. Visual pattern elements (form, line, color, and texture) would be compatible with the existing highway. The dominance and scale components of pattern character would change. However, these elements would be subordinate to the overall visual setting when viewed from alongside the highway, which would generally occupy the existing highway's same horizontal plane. Middleground and background views would remain unchanged. No additional highway lighting would be constructed, and overhead power lines would likely remain in place.⁵ Visual compatibility of the project would be considered moderate. There would be no change to the status of US 89 as a Wyoming scenic byway.

⁵ Under each alternative, utilities would be relocated as necessary by the utility companies, who would determine if the lines would be above or below ground.

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Temporary visual impacts anticipated during construction would include views of construction workers and equipment, material stockpiling, construction signage, and ground disturbance.

4-Lane Alternative: Visual impacts would be similar to those described for the 5-Lane Alternative but to a slightly lesser degree because the roadway footprint would be narrower. Areas of straightened curves and flattened hills would be barely noticeable to motorists. For residents, views would change to those of a widened roadway, although it would continue to be a subordinate visual feature within the valley floor and surrounding landscape. Middleground and background views would remain unchanged. Visual compatibility of the project would be considered moderate. There would be no change to the status of US 89 as a Wyoming scenic byway.

Mitigation

Areas disturbed during construction will be revegetated in a manner that is consistent with adjacent landscape features. Native and indigenous species will be used for revegetation.

3.19 Cultural Resources

Cultural resources are protected under the National Historic Preservation Act of 1966 (as amended 1992) and other statutes, and Section 4(f) as amended and codified in the U.S. Department of Transportation Act of 1966, 49 USC 303 (c). For the purposes of this EA, cultural resources include prehistoric and historic archaeological remains and historic resources.

Existing Conditions

WYDOT commissioned historical investigations by Rosenberg Historical Consultants and a Class III cultural resource inventory by the Office of the Wyoming State Archaeologist (OWSA) to determine if the build alternatives would affect any historic properties. Background research indicated that few known cultural resources exist in the Project Area. One of the few documented sites is 48LN2716, the original historic marker

commemorating the passage of the Astorian party through the area in 1812. The original monument is located along the original US 89 route approximately 1,200 feet northwest of the current US 89 alignment and has been determined not eligible to the National Register of Historic Places (NRHP). The original monument would not be affected by the build alternatives. A new monument was constructed along US 89 in 1990 and is not of sufficient age to be considered eligible for the NRHP.

Fifteen historic sites (i.e., buildings or structures over 50 years in age) were identified adjacent to US 89 between Etna and Alpine. These include 12 residences and associated buildings that were once part of farmsteads, a Quonset hut associated with the elk feeding grounds, a directional sign to Bridger-Teton National Forest campgrounds, and a late-1950s restaurant and cabin. WYDOT has determined that none of these structures are eligible to the NRHP, and the alternatives would have no effect on them. Consultation with the Wyoming State Historic Preservation Office (SHPO) was initiated on May 20, 2013. SHPO concurred on the determinations of NRHP eligibility and the 5-Lane Alternative effect on July 8, 2013. This concurrence also applies to the 4-Lane Alternative.

The OWSA Class III cultural resource inventory identified no archaeological sites. OWSA documented one irrigation canal adjacent to US 89 (48LN2842, the East Side Canal) that has been determined eligible for the NRHP. This canal is considered historically significant because of its association with the development of the Star Valley dairy industry and the community of Etna. The canal enters the Project Area near the intersection of US 89 and Stewart Trail Road.

Because of loss of setting, feeling, and association due to modern development (i.e., roads, highways, and residential development), and changes due to the original construction of Stewart Trail Road, WYDOT determined the segment of the East Side Canal within the Project Area as non-contributing to the canal's eligibility for listing on the NRHP. Some minor channel changes associated with improving Stewart Trail Road to accommodate the cluster mailboxes and replacing

the culvert may occur. These impacts were determined by WYDOT to have no adverse effect. Consultation with SHPO was initiated on May 28, 2013. Concurrence from SHPO was received on June 25, 2013.

Impacts

No Build Alternative: The No Build Alternative would have no impacts because no sites eligible for listing on the NRHP would be affected.

5-Lane Alternative: The 5-Lane Alternative would have no impacts to cultural resources because no sites eligible for listing on the NRHP would be affected.

4-Lane Alternative: The 4-Lane Alternative would have no impacts to cultural resources because no sites eligible for listing on the NRHP would be affected.

Section 4(f) Properties

Section 4(f) of the United States Department of Transportation Act of 1966 (Title 49 United States Code Section 303 and Title 23 United States Code Section 138) protects public parks, recreation areas, or wildlife and waterfowl refuges of national, state, or local significance, or any land from an historic site of national, state, or local significance.

The East Side Canal (48LN2842) is a Section 4(f) property due to its historic significance, described above. Culvert replacement, minor channel changes, and realignment of the Stewart Trail Road as a result of the alternatives would not alter the function and use of the East Side Canal and would not convert any part of the canal to transportation uses. Therefore, there would be no Section 4(f) use of this property.

3.20 Hazardous Materials

Hazardous materials could be encountered during the construction of the alternatives. Therefore, it is important to identify properties that may contain contamination prior to right-of-way acquisition and construction.

Existing Conditions

Most of the Project Area consists of agricultural uses and residential development with minor commercial development. The commercial development is mainly located in Etna and Alpine near both ends of the Project Area. In general, parcels with a history of commercial uses have a higher likelihood of having recognized environmental conditions (RECs) than residential property.

Environmental Data Resources, Inc. (EDR) generated a report to locate potential sites with known or suspected RECs within 0.5 mile of the Project Area. According to the EDR report, no sites are listed in federal, state, or local databases within 0.5 mile of the Project Area. However, four facilities are listed as orphan sites. The term "orphan sites" means that EDR could not pinpoint the exact location of the sites with the listed address. A review of the listed addresses indicated that two of these sites appear to be located within 0.5 mile of the Project Area.

In addition, a search of the WDEQ database indicated that five sites are located within 0.5 mile of the Project Area.

Impacts

No Build Alternative: After evaluating the likelihood that contamination from each of the EDR orphan sites and/or WDEQ-listed sites would impact any potential spot safety improvements, there are no sites of concern.

5-Lane Alternative: After evaluating the likelihood that contamination from each of the EDR orphan sites and/or WDEQ-listed sites would impact the construction of the 5-Lane Alternative, there are no sites of concern.

4-Lane Alternative: Similar to the 5-Lane Alternative, no sites of concern were identified for the 4-Lane Alternative.

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Mitigation

Although no sites of concern were identified that could impact construction of the alternatives, contamination could still be encountered during construction activities. Therefore, construction personnel will be trained to recognize signs of possible contamination in soil, such as odors and staining.

Owners of subsurface utilities will be contacted regarding excavation areas in order to assess whether any of the utilities are contained in Transite asbestos pipe. If subsurface utilities are determined to be housed in Transite asbestos pipe and the utilities need to be relocated for the project, special handling, and possibly asbestos abatement, would be required.

For additional information regarding potential hazardous materials within the Study Area, see the *Hazardous Materials Technical Memorandum* (Jacobs 2013) in Appendix A.

3.21 Wild and Scenic Rivers

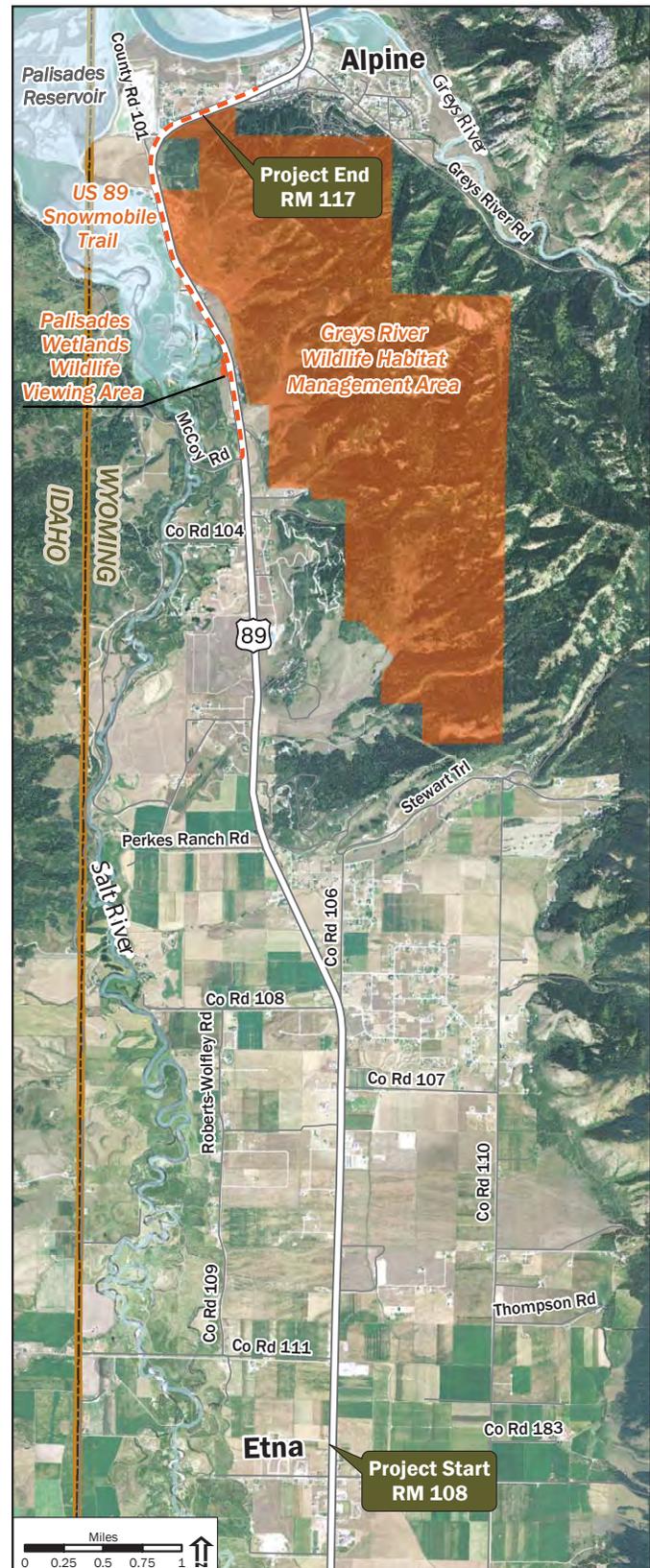
No Wild and Scenic Rivers are located in the Project Area. Therefore, no impacts are expected under the No Build Alternative or the build alternatives, and no mitigation is required.

3.22 Parks and Recreation

No designated public parks exist along US 89. However, the following facilities serve a recreational purpose along the corridor (see **Figure 3-17**).

- **US 89 Snowmobile Trail:** The snowmobile trail parallels US 89 from McCoy Road north through the Town of Alpine. An unofficial parking area located at the McCoy Road/US 89 intersection provides access to the McCoy Road snowmobile trail system, as well as the trails throughout the Caribou National Forest. Snowmobilers use the US 89 Snowmobile Trail as a connection between the snowmobile trail systems of Caribou National

Figure 3-17 Parks and Recreation Resources



Forest west of US 89 and Bridger National Forest southeast of the Town of Alpine.

- **Palisades Wetlands Wildlife Viewing Area:** The viewing area is located on the west side of US 89 at the Salt River inlet (southern end) of the Palisades Reservoir. The area consists of parking, an interpretive sign, and a covered area with benches. The viewing area looks out over a large expanse of wetlands surrounding the southern inlet of the Palisades Reservoir.
- **Greys River Wildlife Habitat Management Area:** Greys River Wildlife Habitat Management Area includes a feedground located 1.0 mile south of Alpine along the east side of US 89 where wildlife officials provide feed for elk throughout the winter. The property is predominantly owned and managed by the WGFD; however, some eastern portions of the property (not adjacent to US 89) are owned by the U.S. Forest Service. The total area of the Greys River Wildlife Habitat Management Area is 3,064 acres. The area provides opportunities for hunting, camping, hiking, and wildlife viewing. It is closed to the public from November 1 through April 30 to avoid human disturbance to wintering wildlife.

Section 4(f) Properties

Section 4(f) of United States Department of Transportation Act of 1966 (Title 49 United States Code Section 303 and Title 23 United States Code Section 138) protects public parks, recreation areas, or wildlife and waterfowl refuges of national, state, or local significance, or any land from an historic site of national, state, or local significance.

The US 89 Snowmobile Trail, the Palisades Wetlands Wildlife Viewing Area, and the Greys River Wildlife Habitat Management Area were analyzed to determine Section 4(f) applicability. None of these recreation areas were determined to be Section 4(f) properties. For additional information regarding Section 4(f) resources, see the *Section 4(f) Technical Memorandum* (Jacobs 2013) in Appendix A.

Section 6(f) Properties

Section 6(f) of the Land and Water Conservation Fund Act (Title 36 of the CFR Part 59) protects recreational lands planned, acquired, or developed with Land and Water Conservation Funds. According to the Wyoming Land and Water Conservation Fund Database (1965-2011), two Section 6(f) recreation resources within the Project Area (the Alpine Park Development and the Alpine Skate Park) have received Land and Water Conservation funds for development (InvestigateWest 2012).

Impacts

No Build Alternative: The No Build Alternative would have no impacts to parks and recreation resources. However, an unofficial parking area exists at the intersection of US 89 and CR 106, as described in Chapter 1. The public has expressed safety concerns regarding the many turning movements in this area, which is used by recreational snowmobilers during winter for parking. Under this alternative, safety issues are expected to worsen, potentially affecting recreational snowmobile use in this area.

5-Lane Alternative: The 5-Lane Alternative would impact two recreation resources—the Palisades Wetlands Wildlife Viewing Area and the Greys River Wildlife Habitat Management Area.

Approximately 0.3 acre of land associated with the access to the Palisades Wetlands Wildlife Viewing Area would be acquired and converted for transportation use. Impacts would be limited to the two access points, which would each be shortened by approximately 30 feet to accommodate roadway widening. However, the viewing area itself would not be impacted because approximately 30 to 50 feet of roadway would remain for each access point to the viewing area.

Additionally, the 5-Lane Alternative would result in the acquisition (reduction) of approximately 6.7 acres of the Greys River feedground property in the Greys River Wildlife Habitat Management Area as a result of the required expansion of right-of-way and avoidance of

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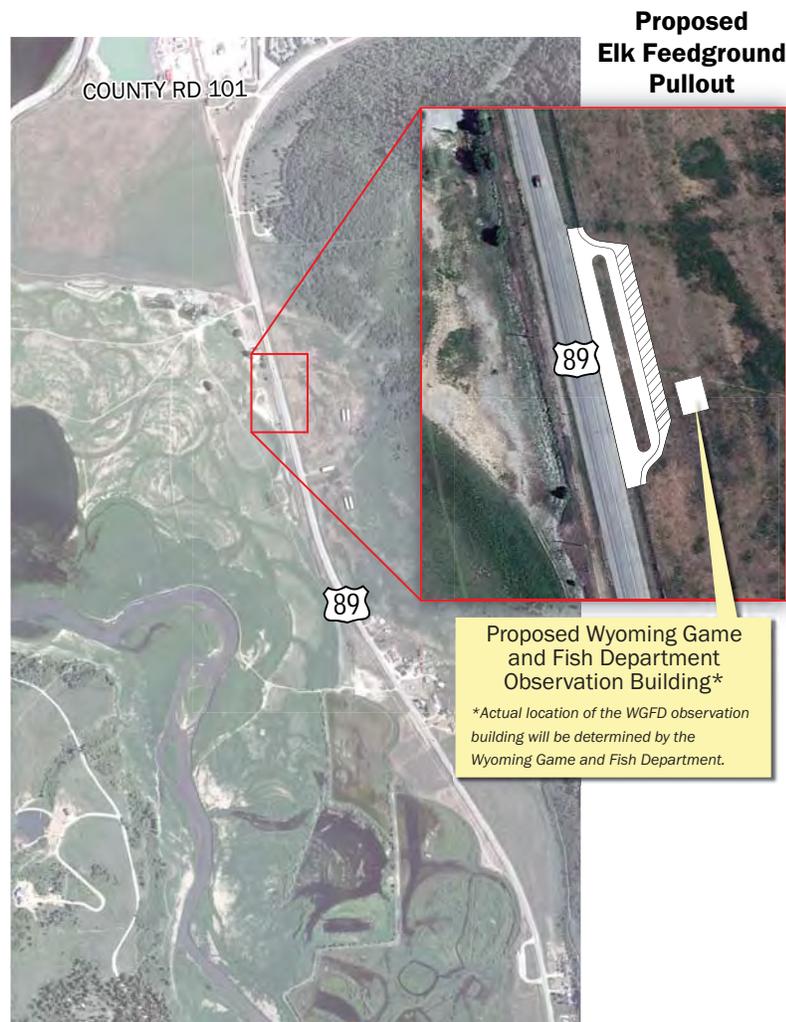
the Palisades Reservoir.⁶ An approximate 0.6-mile strip of feedground ranging from 40-60 feet wide immediately adjacent to the existing US 89 right-of-way would be acquired by WYDOT and converted to transportation use. However, this alternative provides for construction of a new pull-out and parking area to accommodate approximately 20 vehicles for wildlife viewing at the elk feedground. The Wyoming Game and Fish Department is proposing construction of a small observation building in conjunction with this viewing area (see **Figure 3-18**). These facilities would provide enhanced recreational wildlife viewing opportunities in the area.

The 5-Lane Alternative would not impact the US 89 Snowmobile Trail, which would continue to operate in its current configuration. A new parking area would be constructed to replace the existing unofficial parking area. No other changes would occur at this location.

The two Section 6(f) properties, the Alpine Park Development and the Alpine Skate Park, are located outside the 5-Lane Alternative construction and right-of-way acquisition areas. Therefore, neither would be impacted.

⁶ Actual acreages would be determined during final design.

Figure 3-18 Proposed Wildlife Viewing Area



4-Lane Alternative: Impacts would be similar to the 5-Lane Alternative but to a slightly lesser degree. Approximately 0.3 acre of land associated with the access to the Palisades Wetlands Wildlife Viewing Area would be acquired and converted to transportation use. Impacts would be limited to the two access points, which would each be shortened by approximately 30 feet to accommodate roadway widening. However, the viewing area itself would not be impacted for reasons described above.

Additionally, the 4-Lane Alternative would result in the acquisition (reduction) of approximately 4.0 acres of the Greys River feedground property in the Greys River Wildlife Habitat Management Area. A 0.7-mile strip of feedground ranging from 40-60 feet wide immediately adjacent to the existing US 89 right-of-way would be acquired by WYDOT and converted to transportation use. However, this alternative provides for enhanced recreational wildlife viewing opportunities in the area, as described for the 5-Lane Alternative, through construction of a new pull-out, parking area, and proposed observation building at the elk feedground.

The 4-Lane Alternative would not impact the US 89 Snowmobile Trail, which would continue to operate in its current configuration. Impacts to the unofficial parking area at the intersection of US 89 and CR 106 would be the same as the 5-Lane Alternative.

The two Section 6(f) properties, the Alpine Park Development and the Alpine Skate Park, are located outside the 4-Lane Alternative construction and right-of-way acquisition areas. Therefore, neither would be impacted.

Mitigation

The portion of Greys River Wildlife Habitat Management property required to construct the build alternatives will be purchased from the WGFD at fair market value. The proceeds from that purchase will be used by the WGFD to purchase additional land for the Greys River feedground.

3.23 Construction Impacts

Construction activities associated with either build alternative would require acquisition of aggregate and earthen borrow materials from one or more of the following sources:

- Bear Pit on U.S. Bureau of Reclamation Palisades Reservoir land
- Alpine State Pit on WYDOT land south of Alpine
- A contractor-furnished source

These sources serve multiple projects and are cleared through separate environmental processes.

No Build Alternative: The No Build Alternative would involve construction related to spot improvements yet to be identified. Impacts related to the spot safety improvements will be assessed under a separate environmental compliance effort.

Build Alternatives: Construction impacts would be similar for both the 5-Lane Alternative and the 4-Lane Alternative. The period of construction would most likely occur over two to three years and would begin in 2021. Short-term impacts would occur during the construction period, the extent of which would depend on the construction methods, which would be determined during final design. However, highway construction generally would involve excavation, grading, paving, utility adjustments, and construction of ditches. Sequencing of construction and the overall timeframe of construction, including the possibility of restricting construction to weekdays or evenings, are dependent upon funding and have not been finalized. This would be coordinated with local communities to minimize impacts to residents and traffic, including school bus transportation.

Construction could affect travel mobility, increase traffic congestion, and temporarily restrict access to residences and businesses in the short term. However, at this time, WYDOT anticipates there would be no road closures associated with construction. Construction activities could increase dust, noise, and runoff,

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and could result in visual intrusions to motorists and residents. Construction would present the potential for exposure to, or accidental spill of, hazardous materials.

Air Quality

Without mitigation, excavation, grading, and fill activities could increase local fugitive dust emissions. Fugitive dust is airborne particulate matter, generally of a relatively large particulate size (greater than 100 microns in diameter). Because of the large size, these particles typically settle within 30 feet of their source. Smaller particles could travel as much as several hundred feet depending on wind speed. Vehicle emissions from construction vehicles and idling traffic would also impact air quality along roadways during construction activities.

Noise

Construction noise would present the potential for short-term impacts to receptors located in the Project Area. The primary source of construction noise is expected to be diesel-powered equipment, such as trucks and earth-moving equipment. Pile driving could be required for constructing certain substructures. Although several noise receptors are located within 50 feet of construction activities, most noise receptors are located farther than 50 feet from areas where high-noise activities are expected.

Water Quality

Stormwater runoff from a construction site presents the potential for violations of water quality standards in adjacent waterways and groundwater. Without BMPs, stormwater runoff could cause erosion, sedimentation, and transport of spilled fuels or other hazardous materials. These potential impacts are important because of the proximity of the Project Area to the Palisades Reservoir.

If unchecked, construction activities can lead to the deposition of eroded sediments within nearby waterways and water bodies. Without implementation of appropriate mitigation measures (described below), short-term effects to surface waters (i.e., during and immediately following construction) would include:

- A temporary increase in turbidity and sedimentation during and immediately following nearby land disturbances.
- An increased risk of contamination associated with the presence of heavy equipment fluids (fuels, lubricants, etc.) and construction-related chemicals (paints and concrete additives).

Traffic

Construction delays are expected to create short-term impacts to local and regional traffic circulation and congestion. Delays to the traveling public and emergency service vehicles would occur. Temporarily reduced speed limits and delays would affect travel mobility. Although WYDOT does not anticipate the need to close the highway at any time during construction, signage will be provided if closures are necessary.

Visual

Short-term construction-related visual impacts would include the presence of construction equipment and materials, temporary barriers, guardrail, detour pavement and signs, temporary shoring and retaining walls, lighting for any night construction that may occur, and removal of vegetative cover.

Construction Impacts Mitigation

Air Quality

WYDOT's Standard Specifications for Road and Bridge Construction (WYDOT 2010) requires contractors to provide and use methods to control air pollution (Section 111.4 Air Pollution Control). Construction impacts to air quality will be reduced by using dust suppression methods, such as water and/or commercial dust control agents.

Noise/Vibration

Mitigation for noise and vibration due to construction will conform to all local ordinances.

Water Quality

Contractors will be required to adhere to measures outlined in WYDOT's *Standard Specifications for Road and Bridge Construction* (WYDOT 2010) to protect water quality during construction. These measures

require implementation of a SWPPP in compliance with the National Pollution Discharge Elimination System.

BMPs will be implemented to control sediment and prevent erosion. Existing vegetation will be maintained and preserved where practicable, and all disturbed soils will be seeded and revegetated. Silt fences, as well as erosion bales and burlap bag curb, will be used to trap sediments and contain runoff, and to protect water quality from erosion.

Traffic Control

WYDOT will implement the following measures to minimize impacts to traffic circulation during construction:

- Develop traffic management plans.
- Maintain traffic flow during peak travel times by minimizing lane closures, if possible.
- Coordinate with emergency service providers to minimize delays and ensure access to properties.
- Coordinate with school districts to minimize delays to school buses.
- Although not anticipated, use signage to announce/advertise timing of road closures if necessary.

Permits Required

The following permits would or may be required for construction and will be obtained prior to construction:

- Section 401 Water Quality Certificate, issued by the WDEQ, is required for impacts to waterways. A Section 401 Water Quality Certificate is required in conjunction with an Individual 404 Permit (dredge and fill permit) for any transportation construction project or maintenance activity where work occurs below ordinary high water mark or adjacent to wetlands.
- Section 402 Permit, issued by the WDEQ, is required for dewatering of construction areas, if necessary. The following activities would require the acquisition of a Section 402 Permit:
 - ◆ Construction dewatering operations associated with utility excavation, bridge pier installation, foundation or trench digging, or other subsurface activities.
 - ◆ Discharge expected to occur from a point source discharge from mechanical wastewater treatment plants, vehicle washing, or industrial discharges.
- Section 404 Permit, issued by the U.S. Army Corps of Engineers, is required whenever construction projects or maintenance activities requiring filling below the ordinary high water mark in any body of water considered a Water of the U.S.
- Wyoming Pollutant Discharge Elimination System Permit, issued by the WDEQ, Water Quality Division, is required prior to construction in accordance with Section 402 of the Clean Water Act. This stormwater discharge permit is required to assure the quality of stormwater runoff for surface disturbances of one or more acres associated with the construction of the project. A general permit has been established for this purpose. The process for receipt of coverage under the general permit depends upon the scale of the construction activities. Land disturbance of at least 1 acre but less than 5 acres falls under the provisions of the Small Construction General Permit; land disturbance of 5 acres or more falls under the provisions of the Large Construction General Permit. A Notice of Intent to request coverage under the general stormwater permit must be submitted to the WDEQ, Water Quality Division for the Large Construction General Permit. The level of coverage necessary for this project (Small or Large Construction General Permit) would be determined upon completion of the roadway design.
- Floodplain Development Permit, issued by Lincoln County. A floodplain development permit is required for almost any development-related change to the floodplain, including, but not limited to, construction of new structures, modifications or improvements to existing structures, excavation, filling, paving, drilling, driving of piles, mining,

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dredging, land clearing, grading, or permanent storage of materials and/or equipment.

- Construction Access Permits are required for temporary access needs outside the construction project limits.
- Easement permits are required for construction, slope modification, and utilities.

3.24 Preferred Alternative

WYDOT evaluated the alternatives analyzed in this EA against the project's purpose and need statements, and reviewed the environmental impacts expected to resources within the Project Area to identify a Preferred Alternative. The No Build Alternative does not meet the project's purpose and need. **Table 3-13** indicates how the build alternatives would meet the project's needs. **Table 3-14** summarizes impacts to resources within the Project Area for the proposed alternatives.

WYDOT has identified Alternative 5: Five-lane Roadway with Center Turn Lane as the Preferred Alternative. Although the No Build Alternative includes some actions to address safety and maintain roadway conditions, it would not fully meet the project's purpose and needs. Spot safety improvements under the No Build Alternative are not expected to sufficiently address

safety issues associated with increased growth. Particularly, the No Build Alternative would not meet the project need to increase capacity and improve level of service. In addition, both build alternatives also include enhancements over the No Build Alternative that would improve overall quality of life in the valley, including creation of a new START bus park-and ride and construction of a new pull-out and parking area for wildlife viewing at the Greys River feedground.

Both build alternatives would meet the project's purpose and need. Alternative 5 would have greater physical impacts due to its additional width compared to the 4-Lane Alternative. Specifically, more land would be converted to transportation use, more property would be acquired, more receptors would be impacted by noise, more runoff would occur, and more wetlands would be impacted (see **Table 3-14**). However, these effects were offset by the safety advantages the 5-Lane Alternative would have over the 4-Lane Alternative. Although the 4-Lane Alternative would be expected to improve safety over existing conditions, its alternating passing lanes present more potential safety issues than one continuous passing lane. Therefore, Alternative 5 better meets the project's purpose to improve safety.

Table 3-13 Ability of 5-Lane Alternative and 4-Lane Alternative to Meet Project Needs

Project Need	5-Lane Alternative	4-Lane Alternative
Ability to Increase Capacity and Improve Level of Service	<ul style="list-style-type: none"> - Would increase capacity to meet design year requirements. - Would attain LOS rating of A. 	Same as 5-Lane Alternative.
Ability to Improve Safety	<ul style="list-style-type: none"> - Would eliminate time spent following a vehicle, which would enhance safety related to following too closely and attempting to pass. - Continuous passing lanes in both directions would meet driver expectations, especially when visibility is low. - Additional travel lanes would accommodate turning vehicles, reducing the potential for crashes. - Improved horizontal and vertical alignments would enhance the ability of motorists to safely negotiate curves. 	<ul style="list-style-type: none"> - Would reduce time spent following a vehicle, which would enhance safety related to following too closely and attempting to pass. - Improved safety over existing conditions. However, alternating passing lanes could introduce potential for crashes, primarily because passing lanes would merge on both the northbound and southbound directions, requiring driver vigilance to avoid collisions with oncoming traffic. - Improved safety over existing conditions. However, the potential for vehicles in the no-passing zone to cross the no passing centerline when a gap is perceived would increase the risk of colliding with oncoming traffic. - The changing passing lanes would be difficult to see during inclement weather and when covered in snow. - Improved horizontal and vertical alignments would enhance the ability of motorists to safely negotiate curves.
Ability to Improve Roadway Conditions	<ul style="list-style-type: none"> - Would improve parking areas near CR 108. - Would correct horizontal and vertical roadway alignments. - Would provide long-term pavement performance. 	Same as 5-Lane Alternative.

Table 3-14 Comparison of Impacts

Resource	Alternative		
	No Build	5-Lane	4-Lane
Land Use and Zoning	<ul style="list-style-type: none"> - No conversion to transportation use. 	<ul style="list-style-type: none"> - Converts 41.7 acres to transportation use. 	<ul style="list-style-type: none"> - Converts 30.5 acres to transportation use.
Social	<ul style="list-style-type: none"> - Adverse quality of life impacts from decreased LOS and safety, increased congestion. 	<ul style="list-style-type: none"> - Increased quality of life through increased LOS and safety, decreased congestion. - Adverse impact from removal of individual mailboxes. 	<ul style="list-style-type: none"> - Same as 5-Lane Alternative.

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Resource	Alternative		
	No Build	5-Lane	4-Lane
Economic	<ul style="list-style-type: none"> - Adverse effects to tourism and ability to attract local investment. - Does not support Lincoln County's Tourism Concept. 	<ul style="list-style-type: none"> - Beneficial effects to tourism and ability to attract local investment. - Supports Lincoln County's Tourism Concept. 	<ul style="list-style-type: none"> - Same as 5-Lane Alternative. - Same as 5-Lane Alternative.
Transportation and Traffic	<ul style="list-style-type: none"> - Potential increased number of crashes. - Percent time following another vehicle increase from 60% to 71%. - Overall LOS D by 2034; LOS E during summer. - Increased congestion at access points. - 3-foot to 6-foot shoulders for cyclists. - Spot safety improvements. - No START park-and-ride facility. - Adverse safety impacts due to mail delivery, retrieval. - Adverse safety impacts from multiple access points to Alpine Hills. - Existing bottleneck effect at Alpine and Etna from speed reductions. 	<ul style="list-style-type: none"> - Potential decreased number of crashes. - Percent time following another vehicle decrease to zero. - Overall LOS A by 2034. - Decreased congestion at access points. - Increased safety with 8-foot shoulders for cyclists. - Increased safety with improvements to sags and curves. - Enhanced use of transit with new START park-and-ride facility. - Increased safety by removing mailboxes from corridor and consolidating them in two locations. - Increased safety from removal of an access point at Alpine Hills. - Potential increased bottleneck effect at Alpine and Etna from lane merges. 	<ul style="list-style-type: none"> - Potential decreased number of crashes compared to existing conditions, but potentially less so than 5-Lane Alternative due to alternating passing lanes. - Same as 5-Lane Alternative.
Right-of-Way	<ul style="list-style-type: none"> - No right-of-way required. 	<ul style="list-style-type: none"> - Some property would be acquired; approximately 14.1 acres of residential use converted to transportation use. 	<ul style="list-style-type: none"> - Some property would be acquired; approximately 9.6 acres of residential use converted to transportation use.
Air Quality	<ul style="list-style-type: none"> - Increased emissions with increased traffic volumes; potential increased idling vehicles. 	<ul style="list-style-type: none"> - Increased emissions with increased traffic volumes; potential decreased idling vehicles. 	<ul style="list-style-type: none"> - Same as 5-Lane Alternative.

Resource	Alternative		
	No Build	5-Lane	4-Lane
Noise	- 10 receptors impacted.	- 23 receptors impacted.	- 19 receptors impacted.
Water Resources and Water Quality	- Increased roadway pollutants in highway runoff with increased traffic volumes. - Potential increased impervious surface with spot safety improvements.	- Increased roadway pollutants in highway runoff with increased traffic volumes. - Additional runoff from increased impervious surface.	- Same as 5-Lane Alternative but to a slightly lesser degree.
Floodplains	- No impact.	- No impact.	- No impact.
Vegetation and Noxious Weeds	- No impact.	- Minimal impacts with mitigation.	- Same as 5-Lane Alternative.
Wildlife and Fisheries	- Increased vehicle-wildlife collisions with increased traffic volume.	- Same as No Build plus converts 6.7 acres of Greys River feedground to transportation use.	- Same as No Build plus converts 4.0 acres of Greys River feedground to transportation use.
Wetlands and Other Waters of the U.S.	- Increased roadway pollutants in highway runoff with increased traffic volumes.	- Same as No Build plus 0.02 acre temporary disturbance to wet meadow wetlands, 0.07 acre permanent impact to shrub swamp, 0.09 acre impact to Waters of the U.S.	- Same as No Build plus 0.01 acre temporary disturbance to wet meadow wetlands, 0.05 acre permanent impact to shrub swamp, 0.09 acre impact to Waters of the U.S.
Threatened and Endangered Species	- No impact.	- Not likely to adversely affect special status species.	- Same as 5-Lane Alternative.
Visual Resources	- No Impact.	- Changed views but subordinate to surrounding landscape.	- Same as 5-Lane Alternative.
Cultural Resources	- No Impact.	- No impact.	- No impact.
Hazardous Materials	- No Impact.	- No impact, but mitigation applied if hazardous materials found during construction.	- Same as 5-Lane Alternative.
Wild and Scenic Rivers	- No impact.	- No impact.	- No impact.

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Resource	Alternative		
	No Build	5-Lane	4-Lane
Parks and Recreation	<ul style="list-style-type: none"> - Potential impact from increased congestion at parking area for snowmobile use. 	<ul style="list-style-type: none"> - Converts 0.3 acre of Palisades Wetlands Wildlife Viewing Area, 6.7 acres of Greys River feedground to transportation use. - Includes new parking and viewing area for feedground. - Decreased snowmobile parking area size and reduced congestion. 	<ul style="list-style-type: none"> - Converts 0.3 acre of Palisades Wetlands wildlife Viewing Area, 4.0 acres of Greys River feedground to transportation use; remainder same as 5-Lane Alternative.

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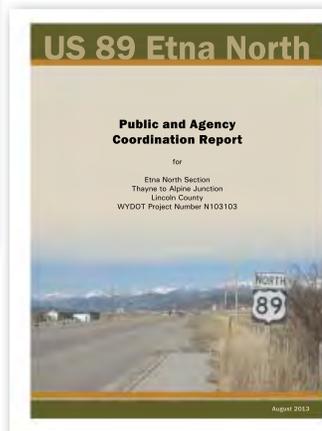
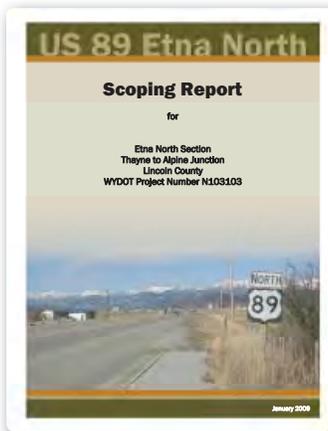


Chapter 4: Comments and Coordination

The Wyoming Department of Transportation (WYDOT) has conducted public and agency involvement throughout the Environmental Assessment (EA) process to ensure widespread public awareness of the project and to provide opportunities for timely input to project decision-making. Participants included interested citizens; property owners; representatives from the Town of Alpine, Etna, and Lincoln County; business owners and operators; and local, state, and federal agencies. Detailed information on the public and agency involvement can be found in two reports:

- *US 89 Etna North Scoping Report* (January 2009)
- *US 89 Etna North Public and Agency Coordination Report* (January 2015)

This chapter summarizes the outreach efforts.



4.1 Public Involvement

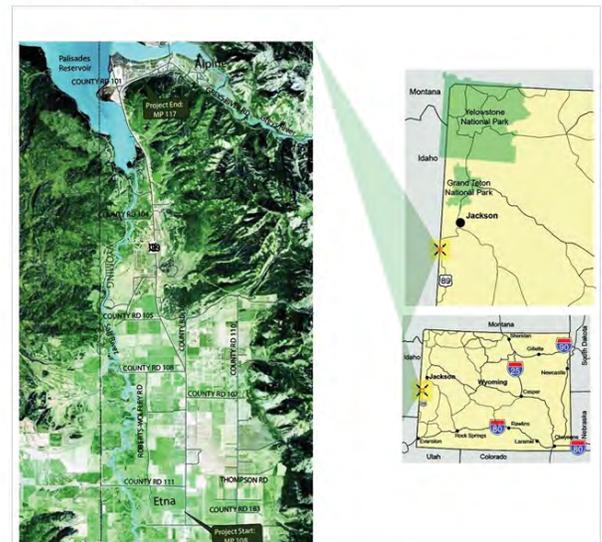
As part of the effort to involve area residents, businesses, and landowners, WYDOT held public meetings to provide information to the public and to obtain input on issues to be addressed and the development of the EA alternatives. A project web site was created and updated throughout the process (see **Figure 4-1**). Two project-specific informational videos were also posted on the WYDOT YouTube website, and project updates were posted on WYDOT's Facebook page.

Figure 4-1 Etna North Website

Etna North



The Etna North Project



The Wyoming Department of Transportation (WYDOT) and the Federal Highway Administration (FHWA) are proposing improvements to 9.25 miles of US Highway 89 in Lincoln County, Wyoming, between the towns of Etna and Alpine. US 89 is functionally classified as a Rural Principal Arterial route and designated as part of the National Highway System (NHS). The primary function of this route is the safe and efficient movement of people and goods over long distances while allowing for limited access to adjacent lands. As part of the National Highway System, US 89 is considered a strategic national highway that is critical to national security and economic viability. This highway also provides visitors a route to the Jackson Hole region and two major national parks.

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Public Meetings

WYDOT held four public meetings — a public scoping meeting in 2008, two public informational meetings in 2013, and one public informational meeting in 2014.

Public Scoping Meeting (November 20, 2008)

Scoping is an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to the project.

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The public scoping meeting was held on November 20, 2008, at the Alpine Town Hall in Alpine, Wyoming. The meeting was conducted in an open house format. Invitations were sent to each address on the public mailing list for this project. Advertisements were also placed in three newspapers inviting the public to attend the meeting. The ads were run on Sunday November 9, 2008, in the Casper Star Tribune; for the week of November 10-16, 2008, in the Star Valley Independent; and for three days (November 13-15, 2008) in the Jackson Hole Daily.

A total of 25 people signed in at the public scoping meeting. The following summarizes the comments or issues identified at the public meeting and those received by WYDOT via mail, fax, telephone, or the project-specific email.

Alternatives

- Will alternatives other than the five-lane option continue to be considered? (Comment ad-



dressed in Section 2.2 What Alternatives Were Considered?)

- Bike paths should be included in the design. (Comment addressed in Section 2.2 What Alternatives Were Considered?)
- The curve entering Alpine receives heavy truck traffic. Sufficient turn lanes are needed to accommodate this traffic, as well as traffic to other public facilities in the area. (Comment addressed in Section 2.10 Alternative 5 and Section 2.11 Alternative 6.)

Safety

Several areas were identified as safety concerns:

- Jackknife Road/US 89 intersection. (Intersection safety would be improved with the addition of turn lanes.)
- Swimming Pool Road (108)/US 89 intersection, which is used as an informal parking lot. (Comment addressed in Section 2.6 Actions Common to All Build Alternatives.)
- The Alpine Hills Drive/US 89 intersection related to sight distance at the US 89 curve. (Comment addressed in Section 2.1 How Were Alternatives Developed and Evaluated.)
- The curve south of Alpine. (Comment addressed in Section 2.6 Actions Common to All Build Alternatives.)

Speed Limits

- The posted speed is too high at the curve entering Alpine. There seems to be a high number of vehicle/wildlife collisions in this area; reduce speed to 45 mph 100 yards farther south than presently posted. (The state legislature has set the speed limit for Rural Principal Arterials at 65 mph.)
- Speed limits should be enforced considering speed is an issue currently along the US 89 corridor. (Speed limit enforcement is the responsibility of the state highway patrol.)

Private Property

Numerous individual property (and owner) easements and irrigation ditches were identified. There should be equitable acquisition of land for right-of-way and distribution of right-of-way impacts. (Comments addressed in Section 3.8 Right-of-Way.)

Transportation and Traffic

The five-lane option will result in bottlenecks in the towns where the highway is reduced to three lanes. (Comment addressed in Section 3.7 Transportation and Traffic.)

Visual Impacts

- Concerns were expressed about lighting impacts associated with the reconstructed highway. (Comment addressed in Section 3.18 Visual Resources.)
- Power lines should be buried near the wildlife viewing areas to protect birds and increase viewing pleasure. (Comment addressed in Section 2.4 Actions Common to All Alternatives.)

Wildlife

Wildlife cross the roadway at several points, including the elk feedground, McCoy Campground access road, Alpine near the medical clinic and the fire station, and north of the Alpine Hills Drive/US 89 intersection. Wildlife tunnels at these crossings and lower speed limits were recommended to protect wildlife. (Comment addressed in Section 2.2 What Alternatives Were Considered? and Section 3.15 Wildlife and Fisheries.)

Maintenance

- Snowmobile lanes that parallel the highway are heavily used during the winter and these should be maintained. (Comment addressed in Section 3.22 Parks and Recreation and the *Section 4(f) Technical Memorandum* in Appendix A. Appendices can be found on the project website: <http://www.etna-north.com>.)
- The McCoy Road/US 89 intersection is used as a parking area for snow machine and other recreational uses. (Parking would continue to be accommodated at this intersection.)

Public Meeting (March 5, 2013)

Because of project refinements in response to public and agency comments, WYDOT held a second public meeting in March 2013 to provide additional opportunity for the public to offer input and ask questions. WYDOT held this public meeting on March 5, 2013, in an open house format at the Star Valley Community Complex in Etna, Wyoming. WYDOT sent invitations to each address on the public mailing list. WYDOT also placed advertisements in three newspapers inviting the public to attend the meeting. The ads were run on Wednesday, February 27, 2013, in the Jackson Hole News and Guide; February 20 and February 27, 2013, in the Star Valley Independent; and February 25 through March 3, 2013, in the Jackson Hole Daily. In addition, the Star Valley Community Complex advertised the meeting on its electronic signboard in the days leading up to the meeting.

WYDOT produced an informational video that was posted on WYDOT's YouTube website and shown at the March 5, 2013, public meeting. The video highlighted the purpose and need of the project, issues and concerns that had been identified by the general public, and information on how to be involved. Multiple Facebook posts included information on the March 5, 2013, public meeting.

A total of 96 people signed in at the March 5, 2013, public meeting. The following summarizes the comments or issues identified at the public meeting and those received by WYDOT via mail, fax, telephone, or the project-specific email.

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Project Need

Five lanes are unnecessary to support traffic needs. (Comment addressed in Chapter 1: Purpose and Need for Action).

Alternatives

- Can alternative routes besides the highway be developed? (Comment addressed in Section 1.2 Project Setting)
- Increase mass transit. (Comment addressed in Section 2.2 What Alternatives Were Considered?)
- Leave the road through Etna at two lanes to maintain safer speeds. (Comment addressed in Chapter 2: Alternatives Analysis.)

Speed Limits

Use a 55 mph speed limit and turn lanes. There is a need for a graduated change in speed limits entering Etna. (The state legislature has set the speed limit for Rural Principal Arterials at 65 mph.)

Economics

Five lanes will encourage travelers to pass through the valley without stopping. (Comment addressed in Section 3.6 Economic Resources.)

Visual

Five lanes will alter the character of Star Valley. (Comment addressed in Section 3.18 Visual Resources.)

Wildlife

Concerns were expressed regarding wildlife vehicle collisions, specifically deer and elk. (Comment addressed in Section 3.15 Wildlife and Fisheries.)

Construction

Account for public school bus operation in the construction plan. Construction equipment will need to obey the bus stop signs, children may need to cross construction areas, and buses may need to stop in between areas of active traffic control. (Comment addressed in Section 3.23 Construction.)

Public Meeting (June 25, 2013)

In response to increased public interest in the project and additional refinements made to the roadway design to further decrease right-of-way needs, WYDOT held a third public meeting in June 2013 where the public could offer input and ask questions. WYDOT held this meeting on June 25, 2013, in a presentation/open house format at the Star Valley Community Complex in Etna, Wyoming. WYDOT sent invitations to each address on the public mailing list and to each person who had contacted the Governor's Office with concerns about the project. WYDOT also placed an advertisement in the local newspaper inviting the public to attend the meeting. The ad appeared on June 13 and June 20, 2013, in the Star Valley Independent.

A total of 73 people signed in at the June 25, 2013, public meeting. Of the 138 landowners along the project alignment, 31 signed in. The public meeting was attended by two members of the Wyoming State Legislature and a Lincoln County Commissioner. The following summarizes the comments or issues identified at the public meeting. Many comments focused on specific design aspects.

Alternatives

- Five lanes is overkill. Recommend three lanes including a passing lane. (Comment addressed in Section 2.2 What Alternatives Were Considered?)
- Enhanced START bus service will help to manage peak demand periods, increase safety by reducing vehicle trips, and extend the life of future roadway. (Comment addressed in Section 2.2 What Alternatives Were Considered?)
- South of Alpine, recommend building alignment to the west to better align with existing three-lane through Alpine. (The curve south of Alpine would be improved to help flatten the curve radius, which would also help improve alignment of the highway in Alpine. See Section 2.6 Actions Common to All Build Alternatives.)

Noise

Noise barriers were suggested south of Alpine. (Comment addressed in Section 3.11 Noise.)

Wildlife

Area north of Nordic Ranches has frequent vehicle-animal collisions; recommend wildlife tunnel in the area. (Comment addressed in Section 2.2 What Alternatives Were Considered? and Section 3.15 Wildlife and Fisheries.)

Public Meeting (July 8, 2014)

WYDOT held a public meeting in July 2014 to present the 5- and 4-Lane Alternatives being proposed for further analysis. WYDOT held this meeting on July 8, 2014, from 6:00 p.m. to 8:00 p.m. in a presentation/open house format at the Star Valley Community Complex in Etna, Wyoming. The presentation included a video, visual simulation, preliminary roadway design plans, and a general update on the project. Comments on the proposed improvements were also requested and accepted at the meeting, as well as indefinitely after the meeting. WYDOT sent invitations to each address on the public mailing list. WYDOT also placed an advertisement on June 25 and July 2, 2014, in the Jackson Hole News & Guide.

A total of 114 people signed in at the July 8, 2014, public meeting. Comments were accepted during and after the meeting, and are summarized as follows:

Project Need

- Data used for analysis is out of date and faulty; population projections are flawed. (Comment addressed in Section 1.2 Project Setting and Section 3.7 Transportation and Traffic).
- There is no justification for five lanes. No significant traffic congestion or safety problems exist; project is not justified. (Comment addressed in Section 1.2 Project Setting and Section 1.4 Project Needs.)
- Address the problem in 2030, not now. Take the right-of-way now but don't build until the need is greater. (Comment addressed in Section 1.2 Project Setting.)
- Traffic is only heavy during summer months. (Comment addressed in Section 1.4 Project Needs,

Section 3.6 Economic Resources, and Section 3.7 Transportation and Traffic.)

- Turning on and off the highway is the major issue, more so than passing slow traffic. (Comment addressed in Section 1.2 Project Setting, Section 1.4 Project Needs, Section 2.10 Alternative 5, and Section 2.11 Alternative 6.)
- Focus spending on other roads that are more in need. (WYDOT has a process for identifying projects most in need while making sure the needs of the entire state are being met. This project was identified as having a high level of need. See Chapter 1: Purpose and Need for Action.)
- There is no need to accommodate cyclists. (Comment addressed in Section 2.2 What Alternatives Were Considered?)
- How is the highway failing its intended function? (Comment addressed in Section 1.2 Project Setting and Section 1.4 Project Needs.)
- Can the designation be changed? (The highway's designation reflects the use of the road and how it functions. US 89 is the only Rural Principal Arterial in Star Valley, and it serves specific functions [see Section 1.2 Project Setting]. Changing the designation would not change how the highway functions. US 89 would continue to function as a Rural Principal Arterial because the traffic using the highway cannot be shifted to another route.)

Alternatives

Comments were received in support of all proposed alternatives. The majority supported the 5-Lane Alternative or No Build. Several commenters suggested other options:

- Consider minor improvements such as widening shoulders, adding left turn lanes where really needed, adding turn lanes at major intersections, adding pull-offs for buses, reducing speeds, resurfacing existing road, adding passing lane where no homes would be taken, adding more commuter bus. (Comment addressed in Section 2.2 What Alternatives Were Considered?)

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- Use wider shoulders as travel lane for farm equipment and bicycles, temporary lane during road repair, turn lanes at major intersections, merge lanes, bus pullouts, and pullover areas for police and people with car trouble. (Comment addressed in Section 2.2 What Alternatives Were Considered?)
- Suggest a hybrid of 4-Lane and 5-Lane where one or two sections could have alternating passing lanes to minimize impacts on property owners. (Comment addressed in Section 2.2 What Alternatives Were Considered?)
- Suggest a 4-lane continuous road with additional right turn and center lane left turn lanes. (Comment addressed in Section 2.2 What Alternatives Were Considered?)
- Suggest three lanes with 45-mph speed limit; three lanes with enter and right turn ramps at major intersections. (Comment addressed in Section 2.2 What Alternatives Were Considered?)

Safety

- Remove northern highway access to the Alpine Hills Drive at the dangerous curve. (Comment addressed in Section 2.6 Actions Common to All Build Alternatives.)
- Concern about cyclists using bike lanes. (Comment addressed in Section 2.2 What Alternatives Were Considered? and Section 3.7 Transportation and Traffic.)
- Multi-lane options would result in increased accidents from animals crossing wider road, increased blind spots resulting from extra lanes, and aggressive driving. (Comment addressed in Section 3.7 Transportation and Traffic.)
- Lane markings on the 4-Lane Alternative would be lost when covered in snow. (Comment addressed in Section 3.7 Transportation and Traffic.)
- Multiple lanes will create dangerous bottlenecks at either end where the road is two lanes wide. (Comment addressed in Section 3.7 Transportation and Traffic.)

- The 4-Lane Alternative is too unconventional and unsafe. (Comment addressed in Section 3.7 Transportation and Traffic.)
- Bury utilities underground to improve safety. (Comment addressed in Section 2.4 Actions Common to All Alternatives.)
- Cluster mailboxes would increase accidents. Keep individual mailboxes. (Comment addressed in Section 2.6 Actions Common to All Build Alternatives and Section 3.7 Transportation and Traffic.)
- How would a wider road have prevented the previous 5 crashes in 13 years? (Comment addressed in Section 3.7 Transportation and Traffic.)

Speed Limits

Speed limit is already too high. Set speed limit at 55 mph. Other scenic highways typically have speed limits 55 mph or lower. (The state legislature has set the speed limit for Rural Principal Arterials at 65 mph.)

Private Property

- Too many properties would be affected. How much property would be taken? (Comment addressed in Section 3.8 Right-of-Way.)
- Would disturbed pastures be re-seeded? (All areas temporarily impacted would be reclaimed with a seed mix composed of species appropriate to site conditions, as developed by the WYDOT agronomist.)
- Has right-of-way been purchased already? (No, the NEPA process must be completed first.)
- Will WYDOT build new foundations and move houses for impacted homeowners? (WYDOT would monetarily compensate homeowners for any property acquisitions in conformance with in the Uniform Relocation Assistance and Real Property Acquisition Policies Act. The homeowner makes the decision as to how to spend that money [i.e., moving a house or buying another one].)

Traffic and Transportation

- A bottleneck effect will be created to the north of Alpine Junction. Bottlenecks would occur to the north and south where the highway becomes two lanes. (Comment addressed in Section 3.7 Transportation and Traffic.)
- Make sure there are enough parking spots at the START bus parking area. (Comment addressed in Section 2.6 Actions Common to All Build Alternatives.)
- Will Lincoln County build the needed connectivity to Highway 89? (WYDOT has been working closely with Lincoln County, specifically on the Corridor Management Plan, to address the proliferation of access points on US 89. The *Lincoln County Comprehensive Plan* (July 6, 2005; amended November 13, 2006), indicates that, as a result of items identified in the *U.S. 89 Corridor Study*, a county-wide transportation plan will be initiated to promote the safe flow of traffic within the county and the orderly and timely development of county transportation infrastructure.)
- Please qualify access points. (Comment addressed in Section 1.4 Project Needs and Section 3.7 Transportation and Traffic.)

Wildlife

Concern about elk crossing the road at the feeding grounds; animal collisions will increase. Add wildlife crossing at elk feeding grounds. (Comment addressed in Section 2.2 What Alternatives Were Considered? and Section 3.15 Wildlife and Fisheries.)

Economics

The 4-Lane Alternative would be a huge issue for people who live along the road; property values will be degraded. (Research has found that in most cases, no statistically significant change in property values result from a highway reconstruction project, and improvements to transportation networks are not significant when the highway network is largely already developed. [MNDOT 2009].)

Noise

Address noise issues. Highway is already too close and noise levels too high. (Comment addressed in Section 3.11 Noise.)

Visual

- Multiple lanes would negatively affect the area's rural nature. Preserve the rural character of the road and its scenic byway status. (Comment addressed in Section 3.18 Visual Resources.)
- Bury utilities underground to improve aesthetics. (Comment addressed in Section 2.4 Actions Common to All Alternatives.)

Parks and Recreation

Improve parking and add interpretive facilities at Elk Feedground and Palisades Reservoir. (Comment addressed in Section 2.6 Actions Common to All Build Alternatives and Section 3.22 Parks and Recreation Resources.)

Construction

Conduct road work at night as much as possible. (Comment addressed in Section 3.23 Construction Impacts.)

Funding

- How will funds be provided? What does the \$40 million listed in the STIP cover? (The \$40 million in the STIP does not cover property acquisition, right-of-way costs, or future maintenance.)
- No evidence of financial support for year-round maintenance. (More money would be required for maintenance. Future maintenance would be provided from a separate budget.)

Maintenance

- How would snow plowing and road maintenance be affected? Under multi-lane options, maintenance would be increased and snow removal would be greater, increasing time for residents to remove it. (Comment addressed in Section 2.6 Actions Common to All Build Alternatives.)

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- Will only two lanes be open during winter? (All lanes would be open during winter unless conditions degrade beyond what personnel and equipment can address.)

The comments received and summarized above were used to inform project design and are reflected in the environmental assessment.

4.2 Agency Coordination

Coordination with local, state, and federal agencies occurred throughout the process to ensure compliance with agency policies, procedures, and transportation planning requirements, and to ensure accurate resource identification and impact evaluation.

Scoping letters were sent on November 8, 2008, to the agencies listed below:

- Eastern Shoshone Business Council
 - Lincoln County
 - Town of Alpine
 - Shoshone-Bannock Business Council
 - U.S. Army Corps of Engineers
 - U.S. Bureau of Land Management
 - U.S. Bureau of Reclamation
 - U. S. Department of Agriculture, Natural Resources Conservation Service
 - U.S. Environmental Protection Agency
 - U.S. Fish and Wildlife Service
 - U.S. Forest Service Bridger-Teton National Forest
 - U.S. Forest Service Caribou-Targhee National Forest
 - Wyoming Department of Environmental Quality
 - Wyoming Game & Fish Department
 - Wyoming Governor's Planning Office
 - Wyoming State Historic Preservation Office
- Ten agencies responded to the scoping letter request with the following comments.
- **Town of Alpine** – Generally supported the project; however, noise impacts to residents during construction are of concern. Heavy equipment not directly needed on site should be placed as far away from residents as possible. Also, the speed limits south of the town should be reassessed. (Comment address in Section 3.11 Noise. Also, the state legislature has set the speed limit for Rural Principal Arterials at 65 mph.)
 - **U.S. Bureau of Reclamation (BOR); Snake River Area Office** – No impact to facilities or lands as long as Wyoming Department of Environmental Quality regulations are followed. (Current design does not include impacts to BOR facilities or lands.)
 - **Department of the U.S. Army Corps of Engineers; Omaha District; Wyoming Regulatory Field Office (USACE)** – Dredging or filling of wetlands and Waters of the U.S. associated with the Salt River will require USACE authorization. (Comment addressed in Section 3.16 Wetlands and Other Waters of the U.S.).
 - **Natural Resources Conservation Service (NRCS); Afton and Jackson Field Offices** – Identified water quality, weeds, prime farmland, wildlife habitat and migration, and agricultural infrastructure as resources of potential concern. (Comment addressed in Section 2.4 Actions Common to All Alternatives, Section 3.12 Water Resources and Water Quality, Section 3.14 Vegetation and Noxious Weeds, Section 3.9 Prime and Unique Farmland, and Section 3.15 Wildlife and Fisheries.)
 - **Wyoming State Historic Preservation Office (SHPO)** – Historic properties must be identified and assessed by a consultant meeting the required professional standards. A report detailing these findings must be provided to the SHPO for review and comment. (Comment addressed in Section 3.19 Cultural Resources.)

- **U.S. Forest Service (USFS), Caribou-Targhee National Forest, Palisades Ranger District**
 – General comments were related to USFS land near FR 87, impacts at the Alpine Wildlife Viewing Area, the Alpine to McCoy Creek Snowmobile Trail (an important recreation resource), McCoy Creek Snowmobile Parking Lot, and wetland habitat of the Alpine Wetland Impoundment and Complex. Also pointed out an important elk crossing corridor from the feedground to the wetland area. (Comment addressed in Section 3.22 Parks and Recreation, Section 3.16 Wetlands and Other Waters of the U.S., and Section 3.15 Wildlife and Fisheries.)
 - **U.S. Fish and Wildlife Service (USFWS)** – Provided comments on the Ute ladies'-tresses (threatened) and the yellow-billed cuckoo (candidate) and other protected species, wetland protection, floodplain management, and the Clean Water Act. Additionally, USFWS encouraged the burying of power lines and provision of wildlife crossing information. (Comment addressed in Section 2.4 Actions Common to All Alternatives, Section 3.7 Threatened and Endangered Species, Section 3.16 Wetlands and Other Waters of the U.S., Section 3.13 Floodplains, and Section 3.12 Water Resources and Water Quality.)
 - **Wyoming Game and Fish Department (WGFD)**
 – General comments included issues of big game seasonal movements and migration routes, wildlife-proof fencing, underpasses and wildlife exit ramps, wetland impacts and potential mitigation, right-of-way and access associated with the Alpine Wetland and the Greys River Wildlife Habitat Management Area, power lines in the highway right-of-way, and impacts to raptor nests. WGFD also requested an on-site visit to the project area with WYDOT. WYDOT and WGFD met on August 11, 2009, and coordination continued through March 2013. (Comment addressed in Section 2.2 What Alternatives Were Considered?, Section 2.4 Actions Common to All Alternatives, Section 3.15 Wildlife and Fisheries, and Section 3.16 Wetlands and Other Waters of the U.S.)
- Through this coordination, it has been determined that a five-lane roadway would allow traffic to move around slower traffic and vehicles turning right. The center turn lane would accommodate trucks turning left into to the feedground area. This configuration would reduce the safety issues regarding hay trucks accessing the feedground. The distance from the roadway shoulder to the front of the Quonset hut, where trucks unload, would be approximately 130 feet. This distance is adequate to ensure safety during unloading and loading of semi-trucks.
- **Wyoming Department of Environmental Quality (Wyoming DEQ), Solid and Hazardous Waste Division** – Provided information regarding underground storage tanks and the potential for encountering contaminated soils adjacent to the proposed project corridor. (Comment addressed in Section 3.20 Hazardous Materials.)
 - **Lincoln County** – Supported proposed improvements. The county noted that:

 - ◆ A proposed water line expansion is likely in WYDOT right-of-way north of Etna.
 - ◆ Relocations of two park-and-ride START bus stops near the project corridor are proposed.
 - ◆ A major new private development at the west end of CR 104 is planned that will involve widening the Salt River bridge on CR 104. The developer will also work with WYDOT to improve the CR 104/US 89 intersection.
 - ◆ The county is also considering connecting CR 110 with CR 106 to alleviate some of the local and agricultural traffic pressure from US 89. (Note: Although this may reduce pressure in the immediate vicinity of CR 110 and CR 106, the traffic pressure from agricultural activities and other residential developments is expected to continue to affect the remainder of the corridor.)

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- **Star Valley Conservation District (SVCD)** – Salt River is listed on the DEQ 2008 Section 303(d) list, and road design should include vegetative buffers between paved surfaces and surface waters. Soil maps provided by SVCD show highly erodible soils in the project area. Request best management practices (BMP) to protect soils and surface waters and prevent stormwater impacts. Noxious weeds and agriculture infrastructure and uses are also concerns that need to be addressed in planning. (Comment addressed in Section 2.4 Actions Common to All Alternatives, Section 3.12 Water Resources and Water Quality, Section 3.14 Vegetation and Noxious Weeds, and Section 3.23 Construction Impacts.)

4.3 Decision Process

A Notice of Availability of the EA and an announcement of a public hearing to present the findings of the EA and receive comments on the EA will be published in the Star Valley Independent, Jackson Hole Daily, and the Jackson Hole News and Guide. The EA will be available for review by the public for 30 days. The general public and agencies will be given an opportunity to provide official comment on the project. Written comments, to be included as an official part of WYDOT's records, will be accepted for 30 days following the Notice of Availability.

The Federal Highway Administration (FHWA) will prepare a Decision Document following the EA public and agency review identifying the preferred alternative.

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References

- Environmental Data Resources, Inc.*. 2009. *US 89 Etna North US 89/Trail Drive Road Radius Map Report and US 89 Etna North US 89/Jack Knife Road Radius Map Report with Geocheck*. August 19, 2009.
- Federal Highway Administration*. 2011. *An Agency Guide on How to Establish Localized Congestion Mitigation Programs*. FHWA's Bottleneck Reduction Initiative Program Office of Operations. March.
- _____. 2008. *Wildlife-Vehicle Collision Reduction Study, Report to Congress*. FHWA-HRT-08-034. August. <http://www.fhwa.dot.gov/publications/research/safety/08034/08034.pdf>.
- _____. 2008b. *Safety Evaluation of Center Two-Way Left-Turn Lanes on Two-Lane Roads*. Publication Number: FHWA-HRT-08-046. March. <http://www.fhwa.dot.gov/publications/research/safety/08046/index.cfm>.
- _____. 2001. *Highway Traffic Noise: Analysis and Abatement Guidance*.
- _____. 1998. *FHWA Order 6640.23, Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*
- _____. 1994. *The Magnitude and Severity of Passing Accidents on Two-Lane Rural Roads*. Publication Number: FHWA-RD-94-068. November. <http://www.fhwa.dot.gov/publications/research/safety/humanfac/94068.cfm>.
- _____. 1988. *Visual Impact Assessment for Highway Projects*. Office of Environmental Policy. Publication No. FHWA-HI-88-054.
- Garder, Per*. 2006. *Segment characteristics and severity of head-on crashes on two-lane rural highways in Maine*. *Accident Analysis & Prevention*. Volume 38, Issue 4. July. Pages 652-661.
- Hart, Thomas*. 2012. *Personal communication (email correspondence), wildlife*. February 13.
- InvestigateWest*. 2012. *Wyoming Land and Water Conservation Fund Grants: Wyoming Land and Water Conservation Fund Database (1965-2011)*. <http://www.invw.org/data/lwcf/grants-wy.html>. Accessed March 2013.
- Jacobs Engineering Group Inc.* 2009. *US 89 Etna North Scoping Report*.
- Lincoln County*. 2013. *Planning Maps*. <http://www.lcwy.org/departments/planning/maps.php>. Accessed March, 2013.

US 89 Etna North

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- _____. 2012. *Lincoln County Economic Development Plan*. https://docs.google.com/viewer?a=v&pid=sites&srcid=bGN3eS5vcmd8bGluY29sbi1jb3VudHktYW5ub3VuY2VtZW50c3xneDo2ZDBiNjRhZjQ3MmWlxZ_TNj. Accessed December 19, 2013.
- _____. 2006. *Comprehensive Plan Lincoln County, Wyoming*. Adopted July 6, 2005. Amended 2006.
- _____. 2005. *Official Zoning Map of Lincoln County, Wyoming (Lower Valley and Upper Valley)*. Amended 2012.
- Minnesota Department of Transportation (MNDOT). 2009. *Impacts of Upgrading Roads on Local Property Values*. Research Services Section Technical Summary.
- Missoula County Air Quality Advisory Council. 2014. *Idling Fact Sheet*.
- National Geographic. 2013. *Top 10 Driver's Drives*. <http://travel.nationalgeographic.com/travel/top-10/drivers-drives-traveler/>. Accessed December 24, 2013.
- National Park Service (NPS). n.d. *NPS Stats*. <https://irma.nps.gov/Stats/Reports/Park>. Accessed December 24, 2013.
- Star Valley Chamber of Commerce. n.d. *Star Valley Relocation and Travel Guide*. <http://www.starvalleychamber.com/index.cfm?ID=28>. Accessed December 19, 2013.
- _____. 2015. *Star Valley Community Profile*. <http://starvalleychamber.com/our-communities/towns-community-profiles>.
- Taylor, David T. and Foulke, Thomas. *Lincoln County*. 2008. *Wyoming: A Socio-economic Profile*. University of Wyoming, Department of Agriculture and Applied Science.
- Town of Alpine. Pedersen Planning Consultants. 2006. *Town of Alpine Municipal Master Plan, Final*.
- University of Wyoming. 2014. *Regional Economic Analysis Project. Population Growth by Decade, Regions and Counties of Wyoming, 1969-2013*. <https://wyoming.reaproject.org/>.
- _____. 2012. *Second Home Growth in Wyoming, 2000-2010*. <http://www.uwyo.edu/haub/ruckelshaus-institute/files/docs/open-spaces/2012-second-home-growth-2000-10.pdf>.
- U.S. Army Corps of Engineers. 2013. *Wyoming Stream Mitigation Procedure*. Omaha District, Wyoming Regulatory Office. February. http://www.nwo.usace.army.mil/Portals/23/docs/regulatory/WY/WSMP_Feb2013.pdf.
- _____. 1987. *Wetland Delineation Manual*. January 1987.
- U.S. Census Bureau. *Census 2010*. <http://2010.census.gov/2010census/>. Accessed July 2012.
- _____. *American Community Survey 2006-2010*. 2010. <http://factfinder.census.gov/servlet/DatasetMainPageServlet?_program=ACS>. Accessed May 2012.

-
- _____. 2013. *American Community Survey 2009-2013*. <http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>.
- U.S. Department of Transportation. 1997. *DOT Order 5610.2 Order to Address Environmental Justice in Minority Populations and Low-Income Populations*.
- U.S. Environmental Protection Agency. 2012. *National Ambient Air Quality Standards (NAAQS)*. Website: <http://www.epa.gov/air/criteria.html>. Accessed April 2012.
- U.S. Fish and Wildlife Service. 2002. *Birds of Conservation Concern*. December 2002.
- _____. 1995. *Migratory Nongame Birds of Management Concern*. 1995.
- W. Henry McNab and Peter E Avers. 1994. *Ecological Subregions of the United States*. July 1994.
- Wackerly, Michael. 2014. *Personal communication (email correspondence), START bus service*. December 4.
- _____. 2013. *Personal communication (email correspondence), START bus service*. March 18, 2013.
- WyGIS for GAP, hyrdo, and transportation, <http://www.uwyo.edu/wygisc/>. Accessed 2013.
- Wyoming Department of Administration and Information, Economic Analysis Division. 2012. www.eadiv.state.wy.us. Accessed June 2012.
- Wyoming Department of Employment. 2013. www.doe.state.wy.us/lmi/trends.htm. Accessed March 4, 2013.
- Wyoming Department of Environmental Quality. 2012. <http://deq.state.wy.us/shwd/>. Accessed April 2012.
- Wyoming Department of Transportation. 2014. *Access Manual Rules and Regulations and Policy for Accesses to Wyoming Highways*. March 2005.
- _____. 2012. *Etna North Value Engineering Study, US 89, Thayne-Alpine Junction (Etna North), Located in Southwestern Wyoming, in Star Valley, near Jackson, WY*. Project No. N103103.
- _____. 2011. *Noise Analysis and Abatement Policy*. July 2011.
- _____. 2010. *Standard Specifications for Road and Bridge Construction*. Adopted March 18, 2010.
- _____. 2005. *US 89 Corridor Study, Star Valley, WY*.
- Wyoming Department of Workforce Services. 2013. www.WyomingWorkforce.org/tools-and-resources/Pages/publications.aspx. Accessed March 4, 2013.
- Wyoming Game & Fish Department. 2013. *Stream Classification & Mitigation*. <http://wgfd.wyo.gov/web2011/WILDLIFE-1001061.aspx>.

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Wyoming Interagency Spatial Database & Online Management System (WISDOM). 2014. <http://wisdom.wygisc.org/>.

Wyoming Oil and Gas Conservation Commission. 2009. Website: <http://wogcc.state.wy.us/>. Accessed August 2009.

Wyoming Travel and Tourism. 2015. Star Valley Scenic Byway. <http://www.wyomingtourism.org/things-to-do/detail/Star-Valley-Scenic-Byway/8747>.

Wyoming Water Development Commission. 2003. Snake/Salt River Basin Plan Final Report. June 2003. <http://waterplan.state.wy.us/plan/snake/finalrept/finalrept.pdf>. Accessed May 2, 2013.

Yellowstone Insider. 2013. Yellowstone National Park Visitation Strong in 2013. <http://yellowstoneinsider.com/2013/06/10/yellowstone-national-park-visitation-strong-in-2013/>. Accessed December 24, 2013.