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1.0 Introduction

The town of Bar Nunn is located northwest of Casper, Wyoming, just west of the Interstate 25 corridor. The Casper area is currently experiencing significant growth due to energy development throughout Wyoming. As a quiet community with open land available for affordable housing development, Bar Nunn, in particular, is growing at an accelerated rate. Current construction includes the completion of a 300 home subdivision immediately north of the original town limits, and a 150 home subdivision located within the town limits.

The Casper Area Metropolitan Planning Organization (MPO) retained HKM Engineering to study and recommend potential improvements to Salt Creek Highway and McMurry Boulevard to facilitate access and efficient traffic flow to the Town of Bar Nunn and nearby developments. The study objectives included:

- Conduct a feasibility study to extend McMurry Boulevard from Antelope Drive to Seven Mile Road/Highway 20-26.
- Evaluate current roadway geometrics along Salt Creek Highway between West Yellowstone and McMurry Boulevard with respect to current and forecasted truck and car traffic, and provide recommendations for improvements along the corridor to address increased traffic and maintain a desirable Level of Service.
- Evaluate potential transportation network alternatives to effectively address forecasted traffic demands.
- Conduct a feasibility study to place an interchange on Interstate Highway No. 25 near McMurry Boulevard.

Data from this Study will assist the MPO in making decisions regarding roadway and intersection improvements and/or defining areas that may need additional study and public input. The Study was conducted in collaboration with the Town of Bar Nunn, City of Casper, Natrona County and Wyoming Department of Transportation (WYDOT) staff in conjunction with ongoing Bar Nunn comprehensive planning efforts. The Study was guided through interaction with a Steering Committee specifically created to receive information and provide input during the conduct of this Study. Steering committee members are listed in Appendix A to this report.

The study area is identified in Figure 1-1.

Figure 1-1 - Study Area



The findings of this study are documented in a single-volume report describing the analysis of relevant technical data, summarizing findings from the technical analyses, and providing recommendations for improvements to the transportation network around the Bar Nunn community. The detailed technical data are provided as a series of technical appendices at the end of this volume. Public comments gathered throughout the study are also included as appendices to the report.

2.0 Existing Conditions

2.1 Traffic Patterns

Currently, the town of Bar Nunn and the surrounding area depend solely on the Salt Creek Highway (Wyoming Highway 254) for access and mobility to the south. Salt Creek is tied to Interstate 25 by Howard Street and the Wardwell - Interstate 25 interchange, approximately 3/4 of a mile south of the Bar Nunn community. Salt Creek Highway is a striped two-lane (one lane each direction) rural arterial roadway with no shoulders, sidewalks, nor curb and gutter. The highway passes through areas of heavy industrial and commercial land use mixed with pockets of residential housing. Many closely spaced driveway accesses exist along Salt Creek Highway.

As residential development in Bar Nunn has escalated, residents and commercial users have experienced increasing congestion along the highway, resulting in safety concerns for both motorists and pedestrians.

Truck traffic traveling to and from a commercial gravel operation north of Bar Nunn utilizes Salt Creek Highway to access I-25 through the Wardwell interchange. Traffic attempting to enter the Bar Nunn/Salt Creek area from I-25 northbound via Howard Street is periodically prevented from exiting the interstate at that location due to truck traffic turning from Howard Street onto Salt Creek Highway.

Salt Creek Highway is connected on the south to US Highway 20-26 by an interchange serving as the primary access to the Port of Entry. At peak hours trucks experience significant delays in exiting the Port of Entry due to traffic on Salt Creek Highway. Traffic from a large commercial development on Revenue Boulevard at the south end of Salt Creek Highway is also often prevented from executing turning movements onto Salt Creek Highway due to the heavy volume of traffic on the highway.

2.2 Additional Data Collected

Beginning with the Casper Area Long-Range Transportation Plan (LRTP) and the Functional Classification Map published by WYDOT, current and forecasted land uses were evaluated. Socioeconomic data for existing and future conditions and current and forecasted traffic volumes on existing roadways were reviewed. The existing Traffic Analysis Zones (TAZs) used by WYDOT to model traffic were reviewed and updated for traffic generation or attraction volumes. The 2003 Salt Creek Highway Intersection Study performed by HKM and the 1990 Salt Creek Road Study by WYDOT were also reviewed.

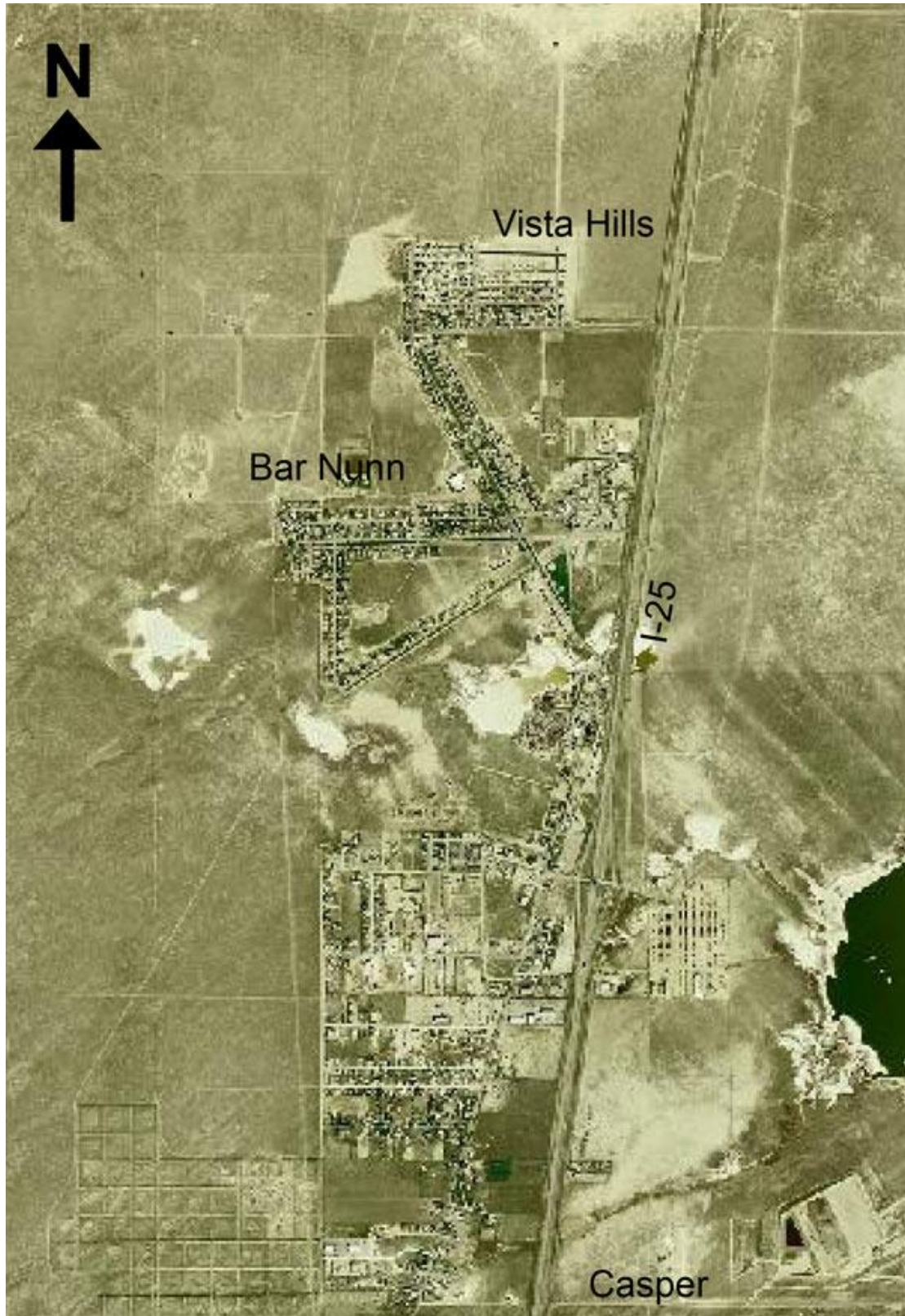
From Casper area Metropolitan Planning Organization (MPO) and WYDOT, the study team obtained the most recent traffic counts, crash data, turning movement counts, and the latest adopted Urban Roadway Functional Classification Map. Through the transportation model maintained by WYDOT, forecasted traffic counts and turning movement counts were acquired.

Based on the data collected and described above, scenarios for improvement to the transportation network were identified.

3.0 Anticipated Growth

Bar Nunn was first developed for residential purposes in the early 1970's, when the Natrona County Airport was moved to its present location. Bar Nunn was incorporated as a municipality in 1982. Figure 3-1 shows the layout of Bar Nunn and the McMurry 1 (Vista Hills) subdivision to the north. Census 2000 data lists the population of Bar Nunn as 936, which is a 12.1% increase from the 1990 population of 835. This growth rate is higher than both Natrona County (8.7%) and the City of Casper (6.2%). US Census estimates place the 2006 population of Bar Nunn at 1,527, an increase of 63.1% over the 2000 population, while growth rates for Natrona County and Casper are expected to flatten slightly at 5.8% and 4.9%, respectively.

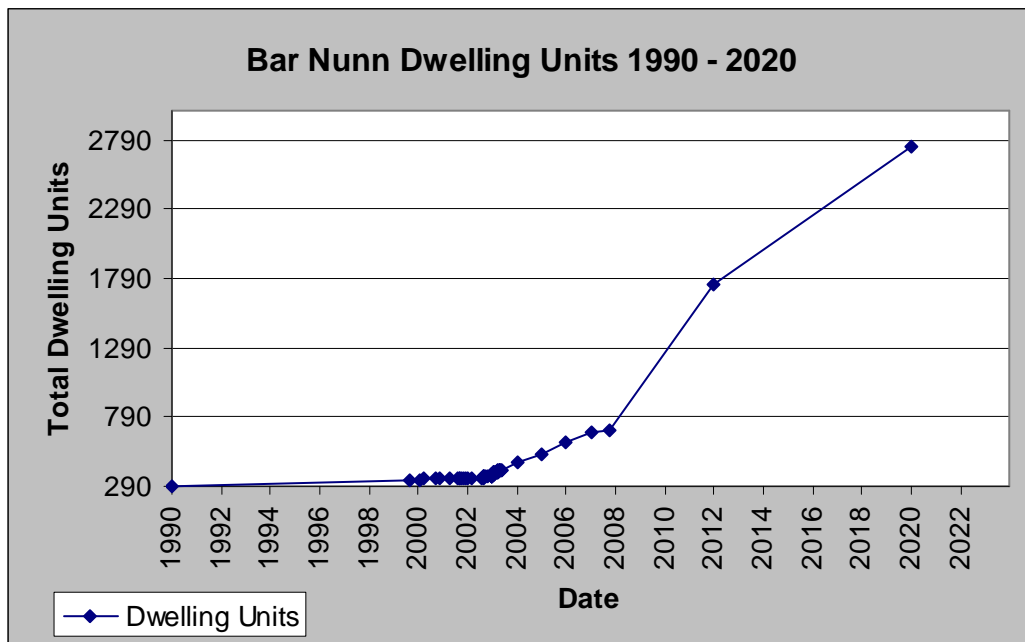
Figure 3-1 – Bar Nunn, Wyoming



3.1 Dwelling Units 1990-2020

The Town of Bar Nunn reports 285 new building starts from 2003 to 2007. Meetings with developers in the Bar Nunn area during the course of this study revealed approximately 1,050 additional homes are currently planned for construction within the next one to three years, with up to 2,000 homes speculated in the next three to eight years as dictated by continued economic growth. Figure 3-2 below illustrates the historical and projected growth of Bar Nunn Dwelling Units. The location of planned development in the Bar Nunn area is illustrated in Figure 3-3.

Figure 3-2 - Historical and Forecasted Number of Bar Nunn Dwelling Units



3.2 Other Growth

Besides residential growth, commercial and industrial growth is expected in and around Bar Nunn. Specific development identified includes a proposed ready-mix plant and pre-cast concrete plant north of Bar Nunn, and a truck-train transfer station northeast of the Natrona County International Airport. This development will significantly increase the number of trucks on the Salt Creek Highway (Train-Truck Transfer Station and Pre-cast Concrete Plant not shown in Figure 3-3).

FIGURE 3-3: PROPOSED DEVELOPMENT IN BAR NUNN AREA

Salt Creek Highway
McMurry Boulevard
Corridor Study

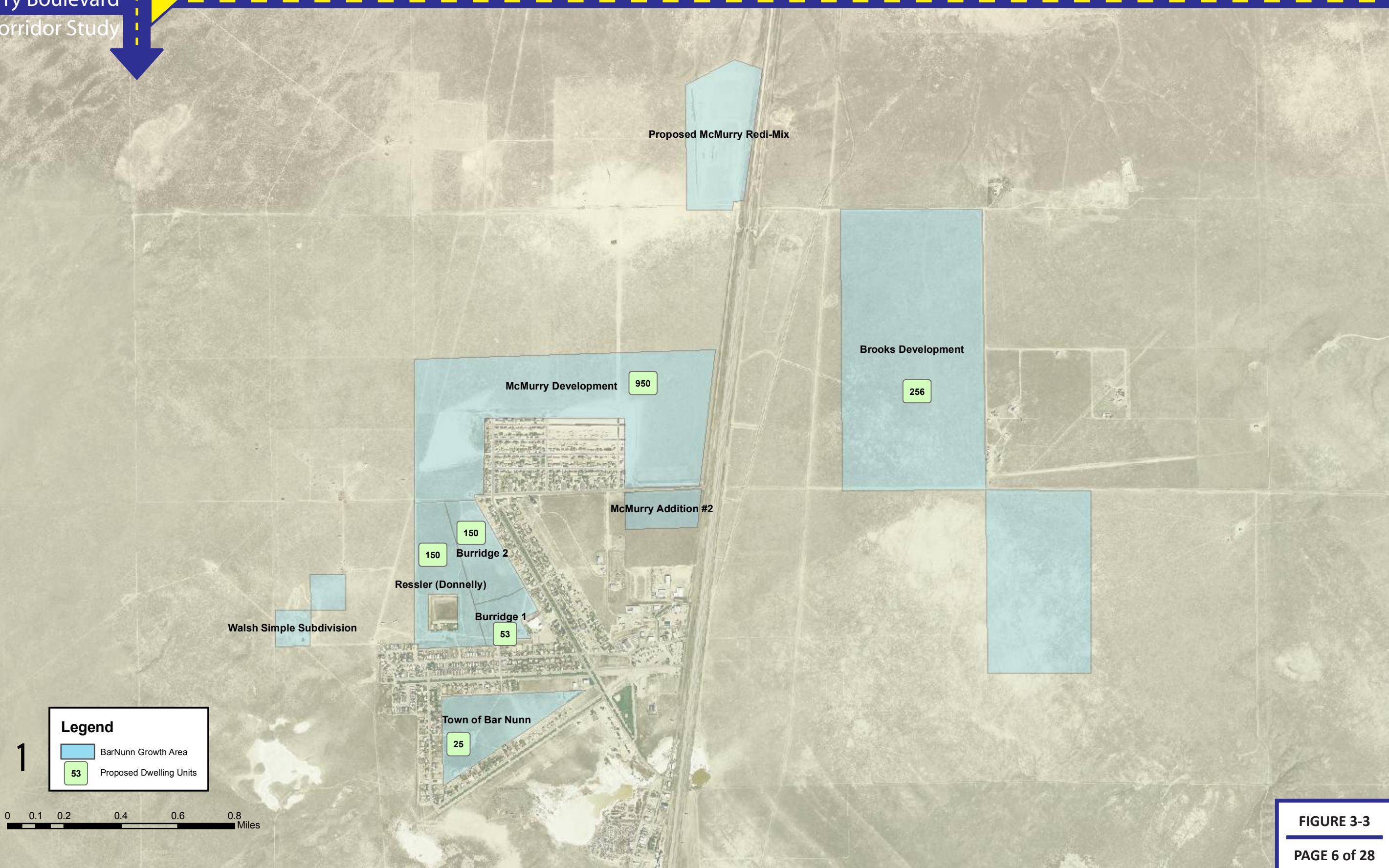


FIGURE 3-3

4.0 Roadway Functional Classification

4.1 Roadway Evaluation

Roadways and Streets are classified by the way they function and the service they provide. Low mobility streets with slower speeds to facilitate access to driveways, alleys, and curb cuts are classified as local streets, while high mobility streets with faster speeds and limited access are classified as arterial streets. Collector streets typically connect local streets to arterial streets and balance the functions of access and mobility.

The connectivity of a transportation network influences the ability of a street to function as an arterial or collector. Adequate connectivity in the network is as important as mobility or access in defining the function for individual streets. Without sufficient connections and parallel routes of similar functions, traffic of all types (local and regional) will be focused on the streets that connect across the network, regardless of function. For example, if sufficient arterials or collectors are not available, traffic will utilize local roadways as necessary to connect across the network.

Figure 4-2 shows the current Functional Classification Map. A scanned version of the 2004 Casper Urban Roadway Functional Classification map adopted by the Casper MPO and Natrona County officials and approved by WYDOT and the Federal Highway Administration can be found in Appendix A. The adopted functional classification system categorizes existing and proposed roadways as Arterials, Collectors, or Local Streets based on the intended use for each roadway and distinguishes between new, existing, and substandard roadways. This system is used as a basis for the traffic forecasting model for the Casper area and to identify and prioritize transportation improvement projects.

In order to evaluate improvement alternatives for Salt Creek Highway that will bolster the future transportation network, street criteria were reviewed. One criterion focused on the functional role of the roadway in the transportation network looking at existing classification and design, while the other evaluated network connectivity.

4.2 Roadway Classification Criteria

Arterial – Arterials are intended to connect points of major destinations to provide for regional traffic movement, as such arterials typically move greater volumes of traffic at higher speeds. Limited access improves the arterial's mobility and safety. Target speeds are in the range of 35 to 50 mph with slower speeds appropriate in the urbanized core of the city and higher speeds appropriate to outlying areas and areas where access control has been established. Typically, arterials tend to be four-lane roadways, but can be wider or narrower as volumes dictate. Parking is generally not allowed along arterials and access spacing is controlled appropriate with target speed. Rule of thumb criteria suggests providing arterials at ¼ to ½ mile spacing in urban areas and at ½ to 1 mile spacing in rural areas.

Collector – Collectors service neighborhoods and districts by connecting traffic movement between arterials and local streets. This function commonly provides for some direct access to abutting property. These are moderate speed streets, with target

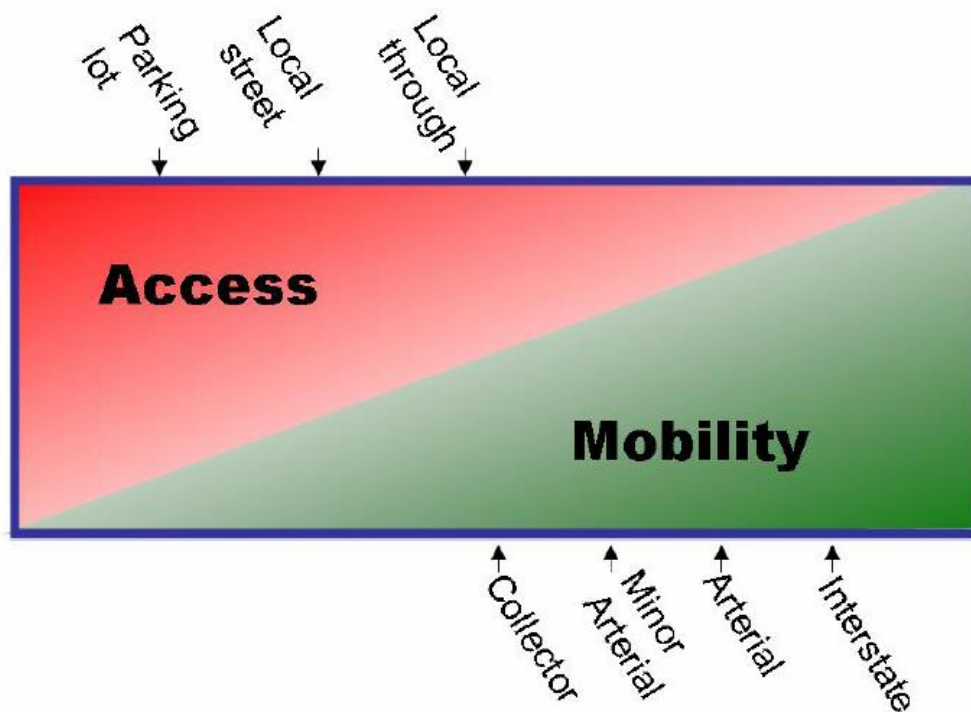
speeds in the range of 30 to 40 mph. Lower target speeds are appropriate in residential and mixed-use areas, while higher target speeds may be appropriate in commercial, industrial and rural areas. The frequency of access and the type of access design will be affected by higher target speeds. Parking may be allowed along collectors, particularly those with lower target speeds. Typically, collectors would be provided at a spacing to subdivide the arterial grid.

Local-through – These streets are local streets (see below) that provide limited connectivity between residential subdivisions. As such, they have a limited collector function, but are essentially residential in character. Target speeds on local-through streets are 25 to 30 mph and are dependent upon width and activity. Establishing local-through streets is beneficial for subdivisions as well as the overall transportation network. Subdivision standards should require collector streets to subdivide the arterial grid, and provide local-through streets where necessary.

Local – A local street provides circulation, parking, access to adjoining property and parking facilities. These streets provide the greatest degree of access, have lower speeds, and yield the right of way to all higher street classes. Street architecture and traffic calming on local streets may be used to discourage through traffic and higher speeds. Target speeds on local streets are typically 20 mph or less dependent on width and activity.

Figure 4-1 shows an illustration of how each type of roadway is designed to function in terms of access and mobility.

Figure 4-1 Roadway Function in terms of Access and Mobility



SALT CREEK HIGHWAY/MCMURRY BOULEVARD CORRIDOR STUDY
NATRONA COUNTY, WYOMING

FIGURE 4-2: URBAN ROADWAY FUNCTIONAL CLASSIFICATION



Salt Creek Highway
McMurry Boulevard
Corridor Study

- Legend**
- Interstate
 - Freeway_Expressways
 - Other Major Arterial Streets
 - Minor Arterial Streets
 - Collector Streets
 - Local Streets

0 0.25 0.5 1 1.5 2 Miles

FIGURE 4-2

The function of local and collector roadways allows for more frequent and direct property access while arterials require more access control to maintain their mobility. It is important to create a balanced network of arterial, collector, and local streets to provide mobility, accommodate development, and allow property access. Figure 4-3 below illustrates the roadway criteria based on classification.

Figure 4-3 - Design Criteria by Classification

Street Classification	Target Speed (mph)	Access Spacing (ft)	Parking	Street Width (ft)	Right of Way Width (ft)
Arterial	35-50	250-600	None	50-98	100-122
Minor Arterial	30-45	100-400	None	39-72	76-90
Collector	30-40	100-350	Parallel	36-56	60-82
Local-through	25-30	50-100	Parallel	36-50	54-68
Local	20 or less	50	Diagonal or parallel	34-50	54-68

The criteria in Figure 4-3 represent a compilation of standard practice taken from the documents listed in the reference section at the end of this volume. Figure 4-4 illustrates the basic design criteria for the above street types and shows the relationships with parking and edge of roadway treatment contained in the criteria. In addition to and supporting this criteria is the *2005 WYDOT Access Manual*, which provides further guidelines for WYDOT facilities. This manual can be found in Appendix B.

FIGURE 4-4: ROADWAY CLASSIFICATION CROSS SECTIONS

Salt Creek Highway
McMurry Boulevard

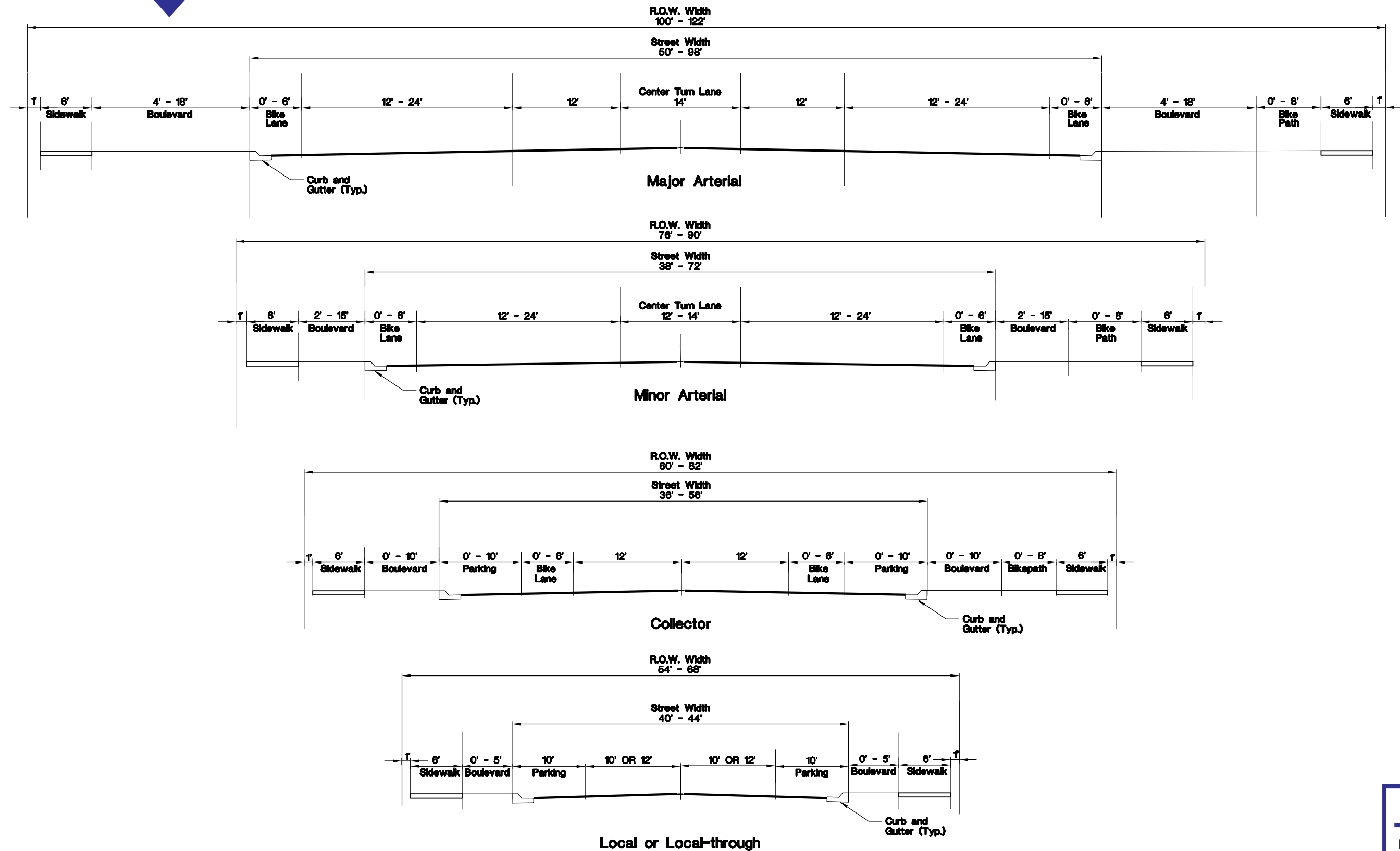


FIGURE 4-4

5.0 Forecasted Traffic

As discussed in Section 3.0, there are several proposed residential developments near Bar Nunn that would substantially increase the population of Bar Nunn (approximately 3,000 dwelling units). Based on a trip generation rate of around 8 trips a day per dwelling unit, the planned residential development could potentially add 25,000 vehicles per day to Salt Creek Highway north of Howard Street if no alternative routes are built. Additionally, the proposed commercial development will increase the number of heavy trucks on the roadway.

A level of service analysis was performed for the purpose of relating each roadway's volume and capacity. Level of service (LOS) is a quality measure describing operational conditions within a traffic stream. Operational conditions affecting the LOS include speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. LOS is determined by the ratio of a roadway's volume to its capacity.

Using the described growth information, the increase in traffic on the existing network and corresponding decrease in levels of service were projected as shown in Figure 5-1. The Levels of Service (LOS) Average Daily Traffic (ADT) thresholds were based on information provided in the June 2007 Casper LRTP. This information is provided in Appendix H. It should be noted this LOS analysis is for roadways and does not consider LOS at intersections.

Figure 5-1 – Existing and Forecasted Level of Service on Existing Network

Existing Roadway	2005		Projected Growth	
	ADT	LOS	ADT	LOS
Salt Creek Hwy north of Howard St.	5000	C	30000	F
Salt Creek Hwy south of Howard St.	3300	B	10300	E
Interstate 25 north of Howard St.	7700	A	8000	A
Interstate 25 south of Howard St.	10400	A	30000	B
Hwy 20-26 east of Salt Creek Hwy	13500	B	28500	C
Hwy 20-26 west of Salt Creek Hwy	12500	B	22700	C

5.1 Transportation Modeling

WYDOT operates the travel forecasting model for the Casper MPO. Growth information from the LRTP was updated with the growth information discussed in this study, and the model was used to forecast trips from anticipated growth onto the existing network. Results from this modeling are shown in Figure 5-1 above.

Currently, the WYDOT transportation model (TransCAD) identifies all trips to and from the Bar Nunn area either starting or ending in or around the City of Casper. Also, the model utilizes the shortest path travel time to assign trips to the network. Therefore, traffic modeling for future growth in Bar Nunn assigns the majority of the new trips to the Salt Creek Highway and I-25. Because Bar Nunn is located on the perimeter of the WYDOT model, reliable model results were not available for proposed network

improvements in this area. This is due to the current calibration, or the way the model produces or attracts trips from one area to another.

Despite not having a representative model, improvements to the Salt Creek Highway and surrounding road network have been suggested and prioritized. Proposed improvements have been made and prioritized based on evaluation of roadway classification and spacing criteria.

6.0 Improvement Alternatives

The existing road network in the Bar Nunn area was evaluated with respect to existing and future traffic and the standard roadway functional classification criteria presented in Section 5. Improvements to the road network were considered and evaluated as discussed below:

Salt Creek Highway has several closely spaced residential and commercial accesses that reduce mobility north of the US Highway 20-26 bypass. Because of these accesses, this roadway will not function efficiently as a principal arterial. Safety is also an issue, as the roadway is not designed to carry the heavy truck traffic produced by the existing gravel pit, proposed ready-mix plant and pre-cast concrete plant north of Bar Nunn, in combination with residential traffic in the area.

With Salt Creek Highway being the only existing roadway serving the Bar Nunn area, all existing and future traffic will be required to use the Salt Creek Highway. As can be seen in the forecasted traffic analysis, the Salt Creek Highway cannot safely and effectively accommodate projected increases in traffic without improvements to the roadway. This study looked at the following improvement alternatives:

- Improvements to increase capacity and safety of the Salt Creek Highway.
- Improvements to the street network between Casper and Bar Nunn, including parallel routes to the Salt Creek Highway to offload traffic from the Salt Creek Highway.
- New connection to I-25 (interchange) north of Bar Nunn.

The following sections prioritize the recommended roadway improvements to safely and efficiently accommodate the Bar Nunn growth:

6.1 Howard Street/Salt Creek Highway Intersection and Westside Boulevard – Priority 1

The first priority improvement for accommodating future traffic on Salt Creek Highway is divided into two parts: first, improving the intersection of Howard Street and Salt Creek Highway and second, providing a parallel route to Salt Creek Highway.

6.1.1 Howard Street/Salt Creek Highway Intersection

Several improvements at the intersection of Howard Street and Salt Creek Highway would enhance the safety and operation of this intersection. As recommended by the 2003 Salt Creek Highway Intersection Study, the following improvements are:

- Add protected left turn bays on both north and southbound legs of the Salt Creek Highway.
- Incorporate through and right turn shared lanes for the north and southbound legs of the Salt Creek Highway. The northbound leg would be tapered (radius increased) to allow right turn truck traffic.
- Provide a yield controlled free right turn lane with a right turn lane on Howard Street and an acceleration lane on Salt Creek Highway. This requires relocating the existing mailboxes to a location away from the immediate intersection.
- Include a shared through/left turn lane on the Howard Street westbound lane.
- Evaluate removal of sight distance issue by lowering the crest vertical curve to the south.
- Install buried electrical conduits for future signal installation.
- Use concrete pavement for intersection and aprons, and asphalt pavement for the remainder of intersection legs.
- Install curb and gutter to delineate the entire intersection and keep vehicles from parking on the intersection shoulders.
- Install signs, delineation, and pavement markings and intersection lighting.

The majority of the recommendations made in 2003 above still apply to the intersection today. However, based on current traffic volume, a signal may also be warranted at this location. Final recommendations on improving this intersection need to be coordinated with the second part of the Priority 1 improvement, which is providing a parallel route to the Salt Creek Highway.

6.1.2 Parallel Arterial to Salt Creek Highway –Westside Boulevard

Due to the forecasted volumes of traffic, and major improvements needed to Salt Creek Highway to safely accommodate future traffic, a new arterial road parallel to Salt Creek Highway is proposed.

This new arterial roadway (hereinafter referred to as “Westside Boulevard”) would utilize the existing interchange at the 20-26 bypass, but instead of turning east along the current Salt Creek Highway, would continue due north near Revenue Boulevard and continue north on the west side of Andy Road and Bar Nunn. This arterial roadway would then intersect with a new east-west arterial north of McMurry Boulevard. There would be two collector connections and five arterial connections to Salt Creek Highway along the 5-mile stretch of new road. Some of the benefits of an alternative arterial between Bar Nunn and Casper include:

- Less heavy truck traffic in the residential areas along Salt Creek Highway

- Less congestion on Salt Creek Highway
- Establishing an arterial grid to allow access and mobility for development between I-25 and the Airport.
- Allow Salt Creek Highway to function as a collector/minor arterial consistent with its existing cross section and access spacing.
- Minimize improvements needed to the Salt Creek Highway.

As mentioned above, the design of the improvements to the Salt Creek Highway/Howard Street intersection and signalization should plan for connection to the new Westside Boulevard. With Howard Street extended to the new Westside Boulevard, it is anticipated much of the traffic currently turning from Howard Street to Salt Creek Highway would continue west and use Westside Boulevard. This would reduce traffic load on Salt Creek Highway, and improve operations at this intersection.

6.2 Salt Creek Highway – Priority 2

Salt Creek Highway has several maintenance issues in need of attention including failing pavement and poor drainage. The construction and completion of a new arterial west of Bar Nunn will provide an alternate north-south route while Salt Creek is under construction. Several cross section alternatives for arterial roadways are included in this report. The proposed network with Westside Boulevard would allow Salt Creek Highway to function efficiently as a two-lane minor arterial with a two-way left turn lane or a raised center median. Because of the many accesses north of Howard Street, a two-way left turn lane may be appropriate for this area. South of Howard Street, a raised decorative median would improve safety and enhance the appearance of the roadway. Curb and gutter and sidewalks or a pedestrian pathway should be considered for the length of Salt Creek Highway.

If Priority 1 is not completed, upgrades to Salt Creek Highway will be more dramatic. The roadway cannot function safely as a principal arterial with the numerous closely spaced accesses. In addition, the roadway north of Howard Street would require 5 lanes to operate at an acceptable level of service with the forecasted traffic volumes. Figure 6-1 is an aerial view of Salt Creek Highway which identifies the closely spaced accesses north of Howard Street.

FIGURE 6-1: AERIAL OF ACCESSES TO SALT CREEK HIGHWAY



FIGURE 6-1

6.3 I-25 Interchange – Priority 3

As development occurs in the area, a new interchange on I-25 near Bar Nunn will be needed to provide an alternate access to the Interstate. The Federal Highway Administration requires a one mile spacing between interchanges for metropolitan areas. The ideal location for the new interchange would therefore be near the existing McMurry gravel pit, approximately 1 mile north of McMurry Boulevard and 2.7 miles north of the Wardwell interchange. This allows adequate spacing between interchanges along I-25 and minimizes weaving conflicts. Placing the interchange on McMurry Boulevard was considered, but the distance from McMurry Boulevard to Howard Street is only 1.7 miles. Also, the functional classification of McMurry Boulevard should be a principal arterial, if connected to the Interstate, which would conflict with current development along McMurry Boulevard. The proposed interchange will allow more direct access to I-25 for airport traffic, east-west through traffic and truck traffic from the train-truck station when Priority 4 is completed. This also enables the trucks to avoid the residential areas of Bar Nunn.

6.4 I-25/Hwy 20-26 Arterial – Priority 4

Following construction of the interchange, an arterial route to connect I-25 to Hwy 20-26 west of the airport could be constructed to create a direct route through this area. This will facilitate access to I-25 from the train-truck transfer station.

6.5 Network Expansion – Priority 5

Construction of a new roadway on the west side of Bar Nunn, Westside Boulevard, is the first step in developing the transportation network in the area between I-25 and the Airport. The identified transportation network would include four east-west arterials; one north of McMurry Blvd, one at McMurry Blvd, one at Howard Street, and one where Salt Creek Highway intersects Westside Boulevard; and four north-south arterials at approximately one-mile intervals between Bar Nunn and the airport. This grid is based on rule-of-thumb spacing for arterial roadways in rural areas.

The proposed network from the 2007 Long Range Transportation Plan was used as a starting point for developing the recommended arterial grid in this area. Modifications to the 2007 LRTP include: Westside Boulevard, I-25 interchange north of McMurry Blvd, new location for arterial connection to 20-26 at Zero Road, two additional north-south arterials including a new interchange connection to 20-26 By-Pass, two additional east west arterials including a connection to 20-26 west of the Airport.

The projected traffic volumes for roadways in the Bar Nunn area with priorities 1 and 3 included in the network are shown in Figure 6-2. The recommended arterial network with prioritized improvements is shown in Figure 6-3.

The engineer's opinion of probable construction cost for these improvements based on current (June 2008) dollars is shown in Figure 6-4.

Figure 6-2 – Forecasted LOS with Priority 1&3

Existing Roadway	Projected Growth Existing Road Network		Projected Growth Existing Network w/ Priority 1		Projected Growth Existing Network w/ Priority 1 & 3	
	ADT	LOS	ADT	LOS	ADT	LOS
Salt Creek Hwy north of Howard St.	30000	F	5000	C	3000	B
Salt Creek Hwy south of Howard St.	10300	D	2000	A	2000	A
Interstate 25 north of Howard St.	8000	A	8000	A	18000	B
Interstate 25 south of Howard St.	30000	B	17500	B	26000	B
Hwy 20-26 east of Salt Creek Hwy	28500	C	29000	C	24000	C
Hwy 20-26 west of Salt Creek Hwy	22700	C	23200	C	19000	B
Westside Blvd. south of McMurry Blvd.	N/A	N/A	25000	C	15000	B
Westside Blvd. north of McMurry Blvd.	N/A	N/A	N/A	N/A	15000	B
Corridor 1 between I-25 and Westside Blvd.	N/A	N/A	N/A	N/A	15000	B

SALT CREEK HIGHWAY/MCMURRY BOULEVARD CORRIDOR STUDY
NATRONA COUNTY, WYOMING
FIGURE 6-3: FUTURE ROADWAY NETWORK CONCEPTS WITH IMPROVEMENT PRIORITY

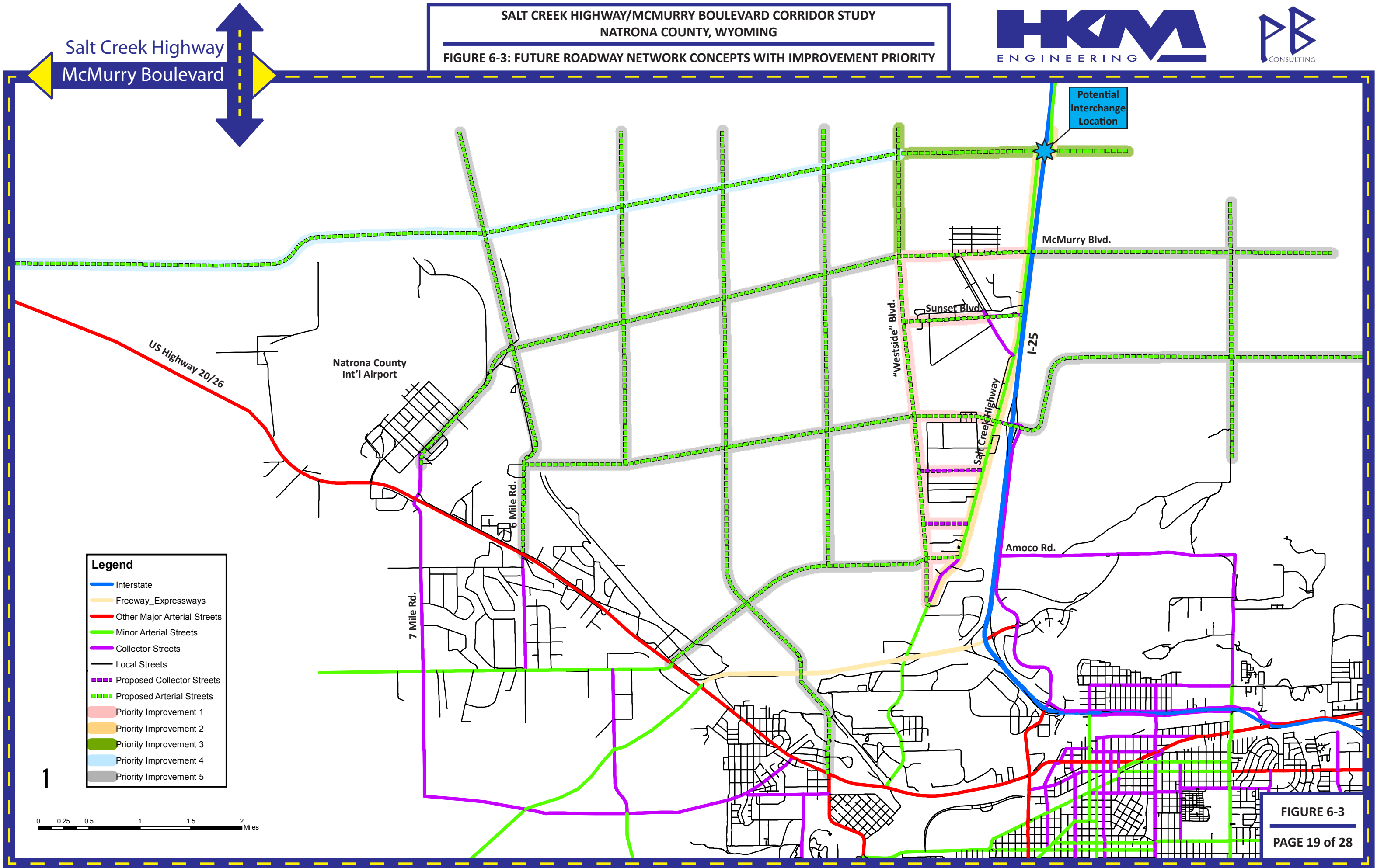


FIGURE 6-3

SALT CREEK HIGHWAY / McMURRY BOULEVARD CORRIDOR STUDY

RECOMMENDED IMPROVEMENTS AND COST ESTIMATES

PRIORITY	CONSTRUCTION YEAR (APPROX.)	SEGMENT NAME	PROPOSED FUNCTIONAL CLASSIFICATION	LENGTH (MILES)	EST.CONSTRUCTION COSTS		ANTICIPATED R/W AND EASEMENT ACQUISITION COSTS (2008 DOLLARS)	ESTIMATED PROFESSIONAL SERVICES (2008 DOLLARS)					ESTIMATED TOTAL COSTS 2008 DOLLARS (MILLIONS)	SEGMENT DESCRIPTION
					UNIT COST 2008 DOLLARS (MILLIONS/MILE)	EXTENDED COST 2008 DOLLARS (MILLIONS)		LEGAL FEES	APPRAISAL AND R/W NEGOTIATION	LAND SURVEYING	DESIGN ENGINEERING	CONSTRUCTION ENGINEERING		
1	2010	Westside Boulevard	Arterial	5.0	2.0	10.0	\$ 140,000.00	\$ 250,000.00	\$ 130,000.00	\$ 150,000.00	\$ 1,000,000.00	\$ 1,000,000.00	12.7	Construct new arterial road on the west side of Bar Nunn, Westside Boulevard (Corridor 9).
2	2011	Salt Creek Hwy Repairs	Minor Arterial	4.7	2.0	9.4	\$ 131,600.00	\$ 240,000.00	\$ 120,000.00	\$ 140,000.00	\$ 940,000.00	\$ 940,000.00	11.9	Repair Salt Creek Hwy including drainage issues and failing pavement.
3	2015	I-25 Interchange	Arterial	4.0	2.0	14.0	\$ 112,000.00	\$ 600,000.00	\$ 480,000.00	\$ 240,000.00	\$ 1,400,000.00	\$ 2,100,000.00	18.9	Construct Interchange at I-25 and Corridor 1 between I-25 and Westside Blvd.
4	2017	Connect I-25 to Hwy 20-26 west of the Airport via a new arterial roadway (Corridor 1)	Arterial	10.0	2.0	20.0	\$ 280,000.00	\$ 500,000.00	\$ 250,000.00	\$ 300,000.00	\$ 2,000,000.00	\$ 2,000,000.00	25.3	Connect Corridor 1 to Hwy 20-26 west of the Airport via new arterial roadway.
5	2030	Fill in Grid Network as the area between I-25 and the Airport is developed	Arterial	26.0	2.0	52.0	\$ 728,000.00	\$ 1,300,000.00	\$ 650,000.00	\$ 780,000.00	\$ 5,200,000.00	\$ 5,200,000.00	65.9	Fill in Grid Network as the area between I-25 and the Airport is developed.

FIGURE 6-4

7.0 Corridor Preservation

As the Casper MPO and Town of Bar Nunn evaluate options for improving traffic flow, a process should be contemplated for preserving the transportation corridors identified in this report. The following summarizes the requirements for corridor preservation in Wyoming.

According to a white paper prepared by the Wyoming Department of Transportation, "Wyoming municipalities have more flexibility in managing their transportation infrastructure needs. State statute allows municipalities to file official maps delineating planned transportation corridors. These maps are very strict corridor alignments that control access, subdivision development, setback and zoning ordinances. They are not restricted to the corporate city limits if there is a need for preservation of the corridor outside these boundaries."

Wyoming State Statute, Title 15, Article 5 provides a mechanism for corridor preservation (included in Appendix C). Each city/town may establish a master plan for areas both inside and outside its City limits provided that action on such master plan, including a major street plan, occurs with concurrence from the Board of County Commissioners. Additionally, the governing body adopts an Official Map of public streets (*in whole or in part*) via ordinance that shall be recorded in the County Clerk's office. After Official Map adoption, the governing body may pass an ordinance that prohibits permits to be issued for a building or structure which encroaches into the land within the lines of any street as shown on the official map. The ordinance shall allow the issue to be brought before the Board of Adjustments for public hearing as an appeal process.

Having a roadway shown on the Official Map allows municipalities, during review of the development or building permit process, to require developments to incorporate these future roadways into their subdivision or site development plans.

In a 2003 opinion, the Wyoming Attorney General ruled on what constitutes an adequate survey relating to preserving new street right-of-way with the Official Map. The AG opinion states that "locating a proposed route on a street plan is accomplished through accurate surveys as well as a process which includes the opportunity for input and scrutiny from several sources."

The legal descriptions and a record map of the proposed roadways are included as Appendix I of this study. It is recommended that the MPO and Town of Bar Nunn, with concurrence from the County Commission, adopt the legal descriptions and record map, by ordinance, and incorporate them into the official map so the corridor can be preserved.

8.0 Interchange Justification

An interchange justification was completed on the proposed interchange north of Bar Nunn. The text in bold is the Federal Highway Administration Approval Criteria for Interchanges on Intestates, the italics text explains the characteristics of the proposed interchange with respect to each criteria and the text in all capitals states if the criteria was met or not and why.

Federal Highway Administration Approval Criteria for Interchanges on Interstates

It is in the national interest to maintain the Interstate System to provide the highest level of service in terms of safety and mobility. Adequate control of access is critical to providing such service. Therefore, new or revised access points to the existing Interstate System should meet the following requirements:

- 1. The existing interchanges and/or local roads and streets in the corridor can neither provide the necessary access nor be improved to satisfactorily accommodate the design-year traffic demands while at the same time providing the access intended by the proposal.**

Salt Creek Highway and the existing interchange at Howard Street cannot be improved to provide the necessary access to Bar Nunn. The north bound off ramp has queued vehicles onto the I-25 mainline with the existing conditions and cannot be efficiently upgraded to provide access to Bar Nunn for the proposed development. Salt Creek Highway currently operates at a level of service C. Once 1000 of the proposed 3000 dwelling units are constructed, the operational level of service of Salt Creek Highway will be approaching a level of service F. The proposed upgrades to the network include a new arterial on the west side of Bar Nunn to provide a more direct route to and from Casper. This arterial will ease congestion but cannot satisfactorily accommodate the design year traffic. THIS REQUIREMENT IS NOT SATISFIED. HOWEVER, IT WILL BE SATISFIED BEFORE ALL PROPOSED GROWTH CAN OCCUR IN THE BAR NUNN AREA.

- 2. All reasonable alternatives for design options, location and transportation system management type improvements (such as ramp metering, mass transit and HOV facilities) have been assessed and provided for if currently justified, or provisions are included for accommodating such facilities if a future need is identified.**

A mass transit system would promote energy conservation and protect and enhance the environment. However, management type improvements will not provide alternate access for Bar Nunn. These types of improvements will not provide improved access to the interstate for the truck traffic from the proposed ready-mix or pre-cast concrete sites. THIS REQUIREMENT IS SATISFIED.

3. **The proposed access point does not have a significant adverse impact on the safety and operation of the Interstate facility based on an analysis of current and future traffic. The operational analysis for existing conditions shall, particularly in urbanized areas, include an analysis of sections of Interstate to and including at least the first adjacent existing or proposed interchange on either side. Crossroads and other roads and streets shall be included in the analysis to the extent necessary to assure their ability to collect and distribute traffic to and from the interchange with new or revised access points.**

The distance between the proposed interchange and the nearest interchange to the south, Howard Street, is 2.7 miles. The nearest interchange to the north, Ormsby Road, is 3.1 miles north of the proposed interchange. The proposed arterial network will provide sufficient roadways to collect and distribute traffic to and from the interchange. Because of the low traffic and rural nature of Interstate 25 and the distance between adjacent interchanges, weaving issues will be minimal in this area. The network improvements near Bar Nunn will be designed and constructed in conjunction with this interchange. THIS REQUIREMENT IS NOT SATISFIED. HOWEVER, IT WILL BE SATISFIED WHEN DEVELOPMENT OCCURS AND THE PROPOSED WESTSIDE BOULEVARD AND THE ARTERIAL ROAD NORTH OF BAR NUNN ARE CONSTRUCTED.

4. **The proposed access connects to a public road only and will provide for all traffic movements. Less than "full interchanges" for special purpose access for transit vehicles, for HOV's, or into park and ride lots may be considered on a case-by-case basis. The proposed access will be designed to meet or exceed current standards for Federal-aid projects on the Interstate System.**

With the construction of this interchange, efficient access would be available to the proposed industrial and residential area. The proposed access will be designed to meet or exceed current standards for federal aid projects on the interstate system. THIS REQUIREMENT IS SATISFIED.

5. **The proposal considers and is consistent with local and regional land use and transportation plans. Prior to final approval, all requests for new or revised access must be consistent with the metropolitan and/or statewide transportation plan, as appropriate, the applicable provisions of 23 CFR part 450 and the transportation conformity requirements of 40 CFR parts 51 and 93.**

The proposed interchange near Bar Nunn is identified in the 2030 Long Range Transportation Plan adopted by the Casper MPO.

Coordination with the MPO - §450.210 requires WYDOT to provide for a fully coordinated planning process with the Casper MPO. Public involvement is also carried out for the statewide and metropolitan planning processes. In accordance with these regulations, WYDOT was actively involved in the steering committee, data collecting, traffic modeling, funding and review process during

the formation and final draft of the Casper Long Range Transportation Plan which led to the proposal for the proposed interchange.

Citizen Input – Citizen involvement was an integral part of this study. A Steering Committee with WYDOT staff, and city and county staff met throughout the process to provide input and feedback on the study. In addition to the Steering Committee involvement, two public meetings were held during the preparation of the final study. The MPO has expanded public access to the planning process through an internet webpage.

Coordination with Local Developers – Two of TEA-21's planning factors [1203(f)] to be considered in the planning process are to "support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency" and to "increase the accessibility and mobility options available to people and for freight." A ready-mix plant and a pre-cast concrete plant are planned in the vicinity of the proposed interchange. Also the train to truck station and airport traffic will use the interchange to access I-25 when the arterial grid is constructed. These businesses are vital to the economic vitality of Casper and Natrona County. In addition, residential development continues to increase in, and around the Town of Bar Nunn. The proposed interchange allows safe and efficient access and egress to the proposed developments. The existing interchange and roadways do not accommodate efficient regional access to the proposed facilities. THIS REQUIREMENT IS SATISFIED.

- 6. In areas where the potential exists for future multiple interchange additions, all requests for new or revised access are supported by a comprehensive Interstate network study with recommendations that address all proposed and desired access within the context of a long-term plan.**

This interchange is the only interchange identified in the 2007 Long Range Transportation Plan in the metropolitan area. THIS REQUIREMENT IS SATISFIED.

- 7. The request for a new or revised access generated by new or expanded development demonstrates appropriate coordination between the development and related or otherwise required transportation system improvements.**

This interchange location provides appropriate access to the Town of Bar Nunn and the proposed development in the area. The location would give the ready-mix and pre-cast concrete plants direct access to the interstate and can provide more direct access to the airport and the train to truck station from I-25 when the arterial grid west of Bar Nunn is constructed. THIS REQUIREMENT IS SATISFIED.

8. The request for new or revised access contains information relative to the planning requirements and the status of the environmental processing of the proposal.

A preliminary review of the proposed interchange location indicates no wetlands nor endangered, threatened, proposed or candidate species will be affected by the interchange project. THIS REQUIREMENT IS NOT SATISFIED. PENDING ENVIRONMENTAL IMPACT EVALUATION.

All requests for new or revised access points on completed Interstate highways must be closely coordinated with the planning and environmental processes. The FHWA approval constitutes a Federal action, and as such, requires that the National Environmental Policy Act (NEPA) procedures are followed. The NEPA procedures will be accomplished as part of the normal project development process and as a condition of the access approval. This means the final approval of access cannot precede the completion of the NEPA process. To offer maximum flexibility, however, any proposed access points can be submitted in accordance with the delegation of authority for a determination of engineering and operational acceptability prior to completion of the NEPA process. In this manner, the State highway agency can determine if a proposal is acceptable for inclusion as an alternative in the environmental process. This policy in no way alters the current NEPA implementing procedures as contained in 23 CFR part 771.

Implementation

The FHWA Division Office will ensure all requests for new or revised access submitted by the State highway agency for FHWA consideration contain sufficient information to allow the FHWA to independently evaluate the request and ensure all pertinent factors and alternatives have been appropriately considered. The extent and format of the required justification and documentation should be developed jointly by the State highway agency and the FHWA to accommodate the operations of both agencies, and should also be consistent with the complexity and expected impact of the proposals. For example, information in support of isolated rural interchanges may not need to be as extensive as for a complex or potentially controversial interchange in an urban area. No specific documentation format or content is prescribed by this policy.

<http://www.fhwa.dot.gov/programadmin/fraccess.cfm>

The proposed interchange currently meets 5 of the 8 criteria for a new interchange. The interchange will be justified if development occurs as expected. It is recommended the interchange justification criteria be reevaluated as the town of Bar Nunn grows and as the transportation network is upgraded.

9.0 Public Involvement

Public outreach efforts were coordinated by PB Enterprises, LLC, dba PB Consulting. The study team prepared a public involvement plan to guide the public involvement process. The public involvement plan is attached to this report as Appendix E.

Study information was provided to the public through newspaper advertising and media releases, through the project website (www.hkminc.com/saltcreekmcmurzystudy); and through direct mail project fact sheets and comment forms sent to all mailing addresses in the Bar Nunn community and along the Salt Creek Highway corridor (rural route delivery areas H36 and H40). Throughout the study, the project website featured a feedback form for collecting public comments.

Two public open house meetings were held during the course of the study. Both open house gatherings were held at the Bar Nunn Elementary School. The first open house, held on December 11, 2007, drew 32 participants, including area residents, business owners, developers, elected officials, community leaders, and area transportation planning committee members. The purpose of this open house was to introduce participants to the Corridor Study, establish purpose and need for the Study, and gather public comment about specific aspects of the Study. Comments collected at this meeting are attached to this report as Appendix F.

Following the initial open house gathering, a draft study report was prepared providing detailed information on data gathered throughout the study, analysis of that data, and preliminary recommendations for transportation improvements in the Bar Nunn area. The draft study report was posted on the project website, and copies were made available to the community at the Bar Nunn Town Hall.

The second open house was held on March 19, 2008. Participants included area residents, business owners, developers, elected officials, community leaders, and area transportation planning committee members. The purpose of this open house was to present the draft study report, describing the data, analysis, and preliminary recommendations of the study. Workshop participants were asked to provide feedback regarding the recommendations in the draft report. Comments collected at this meeting are also attached to this report as Appendix F.

Advertisement of both open house meetings and of the publication of the draft report was published in the Casper Star-Tribune and in the Bar Nunn community newsletter. Stakeholders were also notified of the open house meetings via the aforementioned project fact sheet mailer.

10.0 References

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Trip Generation, 6th Edition. Prepared by Institute of Transportation Engineers, Washington, D.C., 1997.

WYDOT Access Manual, Rules and Regulations and Policy for Access to Wyoming State Highways, Prepared by WYDOT Traffic Program, March 2005

<http://www.fhwa.dot.gov/programadmin/fraccess.cfm>, accessed March 13, 2008.

Appendices

- A. 2004 Functional Classification Map
- B. 2005 Wyoming Dept. of Transportation Access Manual
- C. Wyoming State Statute, Title 15, Article 5
- D. Project Steering Committee Members
- E. Public Involvement Plan
- F. Public Comments
- G. Crash Data
- H. Connecting Casper 2030 LRTP – Capacity Thresholds
- I. Corridor Preservation Legal Descriptions