Bowman Comprehensive and Transportation Plan

Bowman, North Dakota

June 2013

Bowman
NORTH DAKOTA

SRF
Consulting Group, Inc.

RESOLUTION 2013-1

A RESOLUTION TO ADOPT THE BOWMAN, NORTH DAKOTA COMPREHENSIVE AND TRANSPORTATION PLAN

WHEREAS, the Bowman City Commission is the duly elected governing body for the City of Bowman and wishes to plan for orderly and predictable future growth and development as well as a high level of continuity and connectivity in its transportation system; and

WHEREAS, the Bowman City Commission has undertaken the task of preparing a Comprehensive Plan to guide future zoning and subdivision decisions, and

WHEREAS, the Bowman City Planning and Zoning Commission, having held a public hearing thereon, following which recommended to the Bowman City Commission that the Comprehensive Plan be approved; and

WHEREAS, input from the public and affected property owners was sought during the planning process, and

WHEREAS, the planning process for this undertaking was guided by appointed Planning and Zoning Commissioners and City Commissioners who reviewed and commented on the draft plan, and

WHEREAS, City officials have coordinated with Bowman County officials to ensure understanding and agreement about extraterritorial land use plans and the responsibilities of extraterritorial jurisdiction, and

WHEREAS, citizens have been notified of and invited to attend meetings where the draft plan was reviewed and discussed.

NOW, THEREFORE BE IT RESOLVED, that the Board of Commissioners of the City of Bowman does hereby adopt the Bowman Comprehensive Plan.

ADOPTED THIS 4th DAY OF JUNE, 2013

LYN JAMES, CHAIRMAN OF THE CITY COMMISSION

DARWIN WILKE, CHAIRMAN OF PLANNING & ZONING COMMISSION

ATTEST:

PEGGY MATHESON, CITY AUDITOR

Commissioner Whitney moved on adoption of the foregoing resolution. The motion was seconded by Commissioner Wiffler. On roll call vote of the Commissioners, the following Commissioners voted "AYE": Rea, Sondeland, Wiffler, Whitney and the following Commissioners voted "NAY": James. Absent and not voting: none.

Bowman Comprehensive and Transportation Plan

June 2013

Prepared for:

The City of Bowman, North Dakota

Prepared by:

SRF Consulting Group, Inc.

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Bowman Comprehensive and Transportation Plan

June 2013

1.0 Introduction

Over the past six years, the growth of the oil industry in western North Dakota has brought rapid growth and many changes to cities and counties in the region. The discovery of the Tyler Formation, which extends south of the Bakken Formation into South Dakota (see Figure 1), has given cities and counties in southwest North Dakota a reason to review their existing growth patterns, capital improvements, transportation characteristics and comprehensive plans. The boom and subsequent bust in the 1980's which resulted in out-migration and vacant properties, has provided a learning experience for the region. Bowman is taking this opportunity to not only plan for the near future and the potential impacts of the oil industry, but for several years into the future. Perhaps the most difficult aspect of planning for the future in a community anticipating an oil boom is identifying short term versus long term growth, due to the unknown rate of development. This plan acknowledges that, and emphasizes the importance of remaining flexible in terms of timeframes and adjustments that are needed to address job growth in the area and the corresponding demand for housing and retail sales and service.

This comprehensive plan outlines the goals, objectives, and policies for Bowman. It establishes a future land use plan, defines future transportation improvements, and lists steps the city will take in the direction of achieving short and long-term goals. This plan is meant to serve as a decision making tool, to be used by city staff and officials.

1.1 Why Plan

A comprehensive plan is not optional for communities that wish to exercise zoning authority. North Dakota communities are required to adopt a comprehensive plan as the foundation document for their zoning and subdivision regulations.

Any community can take a passive stance and allow changes to occur as they will, without any discussion or guidance as the growth takes on a life of its own. The changes that emerge from these passive situations are often based on short-term profits for individuals rather than of the long-term betterment of the community at large. People want to live in attractive communities, which make them more attractive to potential businesses.

Attractive communities don't happen by accident. Bowman understands it has the power to control the quality of its growth and steer the development in the community. The city has chosen to take a proactive stance in guiding developers towards building a bigger and better community while still

retaining its friendly, small-town character. This comprehensive plan is the first step towards that self-determination.

This comprehensive plan provides a roadmap to the future for Bowman. It was developed based on input from Bowman residents. Every community is unique and this plan is custom-tailored for Bowman, by Bowman. It was developed from ideas generated during public involvement session with residents and through conversations with city staff and city officials.

Every plan has some elements which are particularly valid for the current timeframe; other goals and objectives are long-term. Yet as a community evolves, the plan should periodically be revisited to determine whether updates are needed. Because the policies in this plan will guide development decisions, changes in the community's wants, needs, and opportunities may require future amendments to the plan. This plan is a living document, intended to reflect current and future community goals. Further guidance on updating elements of this plan is discussed throughout the remainder of the document.

1.2 North Dakota Century Code

The North Dakota Century Code (NDCC) contains several references to city comprehensive plans and master plans:

Chapter 40.05-1-06.11 Pertaining to Home Rule in Cities

"To provide for zoning, planning, and subdivision of public or private property within the city limits. To provide for such zoning, planning and subdivision of public or private property outside the city limits as may be permitted by state law."

Chapter 40-47-01 Pertaining to City Zoning

"For the purpose of promoting health, safety, morals, or the general welfare of the community, the governing body of any city may, subject to the provisions of Chapter 54-21.3, regulate and restrict the height, number of stories, the size of buildings and other structures, the percentage of the lot that may be occupied, the size of yards, courts, and other open spaces, the density of population, and the location and use of buildings, structures, and land for trade, industry, residence, or other purposes."

Chapter 40-47-03 Pertaining to City Zoning

This section of the Century Code states that the regulations provided for this chapter shall be made **in accordance with a comprehensive plan** and shall be designed to:

- Lessen congestion in the streets;
- Provide for emergency management;
- Promote health and the general welfare;
- Provide adequate light and air;
- Prevent the overcrowding of land;
- Avoid undue concentration of population; and
- Facilitate adequate provisions for transportation, water, sewage, schools, parks, and other public requirements.

The Century Code goes on to say that a comprehensive plan shall be a statement in documented text setting forth explicit goals, objectives, policies, and standards of the jurisdiction to guide public and private development within its control.

Chapter 40-51.2-02 Pertaining to City Zoning

The Century Code declares that the policies and procedures contained in this chapter are "necessary and desirable for the orderly growth of urban communities in the state of North Dakota.". This section goes on to list the following as purposes of the law:

1. To encourage natural and well-ordered development of municipalities of the state;
2. To extend municipal government to areas which form a part of the whole community;
3. To simplify government structure in urban areas; and
4. To recognize the interrelationship and interdependence between a municipal corporation and areas contiguous or adjacent thereto

Chapter 40-48-02 Pertaining to Municipal Master Plans and Planning Commissions

Any municipality, by an ordinance of its governing body, may establish an official master plan of the municipality…. The official master plan is declared to be established to conserve and promote the public health, safety, and general welfare of the municipality.

Chapter 40-51.2-02 Pertaining to Extraterritorial Zoning Jurisdiction

The NDCC states that communities with a population of fewer than 5,000 persons (such as Bowman) have sole zoning authority out to ½ mile beyond the corporate boundary and have shared zoning authority from ½ mile to one mile beyond the corporate boundary. The outside half-mile is to be shared with the county, or in some cases with an organized township that has its own zoning authority. This area surrounding a city is known as the Extraterritorial Area or ETA. The purpose of the ETA is to allow cities to regulate what happens in their growth area for the purpose of maintaining orderly expansions of the community. When a city annexes land, the ETA line will also move further out by a distance proportional to the annexation.

There are alternatives to the joint-zoning jurisdiction for the outer half of the ETA. The authority to receive applications and issue permits may be changed by a written agreement between the city and the county. Bowman can obtain sole authority over the 1-mile ETA if Bowman County wishes to let it go.

Zoning must be in place for the city to have authority over the ETA. It is important to note that zoning authority should be initiated by the city's action of approving city zoning districts for land in its ETA.

2.0 How to use this plan

As population growth and development activity continue in the City of Bowman and the region around it, this plan should be referenced by city staff and leaders, along with elected officials, while making decisions for the future. These decisions should support the goals and visions outlined within this plan. These situations include everything from the zoning change of a single parcel to the construction of a highway truck reliever route. All involved parties should be aware of the content of this plan through the decision making process. This includes citizens, developers, and businesses. Their access to and knowledge of the plan assists in keeping it up to date over time, and provides insight into the city's future decisions.

Providing prospective developers with access to the future land use and transportation plan prior to the purchase of land allows him/her to search for areas which are best suited to the type of development they want to do, and to arrive at a development proposal that best fits into the city's overall plan.

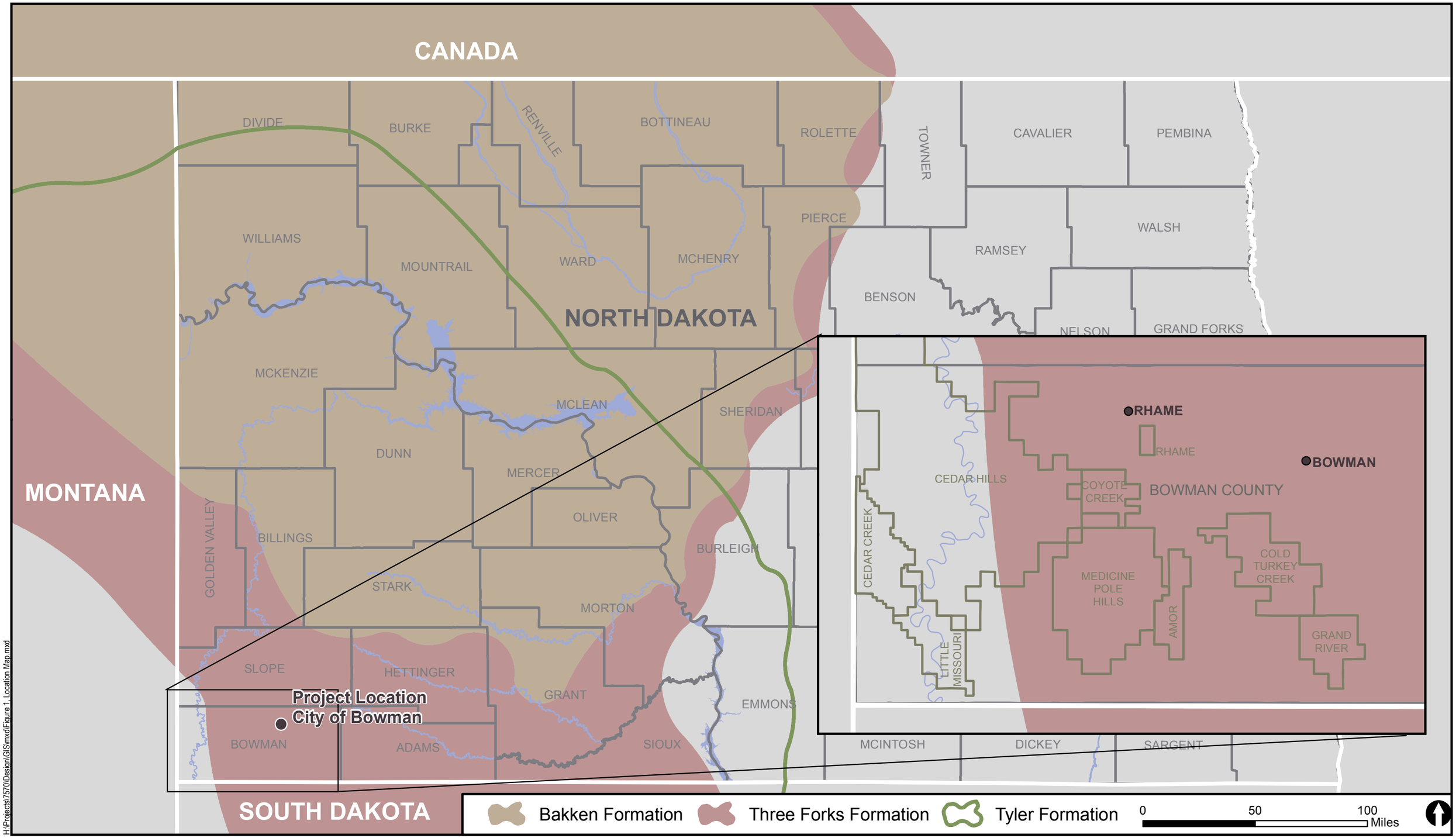
It is important to remember that the plan is a living document, and elements will require updating after careful consideration by the community through a public process. An example of a plan component that may need to be updated from time to time is the future land use plan. A proposed development may consist of a land use that is ultimately be determined to be a better fit than the land use designated on the future land use plan. It is then the city's responsibility to assess the impacts of the change to the land use plan, and process a land use plan amendment if warranted. Carefully following the process of updating this comprehensive plan allows the city an opportunity to carefully step back and consider changes in the context of how those changes benefit the immediate area and the community in its entirety.

3.0 Community Overview

While looking towards the future of a community it is important to understand its past. This chapter provides an overview of the past and existing conditions of the City of Bowman.

3.1 History

The city of Bowman is the county seat of Bowman County, located in the southwest corner of North Dakota (See Figure, 1). It was incorporated as a city in 1907, and named after a prominent legislator, William Bowman. Bowman became home to many ethnic groups including: Anglo-Americans, German, German–Russian, Norwegian, Polish, and Bohemian groups. Early businesses established in Bowman included a restaurant, bank, general store, and the Bowman County Pioneer. The Chicago, Milwaukee, St. Paul, and Pacific Railroad completed a railroad to Bowman in 1907. The railroad and the western land security company provided many jobs in the area, bringing people from the Eastern United States and Europe to Bowman. Oil drilling in the region began in the late 1950's, and has continued to have an influence on Bowman's economy.



H:\Projects\7570\Design\GIS\mxd\Figure 1. Location Map.mxd

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Location Map

Comprehensive and Transportation Plan
Bowman, North Dakota

Figure 1

3.2 Demographics

3.2.1 Population

According to the 2010 Census, Bowman has a population of 1,650 people, representing a 3.12% increase from the 2000 population of 1,600. The community experienced a decline in population from 1980 to 2000, decreasing from the record high population of 2,071 in 1980 to 1,600 people in 2000. Bowman is the most populous city in Bowman County, which had a 2010 population of 3,141. The city makes up 52.53% of the overall county population. Bowman County has experienced a decreasing population from 1980 (4,229) to 2010. Between 2000 and 2010, the county experienced a loss of 2.80%, from 3,242 to 3,151.

Historically, the City of Bowman has experienced a steady growth pattern which culminated in its highest population of 2,071 in 1980. Since that time however, Bowman has seen a decrease in population of anywhere from 3% to 15% per decade. While this has been occurring, Bowman County has seen a steady decline in population from 1930 onward. This has followed a national trend of migration from rural to urban areas. The City of Bowman and Bowman County have experienced similar population trends over the last century, which can be associated with the fact that the city historically accounts for a large percentage of the county's population. The population trend for the last decade differed from historical similarities, showing that other communities in the county experienced a greater loss than the gain experienced in the City of Bowman. The population trends of both geographies are compared to that of the State of North Dakota in Table 1.

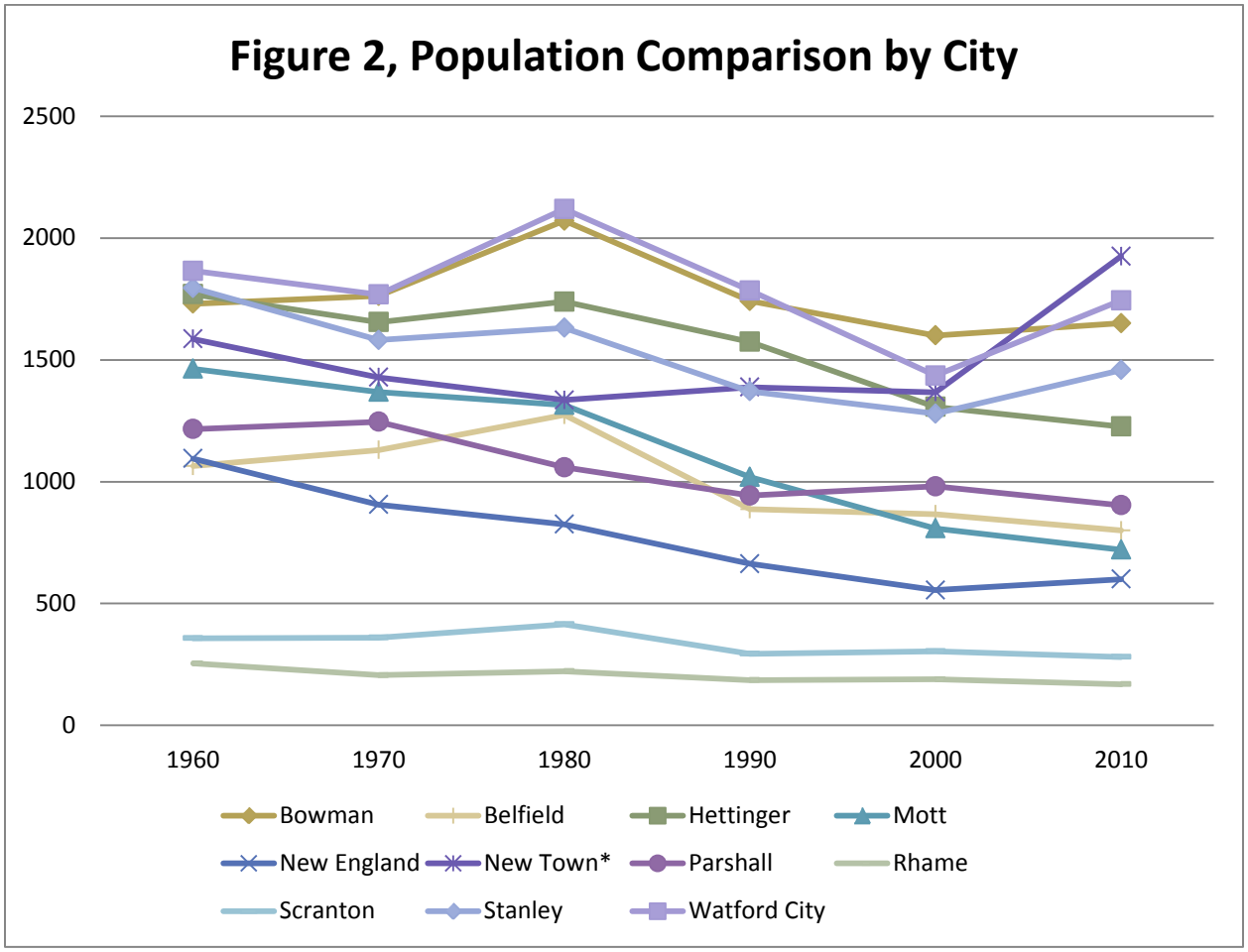
Table 1 – Population Trends

Year	Bowman		Bowman County			North Dakota		
	Population	% Change	Population	% Change	% of County	Population	% Change	% of State
1910	481	-	4668	-	10.30%	577,056	-	0.08%
1920	767	59.46%	4768	2.14%	16.09%	646,872	12.10%	0.12%
1930	888	15.78%	5119	7.36%	17.35%	619,636	-4.21%	0.14%
1940	967	8.90%	3860	-24.59%	25.05%	632,446	2.07%	0.15%
1950	1382	42.92%	4100	6.22%	33.71%	619,636	-2.03%	0.22%
1960	1730	25.18%	4154	1.32%	41.65%	632,446	2.07%	0.27%
1970	1762	1.85%	3901	-6.09%	45.17%	617,792	-2.32%	0.29%
1980	2071	17.54%	4229	8.41%	48.97%	652,727	5.65%	0.32%
1990	1741	-15.93%	3596	-14.97%	48.41%	638,800	-2.13%	0.27%
2000	1600	-8.10%	3242	-9.84%	49.35%	642,200	0.53%	0.25%
2010	1650	3.13%	3151	-2.81%	52.36%	672,591	4.73%	0.25%

Table 2 compares the population trends for Bowman to other cities of similar size. All of these communities are currently experiencing impacts of oil drilling in the Bakken and Three Forks formations. Figure 2 illustrates the population trends for each city over the last 50 years.

Table 2, Population Comparison by City										
City	**1920**	**1930**	**1940**	**1950**	**1960**	**1970**	**1980**	**1990**	**2000**	**2010**
Bowman	767	888	967	1382	1730	1762	2071	1741	1600	1650
Belfield	526	653	870	1051	1064	1130	1274	887	866	800
Hettinger	817	1292	1138	1762	1769	1655	1739	1574	1307	1226
Mott	723	1036	1220	1583	1463	1368	1315	1019	808	721
New England	613	911	895	1117	1095	906	825	663	555	600
New Town*	-	-	-	-	1586	1428	1335	1388	1367	1925
Parshall	376	470	570	935	1216	1246	1059	943	981	903
Rhame	302	356	283	340	254	206	222	186	189	169
Scranton	353	381	277	360	358	360	415	294	304	281
Stanley	591	936	1058	1486	1795	1581	1631	1371	1279	1458
Watford City	260	769	1023	1371	1865	1768	2119	1784	1435	1744

*New Town became an incorporated City in 1953



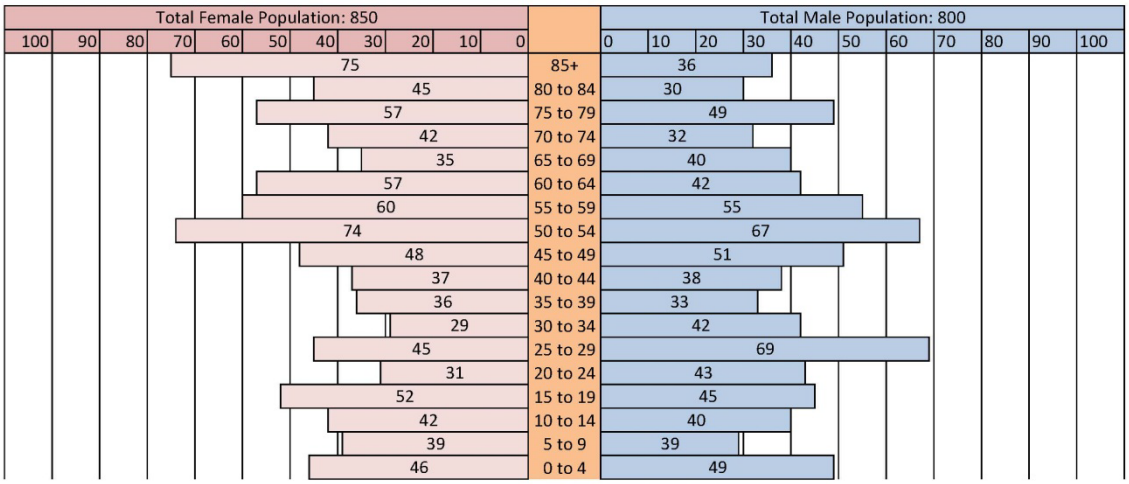
According to the 2010 US Census, Bowman's population is 48.5% male and 51.5% female. This ratio is slightly more separated than the State of North Dakota which is comprised of 50.5% male and 49.50% female. As the energy industry continues to move into Bowman County and Western North Dakota, a higher ratio of male workers are likely to in-migrate to the area, and this will have an influence on the male to female ratio in the region.

3.2.2 Age Distribution

Bowman's median age according to the 2010 census was 48.4 years old. The median age for males was 45.2 and 51.8 for females. The overall median age of Bowman is higher than the State of North Dakota's median age of 37.0. This factor may be influenced by the movement of younger generations to urban areas. However, the male population in the 25-29 age group is dramatically higher than other age cohorts surrounding it.

A population pyramid illustrates the distribution of age groups in a population by gender. An elderly population is depicted as a top heavy pyramid, indicating a decreasing population. Three factors that can contribute to a declining population include: 1. Low birth rates; 2. Out-migration of young adults who are in the age group most likely to have children, and 3. General out-migration of populations from rural communities and areas to bigger cities. In contrast, a bottom heavy pyramid shows an increasing population with a potential for rapid growth. Population pyramids that are middle heavy depict populations that are experiencing a state of change. These populations are most likely transitioning from a bottom heavy, growing population to a top heavy pyramid. The population pyramid for Bowman is show in Figure 3.

Figure 3, Bowman Population Pyramid, 2010



Generally Bowman's population is middle to top heavy, with large portions of both the male and female populations between 50 and 65 years old. Although this characteristic depicts an aging population, the adolescent population (19 year old and younger) still accounts for 21% of the overall population. Assuming a high percentage of these groups stay in the community, or are replaced by new residents of a similar age, they may contribute to future growth within the City of Bowman.

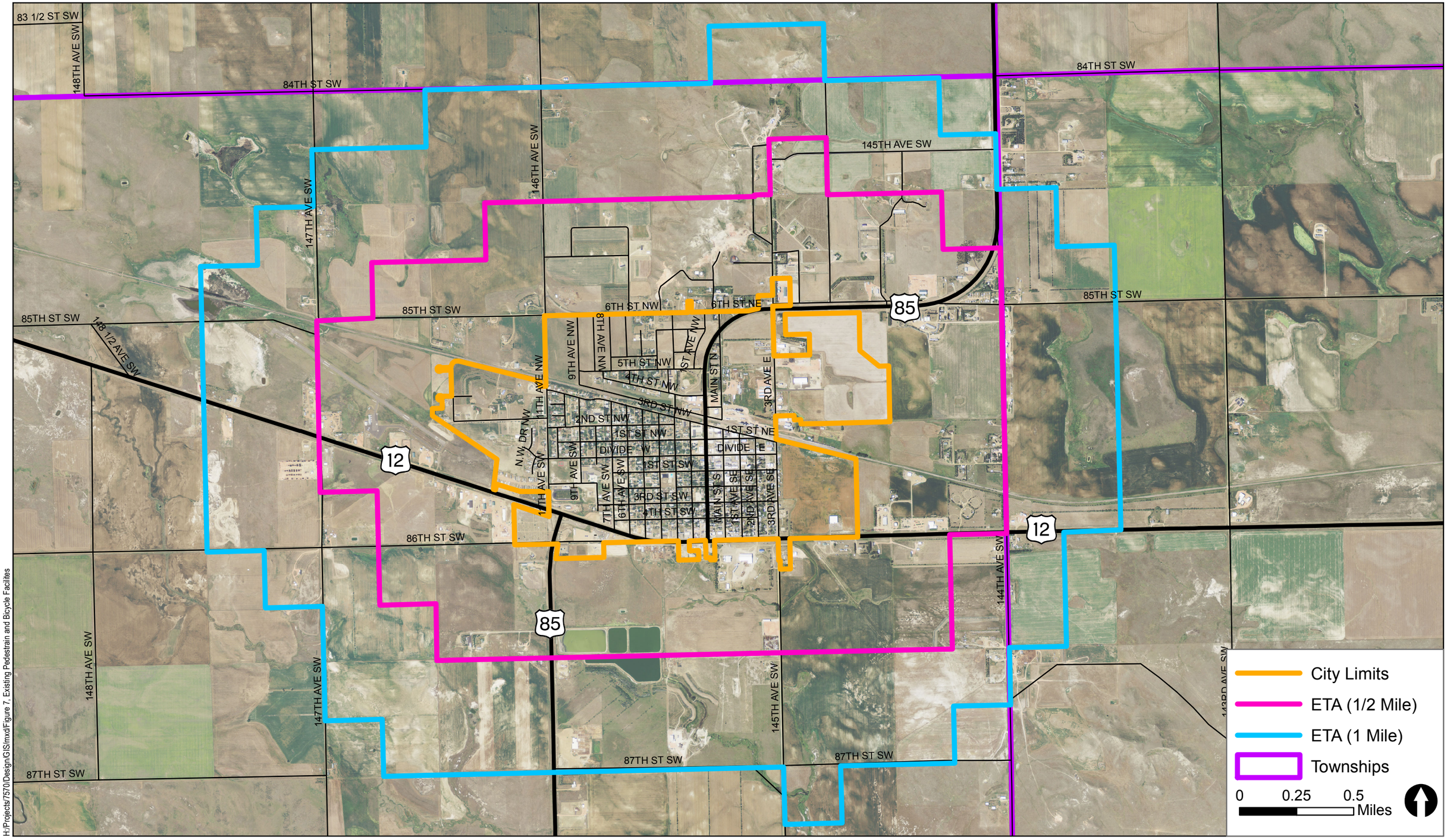
3.2.3 Housing

The 2010 Census recorded 867 housing units in the City of Bowman, 760 of which were occupied (87.66%). This is an increase of 8.5%, from 2000 which recorded a total of 799 housing units. Of the 760 occupied housing units 519 (68.3 percent) are owner-occupied and 241(31.7 percent) are renter-occupied. The percentage of owner-occupied housing units decreased between 2000 and 2010 from 75.8% to 68.3%. The rapid growth in the region may cause inaccuracy in this data, and may also be a factor in the decrease in the owner-occupied percentage. The 2010 census data showed an average of 2.22 people per owner-occupied household and 1.72 people per renter-occupied household. This average shows that though 68.3% of the occupied households are owner-occupied, 69.8% of the population lives in owner-occupied housing.

3.3 Extraterritorial Area

The North Dakota Century Code allows cities the opportunity to have zoning and subdivision authority outside of the incorporated city limits. Cities with a population of 5,000 persons or less, such as Bowman, may exercise an extraterritorial area (ETA) that is one mile beyond the city limits. The ETA boundaries are defined by any quarter-quarter (40 acres) section of which at least half of the area falls within a one-mile mile radius of the city limits (See Figure 4, Statutory ETA Allowance). Within this ETA area, the city has sole zoning and subdivision authority within the first half mile, which is also identified by quarter-quarter sections as described above, and shared jurisdiction with Bowman County in the outer half mile. In order for Bowman to exercise this authority, the city must first apply city zoning designations on the land within the ETA. This follows the same process as a zone change within city limits, but first requires a zoning transition meeting with the county (or township(s) if they have not relinquished zoning authority to the county) as defined by North Dakota Century Code.

Within the inner half mile of the ETA, zoning and subdivision applications are submitted to the City of Bowman, and the City processes and acts on those applications. Within the outer half mile of the ETA, zoning and subdivision applications are submitted to Bowman County, and the County processes and acts on those applications, after which they are required to forward information about the application and their decision to the City of Bowman for a 30-day review period. During that 30-day review period, the City has the opportunity to consider the County's decision and the extent to which is it consistent with the future land use plan. Ideally, the decision would be reviewed by both the City's Planning and Zoning Commission and the City Commission, and a letter of concurrence would be sent to the County if the City agrees with the action. If concerns are identified, the City may request an opportunity to discuss the action with the County, and cooperation between the two jurisdictions is needed to arrive at a mutually agreeable outcome. The Century Code identifies a course of action in the event agreement cannot be reached.



H:/Projects/7570/Design/GIS/mxd/Figure 7, Existing Pedestrain and Bicycle Facilites

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Bowman Extraterritorial Area

Comprehensive and Transportation Plan

Bowman, North Dakota

Figure 4

3.4 Transportation

3.4.1 Existing Functional Class

Roadway functional classification categories are defined by the role of streets and highways in the overall roadway system. The intent of the functional classification system is to create a hierarchy of roads that collect and distribute traffic from neighborhoods to and from the highway system. Roadways with a higher functional classification (arterials) generally provide for longer trips, have more mobility, have limited access, and connect larger centers. Roadways with a lower functional classification (collector and local streets) generally provide shorter trips, have lower mobility, have more access and connect to higher functioning roadways. A balance of all functions of roadways is important to any transportation network. Figure 5 depicts the relationship of the various functional classifications to access and mobility.

Figure 5, Access/Mobility Diagram

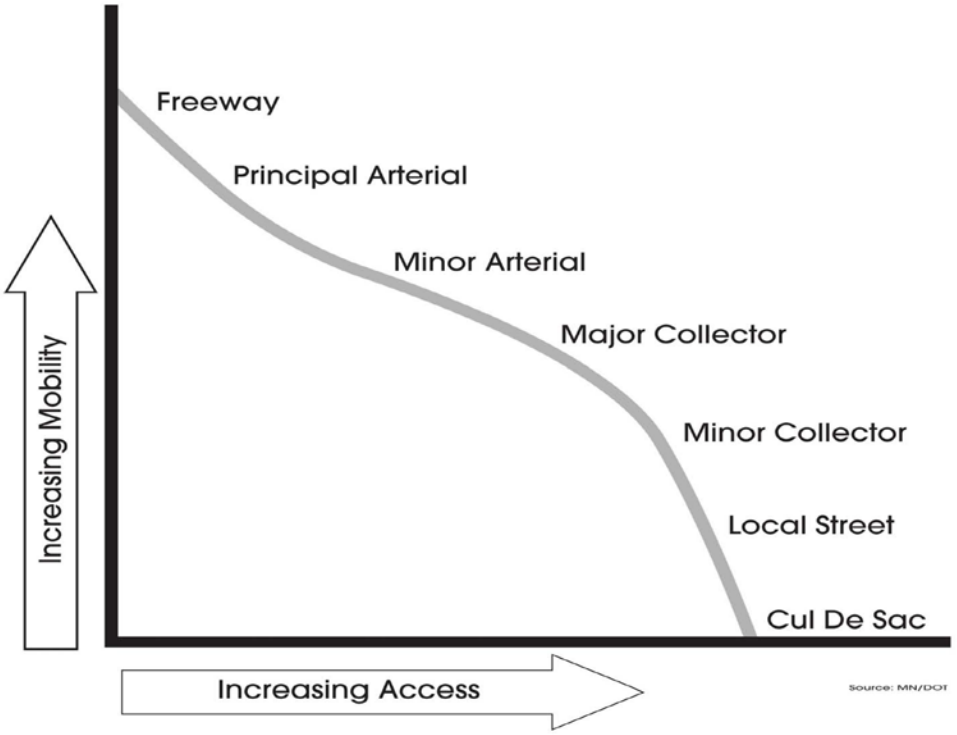
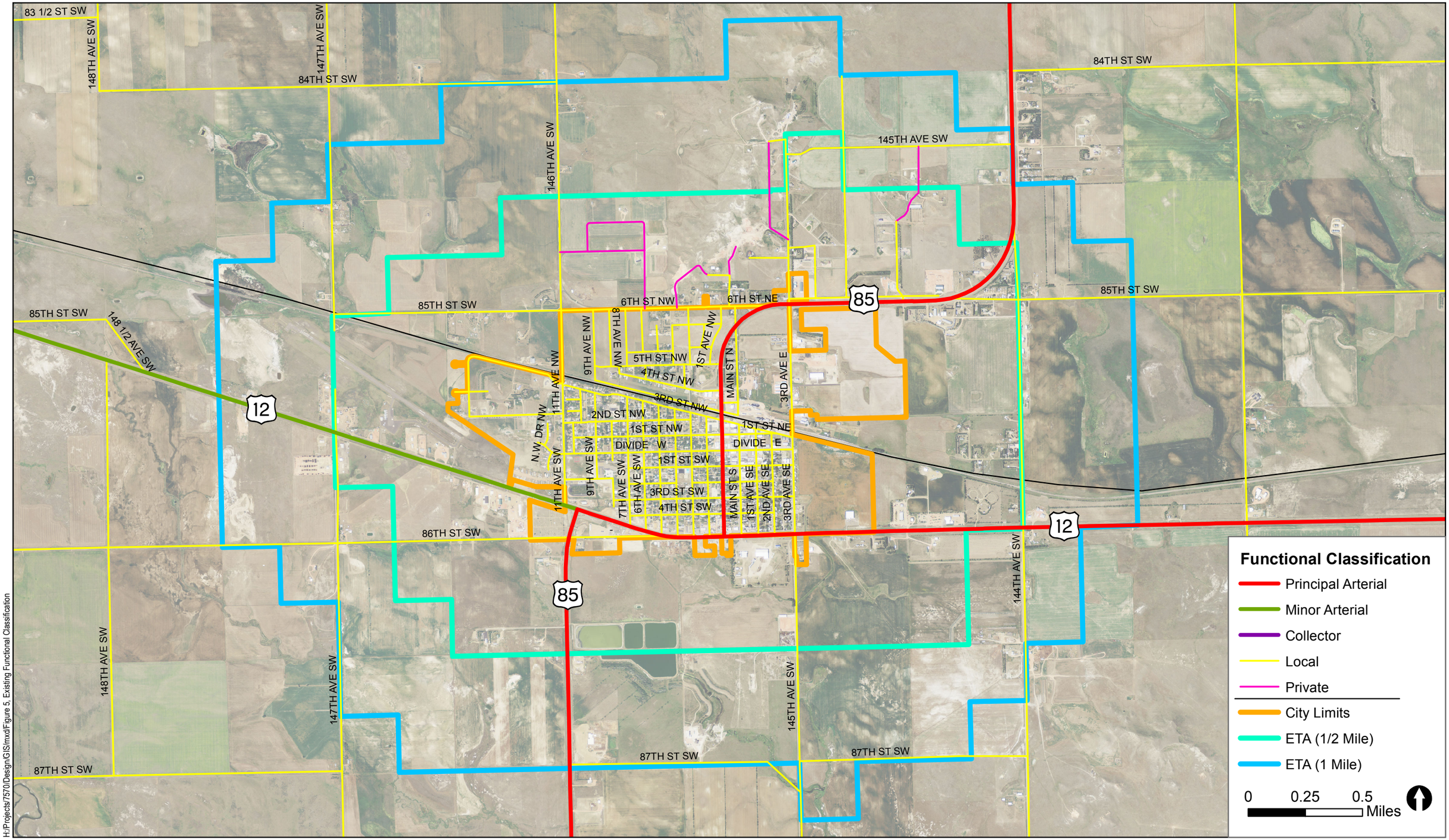


Figure 6, shows the functional classifications currently assigned to roadways within Bowman and the surrounding extraterritorial area. The following is a description of the existing functional classification system within Bowman.



H:/Projects/7570/Design/GIS/mxd/Figure 5, Existing Functional Classification

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Existing Functional Classification

Comprehensive and Transportation Plan
Bowman, North Dakota

Figure 6

Principal Arterials

Principal arterials are intended to provide a high level of mobility with very limited access, connecting major activity centers and providing a continuous transportation system as they establish connections with other principal arterials. The principal arterial system in Bowman includes US Highway 85 and US Highway 12. US Highway 85 runs north from South Dakota into Bowman, briefly joins US Highway 12 which runs east and west, then follows 1st Avenue SW through the center of the city. North of Bowman, US Highway 85 provides a connection to Interstate 94 and major cities such as Dickinson, Watford City, and Williston.

US Highway 12 is located on the southern edge of the City of Bowman and connects many of the cities in Bowman County. Both highways provide important connections into South Dakota from western North Dakota and Montana for commercial traffic. Volumes along the two principal arterials in Bowman rose from 2001 to 2009, and NDDOT traffic counts indicate the highway experienced a decreased in 2011. Although the traffic volumes decreased over the two year span, the percentage of truck traffic increased throughout both corridors.

Minor Arterials

Minor arterials also emphasize mobility over land access, serving to connect adjacent neighborhoods and the highway system. Major business concentrations and other important traffic generators are usually located along minor arterial roadways. In urbanized areas, one to two mile spacing of minor arterials is considered appropriate. A well-planned and adequately designed system of principal and minor arterials will allow the city's overall street system to function the way it is intended and will discourage through traffic from using residential streets. Volumes on principal and minor arterial roadways are expected to be higher than those on collector or local roadways. Providing the capacity for these higher volumes will keep volumes on other city streets lower. The only minor arterial currently designated in Bowman's existing functional classification system is US Highway 12 west of US Highway 85. Based on the existing function of the roadway system, the following roadways within the city and the ETA are also considered minor arterials:

- 146th Ave SW/11th Avenue SW,
- 145th Ave SW/3rd Ave SW,
- 85th St SW, and
- 87th St SW.

Collectors

Collectors are designed to serve shorter trips, providing access from neighborhoods to other collector roadways and the arterial system. They are expected to carry less traffic than arterial roads and to provide access to some properties. Collectors may be categorized as major and minor collectors if it helps to clarify the function of the roadway system. Major collectors can link both local streets and minor collectors to minor arterials, while minor collectors typically connect local streets and other collectors. There are currently no formally designated collectors within Bowman or the surrounding ETA. Based on the

existing function of the roadway system, the following roadways within the city and the ETA are also considered collectors:

- 4th St NW,
- 3rd St NW,
- Divide St W, and
- Main St S.

Local Streets

Local streets provide access to adjacent properties and neighborhoods. They are generally low speed, and designed to discourage through traffic. All of the remaining roadways in Bowman fall under this designation with the exception of private roads.

Private Roads

Private roads and streets are created when a roadway is constructed, but right-of-way is not dedicated to the city or county. It is the responsibility of the land owner, the developer, or a property owner's association to maintain these roadways, including snow removal. The party responsible for private roadway maintenance is often unclear and controversial unless formally designated in conjunction with the subdivision plat and recorded with the county in a separate document. There are several private roadways within the northern portion of Bowman's ETA. Cities, townships and counties are frequently asked to either accept right of way dedication for private roads or to take on the maintenance of private roads without dedication of right of way. This is rarely advisable, and will only be considered by Bowman if the private roadway is first reconstructed to meet city standards and a right of way dedication plat is prepared, approved, and recorded with the county. Without this, the city will inherit a substandard roadway and both on-going maintenance and roadway reconstruction will be costly and controversial.

3.4.2 Existing Traffic Volumes

As shown in Table 3, traffic volumes on US highways around Bowman have fluctuated over the last fifteen years. Volumes along the four highway segments have decreased from 2009 to 2011 by 3.5% to 31.75%. Though these volumes have decreased, the percentage of truck traffic is greater in 2011 than 2009. As shown below, trucks make up 10 to 22% of the overall traffic on US Highway 12, and 23 to 25% of the traffic on US Highway 85. While the overall traffic volume is well within the capacity of the existing roadways, this heavy volume of truck traffic increases starting and stopping time at intersections, thereby causing overall traffic delay and increased queue lengths at intersections, creating the need for turn lanes and other intersection capacity improvements so traffic can continue to function efficiently. These characteristics are especially pertinent on segments of US Highway 85 that occur within the core of the City of Bowman.

Table 3, Traffic Volumes on State Highways near Bowman, ND 1996 - 2011												
Year	Highway Segment											
	US 12 West of Bowman			US 12 East of Bowman			US 85 South of Bowman			US 85 North of Bowman		
	AADT*	Truck Volume	% Trucks	AADT*	Truck Volume	% Trucks	AADT*	Truck Volume	% Trucks	AADT*	Truck Volume	% Trucks
2011	1175	255	22%	1505	145	10%	1605	405	25%	2295	520	23%
2009	1220	245	20%	2205	200	9%	2105	295	14%	2555	345	14%
2008	1075	185	17%	1350	130	10%	1350	210	16%	1750	240	14%
2007	1075	185	17%	1350	130	10%	1350	210	16%	1750	240	14%
2006	1075	190	18%	1350	130	10%	1350	210	16%	1750	240	14%
2005	1125	340	30%	1500	190	13%	1175	190	16%	1650	270	16%
2004	1125	340	30%	1500	190	13%	1175	190	16%	1650	270	16%
2003	1125	340	30%	1500	420	28%	1175	190	16%	1650	270	16%
2002	1400	200	14%	1500	240	16%	1350	350	26%	1900	320	17%
1998	1650	260	16%	1600	190	12%	1250	195	16%	1450	200	14%
1996	1250	125	10%	1150	145	13%	1000	190	19%	1125	175	16%

*AADT = Annual Average Daily Traffic

Source: North Dakota Department of Transportation; http://www.dot.nd.gov/business/maps.htm

As oil drilling and related economic activity and residential development increases in the area south of I-94, traffic volumes on highways through Bowman are expected to increase, and the 2011 decrease from 2009, as documented by NDDOT, still demonstrates an increasing trend from years prior to 2009.

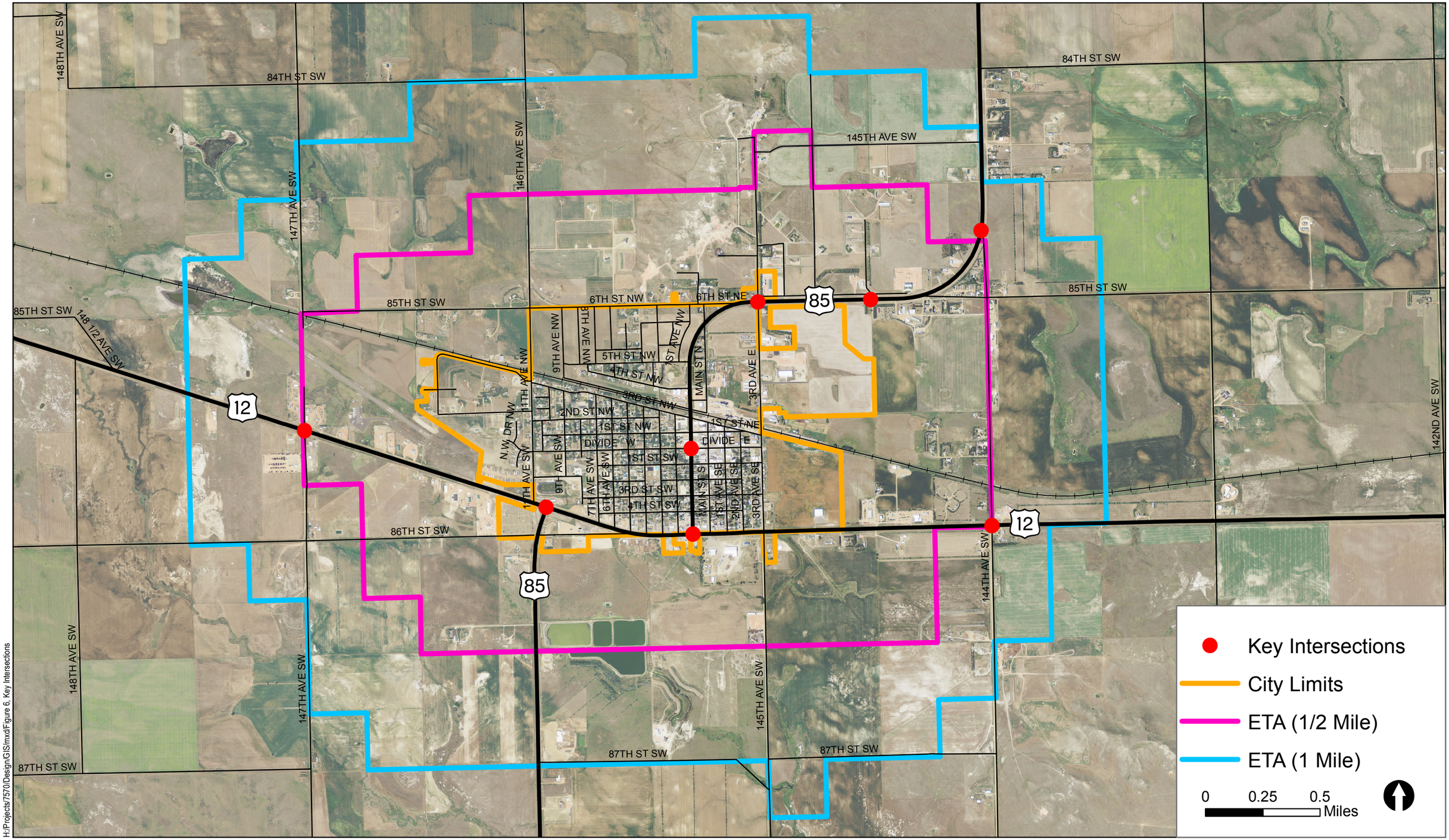
3.4.3 Key Intersections

Key intersections within Bowman and its ETA are shown in Figure 7. The intersections can be described as roadway intersections where major turning movement volumes occur as traffic transitions across the various roadways in the functional classification hierarchy.

Within city limits, four key intersections have been identified. They include the US Highway 85 intersections with 3rd Avenue E and Divide Avenue and both intersections where US Highway 85 and US Highway 12 merge. There are four additional key intersections that lie outside of city limits. These intersections include:

- US Highway 12 and 144th Ave SW
- US Highway 85 and 144th Ave SW
- US Highway 12 and 147th Ave SW
- US Highway 85 and the frontage road access east of 3rd Ave E

A majority of these intersections include stop signs on the side streets, providing for through traffic along the US Highways. As traffic volumes increase, it will be important to assess the traffic flow and level of service at the intersections to ensure safe and functional traffic operations. Of the 36 crashes recorded between 2007 and 2011, 18 occurred at intersections or were intersection related.



H:/Projects/7570/Design/GIS/mxd/Figure 6. Key Intersections

Key Intersections

Comprehensive and Transportation Plan
Bowman, North Dakota

SRF Consulting Group, Inc.

Figure 7

3.4.4 Pedestrian and Bicycle Facilities

Existing sidewalks and shared use paths are shown in Figure 8. Bowman's sidewalk system is generally complete along Divide, 1st St NE, 1st St NW, and Main St N. There are many areas in the city were a sidewalk does not exist on either side of the street. The sidewalk network is relatively incomplete on the north side of the railroad tracks and is fairly incomplete in areas south of the tracks as well. This presents a challenge for residents who wish to walk rather than drive, or who wish to walk for the sake of exercise. Bowman's grid street system offers a high level of continuity and connectedness between land uses within the community, unless the railroad tracks need to be crossed. Sidewalks could be added in the future along streets throughout the city as a phased project or in conjunction with street reconstruction. The existing shared use path provides a facility aimed more towards exercise than transportation. It is located on the north side of the railroad tracks along US Highway 85 and 3rd Ave E. There are few residential developments or destinations along the path, limiting its use for travel between destinations.

3.4.5 Crash History

Five years of crash history, from 2007 to 2011, are shown by crash type in Table 4 and by location in Figure 9.

Table 4, Crash History

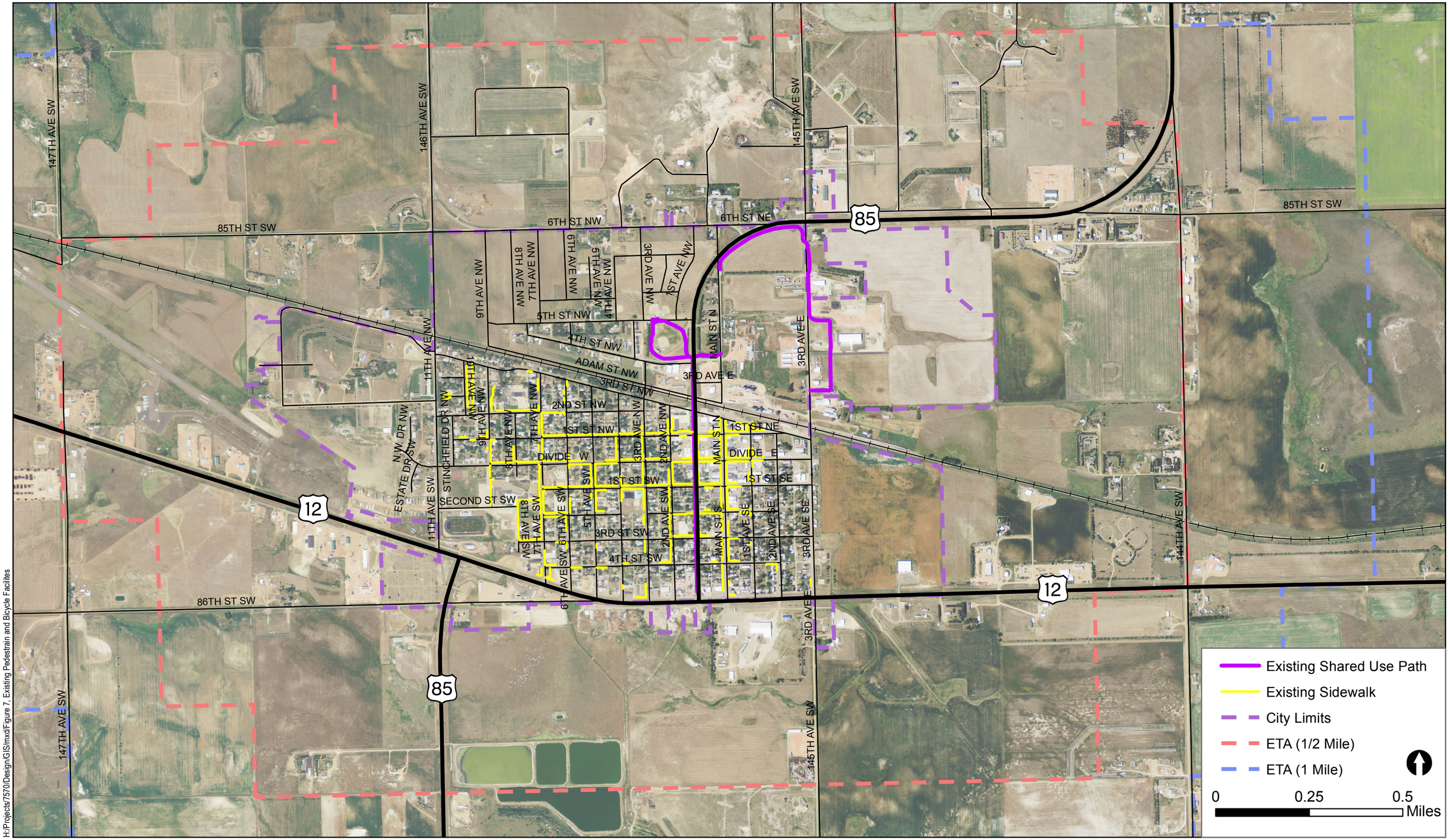
	Sideswipe (Same Direction)	Angle	Head-on	Ran Off Roadway	Rear End	Roll Over	Left Turn	Backing	Other	Total
US Highway 85	2	5	1	2	2	4	1	1	1[1]	**19[1]**
US Highway 12	4	1	-	1	3	4[1]	-	-	4	**17[1]**
Total Crashes	**6**	**6**	**1**	**3**	**5**	**8[1]**	**1**	**1**	**5[1]**	**36[2]**

*[#] indicates the number of fatal crashes

Source: NDDOT Department of Transportation

The patterns that stand out the most in this data include:

- Crashes at the junctions of US Highway 85 and US Highway 12
  The western junction is currently equipped with an overhead flashing yellow beacon for east/west bound traffic and a stop sign for northbound traffic on US Highway 85. The eastern junction of US Highways 12 and 85 (at 1st Avenue SW) is not signalized and has a stop sign for southbound traffic on US Highway 85.
- Crashes along US Highway 85 through Bowman city limits
  Eight crashes occurred along the north/south portion of US Highway 85 through Bowman. As traffic volumes increase, alternative routes with fewer conflict points (i.e. a higher level of access management) could be considered for through traffic, which may help address crashes on this roadway segment.



H:/Projects/7570/Design/GIS/mxd/Figure 7, Existing Pedestrain and Bicycle Facilites

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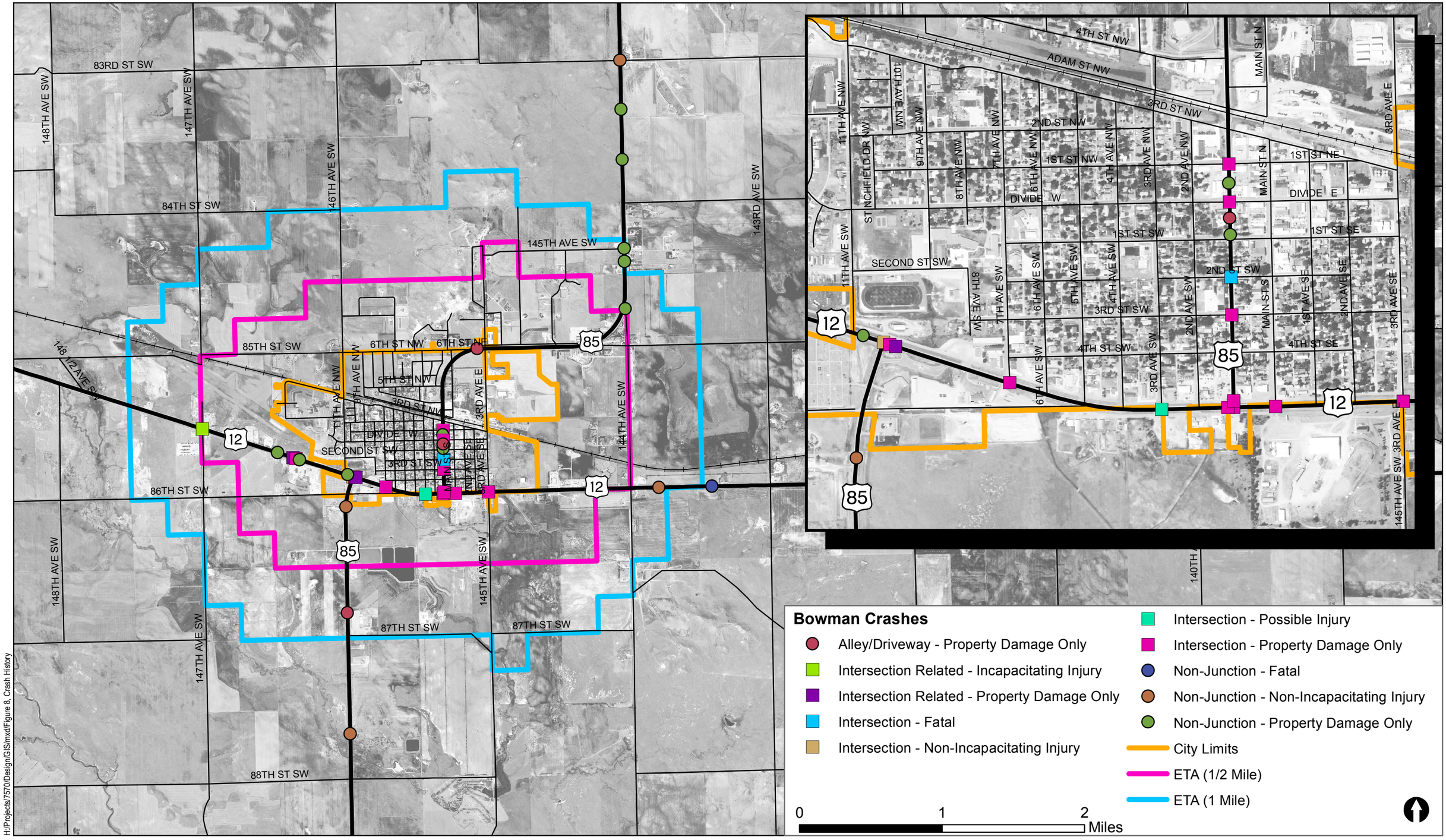
Existing Pedestrian and Bicycle Facilites

Comprehensive and Transportation Plan
Bowman, North Dakota

Figure 8



Crash History

Comprehensive and Transportation Plan

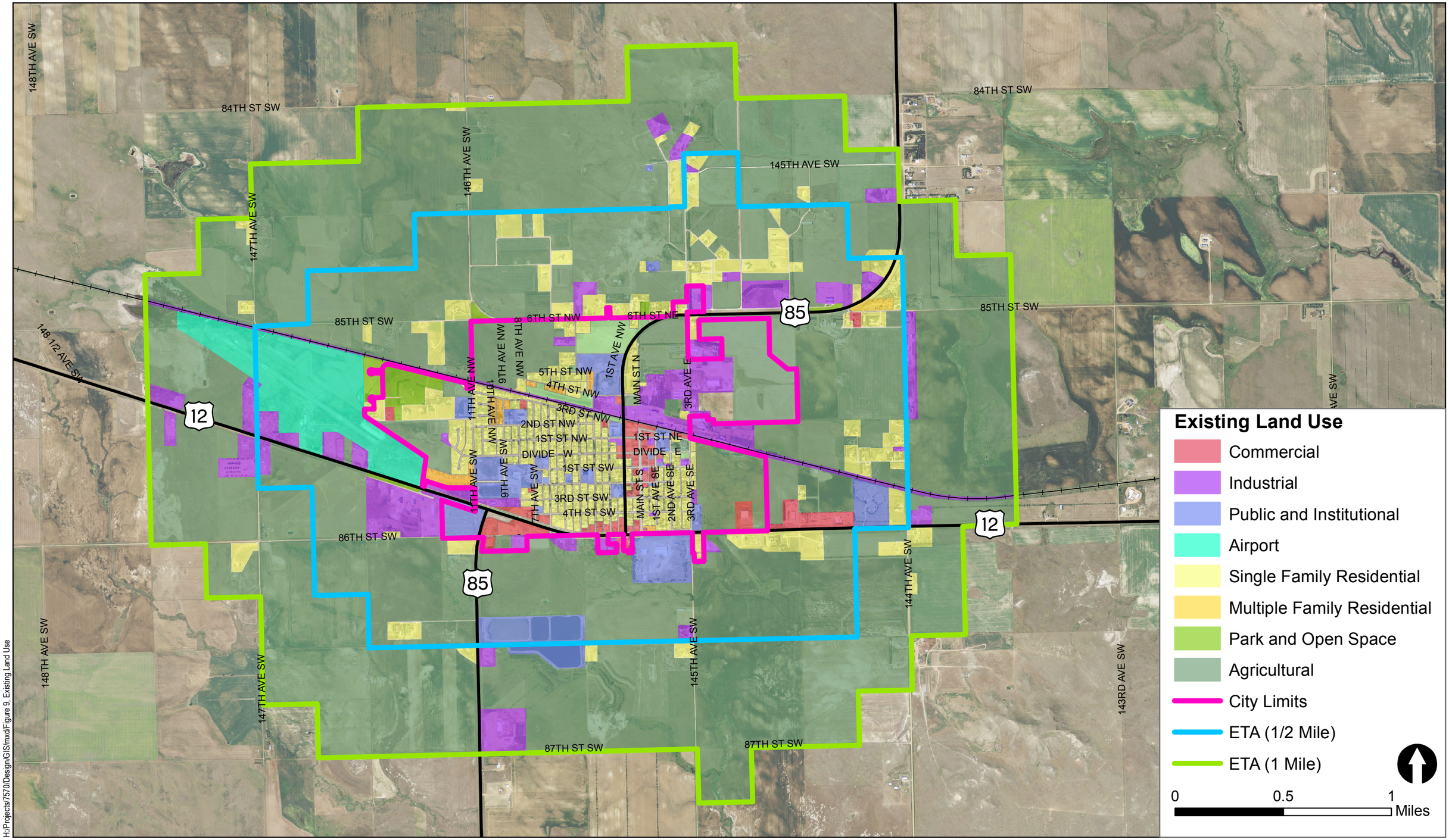
Bowman, North Dakota

Figure 9

3.5 Existing Land Use

Existing land uses for the City of Bowman and its ETA are shown in Figure 10. Existing residential land uses comprise most of the core of Bowman. There are other residential land uses shown in the ETA where existing single-family homes or developments are located. A majority of the existing commercial land uses are shown along US Highway 85 and US Highway 2. Additional commercial land uses are shown in downtown Bowman, along Main Street from the railroad tracks to 3rd St SW. Public and institutional land uses such as schools, churches, and public facilities, are dispersed throughout city limits, many of which are located near the high school. There are three additional public and institutional land uses outside of city limits which include the sewage lagoons, Bowman County Fairgrounds, and the campground. There are limited industrial land uses inside city limits, a majority of which are located north of the railroad tracks and east of US Highway 85, near the elevator and stock yard. Within the ETA, industrial land uses are clustered adjacent to highway corridors.

The remainder of land inside city limits and the ETA is shown as agricultural, as shown in the existing land use plan. This land is currently in agricultural production (crop land or pasture) or is undeveloped land.



H:/Projects/7570/Design/GIS/mxd/Figure 9. Existing Land Use

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Existing Land Use

Comprehensive and Transportation Plan
Bowman, North Dakota

Figure 10

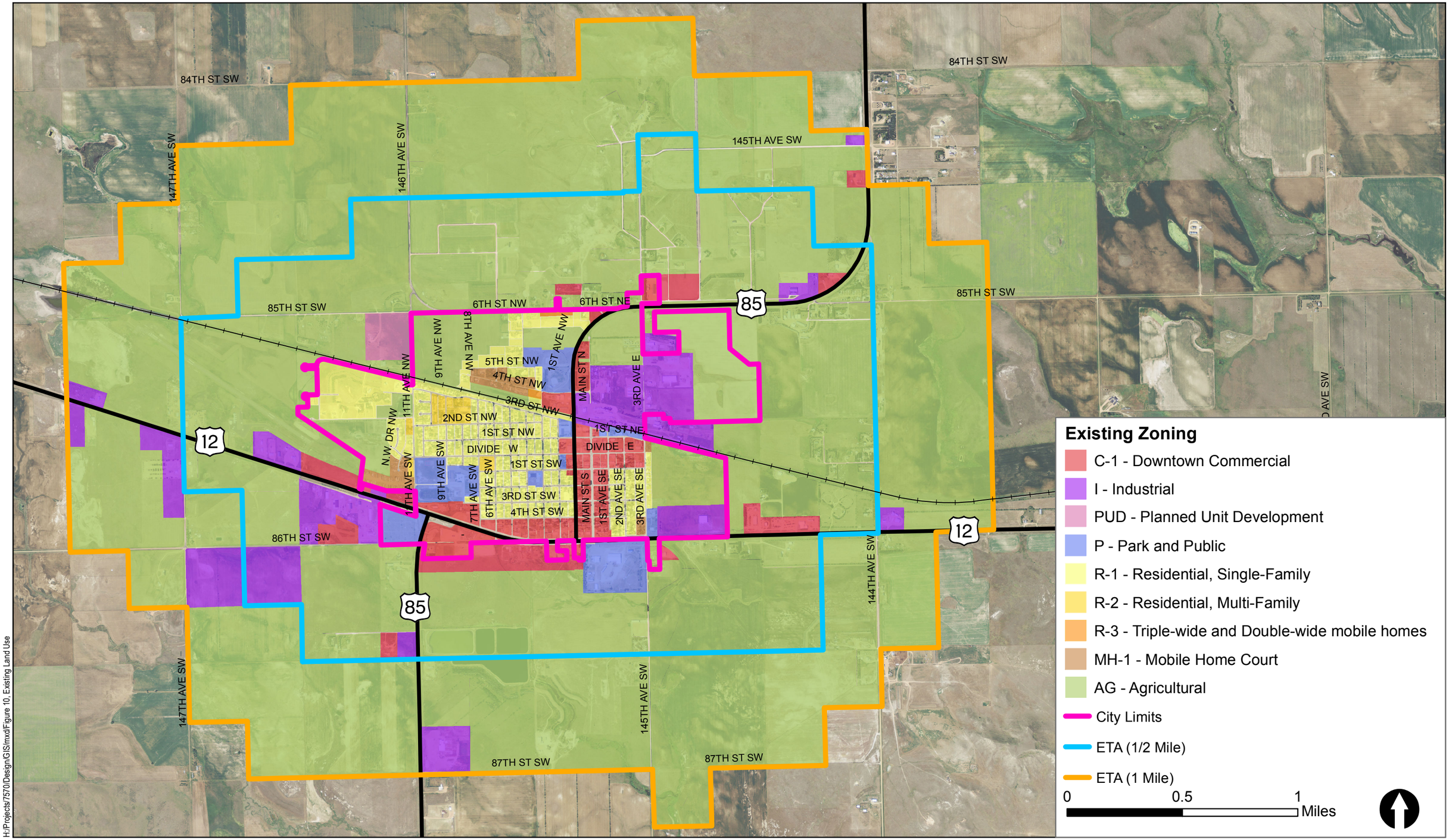
3.6 Existing Zoning

The City of Bowman formally established their ETA in 2011, prior to the preparation of this Comprehensive Plan, by zoning all of the land in the ETA (see Figure 11). According to North Dakota Century Code City of Bowman has sole zoning and subdivision authority within the inner ½ mile of the ETA. Century code allows the city and county to establish an agreement which would make the city responsible for the entire ETA. In Bowman's case, the county did agree to that, but the city has chosen to limit their sole jurisdiction to the inner half mile. Zone changes in this area should be processed in the same manner as zone changes inside city limits. The outer half of the ETA will remain in joint jurisdiction between the city and the county for both zoning and subdivision authority. Under this scenario, the primary jurisdiction will accept and act on applications for a zone change or subdivision within the outer ½ mile of the ETA. Once a decision has been made, the secondary jurisdiction will be notified and will have 30 days to object to the action.

The City of Bowman currently has eight zoning districts. They include:

- R-1: Residential District, Single-Family
- R-2: Residential District, Multi-Family
- MH-1: Mobile Home Court District
- PUD: Planned Unit Development District
- C-1: Downtown Commercial District
- I: Industrial District
- P: Park and Public District

These eight districts provide for a range of uses, especially residential, allowing the City to establish acceptable land use transitions through the appropriate application of transitional zoning districts. As the oil industry continues to move to the south, to the City may revisit the commercial and industrial districts to clarify allowed uses and consider the creation of additional districts that further limit the range of permitted commercial and industrial uses.



H:/Projects/7570/Design/GIS/mxd/Figure 10. Existing Land Use

SRF Consulting Group, Inc.

Existing Zoning

Comprehensive and Transportation Plan
Bowman, North Dakota

Figure 11

3.7 Natural Resources

A community's natural resources are often what set it apart from other communities. Whether those resources are aesthetically pleasing natural characteristics, recreational opportunities, or economic assets in the form of farmland, mineral deposits, petroleum reserves, or simply land that supports development, they work together to create the unique combination of characteristics that makes each community individually unique. Bowman's natural resources are described below.

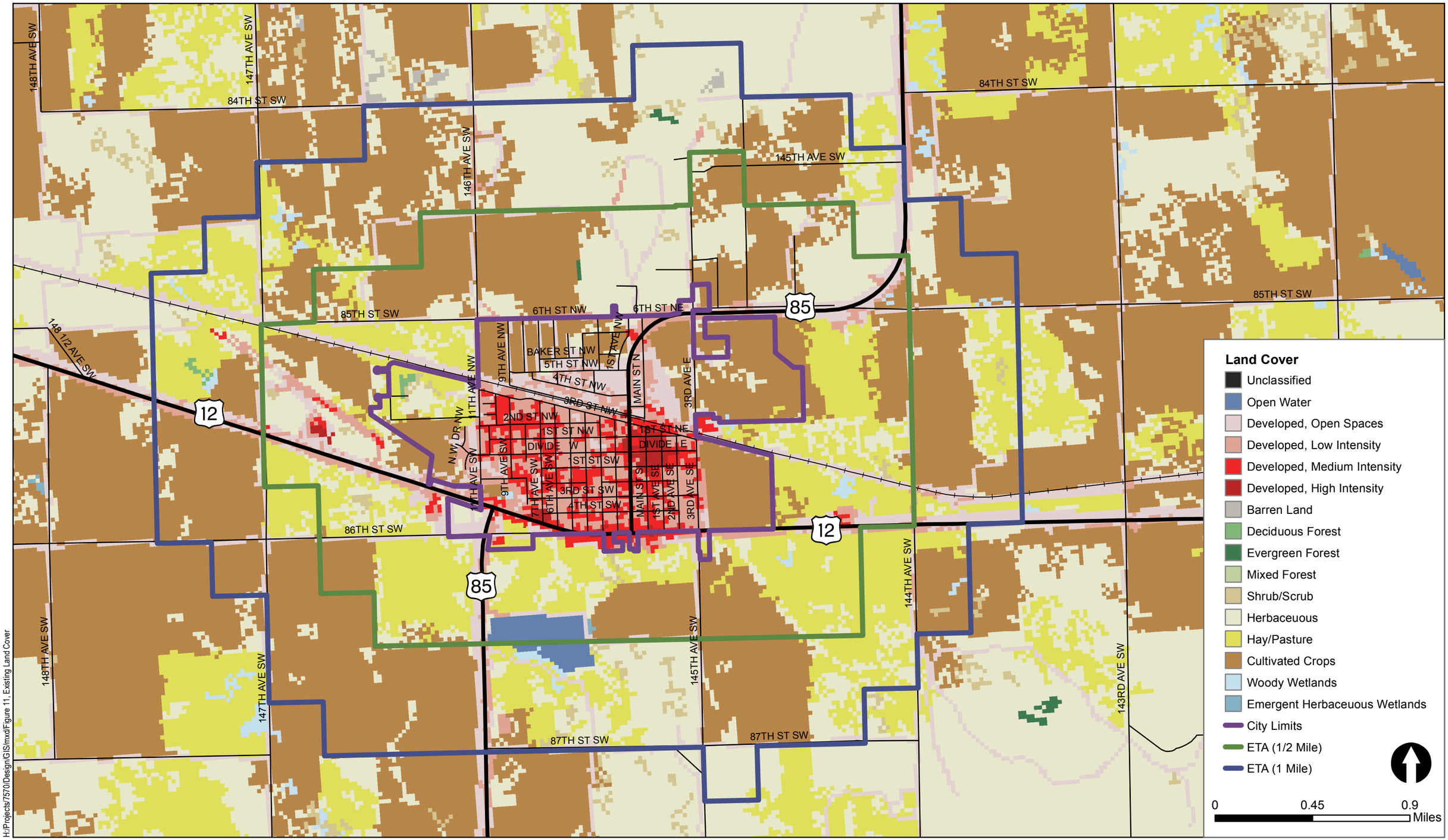
3.7.1 Agricultural Land

Bowman is surrounded by agricultural land, and agriculture has played a vital role in the economy of Bowman, Bowman County, and the greater region. Figure 12 shows the existing land cover in Bowman's ETA, according to the Natural Resource and Conservation Service (NRCS) database. A majority of the land cover surrounding Bowman consists of cultivated crops and hay/pasture. Figure 13 shows existing crop land according to the NRCS database. Alfalfa, barley, peas, canola, and spring wheat are grown within Bowman's ETA. Other lands are herbaceous grasslands and hay or grass pasture. A majority of the ETA is herbaceous grasslands and spring wheat.

3.7.2 Buttes

The land surrounding Bowman is generally made up of gently rolling topography, with the exception of the dramatic buttes that add visual uniqueness and drama to the landscape. Although these features cannot be used for raising crops and have limited value for grazing cattle, they support wildlife and in some cases, serve as a source of scoria or other aggregate material. However, their primary value is in the beauty they add to the landscape and the potential for parks, trails, and other recreational features that will help attract both tourism and residents. Studies have shown that young professionals, such as teachers, medical staff, etc. are far more likely to relocate to cities in close proximity to a high level of outdoor recreational opportunities.

Buttes north of the City of Bowman



H:/Projects/7570/Design/GIS/mxd/Figure 11. Existing Land Cover

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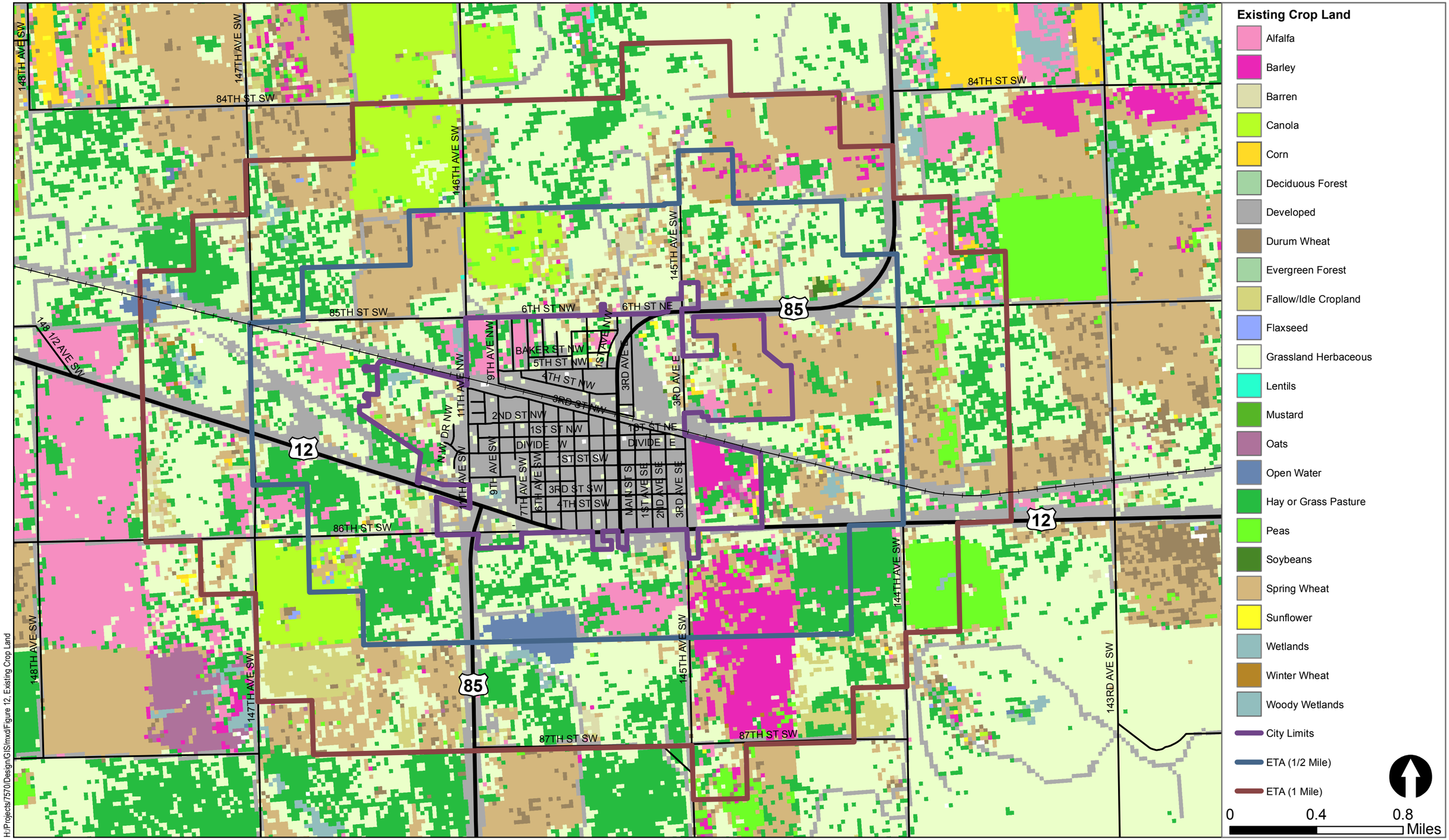
Existing Land Cover

Comprehensive and Transportation Plan
Bowman, North Dakota

Data Retrieved March 19, 2012 from the US Department of Agriculture

Figure 12



H:/Projects/7570/Design/GIS/mxd/Figure 12, Existing Crop Land

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Existing Crop Land

Comprehensive and Transportation Plan
Bowman, North Dakota

Data Retrieved on March 19, 2012 from the US Department of Agriculture

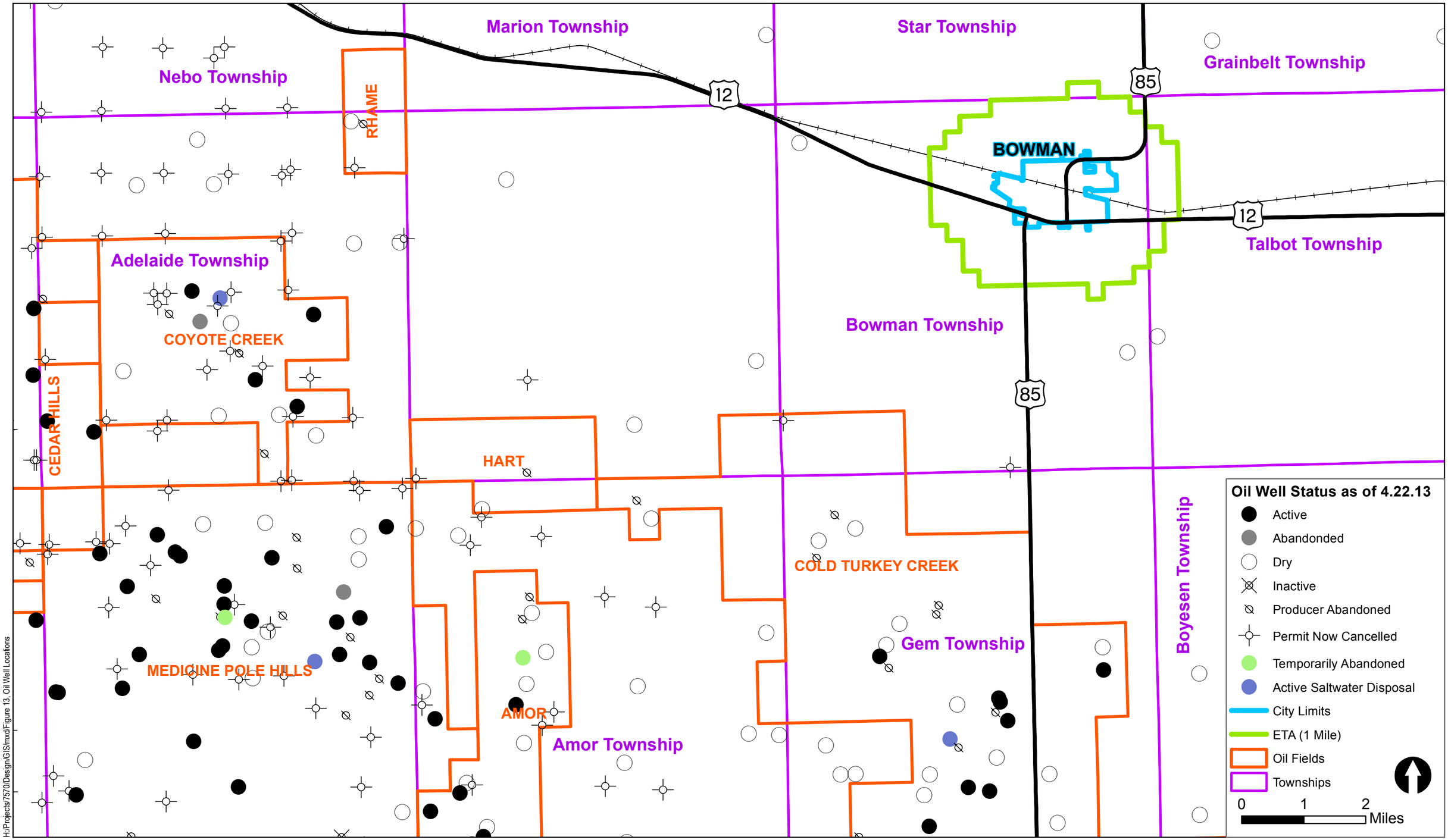
Figure 13

3.7.3 Oil

The presence of oil has played an important part in the economic vitality of Bowman and Bowman County since the 1970's. While many communities in the region experienced the hardships of the bust in the 1980's, Bowman has continued to embrace the presence of oil. The most updated data of oil well locations in and around Bowman are shown in Figure 14. As of early April 2013 there were four oil well permits in Bowman Township consisting of two dry wells and two cancelled permits. Nearby Adelaide, Amor, and Gem Townships southwest of Bowman have active well permits. The Cold Turkey Creek Oil Formation is located approximately five miles from the City of Bowman, and currently has seven active oil well permits.

3.7.4 Water bodies

Existing water body features within Bowman's ETA are shown in Figure 15. There are scattered freshwater emergent wetlands within the southern half of the ETA. Larger emergent wetlands are located to the east and west of the ETA and provide an opportunity for recreational sites with increased bicycle and pedestrian connectivity and onsite amenities. The presence of creeks and drainage ways throughout Bowman and the surrounding area create floodplains on adjacent land. These floodplains are shown in Figure 16. The size of the floodplain in the southeast area of the city, particularly in the vicinity of 3rd Street SE, running from Main Street to 3rd Avenue SE, is under review, and is likely to be removed from the floodplain after culverts under US Highway 12 are reanalyzed. The culverts have greater drainage capacity than what was previously considered when the floodplain was delineated. This reanalysis is also expected to reduce the size of the floodplain east of 3rd Avenue SE.



H:/Projects/7570/Design/GIS/mxd/Figure 13, Oil Well Locations

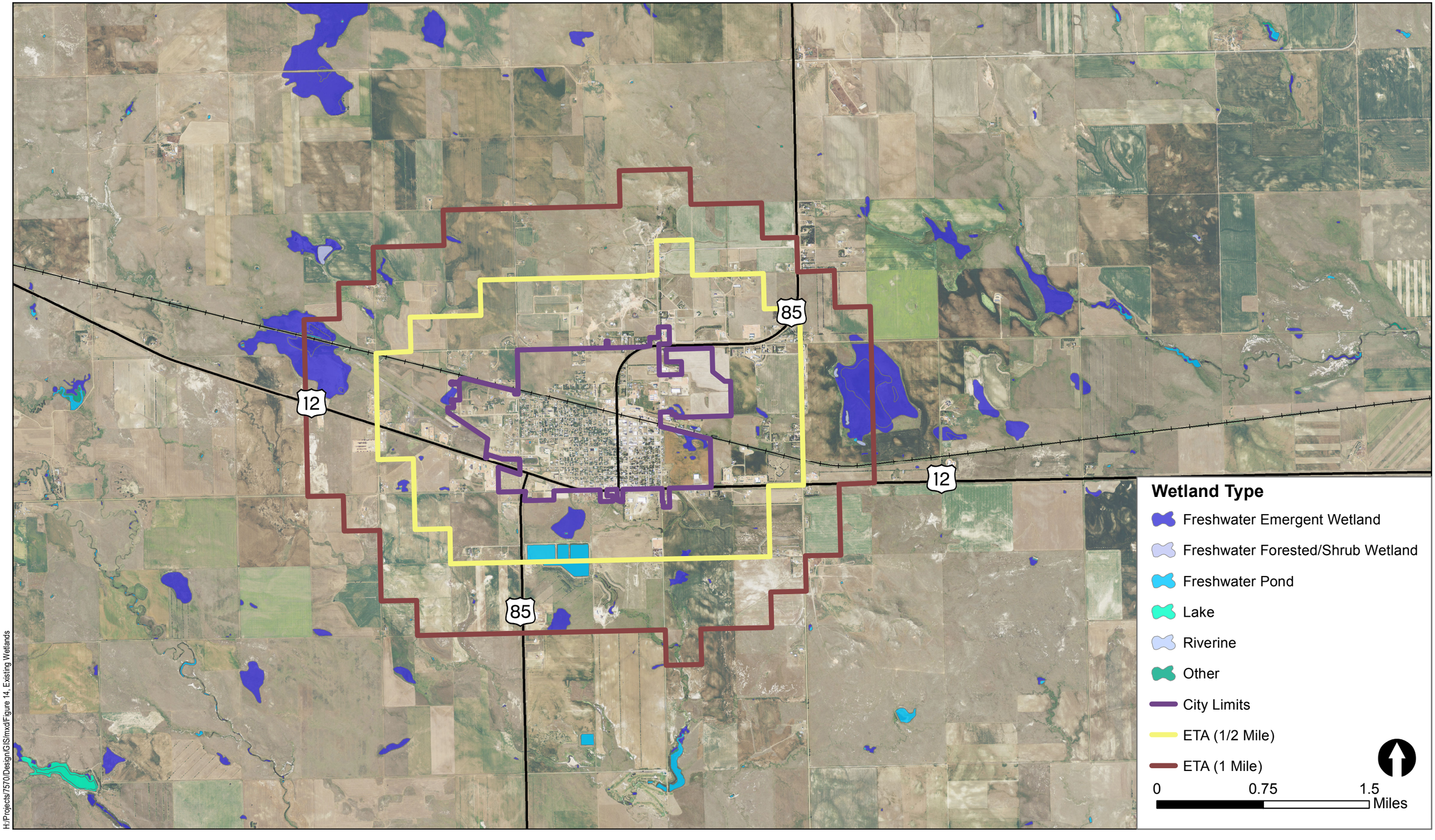
SRF Consulting Group, Inc.

Oil Well Locations

Comprehensive and Transportation Plan
Bowman, North Dakota

Data Retrieved on April 23, 2013 from the ND DIvision of Oil and Gas

Figure 14



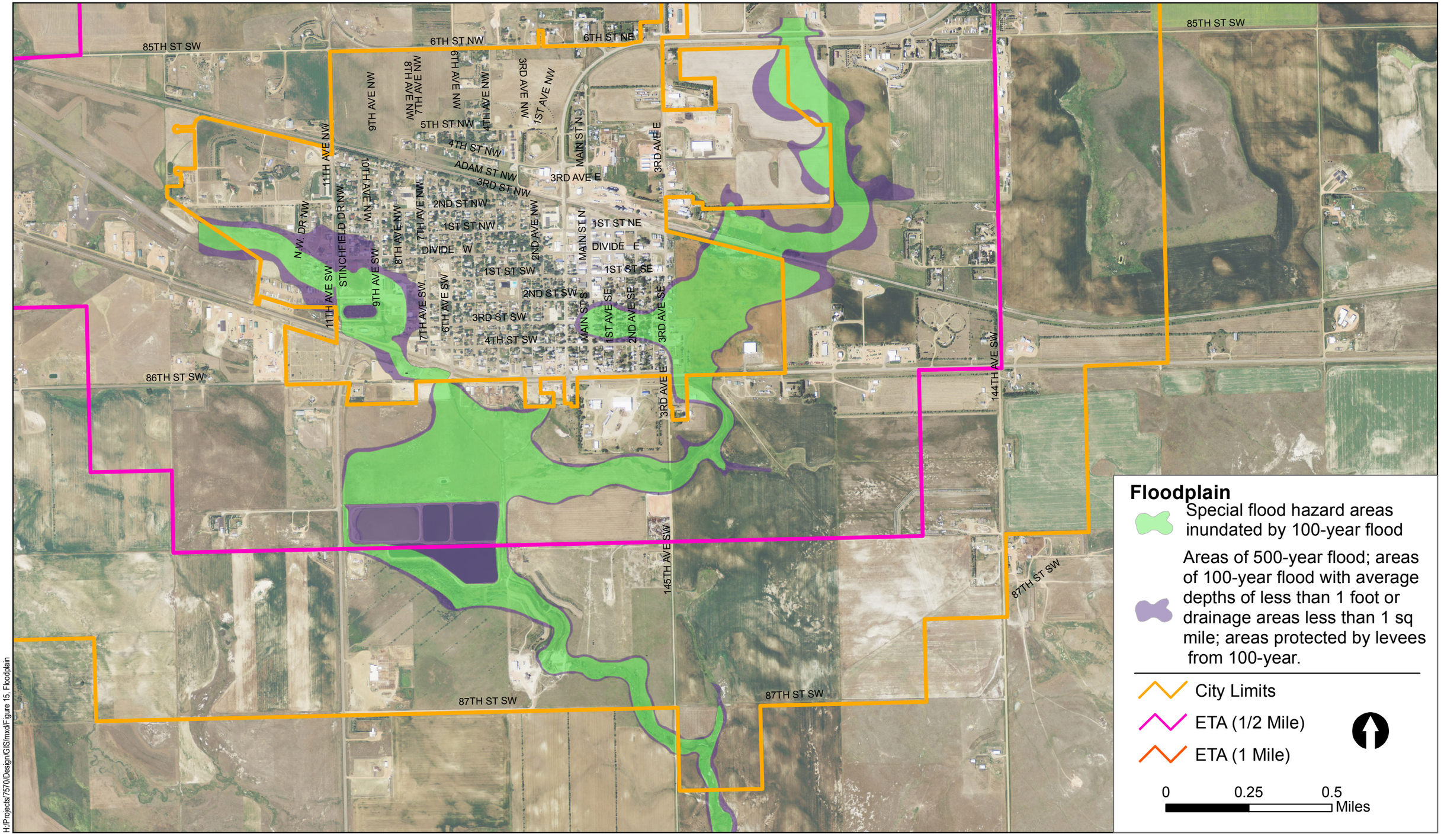
H:/Projects/7570/Design/GIS/mxd/Figure 14, Existing Wetlands

SRF Consulting Group, Inc.

Existing Wetlands

Comprehensive and Transportation Plan
Bowman, North Dakota

Figure 15



H:/Projects/7570/Design/GIS/mxd/Figure 15. Floodplain

SRF Consulting Group, Inc.

Floodplain Map

Comprehensive and Transportation Plan
Bowman, North Dakota

Figure 16

4.0 Planning Process

This comprehensive plan process began in October of 2011. This process included a series of meetings that encouraged input from city of Bowman and Bowman County residents, city staff, and city officials. The project began with a kick-off meeting with city staff and city officials and a public meeting in November 2011. In February 2012 meetings were held with property owners, residents and city staff to review draft future land use alternatives. A timeline of the completed tasks is shown in Appendix A.

4.1 Kick-Off Meeting

The Kick-Off Meeting was held on November 21, 2011 to start the project. City staff and city commissioners attended the meeting with members of the SRF Consulting Group, Inc. team. During the meeting, the planning process was described and current issues and existing conditions were discussed.

4.2 Public Meeting #1

The first public meeting was held on November 21, 2011. Over 45 members of the community attended the meeting and were provided an overview of the comprehensive and transportation planning process. Existing demographic, land use, and zoning information was presented. Attendees participated in one individual exercise that identified three characteristics that Bowman should have in the future and two group exercises that defined a community vision and community values and concerns. An optional activity allowed participants to designate areas for future growth through a mapping exercise. Items from the meeting are provided in Appendix B

4.3 Bowman Township Meeting

During a regular meeting of Bowman Township on February 21, 2012, the existing conditions and the comprehensive plan process were presented to attendees. Township board members and residents were given the opportunity to ask questions about the impacts of the project and other related items of concern.

4.4 Commission Meeting #1

Members of the City Commission along with city staff and the consulting team met to review new information collected since the last public meeting. This included existing transportation information, future land use information, and draft goals and objects. The group went through a series of exercises that defined a preferred future land use alternative, draft future truck reliever route alternatives, and revised goals and objectives.

4.5 Property Owner Open House

A property owner open house was held on February 22, 2012. Notice was sent to owners of property within Bowman's one-mile ETA, as allowed by state statues. At this meeting the preferred future land use alternative, future street extensions, draft truck reliever route alternatives, and draft goals & objectives were available for review, discussion, and comment. Existing conditions information was also available for viewing. The meeting was attended by 86 people. Members of the consultant team were present to answer questions from the public. Information from this open house can be found in Appendix C.

4.6 Public Meeting #2

The second public meeting was held on February 23, 2012, at which over 65 people were in attendance. A one hour presentation was given which covered an overview of comprehensive planning and its importance, examples of oil impacted communities in western North Dakota, existing demographic and future growth information, the preferred draft future land use plan alternative, future street extension and truck reliever route figures, and an overview of the draft goals and objectives. Following the presentation, there was a question and answer session. Presentation materials from this meeting are provided in Appendix D.

4.7 Plan Adoption

A joint meeting of the Bowman Planning and Zoning Commission and the Bowman City Commission was held on May 4, 2013 regarding the Bowman Comprehensive and Transportation Plan. During this joint meeting, the public was invited to provide any comments regarding the plan. The Planning Commission voted in favor of a recommendation of approval of the Comprehensive Plan to the City Commission. Following the Planning Commission's recommendation, the plan was adopted by the City Council contingent on the recommendation that the City would pursue sole zoning and subdivision authority for the first ½ mile of ETA only.

5.0 Community Vision, Goals, and Objectives

5.1 Vision Statement Options

Based on the comments at the Early Public Input meeting, the following draft Vision Statement was prepared.

1. In 2035, Bowman will continue to preserve its vibrant, small town quality of life while welcoming growth. The community will continue to enjoy high-quality city services, a diverse and growing economy, a safe and well functioning transportation system for all users, a high level of public safety, a variety of housing options, and a great sense of community.

5.2 Goals

5.2.1 Transportation Goals

Goal 1: Provide a high level of connectivity and continuity in the transportation system by ensuring the extension of existing streets into new growth areas and providing a connective network of streets in new growth areas where continuity of existing streets is not feasible.

Objectives:

1. Require proposed subdivisions to dedicate streets which provide good connections through the proposed development and to the existing street system.
2. Use the future street system (Figure 21) as provided in this plan as a guide for defining connecting route and a hierarchy of new streets.

Goal 2: Complete a feasibility study for a Highway 85 Truck Reliever Route around Bowman as a short term follow-up action following adoption of the Comprehensive Plan and work with NDDOT to identify a feasible route and a funding plan.

Objectives:

1. Coordinate with the North Dakota Department of Transportation to complete a feasibility study for a Truck Reliever Route around the city.

Goal 3: Consider all modes of transportation in developments, providing options for cars, pedestrians, and bicyclists.

Objectives:

1. Identify gaps within the existing sidewalk system and develop a map of underserved areas within the city.
2. Consider the appropriateness of sidewalk requirements within new developments as part of the City's subdivision regulations.
3. Prepare an inventory of existing sidewalk conditions to prioritize repairs and replacements.
4. Clearly mark crosswalk locations at street intersections.

Goal 4: Expand the regional trail loop to include a larger portion of the city and surrounding area.

Objectives:

1. To increase the functionality of the trail loop for walking and biking, plan for the expansion of the route into areas that provide a destination, including residential areas and commercial centers.

5.2.2 Health Goals

Goal 1: Maintain the availability of healthcare services to residents through collaboration with local healthcare providers.

Objectives:

1. Develop a relationship with local healthcare providers to review and improve the availability of healthcare services for Bowman residents.

Goal 2: Provide a complete network of sidewalks and trails to encourage active living.

Objectives:

1. Enhance the existing and develop a future network of sidewalks and trails that provide a system of connections, which offer opportunities for recreational use and destination travel.
2. Create programs that focus on the importance of an active lifestyle for all ages.

Goal 3: Initiate and implement a phased program to bring sidewalks into compliance with ADA standards to improve safety of pedestrians of all abilities and ages, and to encourage active living and reduce reliance on vehicular travel.

Objectives:

1. Prepare an inventory of the existing sidewalk system that identifies ADA compliant construction and noncompliant construction. Create a replacement plan for sidewalks that do not meet standards.
2. Establish construction criteria that complies with ADA standards for all new construction.

5.2.3 Economy Goals

Goal 1: Encourage economic development and job growth by allowing continued commercial and industrial growth within the city and its growth area.

Objectives:

1. Support the development of commercial and industrial industries in Bowman in the areas designated in the future land use plan.
2. Maintain the relationship with the Small Business Development Center that provides services for businesses.
3. Increase the awareness of financial incentives for businesses to start-up, expand, or relocate in Bowman.

Goal 2: Promote entrepreneurship within the community, encouraging the in-migration of new professionals.

Objectives:

1. Continue to encourage and promote the growth of entrepreneurs and development of new industries within Bowman.
2. Develop programs that assist new professionals looking for employment, and businesses looking for employees.

Goal 3: Encourage the redevelopment and growth of Main Street with the development of a Renaissance Zone.

Objectives:

1. Apply for a Renaissance Zone with the North Dakota Department of Commerce, which requires an adopted comprehensive or strategic plan and a development plan.
2. Continue to promote the Store Front Improvement Grant offered by the Bowman County Development Corporation.

Goal 4: Consider additional tourism opportunities within the region to spur additional economic activity.

Objectives:

1. Work with Bowman County and other communities in the region to develop additional tourism opportunities and associated business needs.

Goal 5: Prepare for economic growth by identifying properties designated for residential, commercial, and industrial growth that currently have access to city utilities, and designating these properties as priority development areas.

Objectives:

1. Utilize the Future Land Use Plan (Figure 18) as a basis for defined areas of residential, commercial, and industrial growth.
2. Work with the city engineer to develop an inventory of existing city utilities and the feasibility of expansion into the growth areas defined in the future land use plan.

5.2.4 Housing Goals

Goal 1: Allow for the development of a diverse housing stock providing a variety of styles and levels of affordability for home buyers and renters.

Objectives:

1. Encourage compact and diverse development patterns that provide a variety of housing choices.

Goal 2: Develop zoning ordinance language that addresses temporary housing other than recreational vehicle parks.

Objectives:

1. Create a definition for temporary housing and development standards to be adopted as part of the city's zoning ordinance. Consider which districts it can be allowed in.

Goal 3: Consider the optimal locations of temporary housing within the community, seeking to protect existing neighborhoods from the impacts of temporary housing while facilitating access of temporary housing occupants to Bowman's retail sales and service establishments.

Objectives:

1. Using the future land use plan (Figure 18), define areas that are suitable for development of temporary housing. Process a land use amendment if necessary.

5.2.5 City Service Goals

Goal 1: Utilize underdeveloped areas for infill development prior to pursuing development in the ETA for city growth, as these areas are already serviced by infrastructure and are in close proximity to retail sales and services.

Objectives:

1. Define areas within existing city limits that are currently undeveloped or underdeveloped with access to city services.
2. Develop incentives for development in these locations.

Goal 2: Monitor the requests for zoning changes, subdivisions, special use permits and building permits and consider the addition of additional city staff if a surge in development

activity creates development demands that exceed the time constraints of the current staffing level.

Objectives:

1. Create a system for recording the number of development related requests received by the City of Bowman.
2. Develop a job description, job tasks, salary, and a funding source for additional city staff.

Goal 3: Monitor the complexity of applications for zoning changes, subdivisions, conditional use permits and building permits for the purpose of evaluating the need for a city/county planner or building inspector.

Objectives:

1. Review the procedures for zoning changes, subdivisions, conditional use permits, and building permits for ease of use for both the developer and city staff. Calculate the number of hours devoted to this type of work for current staff.
2. Develop a job description, job tasks, salary, and a funding source for a city/county planner or building inspector.

Goal 4: Continue to allow for growth of the city by working with Bowman Township and the ETA property owners to encourage annexation at the appropriate time.

Objectives:

1. Encourage that new subdivision plat proposals in the ETA include a request for annexation.
2. Allow the beneficiaries of city water and sewer services to contribute towards the tax base of the community.

Goal 5: Work with property owners and developers to ensure that ETA development is preceded by annexation to prevent rural non-farm development from blocking the city's future growth and extension of utilities.

Objectives:

1. Expand the city's ETA authority proportionately with successive annexations.
2. Continue communication with Bowman County regarding the ETA boundaries and zoning and subdivision applications within the outer half mile of the ETA.
3. Promote a contiguous growth pattern and discourage leapfrog/checkerboard developments.
4. For continuity of growth, promote infill developments on vacant gaps of land.

5.2.6 Quality of Life Goals

Goal 1: Preserve and enhance the quality of life in the community by encouraging development of a diverse housing stock, while maintaining the availability of affordable housing.

Objectives:

1. Encourage the development of a variety of housing options in areas serviced by commercial and public land uses.

Goal 2: Protect the small town atmosphere and near-by farming practices from the contrasting interests of non-farm residents and businesses.

Objectives:

1. Promote a systemized approach to orderly, compatible land use through zoning.
2. Adopt and abide by a land use plan which establishes compatibility of adjacent land uses.
3. Encourage development which is contiguous to the city limits to avoid premature development in areas removed from the city.

5.2.7 Infrastructure Goals

Goal 1: Prior to the extension of city infrastructure into growth areas, require the annexation of these properties into city limits.

Objectives:

1. Require new plat proposals to be accompanied with a request for annexation if city services are desired and feasible.
2. Adopt a standard policy for developers to construct infrastructure extensions to serve the developments they are proposing.

Goal 2: Coordinate land use planning and infrastructure extensions to allow for timely and cost effective growth.

Objectives:

1. Utilize the phasing plan created by comparing the future land use planning and areas for feasible and cost effective infrastructure extension.

Goal 3: Maintain and update existing infrastructure systems throughout the community to sustain current functionality of the system.

Objectives:

1. Prepare and periodically update a Capitol Improvements Plan to determine functional lifespan and replacement scheduling of the city's existing infrastructure system.

5.2.8 Land Use Goals

Goal 1: Expand the ETA after each annexation as allowed by the ND Century Code.

Objectives:

1. Continue to zone land within the full one-mile ETA as new areas are added as allowed by the ND Century Code.
2. Work with Bowman County to adjust the one-mile and half mile ETA boundaries as new properties are annexed into the city.

Goal 2: Encourage the use of land use transitions that protect neighborhoods and residents from the impacts of the energy industry and other industrial uses.

Objectives:

1. Utilize the future land use plan as a guide when review development proposals.
2. Ensure that proposals deviating from the future land use plan complete a land use plan amendment, which should review surrounding land uses to ensure their compatibility with the proposal.

Goal 3: Ensure the provision of adequate park, recreational and open space land as the city grows, providing acreage equivalent to approximately 10 percent of residential acreage and 5 percent of commercial and industrial acreage.

Objectives:

1. Develop a policy that requires the creation or dedication of park land for residential, commercial, and industrial development.

Goal 4: Establish land use patterns that keep industrial uses clustered together.

Objectives:

1. Utilize the future land use plan to define preferred areas of future industrial development.

Goal 5: Maintain an updated land use plan, adopted by the city, which reflects future land use amendments, annexations, and expansions of the ETA.

Objectives:

1. Periodically update, or update as changes occur, the land use plan to ensure that the most up to date information is displayed.
2. Follow the procedure for amending the land use plan as outlined in this plan, which includes public notice and hearings.

6.0 The Plan

6.1 Future Land Use Plan

The land use plan consists of two components; a map that identifies the designated land use categories for the city's growth areas and this supporting text, describing the intent of each land use category. The purpose of the land use plan is to serve as the basis for the city's zoning decisions, fulfilling a requirement of the North Dakota Century Code (NDCC). In this way, a land use plan supplements the city's "comprehensive plan", by providing information about the city's intent to both developers and property owners. Since the purpose of a land use plan is to establish a reliable source of information about future development and to serve as the basis for zoning decisions, a public process for considering land use plan amendments, consisting of notifications and public hearings by both the Planning Commission and City Commission is established in this plan.

The future land use plan for Bowman has been prepared based upon the extraterritorial limits as defined by the North Dakota Century Code. The future land use plan is shown in Figure 17. It is important to recognize that the land use plan designates transitions between one land use and another. The exact location of a transition from one land use to another should not be interpreted as a hard and fast line, but rather as a guideline for creating compatible land use transitions. If changes are considered in the future, it is important that the land use categories, transitions and boundaries of the surrounding area are also examined to determine if any other changes are warranted to create logical land use transitions or buffer areas where less intense uses, such as residential, are protected from more intense uses such as industrial. In some cases this can be accomplished by introducing a land use category such as commercial, open space, or higher density residential. In other cases, it is not feasible to use commercial land use as a buffer between residential and industrial land uses, particularly if the location does not provide a high level of accessibility or visibility. In those situations, it is important to provide a buffer consisting of open space such as a park or to establish a requirement for planting areas, often referred to as buffers, which are increasingly wider between less compatible land uses such as industrial and residential. Residential protection standards can require greater lot depth and building/storage setbacks on adjacent commercial and industrial sites to protect the less intense use from the impacts of the more intense use. Each of the land uses shown on the plan are described below.

6.1.1 Commercial

Commercial land uses are shown in red on the future land use plan. This land use designation identifies locations for retail sales and service, lodging, and office development and redevelopment. They are not intended for industrial sales or service or other activities of an industrial nature. Existing commercial land uses within city limits have remained, though it has been expanded on either side of the US Highway 12/85 and Main Street Corridors. The expansion of commercial land uses along these corridors brings the future land use plan into cohesion with existing zoning.

84TH ST SW
147TH AVE SW
146TH AVE SW
145TH AVE SW
85TH ST SW
6TH ST NW
6TH ST NE
9TH AVE NW
8TH AVE NW
5TH ST NW
1ST AVE NW
4TH ST NW
MAIN ST N
3RD AVE E
3RD ST NW
11TH AVE NW
2ND ST NW
1ST ST NW
1ST ST NE
N.W. DR NW
DIVIDE W
DIVIDE E
12
11TH AVE SW
9TH AVE SW
7TH AVE SW
6TH AVE SW
1ST ST SW
3RD ST SW
4TH ST SW
MAIN ST S
1ST AVE SE
2ND AVE SE
3RD AVE SE
85
86TH ST SW
144TH AVE SW
147TH AVE SW
145TH AVE SW
87TH ST SW

Future Land Use

- Commercial
- Industrial
- Public and Institutional
- Low Density Residential
- Medium Density Residential
- Mobile-Home Park
- Industrial/Mobile Home
- Sensiteve Topography, Carefully Sited Residential
- Park and Open Space
- Agricultural
- Future Park Planning Area
- City Limits
- ETA (1/2 Mile)
- ETA (1 Mile)

0 0.5 1 Miles

H:/Projects/7570/Design/GIS/mxd/Figure 16, Future Land Use Plan

SRF Consulting Group, Inc.

Future Land Use Plan

Comprehensive and Transportation Plan
Bowman, North Dakota

UPDATED: 04.11.13

Figure 17

Additional commercial land uses are shown in Bowman's ETA on the south side of US Highway 12 and the eastern edge of US Highway 85. There are existing commercial land uses in these areas, and the expansion of commercial land uses are suitable with the frontage along the major highway corridors. Existing commercial uses have also been expanded along US Highway 12 west of city limits, including existing uses associated with the airport. Additional commercial uses have been identified along the west side of 11th Avenue, the south side of US Highway 85 east of city limits, and the west side of 14th Avenue SW. These three areas have been identified for commercial development due to their proximity to high volume corridors and relationship to existing development.

Commercial businesses such as restaurants and stores generate higher volumes of traffic than residential and open space uses, and are, for the most part, not fully compatible with residential neighborhoods. To facilitate the transition from full-fledged commercial areas and low density residential areas, some type of land use transition should be introduced. The transitional land use can include lower intensity commercial uses, parks and open spaces, deeper than normal yards, and higher density residential. Commercial uses themselves typically serve as a land use transition between high volume roadways and residential areas, or between industrial and residential land uses.

Many commercial businesses need and want to be visible to high volumes of traffic, which allows them to easily attract both local and regional clientele. For these reasons, commercial land use is placed along higher volume roadways such as US Highways 12 and 85 and along future non-industrial high volume corridors. Maintaining a commercial corridor along US Highway 12 through city limits will provide for commercial visibility, access, and use of city services. However, access management will continue to be an important part of commercial development along the corridor, continued to the east side of US Highway 85 to the north. It will be important to prevent driveways and intersections from being too closely spaced.

6.1.2 Industrial

Designated industrial land uses are shown in purple on the plan. Existing industrial land uses inside city limits have remained in the future land use plan. This primarily includes areas in the northeast corner of city limits. The industrial land use designation is expanded to the east, on the south side of US Highway 85. This area serves future industrial development well with the proximity to the railroad and US Highway 85. A significant portion of the existing airport site has been identified for future industrial development. The Bowman County Airport is currently scheduled to be moved to a location further removed from existing development. The east side of US Highway 85 in the outer ½ mile of the ETA has been designated industrial, and is an expansion of the existing Bowman Auction Market.

Industrial land use is also shown between the city's waste water lagoons and an existing industrial use south of the city in the outer ½ mile of the ETA. The final area shown for industrial growth is the north side of US Highway 85, north of city limits. There are multiple existing industrial uses along this corridor.

The identification of industrial land uses is critical for the future demands of the oil industry and related industrial services, sales and storage businesses. The location of these industrial uses is critical, as they typically generate large volumes of truck traffic and require large areas of outdoor storage.

Industrial land uses typically include warehousing, light and heavy manufacturing, pipe yards, distribution, industrial service (repair or servicing of industrial, business, or consumer machinery, equipment, products or by-products), waste-related uses, and mining. These uses are commonly accompanied by heavy truck traffic and large outdoor storage areas, and sometimes involve the bulk storage and/or transfer of chemicals and other potentially harmful substances. Heavy commercial uses such as gas stations, convenience stores, and fast food establishments are often appropriate in the industrial land use category as these uses provide services to the industrial employees and serve as a buffer between industrial uses and less intense land uses.

In some cases, industrial land use is actually a more compatible neighbor to residential areas than commercial land uses. The commercial uses listed above, including gas station/convenience stores and fast food restaurants, are frequently more intrusive to neighboring residential uses than certain industrial uses, particularly those that involve light manufacturing, small scale warehousing, or self-storage units.

6.1.3 Industrial/Mobile Home Park

This land use is shown in orange and purple hatch. There is one location shown as industrial/mobile home park on the future land use plan, at the location of the existing stock yard north of the elevator. This designation provides a location suitable for a mobile home park, industrial development, or temporary/industrial housing (i.e. crew camps, RV parks, or various types of manufactured homes). Ideally, temporary housing facilities will be designed so they can eventually be transitioned into permanent uses that are consistent with the land use plan and are compatible with other development in the surrounding area. The city will use caution when considering applications for temporary housing to ensure that existing and future areas of permanent residential land use will not be negatively affected by the presence of this high intensity land use.

6.1.4 Public/Institutional

Public and institutional land uses are shown in blue on the future land use plan. These land uses typically signify public or quasi-public facilities such as schools, churches, parks, and some group living facilities. Additional public/institutional land uses have been designated on the south side of US Highway 85, inside of the ½ mile ETA. This area is a wet, low lying area which can be unsuitable for development. At the time that additional public facilities are identified, their location should be identified based their compatibility with surrounding land uses. Churches, schools, and institutional housing, are typically compatible in a residential land use district. Other more intense public or institutional uses, such as medical clinics, offices, large sized schools and churches serve as excellent transitional uses between residential and commercial/industrial uses.

6.1.5 Low Density Residential

Yellow is used to depict low density residential land uses. The majority of existing low density residential land uses within city limits remain part of the city's future land use plan. Additional low density residential is shown north of 5th Street NW. This area is currently platted and zoned for this type of use. The northern portion of the extraterritorial area is shown as low density residential, along with much of the area south of US Highway 12. These areas are well suited for residential development due to their proximity to existing city services and the surrounding compatible land uses.

This land use category is primarily intended for single family dwelling units. When low density land uses are adjacent to commercial or industrial land uses, it is also appropriate to create a land use buffer or transition through the use of townhomes or twin homes, which are also compatible in a low density land use area. A park, open space, or landscaped buffer area can also serve as a transition from more intense non-residential uses. Within the low density residential land use category, a wide variety of lot sizes and levels of affordability are appropriate and desirable. Lot sizes could range from small, affordable lots of approximately 5,000 square feet to large rural residential lots of an acre or more outside city limits. That being said, compact forms of urban development with typical urban sized residential lots (5,000 to 10,000 square feet) are recommended since they will allow for more cost effective utility extensions, and result in a more efficient, walkable growth pattern. Diversity of lot sizes is recommended to provide a wide range of affordability. The city is encouraged to pursue subdivisions that blend seamlessly from single family dwellings on large lots of 10,000 square feet or more, to single family dwellings on smaller lots, to twin homes and townhomes. Ideally, a residential neighborhood consists of a variety of housing styles and levels of affordability, resulting in a diversity of ages, household sizes and income levels.

Despite Bowman's current population and potential growth of young and middle aged workers, the existing population continues to age, and will need senior living accommodations to make it feasible for them to remain in the community. Single level "cottage" style attached housing and assisted living apartments or townhomes are encouraged as part of the low density and medium density housing mix to ensure desirable housing styles for senior citizens.

As Bowman grows, it may, like other cities, wrestle with the balance between owner occupied housing and rental housing, and between affordable and high end housing choices. Creating neighborhoods with a diverse mixture of housing styles and varied lot sizes can help the city create a desirable balance, resulting in an adequate amount of affordable housing to meet the needs of the community. Smaller lot widths can significantly reduce the infrastructure costs (streets and utilities) ultimately paid by the homeowner. Creating a diverse menu of owner occupied housing styles with a broad price range will help retain a balance between owner occupied and rental housing.

It is important that Bowman's neighborhood parks and city recreational facilities are incorporated into the design of residential subdivisions. Parkland acreage equal to approximately 10 percent of residential acreage is a general guideline. A walking distance of no

more than 10 minutes is considered the maximum desirable distance from a park and the residential lots that are intended to be served by a park within any given neighborhood.

6.1.6 Medium Density Residential

Medium Density Residential is shown in the land use plan as light orange. This land use is used to define areas of higher density residential including condos, townhouses, and apartments. Medium density residential is used within city limits and throughout the ETA, mainly to serve as a transition between higher intensity uses and low density residential. It is primarily intended for low-scale multiple family housing in the form of apartment buildings and condominiums. It could also be considered for twin homes or townhomes. These are important housing options for many people in a community. Apartments and condominiums tend to be more affordable than lower density housing options, and are suitable for people who are in a transitional phase of their lives, or for those who do not want the maintenance responsibilities that come with a free standing dwelling. In some cases, apartments and condominiums are attractive to people not because of their affordability, but because of the amenities they offer, such as recreational components, social opportunities, and services provided. Within this land use category, twin homes and townhomes create the most compatible transition between commercial and low density residential land use.

6.1.7 Mobile Home

Dark orange represents mobile homes in the future land use plan. This land use is shown in the northeast portion of the ETA. This area is served well with access to US Highway 85 and proximity to future retail and industrial sites. The mobile home designation is suitable for the development of a manufactured or mobile home park, and is not intended for the development of temporary housing. A mobile home park should consist of publicly dedicated or private streets and city water and sewer services.

6.1.8 Residential/Open Space

Residential/Open Space is shown in a yellow and green hatch in one area of the ETA north of city limits. This area consists of a butte, and as such, has major changes in topography and steep slopes, which can make typical development patterns challenging. This land use would allow for either open space, or residential land use, or some combination thereof. Because of the unique beauty of this land, public open space with trails and overlooks of the area would be an excellent use and a major asset to Bowman. Any type of development warrants careful review to ensure appropriate construction methods are planned for stability on steep slopes.

6.1.9 Park and Open Space

Green is used to depict park and open space on the future land use plan. This designation has been given to existing parks within city limits. Areas defined as park and open space outside of city limits are used as transitions between incompatible land uses or in areas where development may not be feasible due to natural features such as wetlands, streams, topography, etc. Some of these natural features present opportunities to work open space or “greenway” amenities into future development plans.

In addition to the future parks and open space shown on the plan, the city will ensure that neighborhood parks and city recreational facilities are provided within new residential developments. These types of parks are not specifically shown on the land use plan, because their location is best determined by the design of the neighborhood. The city will require parks and trail connections to be specifically planned in the context of a proposed subdivision or a detailed master plan for a particular development area. Land area equal to 10 percent of residential acreage is recommended for parks. As an action item resulting from the adoption of this plan, the city could establish a policy requiring 10 percent of residential acreage and five percent non-residential acreage to be dedicated to the City (Park District) for parkland, with the option for the City to require all or a portion of the dedication to be cash in lieu of land. The dollar amount is established by the market value of land that would otherwise be dedicated.

6.1.10 Agricultural

Agricultural land uses are shown in dark green on the future land use plan. This land use consists primarily of the raising of crops or livestock, as well as farm dwellings. According to the existing land use plan (Figure 10) a majority of the ETA is currently used as agricultural, and will remain this way until growth warrants development. Areas designated as agricultural in the future land use plan are located in the outer portions of the ETA. This designation was used in these areas to focus growth into areas adjacent to existing development, allowing for cost effective utility extensions and orderly expansion of the urbanized area. At such time as the city has grown to the point where development becomes feasible in these areas, a land use plan update should be pursued to define appropriate land uses for the areas.

6.1.11 Amending the Land Use Plan

Land use plans need to be amended from time to time. The needs of a community may change due to an unforeseen economic need or opportunity. A worthy development proposal may require a zoning change that is not consistent with the adopted land use plan. The community at large and adjacent property owners may support such a change. The plan is to serve as a guide for zoning and subdivisions, and as such is meant to be referred to on a frequent basis as developers come forward with proposed projects. It is important to acknowledge that the plan is a living document. It is meant to be drawn on, amended, and refined, and have detail built into it from the inside out, starting with the most immediate growth areas adjacent to existing development. It is not meant to be ignored or relegated to the status of irrelevant as wholesale changes are made without regard to how they affect other planned land uses in the surrounding area. The best way of keeping the land use plan up to date and relevant, and to consider the impacts of another land use on surrounding properties is to follow a formal process for considering amendments to the plan. No matter how much study and scrutiny is put into the original development of a land use plan, over time existing and future property owners will see different opportunities and constraints with respect to the use of land. These opportunities will not justify amending the land use plan in all cases, but in some cases, a change may be a positive step.

The North Dakota Century Code requires that zoning decisions are based on (i.e. consistent with) the comprehensive plan. If for no other reason than this, it is necessary that the city act in accordance with the plan, or carefully consider amendments to its plan based on an approved process. It is important for the city to have a track record of following its plan and/or making thoughtful amendments to the plan based on an approved process, so potential developers can see that the city has respect for the process and for the public when considering prospective development.

When a proposal is made that is not consistent with the plan, this should be identified prior to the project being placed on an agenda for a zoning change or subdivision. Inconsistency could be in the form of:

- Land use (the type or size of a proposed land use area),
- Specific land uses allowed by the proposed zoning district that would be inconsistent with the intent of the plan, or
- Street or highway alignment and/or continuity.

For example, if industrial zoning is proposed where commercial land use is shown on the land use plan, this is an inconsistency, since industrial land use has its own designation. If the property owner wishes to pursue a zoning application for the industrial zoning district, he/she must also request a land use plan amendment. If a subdivision is proposed that does not include right of way for a collector street connection that is shown in the plan, this is an inconsistency that must be corrected, or the plan must be amended with some acceptable alternative, if one is found to exist.

As another example, if a commercial zoning district is proposed in an area identified for commercial land use, and that particular commercial zoning district allows industrial types of uses, it should not be applied, particularly along corridors with high visibility or in areas adjacent to less intense land use such as residential. Application of such a zoning district could result in an inadvertent inconsistency with the plan. Ensuring that this does not happen will likely result in the need to amend some of the city's zoning districts to build in the assurance that a commercial district really does develop as intended, with retail sales and services, restaurants, and offices, rather than uses of an industrial nature.

The process of amending the land use plan is as follows:

1. Identify the inconsistency.

2. Prepare a sketch of the proposed land use change.

This can be as simple as drawing on a copy of the land use plan, or using tracing paper over the land use plan to show the proposed change.

At this point, it is important for the property owner to decide if they wish to move ahead with a land use plan amendment. The issues should be discussed with City staff responsible for

planning, engineering, and zoning administration. A preliminary, informal meeting with surrounding property owners may be advisable at this stage.

3. Require the property owner to apply for a land use plan amendment if they wish to move ahead with their proposal.

   Public notice similar to that of a zoning change should be required prior to both the Planning and Zoning Commission and City Commission hearings. Mailings to surrounding property owners, notifying them of the proposed change, should be mailed in advance of the hearings.

   Provide a staff analysis of the following findings associated with the proposed change:

   a. Is the proposed land use compatible with existing land uses, existing zoning designations, or approved subdivisions?

   b. Is the proposed change compatible with surrounding future land uses, or does it create a domino effect, resulting in the need for other land use plan changes to bring about future land use compatibility? If so, have those changes been included in the proposed amendment?

   c. Does the proposed change create a spot-zoning situation by forming an "island" use or activity within a body of dissimilar designated land use?

   d. Does the proposed change result in the need for changes to streets and roadways to bring about existing or future continuity and connectivity? If so, have those changes been included in the proposed amendment?

   e. Can the proposed change be accommodated by the surrounding infrastructure (roadways and utilities)?

   f. Is the proposed change consistent with the other adopted plans and policies of the city?

4. Planning and Zoning Commission Public Hearing

   Based on the staff findings and recommendations, combined with the input received from those who testify at the public hearing, the Planning and Zoning Commission is to determine if it agrees with the findings of staff or if it feels differently on some point. The Planning and Zoning Commission can deviate from the staff recommendation but they must provide reason(s) for doing so. The Planning and Zoning Commission must be careful to document its findings and share them with the City Commission along with a recommendation for approval or denial of the requested land use plan amendment.

5. City Commission Public Hearing

   Based on the staff findings and recommendations, along with those of the Planning and Zoning Commission and the input received at the public hearing, the City Commission needs to determine if it agrees with the findings of staff and the Planning and Zoning Commission. If the Commission feels differently on some point, they must also be careful to document the findings that led them to approve or deny the requested land use plan amendment.

6. Modify the Land Use Map

   If the land use plan amendment is approved, the map needs to be revised to show the approved change. An updated map should be posted on the City's website, both as a stand-alone map and as a part of this document.

Once steps 1-5 have been taken, the City will have completed its review and consideration of a proposed land use amendment. If approved as part of step 5, the change will be official, and only step 6 will remain as a matter of completing the process by communicating the change on the land use map.

6.1.12 Population and Household Growth

While planning for the future land uses of Bowman, it is important to consider the growth of its population and housing units and how they relate to the future needs of the city. Table 5 uses the 2000 to 2010 growth rate of communities in Western North Dakota currently experiencing pressures of the oil industry. This comparison serves as a baseline to create growth rates appropriate for Bowman compared to the potential growth under a greater impact from the oil industry.

Table 5, Bowman Population Growth applying the 2000-2010 growth rate of other Cities in Western North Dakota

	10-Year Growth 2000-2010	Bowman 2010 population	2015	2020	2025	2030	2035
Bowman	3.13%	1650	1676	1702	1729	1756	1783
Killdeer	5.33%	1650	1694	1739	1785	1833	1882
New England	8.11%	1650	1717	1786	1859	1934	2013
Dickinson	12.26%	1650	1751	1858	1972	2093	2222
Stanley	14.00%	1650	1766	1889	2021	2163	2314
Williston	16.99%	1650	1790	1942	2107	2286	2480
Watford City	22.13%	1650	1833	2035	2261	2511	2788
New Town	40.82%	1650	1987	2392	2881	3468	4176

* Population growths projected in 5 year increments

Table 6 uses the growth rates from the table above to create projections for the future population growth of Bowman, based upon the 2010 population of 1,650 people. These growth rates are commonly used to create future growth projections for communities.

Table 6, Bowman Population Growth Projections

Annual Growth Rate	2010	2015	2020	2025	2030	2035
0.313% (2000-2010 Annual Growth Rate)	1650	1676	1702	1729	1756	1784
1%	1650	1734	1822	1915	2013	2116
2%	1650	1822	2043	2256	2491	2750
Tapered Growth Rate - Low (5% and 2%)	1650	2106	2688	2968	3277	3618
Tapered Growth Rate – High (10%, 5% and 2%)	1650	2657	3391	3744	4134	4564

The findings of this table create low, medium, and high growth projections for the City of Bowman, which can be used to influence different aspects of this plan, including housing growth. According to the 2010 census, 760 units housed the 1,650 residents in the city with an average of 1.97 occupants per household. Using this average, Table 7, provides an estimate of the number of housing units needed for the low, medium, and high population estimates.

Table 7, Housing Demands

	2010		2015		2020		2025		2030		2035	
	Pop.	Housing Units	Pop.	Housing Units	Pop.	Housing Units	Pop.	Housing Units	Pop.	Housing Units	Pop.	Housing Units
Low	1650	760	1676	851	1702	864	1729	878	1756	891	1784	906
Medium	1650	760	1822	925	2043	1037	2256	1145	2491	1264	2750	1396
High	1650	760	2106	1069	2688	1364	2968	1507	3277	1663	3618	1837
Accelerated Growth	1650	760	2657	1349	3391	1721	3744	1901	4134	2098	4564	2317

3.2 Zoning/ETA Zoning

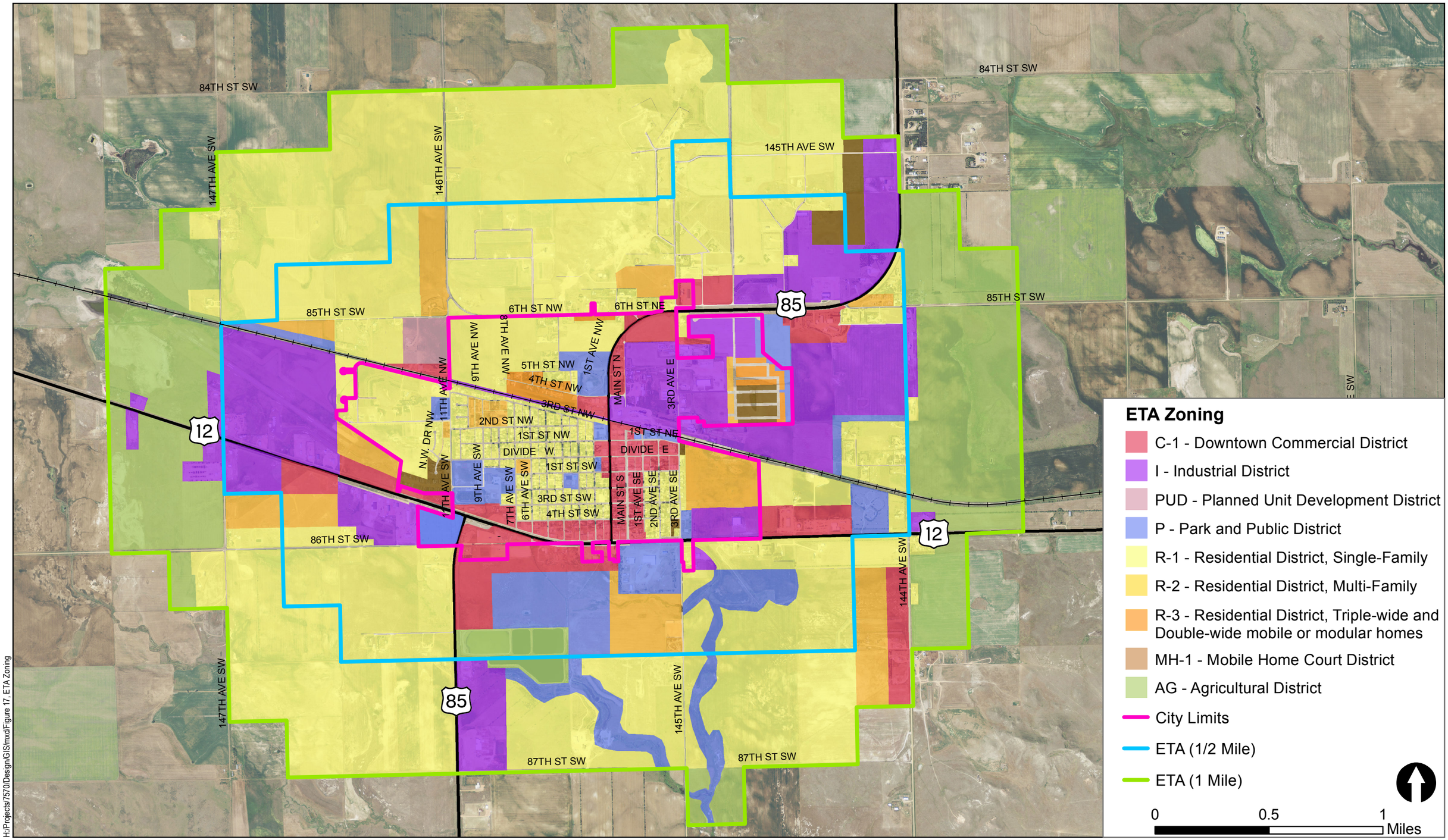
The one-mile ETA as allowed by North Dakota Century Code is shown in a thick green line in Figure 18. Once the city's boundary has changed through recordation of annexation plats with the Bowman County Recorder's Office, the annexation is complete and it is important to extend the boundaries of the ETA. The city will most likely choose to follow all future annexations by extending the ETA as allowed by the ND Century Code.

The process of extending the ETA is initiated with the gathering of existing land use data, discussion of future zoning districts, and mapping of the area. These tasks can (and, in the interest of time, should) be started prior to recordation of annexation plats. A zoning transition meeting (or meetings) with Bowman County, as required by the NDCC, should occur during this time. Open lines of communication will help county officials understand how the city handles zoning changes, what land uses are permitted in each zoning district and other aspects of the city's zoning code and subdivision regulations with which they may be unfamiliar.

In addition, County Board members, township officials, staff and property owners are familiar with the characteristics of the land and can share their past experience of dealing with those issues. This information has the potential to provide city officials with insight they previously did not have as to the types of land use and zoning that may be appropriate for certain areas. The formal zoning notification process (i.e. notification letters to property owners and publication of a notice in the newspaper) will be initiated only after the annexation plats are recorded.

The future ETA zoning districts as shown in Figure 18 are based on the land use plan. Changes to the zoning maps should be consistent with the future land use plan as show in Figure 17 or as formally amended by the City Commission in the future. The plan allows the city to carry out orderly extensions of city streets and utilities to allow growth in the most fiscally responsible manner possible. The land use plan will be the basis for the selected zoning districts within the ETA. Initially many tracts of land in the ETA will be zoned, Ag-Agricultural, since they are not located in an area where the extension of water and sewer services is feasible or advisable. At the time that development occurs and utility extension is feasible, zoning can be changed from Agricultural to the compatible zoning district shown in this figure. Non-agricultural zoning designations can either be initiated by the city, or the city can guide developers to make zoning requests that are consistent with the land use plan when they are ready to proceed with development.

Four areas should also be considered for a "gateway zoning overlay". These areas are located along US Highways 12 and 85 as they enter into the city of Bowman, as shown in Figure 19. Gateway zoning overlays can provide additional design standards to ensure the development of these areas as attractive entrances to the city. Standards included setbacks, material choices, specific land uses, landscaping requirements, sign regulations, and parking locations, to name a few. The desire for standards of this nature should be discussed amongst the Planning Commission and the City Commission prior to zoning and development of the area. If desired, the city can establish a gateway



ETA Zoning

- C-1 - Downtown Commercial District
- I - Industrial District
- PUD - Planned Unit Development District
- P - Park and Public District
- R-1 - Residential District, Single-Family
- R-2 - Residential District, Multi-Family
- R-3 - Residential District, Triple-wide and Double-wide mobile or modular homes
- MH-1 - Mobile Home Court District
- AG - Agricultural District
- City Limits
- ETA (1/2 Mile)
- ETA (1 Mile)

0 0.5 1 Miles

H:/Projects/7570/Design/GIS/mxd/Figure 17, ETA Zoning

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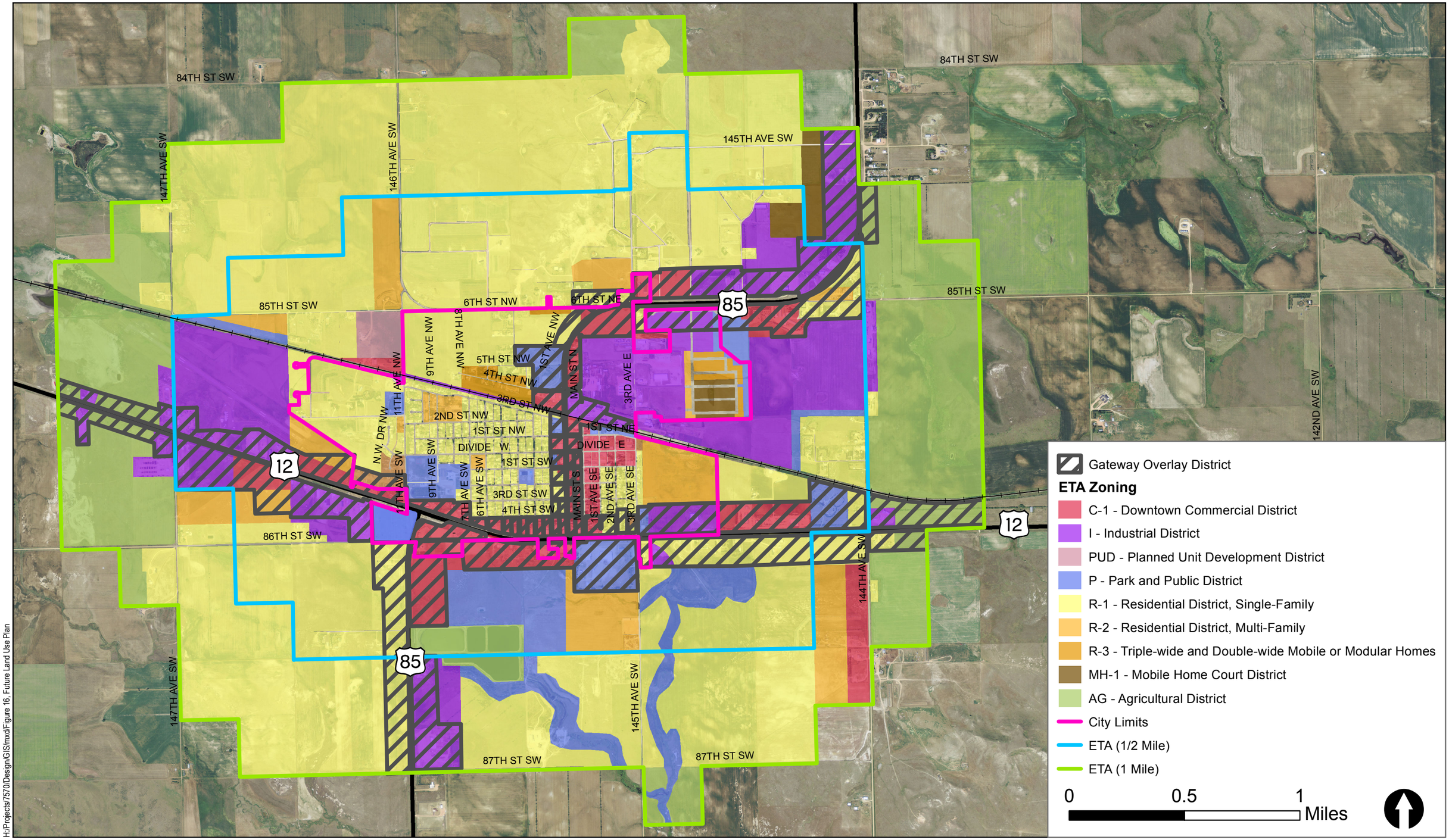
ETA Zoning Recommendations

Comprehensive and Transportation Plan
Bowman, North Dakota

Figure 18



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ETA Zoning and Gateway Overlay Districts

Comprehensive and Transportation Plan
Bowman, North Dakota

Figure 19

zoning overlay within its zoning ordinance, and have it ready to apply when the time comes to zone these areas. As the city grows, the gateway overlay could be applied to each new growth area along these routes, ensuring continuation of attractive gateways to the city.

Consistency of the initial zoning designation with the adopted comprehensive plan land use map is typically not the issue, since the primary intent would be to apply zoning that is consistent with the land use plan. Future requests for isolated zoning changes are more likely to be at odds with the land use map and will need to be carefully evaluated by the City Commission to ensure their consistency.

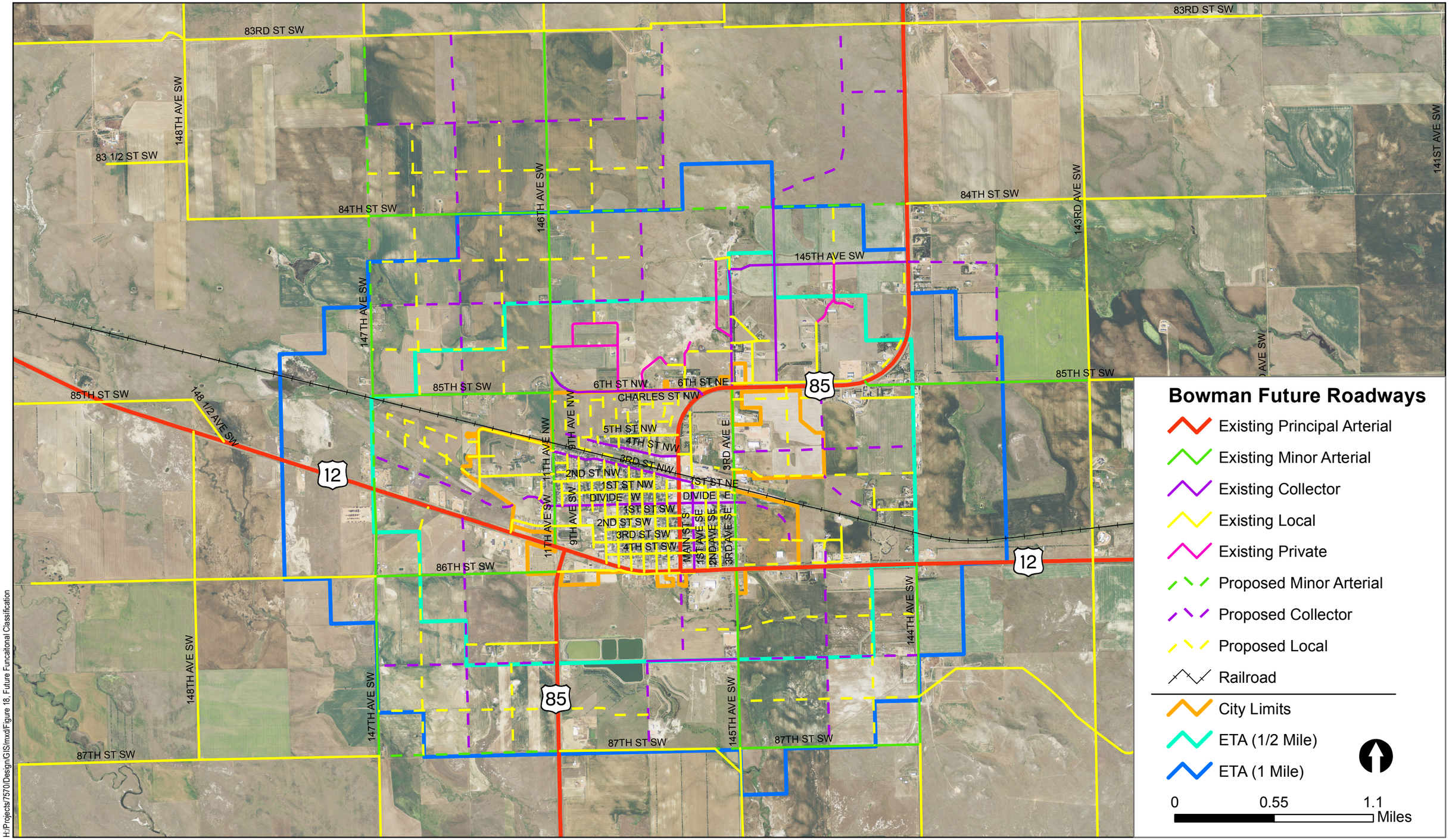
While the Century Code allows a one-mile ETA for a community the size of Bowman, the city may choose to leave certain areas within the one-mile area out of its ETA. Leaving properties out of the ETA would leave them under the zoning enforcement, subdivision authority, and building permit authority of Bowman County. The advantage to including land in the city's ETA is to ensure that zoning enforcement and building permitting for this area is consistent with that of city residential properties, so when the city grows out to that location, there are few, if any, land use incompatibilities and code enforcement issues. Road maintenance for land in the ETA would remain the responsibility of the County or NDDOT.

A revised statute pertaining to ETA was adopted into the ND Century Code in the 2009 legislative session. The statute requires joint jurisdiction of the land in the outer ½ mile of ETA. As a result of this legislation, the county (or township) would normally accept applications for zoning changes, subdivisions, and building permits and notify the city of decisions, allowing for a 30-day comment period during which the city may request negotiation. The City of Bowman and Bowman County have entered into an agreement to provide the city with sole subdivision and zoning authority in the ETA. This is consistent with Chapter 40-47-01.1(1.)(c.) of the Century Code which states "The extraterritorial zoning jurisdiction and authority to receive applications and issue permits under this section may be changed by written agreement between the city and the other political subdivision."

6.3 Transportation

6.3.1 Future Functional Classification and Roadway Connectivity

The functional classification of future roadways is shown in Figure 20, which includes local, collector, and major and minor arterial roadways. Additional local roadways will need to be extended into the ETA, but the alignment should be determined during the development layout process. The streets shown on the Future Transportation map reflect roadways for which continuity and connectivity are particularly important. For example, not all local streets need to extend from 85th St SW to 83rd St SW, but it is important to the future mobility of Bowman that key roadways at half-mile and quarter-mile intervals provide east/west and north/south connectivity through new growth areas and into the city. The alignment of these streets does



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Future Functional Classification

Comprehensive and Transportation Plan
Bowman, North Dakota

Figure 20

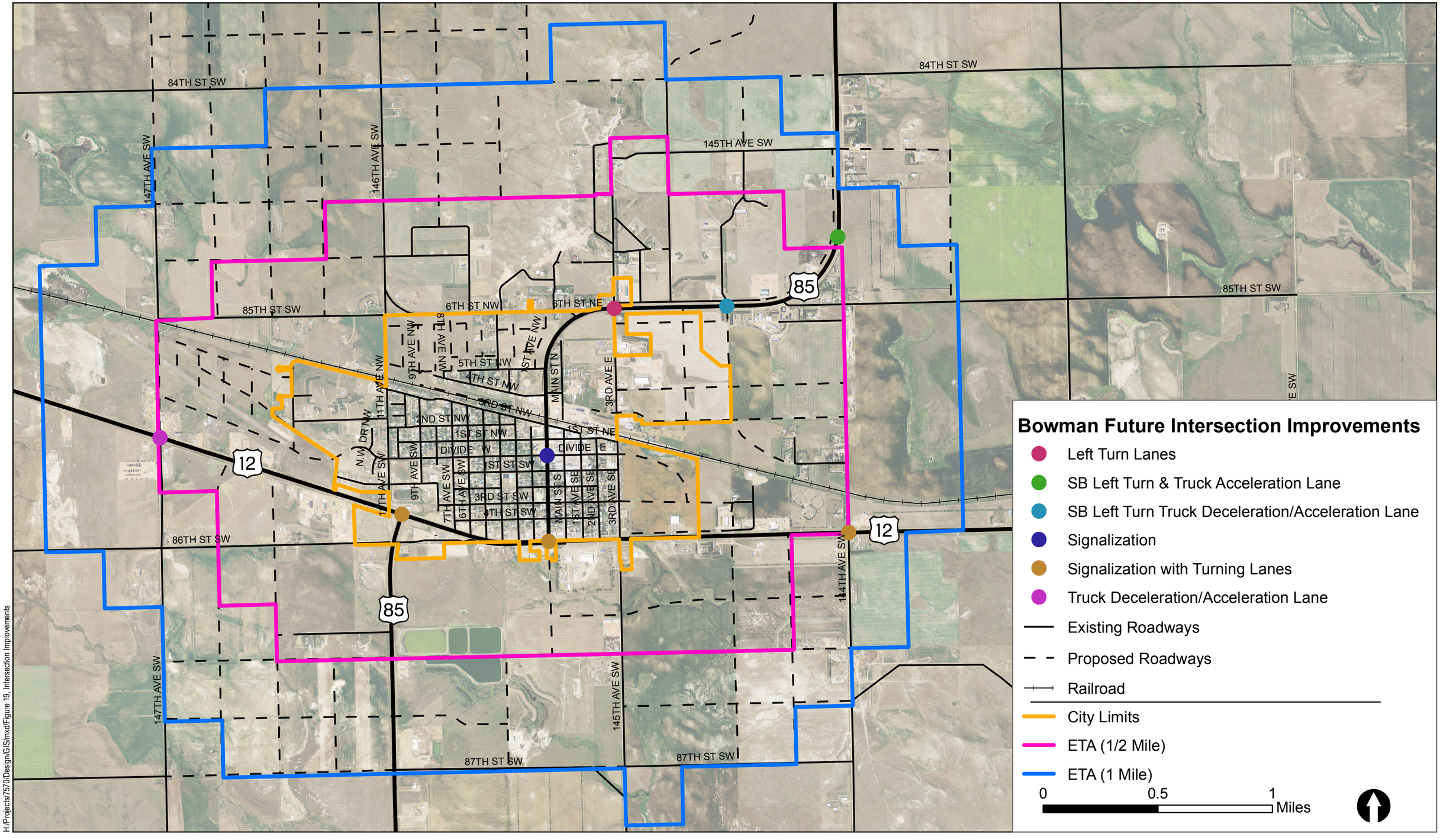
not need to follow the alignment shown on the figure, but should be defined through the subdivision process.

Private roads and streets are created when a roadway is constructed, but right-of-way is not dedicated to the city or county. It is the responsibility of the land owner, the developer, or a property owners' association to maintain these roadways, including snow removal. The party responsible for private roadway maintenance is often unclear and controversial unless formally designated in conjunction with the subdivision plat and recorded with the county in a separate document. There are several private roadways within the northern portion of Bowman's ETA. Cities, townships and counties are frequently asked to either accept right of way dedication for private roads or to take on the maintenance of private roads without dedication of right of way. This is rarely advisable, and will only be considered by Bowman if the private roadway is first reconstructed to meet city standards and a right of way dedication plat is prepared, approved, and recorded with the county. Without this, the city will inherit a substandard roadway and both on-going maintenance and roadway reconstruction will be costly and controversial.

As development occurs within the city limits and the ETA, it will be important to maintain an up to date functional classification map. This includes ensuring that section line roads are shown as arterials, and that there is at least one east/west and one north/south collector through each square mile of growth area. With exceptions made for water bodies, existing development, and railroad tracks, this criteria is shown in the Future Transportation plan.

6.3.2 Future Improvements to Existing Intersections

Another aspect of the future transportation system is improvements to existing intersections; eight existing key intersections were defined in Figure 21. Growing traffic volumes, especially truck traffic, along these roadways can impede on the ability to safely and efficiently travel through these intersections. A variety of intersection enhancements can be considered at the intersections to improve their overall level of service. These assessments were based upon preliminary review of the intersection geometrics and did not involve any traffic or turning movement counts or existing level of service data collection.



Bowman Future Intersection Improvements

- Left Turn Lanes
- SB Left Turn & Truck Acceleration Lane
- SB Left Turn Truck Deceleration/Acceleration Lane
- Signalization
- Signalization with Turning Lanes
- Truck Deceleration/Acceleration Lane
- Existing Roadways
- Proposed Roadways
- Railroad
- City Limits
- ETA (1/2 Mile)
- ETA (1 Mile)

0 0.5 1 Miles

H:/Projects/7570/Design/GIS/mxd/Figure 19, Intersection Improvements

SRF Consulting Group, Inc.

Future Intersection Improvements

Comprehensive and Transportation Plan
Bowman, North Dakota

Figure 21

As traffic volumes continue to increase in and around Bowman, the following improvements may be warranted at the eight key intersections:

- Southbound Left-Turn and Truck Acceleration/Deceleration Lanes: The construction of these additional lanes would enhance the turning movements off of and on to US Highway 85 without impeding the flow of through traffic.
    - US Highway 85 and the frontage road access
    - US Highway 85 and 3rd Ave E
- Signalization: As traffic volumes grow on US Highway 85 and Divide E, the installation of traffic signals would reduce delay and improve the safety of those crossing and turning left onto US Highway 85. However, traffic signal installation requires that signal warrants are met, based on average daily and peak hour traffic counts and pedestrian crossings.
    - US Highway 85 and Divide E
- Signalization with Turning Lanes: The installation of traffic signals and turn lanes would allow for safer and more efficient turning movements along the US Highways.
    - US Highway 12 and US Highway 85 (East and West junctions)
    - US Highway 12 and 144th Ave SW
    - US Highway 85 and 144th Ave SW
- Truck Deceleration/Acceleration Lanes: The construction of deceleration/acceleration lanes would allow for increased safety of turning trucks turning onto and off of the Highway.
    - US Highway 12 and 147th Ave SW

Railroad crossings are a major consideration when planning a future transportation system for a community. There are currently four crossings of the railroad tracks within the city and the surrounding ETA, three of which are inside city limits. These roadways include 11th Ave SW, US Highway 85, 3rd Ave E and 144th Ave SW. Three of the four crossings are at-grade, while US Highway 85 provides the only grade separation over the tracks. Lengthy trains traveling through the community cause delays for residents, commerce, and emergency vehicles. As Bowman continues to grow, it will be important to review the conditions at the existing at-grade crossings and the need for additional grade separated and at-grade crossings.

The construction of additional railroad crossings typically requires the abandonment of an existing crossing. Figure 21 defines two locations where additional crossings may be warranted. An at grade crossing at 147th Ave SW would provide access for future development north of the tracks to US Highway 12. Additional crossings will be required for the implementation of a future truck reliever route around the City of Bowman. This crossing will be important to ensure the functionality and usability of the route as a truck reliever route. An engineering study would be needed to assess the most feasible and cost effective location for a railroad crossing and the nature of that crossing (at-grade, underpass, or overpass).

6.3.3 Future Truck Reliever Route

Traffic movements through the City of Bowman will continue to be affected by increasing traffic volumes, especially increased truck traffic. The safety concerns and decreased level of service may warrant the construction of a truck reliever route around the city. Proposed truck reliever route alignments are shown in Figure 22. These five alignments were defined based on preliminary analysis of the surrounding area and existing roadways. A future study should be completed to further investigate the feasibility of these routes, intersection alignments, and optimal alignment. The six conceptual alignment alternatives are described below.

Alternative A

Alternative A, shown in orange, uses the existing 144th Ave SW alignment to provide a connection from US Highway 85 to US Highway 12. Although the existing roadway is in place, additional right-of-way will most likely be needed to be acquired to provide an adequate roadway width for a truck reliever route. The intersections of 144th Ave SW with US Highway 12 and US Highway 85 would also require further study to determine optimal intersection design and traffic control needs. An existing at-grade railroad crossing at the south end of the corridor will require further analysis to determine the need for a grade-separated railroad crossing due to traffic increases along the route. A grade separation involves the railroad going under or over the railroad tracks.

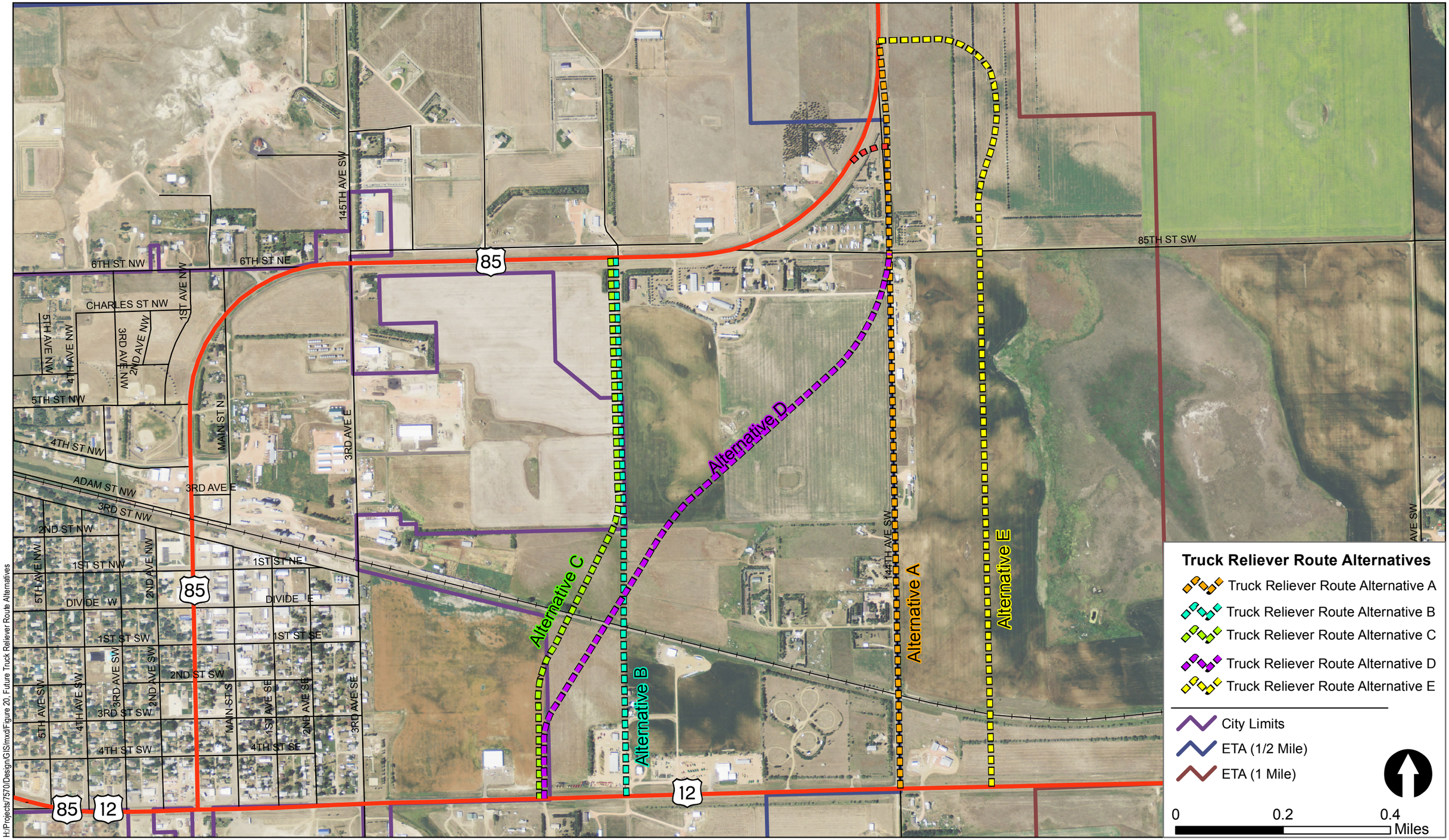
Typically, an engineering study helps to determine the most feasible and cost effective choice between an underpass and an overpass. Even if the funding for a grade separation isn't available for a short term project, a feasibility study will help to determine the following:

1) The optimal location for a railroad grade separation
2) The estimated amount of right-of-way needed for a grade separation, which helps the city to preserve the right-of-way, and prevent new or expanded development from being an obstacle to the facility at a later date
3) Feasibility of an overpass or underpass
4) A planning level cost estimate, which will help the community prepare for this type of major transportation investment

The advantage of this alternative is that it follows an existing roadway alignment. The disadvantages are the presence of existing residential properties north of the railroad tracks and the extensive direct access to commercial/industrial properties just south of 85th Street SW. The alignment also emphasizes the truck reliever route as the through route, rather than the route through town, which may be undesirable from the standpoint of attracting tourism and other commerce-generating traffic into the downtown area.

Alternative B

Alternative B, shown in turquoise, aligns the truck reliever route with the existing frontage road access on the north side of US Highway 85, creating a four-way intersection. Alternative B extends directly south along the quarter section line, running along the east side of the farm implement dealership to connect with US Highway 12. Intersections would



H:/Projects/7570/Design/GIS/mxd/Figure 20. Future Truck Reliever Route Alternatives

SRF Consulting Group, Inc.

Future Truck Reliever Route Alternatives

Comprehensive and Transportation Plan
Bowman, North Dakota

Figure 22

need to be created along both US Highway 12 and 85 with considerations for access management, traffic operations and traffic control. There is no existing railroad crossing for this or any of the remaining alternatives. A grade separated crossing is recommended for the truck reliever route, and the same analysis would be required as described above in Alternative A. If a grade separated railroad crossing is not feasible or cost effective, an at-grade crossing may be workable, but would need to be permitted by BNSF. Typically, the creation of an at-grade crossing for this alternative and the remaining alternatives would require the abandonment of an existing crossing in another location.

Advantages of this alternative include the location of the route on a quarter section line and the distance between the railroad tracks and US Highway 12, which is greater than that of Alternatives A and F. Disadvantages include impacts to the existing farm implement dealership along US Highway 12 and the creation of a major intersection a short distance west of the curve along US Highway 85, after southbound trucks have already made their first major turn toward the city. Turn lanes and traffic control would most likely be needed. A dedicated right and left turn lane for eastbound and westbound trucks on this segment of US highway 85 would allow turning vehicles to move out of the through lane. Traffic control would also need to be evaluated. The same traffic control and turn lane needs would also need to be evaluated along US Highway 12. Even if this route is not selected for the truck reliever route, it will be an important north/south connection in the city's future street network.

Alternative C

Alternative C, shown in green, utilizes the same connection to US Highway 85 as used in Alternative B. This alternative continues along the quarter section line for a half mile, then shifts to the southwest before intersecting with US Highway 12. This alternative has the advantage of not affecting existing development along US Highway 12. Similar to Alternative B, the alignment places a major intersection west of the curve on US Highway 85 and a new major intersection along US Highway 12. The need for turn lanes and traffic control would need to be evaluated in both locations. Advantages to this alternative include the greater distance between the railroad tracks and US Highway 12 and the lack of development adjacent to the alignment between the railroad tracks and US Highway 12. A disadvantage of this route is that it requires dedication or acquisition of right of way for the entire distance between US Highways 85 and 12.

Alternative D

Alternative D, shown in purple, shares the same alignment as Alternative A (the current alignment of 144th Ave SW) from US Highway 85 to 85th St SW. The alignment then curves off the existing roadway to the southwest, crossing the quarter section line just north of the railroad tracks, and connecting with US Highway 12 west of the farm implement dealership, which is approximately 825 feet west of the Alternative B alignment.

An advantage to this alternative includes ease of access to the truck reliever route from southbound US Highway 85 and ease of access back onto the highway from the northbound truck reliever route. This could also be considered a disadvantage if it deters local traffic and tourism traffic from traveling through the city on US Highway 85 through town, placing traffic near the city's downtown businesses. This route is advantageous because a majority of the route travels through undeveloped land. This sets up a situation where the development of the surrounding property can be designed in a manner that ensures compatible land use, adequate right of way, well-managed access, and a positive appearance of adjacent development.

A disadvantage of this route is that it uses no existing right of way south of 85th Street SW. Right of way would need to be dedicated or acquired for the roadway. Another disadvantage includes impacts to existing developments along the existing portion of 144th Ave SW.

Alternative E

Alternative E, shown in yellow, is the route farthest to the east. It begins north of the existing junction of US Highway 85 and 144th Ave SW by creating a perpendicular intersection with US Highway 85. From the junction with US Highway 85, the route curves to the south approximately 1,000 feet east of 144th Avenue SW and continues straight south to create a junction with US Highway 12.

An advantage to this route is that it maintains the existing route through town as the primary route for local, tourism, and commerce-generating traffic for the downtown area. Another advantage is that the route traverses a completely undeveloped area, allowing future land use, right of way, and access management to be planned in a manner that is compatible with high truck volumes.

A disadvantage of this alternative is the additional intersection that will need to be created where the truck reliever route intersects with US Highway 85 north of the curve. However, the truck reliever route creates the need for another intersection along US Highway 85 regardless of the alternative, and an intersection at this location captures southbound truck traffic before it rounds the curve toward the core of Bowman, and presents an easy right turn connection for northbound trucks to get back on US Highway 85. Therefore, it may be the most successful alternative at drawing truck traffic off the through-town route. Data collection and traffic analysis will be needed to determine the traffic control and turn lane needs of the intersections along both US Highways 85 and 12. Another disadvantage to this route is the closer proximity of the railroad tracks to US Highway 12. However the distance from the tracks to the highway at this location is slightly over 700 feet, which allows for a significant amount of stacking distance for both northbound and southbound traffic, and adequate space for a future railroad grade separation (i.e. an underpass or overpass).

Alternative E appears to provide the community with the greatest opportunity for diverting truck traffic and creating a corridor that can be designed as a truck reliever route. This is

particularly due to the location of the US Highway 85 intersection north of the curve into the city, which is expected to encourage truck to use the reliever route, but discourage local, tourism, and commerce-generating traffic from diverting off of the route through town.

Further study of a truck reliever route will eventually lead to environmental documentation, as NDDOT and FHWA environmental clearance is required prior to construction of a roadway using state or federal transportation funds. The environmental documentation must include purpose and need statements that clearly state the purpose of the project (i.e. what the project is intended to do for the community and the transportation system) and clearly explains the need for the project (i.e. problems and deficiencies currently being experienced by the community and the transportation system, and how this project is expected to address those problems or deficiencies). The alternatives will be compared against these statements to determine if the preferred alternative from an environmental standpoint still meets the purpose and need of the project. The following draft purpose and need statements will need to be expanded upon as the details of the project unfold and as existing conditions change on the existing US Highway 85 route through the community. The following preliminary purpose and need statements can serve as a base to be built upon during further analysis of a truck reliever route in Bowman.

Purpose

The purpose of the proposed truck reliever route is to reduce truck traffic on the existing route of US Highway 85 through the heart of Bowman by providing an efficient and safe alternative route for truck traffic on a permanent truck reliever route connecting US Highway 85 to US Highway 12 through the city's easterly fringe growth area. The truck reliever route will reduce truck traffic through the heart of the city, where it currently intersects with the local roadway system at regularly spaced city blocks, driveways to adjacent properties, pedestrian and bicycle crossings, and on-street parking. The purpose of locating the route in the city's easterly growth area is to allow the city to accommodate such a route through future development patterns (i.e. land use, zoning, subdivisions and access management), while allowing trucks to continue having convenient access to businesses that provide truck oriented goods and services along US Highway 12.

Need

The truck reliever route is needed to address several impacts associated with heavy truck traffic on the existing route through town. These impacts include:

- noise impacts on adjacent properties,
- pedestrian and bicycle crossings of the highway,
- east/west community travel patterns between residential areas and the school, downtown, and city/county government services, which must cross US Highway 85,
- limited stopping distance between the railroad bridge and 1st Street NW, which is one of the more heavily traveled east/west streets in Bowman, linking the county courthouse with city hall and the rest of the downtown area,
- delay and safety issues due to conflicting movements at closely spaced intersections and driveways along US Highway 85 between 4th Street NW and US Highway 12, and

- delay for trucks on US Highway 85 (Theodore Roosevelt Expressway), due to the reduced travel speed and increased level of conflicting traffic movements through town.

US Highway 85 has seen an increase in truck traffic of between 9 and 11% between 2009 and 2011. The continued growth of the energy industry in Western North Dakota has increased the movement of goods and the export of crude oil by trucks throughout the state, and heavy truck activity and traffic volumes in general are expected to continue increasing, particularly as drilling activity increases in the Tyler Formation. The City of Bowman is a hub for the movement of freight in southwestern North Dakota due to its location at the intersection of US Highways 85 and 12. .

After additional, more detailed data is collected and analysis is completed, the existing and future need for the project will be further established. The Purpose and Need statements will be updated. The analysis of the alternatives described above (and any other variations that arise as a result of the analysis) will be evaluated to determine the extent to which they address the identified purpose and need. Alternatives A, B, C, and D, for example, intersect with the railroad tracks at a location where the tracks are a greater distance from US Highway 12. However, the spacing between the tracks and US Highway 12 also appear workable with the distances available under Alternative E. Alternatives A and D have the advantage of continuity with US Highway 85 north of Bowman, but present the disadvantage of impacts to the residential property at the north end of the curve between US Highway 85 and 144th Avenue SW. The Alternative A alignment also presents access management and right of way challenges due to existing development along the corridor, particularly in the first ¼ mile south of 85th Street SW.

Alternative D has the advantage of curving west, away from existing development along the east side of 144th Avenue SW. A roadway on this alignment would open up the land east of Bowman to future industrial development by providing a safe and efficient route around the core of the city, helping to make implementation of the land use plan more feasible.

Alternatives B and C have the advantage of providing a roadway along a quarter section line where a future roadway is desirable, but the intersection locations along US Highways 85 and 12 are disadvantageous due to alignment with existing driveways that serve individual properties.

6.3.4 Access Management

The establishment of access management standards along arterial and collector streets is critical to improving transportation safety in the community. Intersection and driveway spacing along arterials helps to reduce the number of conflict points and ensure the proper alignment of intersections and driveways across the street from one another. Driveways along US Highway 85 through Bowman are an example of randomly spaced access points which will become more and more difficult to use as traffic volumes increase. On the flip side, managed intersections and planned, consolidated access points are laid out in a manner that allows for future traffic control if needed.

A recommended access management plan for the city is shown below in Table 8.

Table 8, Access Management Plan	
Functional Classification	Intersection and Access Spacing*
Principal Arterial	¼ mile (1,320 feet)
Arterial	1/8 mile (660 feet)
Collector	300 feet

*Unless traffic study indicated more spacing is required

Achieving the level of access management shown above will require property owners to work with neighboring property owners to consolidate accesses, align driveways and street intersections, and master plan areas of future development to ensure that consolidated access has been properly provided to all land in a certain area. Enforcing access management often means that earlier developments determine access point locations, influencing the required locations of access points across or down the street. Consolidated access points can be created with the implementation of frontage or backage roads. This system can provide access to and from the major corridor at properly spaced locations with direct access to the properties from the frontage or backage road. A frontage road is located between the property line and the major corridor. A backage road is located on the opposite side of the property, allowing for frontage along the major corridor and direct access behind the development as shown in Figure 23. The advantage to a backage road is that it provides more space between the highway intersection and a typical frontage road intersection. Many traditional frontage road intersections have required realignment and reconstruction to provide a "bulbed out" alignment, as shown in Figure 24, for the purpose of increasing the distance between the highway and frontage road intersections. The City will encourage property owners to work together to establish adequately spaced and aligned driveways and intersections, and this will be a key question asked during subdivision review and development plan review. The City of Bowman also recognizes that NDDOT may ultimately request an even higher level of access management along a future truck reliever route than indicated above for Principal Arterials.

Figure 23, Backage Road

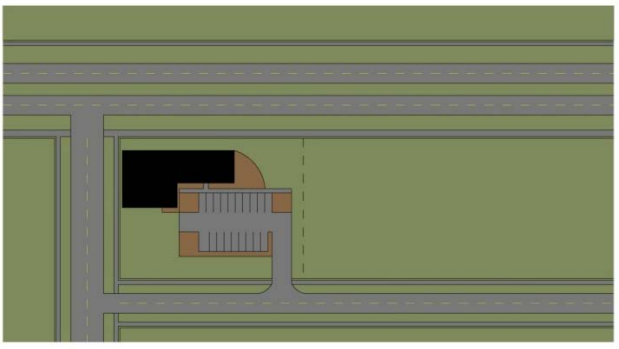
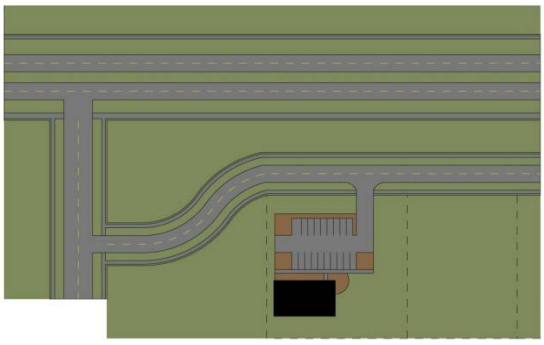


Figure 24, Frontage Road



6.3.5 Lighting

Street lighting is an important component of the urban environment, as it increases public safety, pedestrian safety, and overall traffic safety. Currently, US Highway 12, US Highway 85 and Main Street have lighting within city limits. The inclusion of street lighting will be a component for all future growth of Bowman.

6.3.6 Maintenance

As traffic volumes increase throughout Bowman, it is important to monitor the condition of the streets and highways to identify maintenance needs. Coordination with Bowman Township is an integral part in monitoring the condition of roadways in the surrounding ETA, as the majority of the roads are under their maintenance responsibility. In some cases, street reconstruction is best carried out when utility replacements are needed. Overall, routine maintenance of pavement is extremely important to the overall longevity of the streets, and can significantly delay the need for reconstruction and rehabilitation. Some cities use a pavement management plan to schedule and budget for on-going upkeep of the system. While there are on-going costs associated with implementing such a plan, the costs are typically lower level predictable (budgeted) costs as opposed to higher, sometime unexpected costs of total reconstruction.

An important maintenance consideration is paving of existing gravel roadways. According to a report completed by the University of Minnesota Center for Transportation Studies Local Technical Assistance Program and the Minnesota Department of Transportation in 2006, called To Pave or Not to Pave, the annual cost of maintaining one mile of gravel road ranged from $1,200 and $2,800. The wide range in cost was the result of varying traffic volumes. The lower the average daily volume, the lower the cost to maintain the road. Therefore, roads with less than 200 vehicles per day tended to fall within the lower end of the per mile cost range cited above. Once traffic volumes increased to around 200-250 vehicles per day, the increased use caused the maintenance cost per mile to exceed $2,500 per year. The cost remained fairly consistent at $2,800 per year between 300 and 1,000 vehicles per day.

When compared with a very low volume gravel roadway (under 200 vehicles per day), a paved road can actually cost somewhat more to maintain than a gravel road ($1,600 to $1,800 per mile according to the study cited above). However, on roads with a somewhat higher volume (200 to 1,000 vehicles per day), the per mile cost of maintenance for a paved road dropped to $800 to $1,200 per year. On roads of over 1,000 vehicles per day, the per mile maintenance cost for a paved road increased to approximately $1,800 per year.

As Bowman experiences continued infill development and outward growth, the City will make investments in the roadway network that will ultimately reduce gravel road maintenance costs by ensuring that growth area arterial and collector streets are paved and designed appropriately for anticipated levels of truck traffic and traffic volume. While there is an initial cost for paving a road, over time, paving typically reduces on-going maintenance costs, improves driving conditions, and reduces or eliminates dust, which benefits the driving public and adjacent property owners.

6.3.7 Pedestrian and Bicycle Facilities

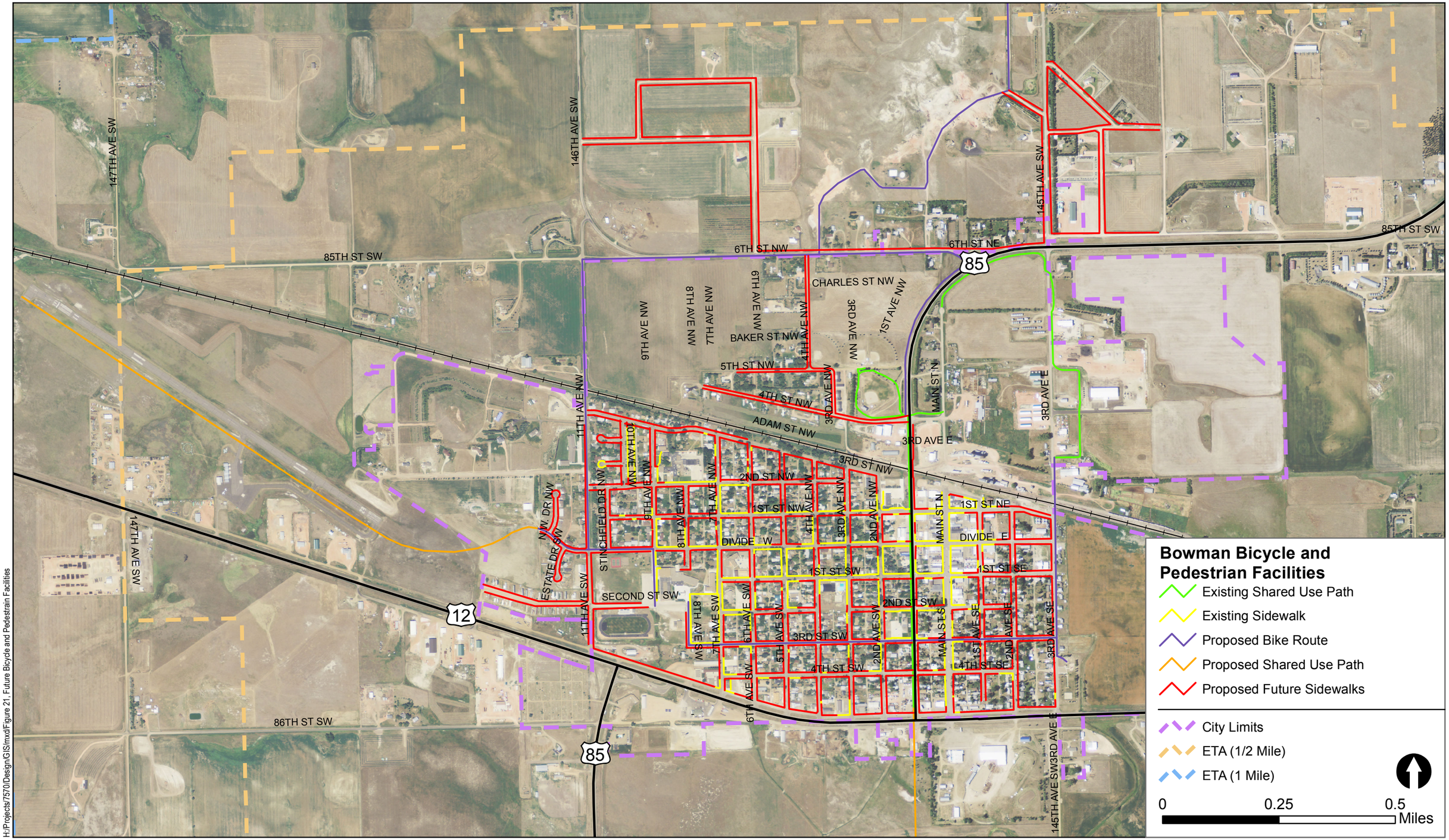
Existing and proposed pedestrian and bicycle facilities are shown in Figure 25. Bowman's sidewalk system is incomplete, especially in areas outside of downtown. There are generally good connections to Main Street along Divide, 1st Street SE and 1st Street NE from the west. Sidewalks are an important component in a city's overall transportation network as they:

- Provide a safe place to walk that is off of the street.
- Encourage and facilitate walking as opposed to driving, reducing the overall dependency on automobiles.
- Increase the sense of neighborhood – both adults and children gravitate to these public facilities, where people often feel more comfortable getting to know their neighbors, supervising children at play, and generally becoming familiar with the neighborhood.
- Promote healthy living through walking and running for exercise – sidewalks and trails are considered by many as the most desirable recreational facility a community can provide to its residents.

Bowman's sidewalk network can be gradually expanded as opportunities arise through street construction, redevelopment, and infill development. The City will consider conducting a sidewalk inventory to document the condition of existing sidewalks, and a phased repair and construction plan. New sidewalks and repair of existing sidewalks will be designed and constructed per required ADA standards.

As the city grows and streets are extended, sidewalks will be required on both sides of all local streets and will be financed with other required public infrastructure. Minor arterial and collector streets will be provided with a standard sidewalk on one-side, and a 10' shared use trail on the other side. The shared use trail should be constructed uniformly on the same side of the street.

A plan for future off-street bicycle facilities are also shown in Figure 25. This expanded network utilizes the existing shared use path on the north side of Bowman, and creates a loop around the city. Additional connections are made to the west along the airstrip and to the north providing a connection to the buttes. Right-of-way for these trails should be acquired or dedicated to the city as part of future subdivision plats. Funding sources for facilities such as these have, in the past, included Transportation Enhancement Funds (federal funds distributed through the NDDOT), park district funds, or other sources of local, state, or federal funding. Typically more than one funding source is needed.



H:/Projects/7570/Design/GIS/mxd/Figure 21, Future Bicycle and Pedestrain Facilities

SRF Consulting Group, Inc.

Future Pedestrain and Bicycle Facilites

Comprehensive and Transportation Plan
Bowman, North Dakota

Figure 25

6.3.8 Traffic Impact Studies

As Bowman experiences an increase in the volume of development proposals, attention will be needed to identify and address the traffic impacts resulting from those developments. Traffic impact studies can be a valuable tool in identifying impacts that will result from a development proposal. NDDOT recently prepared a draft guideline for new development adjacent to the ND State Highway System (Appendix E). This guideline can also be referenced by the City as development pertains to city streets or county roads, and should definitely be referenced when a proposed development will have a very limited number of routes to or from the state highway system (i.e. most of the traffic will leave the highway at the same location to access the property and the traffic generated by the development is not expected to disperse before crossing or accessing the highway).

Traffic impact studies usually consist of the following steps:

- Gather data regarding the existing conditions of the roadway network (e.g. ADT, peak hour turning movements, roadway capacity, traffic speeds, traffic control, crash data)
- Identify the trip generation of the proposed development (number of trips to and from the development on a daily basis and during peak hours), and any unusual trip generation characteristics.
- Identify the trip distribution of the proposed development (the origins and destinations of the trips)
- Complete the traffic assignment (assign the newly generated traffic onto the roadway system)
- Assess traffic impacts and identify the need for additional roadway capacity, geometric improvements, safety improvements, traffic control, pedestrian/bicycle facilities, and modifications to the access or on-site circulation of the proposed development.

The results of a traffic impact study will be used to identify roadway improvements which must be installed and operational before occupancy of a proposed development, and will also be used to identify the level of financial responsibility a proposed development should bear for improvements needed as a result of the development. If impacts are cumulative – in other words, they are the result of a proposed area of several developments, an impact study can assess the impacts of the combined developments, and the costs of improvements can be passed along in the form of special assessments or another type of development fees.

6.3.9 Priorities and Next Steps

The short term priorities relative to the transportation system include:

- Adoption of the access management guidelines.

- Feasibility study for a US Highway 85 Truck Reliever Route, including a grade separated railroad crossing.
- Using the draft truck reliever route purpose and need statement provided in this document, to continue the pursuit of a more detailed truck reliever route study and funding for a truck reliever route.
- Adoption of a policy that requires the construction of sidewalks on both sides on construction of new local streets.
- Complete an inventory of sidewalk condition throughout the city.
- Create a phased plan for the reconstruction/rehabilitation of existing sidewalks.
- Adoption and enforcement of street lighting requirements.
- Maintain an up to date functional classification map

The mid-term priorities relative to the transportation system include:

- Study of intersection improvements throughout Bowman and the ETA.
- Continued sidewalk repairs and sidewalk construction.

The long term priorities relative to the transportation system include:

- On-going system maintenance.
- Continuation of good access management practices.
- Re-evaluation of the transportation system and the needs of the community.

7.0 Comprehensive Plan Implementation

The goals and objectives defined within this Comprehensive Plan are used to outline an implementation plan. The implementation plan is a simplified list of actions that will move the city in the direction of its goals.

7.1 Land Use and Zoning Recommendations and Goal Implementation

Recommendation 1: The City of Bowman will adopt and abide by the future land use plan, and will continue to maintain an up to date future land use plan as amendments are made or ETA authority is expanded.

Recommendation 2: The City of Bowman will continue to establish zoning in areas within the ETA, and extend the ETA as annexations are completed. Coordination with Bowman County will be maintained to determine agreement on boundary locations.

Recommendation3: The City of Bowman will follow the land use amendment process as development proposals arise that deviate from the land use plan adopted by the city. This process will ensure the maintenance of up to date information and the consideration of transitional land uses.

Recommendation 4: To ensure that park dedication continues to meet the current and future needs of the residents, the City will review the existing park land dedication for residential subdivisions and consider the addition of park land dedication in commercial subdivisions (5% for commercial development acreage and 10% for residential development acreage).

Recommendation 5: The City of Bowman will review the existing zoning ordinance to ensure it continues to meet the current and future needs of the community.

Recommendation 6: The City of Bowman will adopt text into the zoning ordinance that outlines a gateway zoning overlay, and will zone gateway areas accordingly.

Recommendation 7: To promote orderly growth and quality development, the City of Bowman will review and amend the city's subdivision ordinance, specifically requiring the platting of land before the issuance of a building permit.

7.2 Transportation Recommendations and Goal Implementation

Recommendation 1: City staff will draft text to amend the zoning ordinance to include review procedures for subdivision plats prior to any public hearing. Review criteria will include dedication of street right-of-way that provides good connections to the existing street system.

Recommendation 2: The City of Bowman will maintain an up to date future functional classification map that defines the preferred location of future arterial and collector roadways. All construction and rehabilitation on section line roads should be

defined as minor arterials. At least one east/west and one north/south collector will be required for every square mile.

Recommendation 3: The City of Bowman will initiate the conversation with the North Dakota Department of Transportation about the alternatives studied in the Comprehensive Plan and the need to further study the planning level alternatives for a US Highway 85 Truck Reliever Route. The future truck reliever route should encourage the movement of trucks from US Highway 85 to the truck reliever route, while discouraging the use of the route for tourist traffic. This can be achieved by maintaining the smooth flow of US Highway 85 through the city, and designing hard turns onto and off of US Highway 85 and the reliever route. Of the alternatives in Figure 23, Alternative E appears to best achieve this objective.

Recommendation 4: During subdivision and development proposal review, the city will ensure that future development does not prevent the implementation of a truck reliever route.

Recommendation 5: The City of Bowman will complete an inventory of the existing pedestrian and bicycle facilities that notes the location, condition, and width of all sidewalks and shared use paths. Using this inventory, the city will identify gaps in the existing system and create a phasing plan for construction of new sidewalks. Prepare a list that prioritizes repairs and replacements for existing sidewalks in poor condition.

Recommendation 6: The City of Bowman will amend the zoning ordinance to require the construction of sidewalks with new road construction. A new local street should be constructed with a standard sidewalk on both sides of the roadway. Collector and minor arterial roadways should be constructed with a standard sidewalk on one side and an 8 to 10-foot shared use path on the other.

Recommendation 7: The City of Bowman will work to preserve right-of-way through new subdivisions for the expansion of the regional trail loop around the city, and will consider different funding sources for its construction.

Recommendation 8: The City of Bowman will continue to provide a safe transportation system for the community by adopting and employing an access management plan during the subdivision and development processes.

7.3 Health Recommendations and Goal Implementation

Recommendation 1: The City of Bowman will coordinate with local healthcare providers to develop city-wide programs that focus on the availability of healthcare services to all residents.

Recommendation 2: The City of Bowman will investigate programs aimed at the importance of a healthy lifestyle for all age groups.

Recommendation 3: The City of Bowman will establish and adopt construction criteria that require all sidewalks and new construction to meet ADA (Americans with Disabilities Act) standards.

7.4 Economy Recommendations and Goal Implementation

Recommendation 1: In cooperation with the Bowman County Economic Development Corporation, Bowman will maintain and support existing financial incentives for start-up, expansion, or relocating businesses in Bowman.

Recommendation 2: The City of Bowman will continue to support the relationship between the Bowman County Economic Development Corporation and the Small Business Development Center and assist in increased awareness of its services.

Recommendation 3: The City of Bowman will continue to support and encourage the development of programs to assist new professionals in finding employment in the Bowman area.

Recommendation 4: The City of Bowman will continue to implement the Renaissance Zone in an effort to continue the revitalization of downtown Bowman.

Recommendation 5: The City of Bowman will partner with the county and other communities to continue to seek additional tourism opportunities within the City of Bowman and the greater region.

Recommendation 6: The City of Bowman will adopt the future land use plan, and update it as required to serve as a tool for developers to locate property slated for residential, commercial, and industrial growth. Work with the city engineer to define areas that allow for feasible and cost effective extension of city services.

7.5 Housing Recommendations and Goal Implementation

Recommendation 1: The City of Bowman will draft text to amend the zoning ordinance to include a definition of temporary housing beyond recreation vehicle parks, and define which districts it is allowed in as a permitted use or conditional use. Define approval criteria for developments of this nature such as density, setbacks, outdoor storage requirements, and length of occupancy.

Recommendation 2: Using the adopted future land use plan, the City of Bowman will define areas that are suitable for temporary housing developments, being mindful of the surrounding land uses.

7.6 City Services Recommendations and Goal Implementation

Recommendation 1: The City of Bowman will complete an inventory of vacant or underutilized properties within developed areas with access to city services. Consider incentives for development in these areas.

Recommendation 2: City staff will develop a system of recording the number of requests for development related proposals, also determining a threshold for the number acceptable for the current staffing levels. Consider the need of additional staff if the threshold is exceeded.

Recommendation 3: City staff will review existing internal and external procedures for processing development proposals. Study ways that the processes could be completed more efficiently.

Recommendation 4: The City of Bowman will amend existing procedures to encourage new subdivision proposals to include a request for annexation. These processes can be heard at the same Planning Commission and City Commission hearings.

Recommendation 5: As annexations are made into the city the City of Bowman will consider expansion of the ETA authority with coordination with Bowman County.

7.7 Quality of Life Recommendations and Goal Implementation

Recommendation 1: The City of Bowman will encourage the development of a variety of housing types within the city and within neighborhoods. Promote the addition of commercial and public development to service new residential growth areas.

Recommendation 2: The City of Bowman will adopt and abide by the future land use plan, serving as a tool for city staff, commissioners, developers and residents. Maintain an up to date future land use plan as amendments are made or ETA authority is expanded.

Recommendation 3: The City of Bowman will encourage development that is contiguous to existing development in the City of Bowman.

7.8 Infrastructure Recommendations and Goal Implementation

Recommendation 1: City staff will work with the city engineer to create a standard policy for the construction of infrastructure extensions to serve new development areas.

Recommendation 2: Using the adopted land use plan and work with the city engineer, the City of Bowman will develop a development phasing plan that identifies areas of future development by land use type and feasible and cost effective infrastructure extension. This plan will serve as a tool for city staff and officials, residents, and potential developers to define areas best suited for development.

Recommendation 3: The City of Bowman will continue to work with the City Engineer to utilize and enhance the existing infrastructure plan. The city will continue to update this plan on an annual basis to identify weak points in the system in need of an upgrade or repairs.