

# MASTER PLAN UPDATE



## 5.0 ENVIRONMENTAL ANALYSIS

This chapter is a summary of the environmentally sensitive features of the Bismarck Airport (BIS) and the potential impacts anticipated from the proposed development plan. Readily available resources provided this information, and this chapter constitutes a preliminary overview of environmental resource categories within Federal Aviation Administration (FAA) Order 1050.1F, Environmental Impacts: Policies and Procedures, FAA Order 5050.4B, National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions, FAA Advisory Circulars and applicable federal, state, and local regulations. While all the NEPA categories are generally addressed, the analysis was deeper for those that are critical to airport master planning.

This environmental overview is not intended to substitute for a NEPA document; however, it is intended to provide information on environmental resources applicable to BIS. The effort did not include field investigations (i.e., cultural resource studies or wetland delineations). Full NEPA-level review (through the development of a Categorical Exclusion, Environmental Assessment [EA] or Environmental Impact Statement), will likely be required project by project as the development plan is implemented.

The information is organized into these sections:

- 5.1 Noise
- 5.2 Land Use
- 5.3 Land Use Controls
- 5.4 GIS Airspace Tool
- 5.5 Historical and Archeological
- 5.6 Water Quality
- 5.7 Fish, Wildlife, and Plants
- 5.8 Hazardous Materials

- 5.9 Solid Waste and Recycling
- 5.10 Wetlands
- 5.11 Other Environmental Considerations
- 5.12 Construction Impacts
- 5.13 Conclusion
- 5.14 Noise

## 5.1 NOISE

Noise is unwanted sound that, at an airport, is generally associated with the operation of aircraft. Some land uses are more sensitive to noise than others, for example, residential, educational, health, religious, recreational, cultural, and historic areas or sites. As a result, the FAA established the Day Night Average Sound Level (DNL) metric to evaluate the impact of aircraft noise on land uses surrounding an airport. DNL is the loudest average sound level in decibels (dB) from an airport's average 24-hour operational day. A 10-dB noise penalty is added to each aircraft operation that occurs between 10 p.m. and 7 a.m. to account for the heightened sensitivity of noise during nighttime hours. The locations of DNL contours identify the level of noise impact on the surrounding community.

Some noise sensitive land uses can be found near BIS. Areas north and west of BIS contain residential development, including single-family housing, multi-family housing, and manufactured home communities. Residential development in other locations around BIS is limited to rural, single-family housing.

Six schools and three churches are located within or close to a 1-mile radius of BIS. **Table 5-1** identifies these facilities and their proximity to BIS.

Table 5-1 Proximity of Schools and Churches to BIS		
Facility Name	Distance	Location
Luther Preschool	0.75 miles	Northwest of BIS
Theodore Jamerson Elementary	1.2 miles	West of BIS
United Tribes Technical College	0.9 mile	West of BIS
Wachter Middle School	0.8 miles	Northwest of BIS
Jeannette Myhre Elementary School	0.72 miles	Northwest of BIS
Dorothy Moses Elementary School	1 mile	Northwest of BIS
Bismarck Community Church	0.75 miles	North of BIS
Ascension Church	0.75 miles	West of BIS
Shepherd of the Valley	0.75 miles	Northwest of BIS

Source: Mead & Hunt, Inc (2019)

There are no hospitals within the vicinity of BIS. More detail about the recreational and historical sites appears in **Section 5.2.5. Department of Transportation Section 4(f) Lands** and **Section 5.5. Historical and Archeological** of this chapter. When considering proposed actions during the NEPA process, FAA Order 1050.1F, Desk Reference, requires a noise analysis if one or more of the following conditions are met:

- Airports have at least 90,000 annual operations by propeller driven Airplane Design Group (ADG) I and II aircraft within Aircraft Approach Categories (AAC) A through D.
- Airports have at least 700 annual jet operations.
- Helicopter operations exceed 10 operations per day, and hover times are at least two minutes.

According to the FAA's Traffic Flow Management System Counts (TFMSC) database, in 2017 BIS had:

- 3,198 Instrument Flight Rules (IFR) piston operations
- 6,453 IFR turbine operations
- 12,579 jet operations.

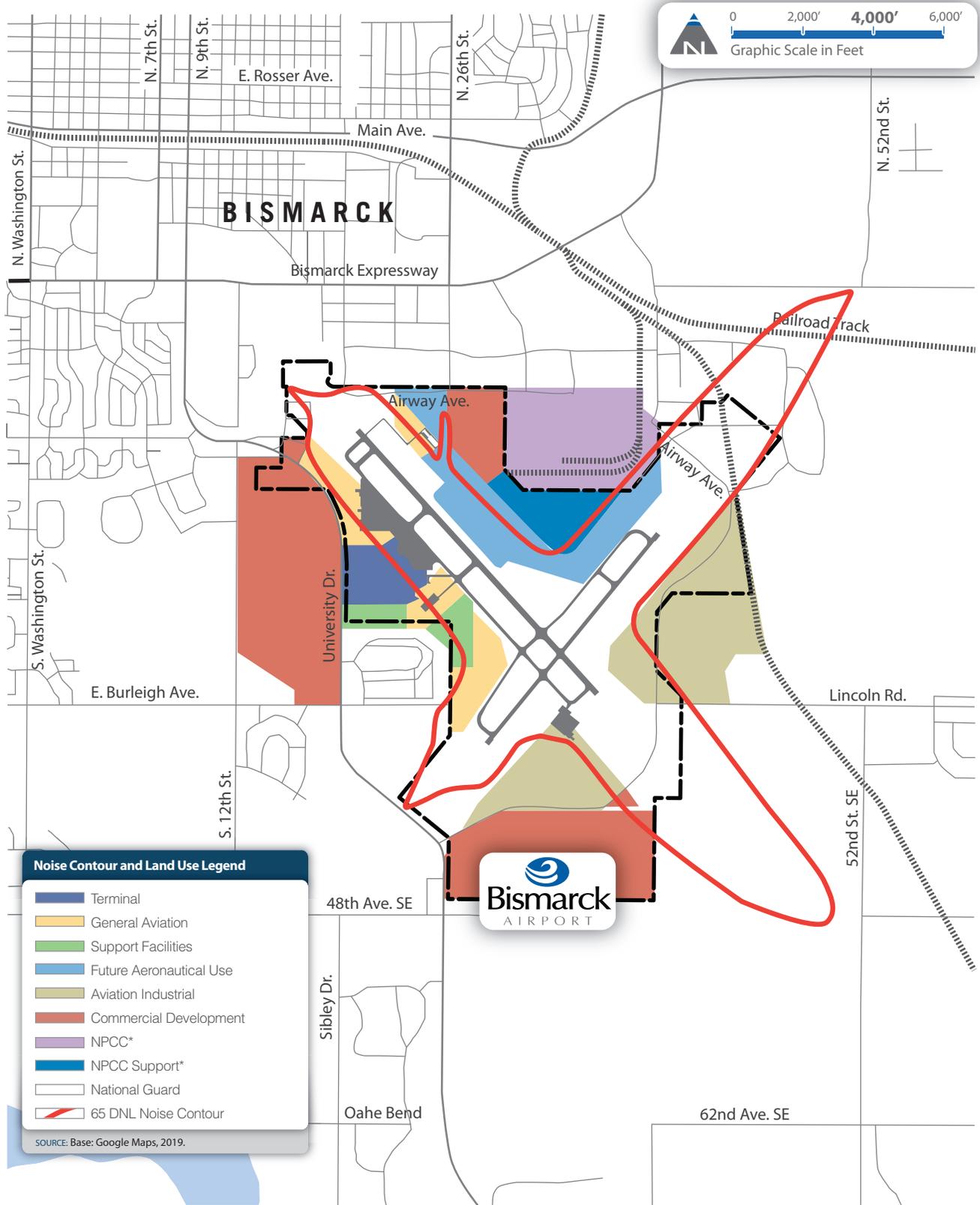
Because the number of jet operations fall within the FAA criteria for noise analysis, future development actions that prompt changes to aircraft movement, airspace, or air traffic procedures may require noise analysis during the environmental review process. Two methods that are often used to determine if noise impacts would result are the Area Equivalent Method or modeling with the Aviation Environmental Design Tool (AEDT). If proposed actions will result in an overall increase in daily traffic or the use of larger or noisier aircraft without any changes to ground tracks or flight profiles, an initial screening using the Area Equivalent Method can be completed. In other cases, noise contours are modeled using the AEDT.

BIS noise exposure levels and surrounding land uses were analyzed for a previous FAR Part 150 Noise Compatibility Plan. The 65 DNL contour developed at the time of the Part 150 is shown in **Figure 5-1**. Contours developed during the Part 150 were used to create the Airport Noise Overlay District for the City of Bismarck, which encourages land uses that are compatible with BIS noise exposure. Permitted uses within the district include manufacturing, transportation, communication, utilities, trade, many types of services, and some cultural and recreational uses. Most residential use is prohibited, with the exception of hotels and pre-existing lots-of-record.

The contours developed for the FAR Part 150 study remain relevant and facilitate the noise overlay zoning that protects land use compatibility near BIS. Public assembly

facilities including schools and churches within 1 mile of the airport remain outside areas of significant noise exposure. The recommended developments within the planning horizon are not expected to significantly affect noise contours or negatively impact sensitive land use areas. As a result, the current 65 DNL noise contours accurately reflect present day noise exposure levels.

This page is intentionally blank



**Noise Contour and Land Use Legend**

- Terminal
- General Aviation
- Support Facilities
- Future Aeronautical Use
- Aviation Industrial
- Commercial Development
- NPCC\*
- NPCC Support\*
- National Guard
- 65 DNL Noise Contour

SOURCE: Base: Google Maps, 2019.

Figure 5-1 Noise Contour and Land Use Map

This page is intentionally blank

## 5.2 LAND USE

The relationship between land use and airport activities is complex since each can affect the other. Ideally, airports set a goal of achieving compatibility with those land uses surrounding it to protect the airport and its users, avoid hazards, and protect the people living and working nearby. Often, existing and/or planned land use compatibility is associated with noise impacts and affects residential and commercial relocations as well as modifications to local roads and travel patterns within the vicinity of an airport.

Laws and policies at state, federal, and local levels encourage compatible land uses near airports and identify what makes land use compatible. The FAA, the State of North Dakota, and local government entities establish the rules and regulations for compatible land use near BIS. Section 1502.16(c) of the Council on Environmental Quality (CEQ) Regulations requires the discussion of “possible conflicts between the proposed action and the objectives of Federal, regional, State, and local (and in the case of a reservation, Indian tribe) land use plans, policies, and controls for the area concerned” in environmental review documents. Under the Airport and Airway Improvement Act of 1982, to receive federal funding for airport actions, sponsors must provide specific assurances to the FAA. Assurances related to land use include:

- Consistency with local plans
- Mitigation and prevention of airport hazards
- Public access to project information and the planning process
- Adoption of zoning laws that increase land use compatibility.

These are some land uses that are least compatible with airports:

- Densely populated residential or office buildings
- Streetlamps and structures that emit bright light

- Dust-producing smokestacks that cause visual and physical obstructions
- Ponds and large wetlands that attract wildlife.

Some farmland, residential developments, and places where people gather in large numbers as well as land uses sensitive to light or air emissions may also be incompatible with airport activities. Careful planning will spur land use, and development around an airport can be accommodated and encouraged.

The FAA directs airport sponsors to seek opportunities to promote compatible land uses and zoning measures adjacent to airport property. FAA policies instruct airports to own and control, where feasible, affected land surrounding an airport to maintain compatible land use. Because all airports do not have land use control authority, the FAA encourages the promotion of compatible land uses through other means, such as working with local authorities to persuade adjacent jurisdictions to enact airport-compatible zoning near airports.

### **5.2.1 General Land Use**

BIS occupies 2,425 acres within Bismarck city limits, south of Interstate Highway 94, between the Missouri River to the west and Apple Creek to the east. The city's most developed areas are north of BIS, which is surrounded by existing land use that is varied and diverse. The primarily residential area northwest of BIS includes traditional single-family and mobile home neighborhoods. Commercial businesses north of BIS consist primarily of retail shopping centers and the Northern Plains Commerce Centre (NPCC) which is located directly northeast of Runway 13-31. Manufacturing enterprises are northeast, with smaller manufacturing operations also found northwest and southwest of BIS property. Outside the residential, commercial, and manufacturing uses already described east, south, and west of BIS, the remaining land is home to agricultural activity. The agricultural land consists of farm and ranch land as well as Lincoln Oaks Nursery

and North Dakota Soil Conservation Forestry Property. Land use near BIS is shown in **Figure 5-1**.

In addition to the churches and schools nearby, three parks, featuring soccer and baseball fields, are within the area. More detail about the churches and schools is in **Section 5.1 Noise** (above), and more detail about the parks is to come in **Section 5.2.5 Department of Transportation Section 4(f) Lands**. Area historical sites will be described in **Section 5.5 Historical and Archeological**.

The review of area maps indicates no hospitals, theaters, stadiums, or campgrounds are within the immediate vicinity of BIS. Review of local land uses did not indicate uses that could cause a significant visual distraction to pilots such as lighting, reflective materials, smoke or steam, or dust. For example, a small asphalt manufacturing plant site is located northeast of BIS but does not conduct activities which impact aircraft approaching the runways.

#### ***Land Use within the Runway Protection Zones***

In addition to the general land uses around an airport, it is important to consider the land uses within certain areas beyond the end of each runway. The FAA offers specific guidance concerning land uses within the Runway Protection Zone (RPZ). An RPZ is a trapezoidal-shaped area beyond a runway end established to protect pilots and individuals and property on the ground. Characteristics that determine the size of this zone are the design of the runway, the types of aircraft most frequently using the runway, and the visibility minimums for runway instrument approach procedures.

FAA Advisory Circular (AC) 150/5300-13A, *Airport Design*, states, “It is desirable to clear the entire RPZ of all above-ground objects. Where this is impractical, airport owners, at a minimum, should maintain the RPZ clear of all facilities supporting incompatible

activities.” On September 27, 2012, the FAA Office of Airports issued the memorandum “Interim Guidance on Land Uses Within a Runway Protection Zone,” which further clarifies incompatible land uses. Airport sponsors and their consultants must consult with the FAA when planning new or changed uses within an RPZ or planning changes to an RPZ size or location. Land uses planned within an RPZ that require FAA consultation include:

- Buildings and structures
- Recreational land uses
- Transportation facilities
- Fuel storage facilities
- Hazardous material storage
- Wastewater treatment facilities
- Above-ground utility infrastructure.

Review of BIS’s surfaces found that the RPZs for Runway 3/21 lie within the BIS property line. The RPZ for Runway 3, which is mowed and maintained, includes a portion of an agricultural field and the Airport security fence. The RPZ for Runway 21, which is also mowed and maintained, has easements for electrical, gas, and telephone utilities running beneath it.

The RPZs for Runway 13/31 include areas both on Airport property and outside the property line. The Runway 13 RPZ contains a perimeter road, security fence, and public roadway (Airport Road) on 42 acres within the BIS perimeter fence. The remaining 37 acres of this RPZ are outside the BIS perimeter fence. Of the 37 acres outside the perimeter fence, approximately 34.5 acres are owned and under the control of BIS. The remaining 2.5 acres are owned by others and contain buildings associated with local businesses, including a kennel club, florist, consignment store, and rental storage units. Small sections of four local roadways, Continental Avenue, Airway Avenue, Cessna Avenue (formerly Piper Avenue), and Park Avenue lie within this RPZ. BIS has aviation

and hazard easements in place for most parcels outside the perimeter fence and is pursuing acquisition for parcels of property currently outside of these controls.

Nearly all the Runway 31 RPZ lies within property owned and controlled by BIS. Airport property. A small creek (Apple Creek) and portions of its associated floodplain, two fences, a public road (Airway Avenue), several trees, and one of two nearby grain bins are located within this RPZ.

Runway 13 currently offers an instrument approach with  $\frac{3}{4}$  mile visibility limitations. If visibility minimums are lowered in the future, the size of the RPZ for Runway 13 may increase. If the RPZ changes in size or location, or future development in the RPZ will alter existing land use, it is likely that an RPZ Alternatives Analysis will be required due to the presence of incompatible uses within the RPZ limits.

## 5.2.2 Zoning

Zoning is a planning technique where certain land uses are permitted for specific areas of land. Zoning can assist in planning for compatible land use around an airport. The City of Bismarck is responsible for zoning most of the land at and around BIS; Burleigh County is also responsible for a portion of this area. According to a City of Bismarck Zoning District Map, BIS property is zoned District P – Public Use. This zoning designation is also shown on the Burleigh County Zoning Map. Airports are permitted as a special use within District P. This is discussed in more detail in **Section 5.3 Land Use Controls**.

Review of the City and County zoning maps and ordinances found several districts within a one-mile radius of BIS. **Table 5-2 Zoning Around the Airport** lists the zoning designations found around BIS.

Table 5-2 Zoning Around the Airport	
Area	Zoning
Airport Property	<ul style="list-style-type: none"> <li>Public Use (P)</li> </ul>
North of the Airport	<ul style="list-style-type: none"> <li>100-Year Floodplain (AE and 0.2% Annual Chance Flood Hazard)</li> <li>Light Industrial (MA)</li> <li>Manufactured Home Park (RMH)</li> <li>Public Use (P)</li> <li>Two Family Residential (R10)</li> <li>Planned Unit Development (PUD)</li> </ul>
East of the Airport	<ul style="list-style-type: none"> <li>100-Year Floodplain (AE and 0.2% Annual Chance Flood Hazard)</li> <li>Heavy Industrial (MB)</li> <li>Agricultural (A)</li> <li>Rural Single Family Residential (RR)</li> </ul>
South of the Airport	<ul style="list-style-type: none"> <li>100-Year Floodplain (AE and 0.2% Annual Chance Flood Hazard)</li> <li>Public Use (P)</li> <li>Light Industrial (MA)</li> <li>Agricultural (A)</li> <li>Rural Single Family Residential (RR)</li> </ul>
West of the Airport	<ul style="list-style-type: none"> <li>100-Year Floodplain (AE and 0.2% Annual Chance Flood Hazard)</li> <li>Agricultural (A)</li> <li>Heavy Commercial (CG)</li> <li>Rural Single Family Residential (RR)</li> <li>Manufactured Home Park (RMH)</li> <li>Multi-Family Residential (RM – 10, 15, 30)</li> <li>Public Use (P)</li> <li>Light Industrial (MA)</li> <li>Two-Family Residential (R10)</li> <li>Single Family Residential (R5)</li> </ul>

Source: City of Bismarck and Burleigh County Zoning Maps

City of Bismarck ordinances indicate that there is an Airport Noise overlay district that corresponds with the 65 DNL contours from the existing FAR Part 150 Noise Compatibility Plan. This was discussed in **Section 5.1 Noise** above. A portion of the area east of BIS is outside the City and County zoning jurisdictions and subject to Lincoln Township zoning. According to the City of Lincoln Zoning Map, the city limit is located approximately

1 mile east of the Airport property line. The western portion of Lincoln is zoned for Agriculture (A), Planned Unit Development (PUD), Heavy Commercial (CG), Public Use (P), and Rural Single Family Residential (RR-1).

### 5.2.3 Wildlife Attractants

Certain land uses have the potential to attract wildlife near airports, such as birds, deer, coyotes, that can be hazardous to aircraft operations. These are examples of the types of land uses that attract wildlife:

- Drinking, storm, and wastewater facilities and associated retention ponds
- Recreational water bodies
- Wetlands
- Agricultural activities
- Other areas that provide food, water, and/or shelter/cover for wildlife.

FAA AC 150/5200-33B, *Hazardous Wildlife Attractants On or Near Airports*, addresses the standards for separation distances between landfills and airports. Specifically, the FAA notes that solid waste landfills and water management facilities attract increased populations of birds, which can pose a hazard for wildlife strikes. Because of this, “The FAA recommends a separation distance of 10,000 feet for new airport development projects meant to accommodate aircraft movement” from municipal solid waste or water management facilities. According to maps of the area, there are no active landfills or wastewater treatment facilities within 1 mile of BIS. The nearest landfill is located about 4 miles to the north-northeast (Bismarck City Landfill). Based on review of aerial mapping, three ponds or lagoons are located off Airport property southwest of Runway 3 and four ponds or lagoons, off Airport property east of Runway 21. The plants and trees grown at a local plant/tree nursery west of the Airport could attract wildlife. The agricultural areas noted under **Section 5.2.1 General Land Use** are used to grow and harvest row crops.

Other wildlife attractants such as surface waters and wetlands near BIS will be described in **Section 5.6 Water Quality**.

The presence of these wildlife attractants requires a management plan to keep birds and animals that may be likely to enter Airport property from becoming hazards. Efforts include barriers such as fencing, vegetation management, removal of attractive habitat, and other types of deterrents. More information about the Airport's wildlife hazard management program can be found in the *2015 Bismarck Airport Wildlife Hazard Management Plan* and *2013-2014 Wildlife Hazard Assessment of the Bismarck Airport*. BIS reassesses the wildlife hazard management program regularly to account for and address new hazards or changes in conditions over time.

#### **5.2.4 Department of Transportation Section 4(f) Lands**

Department of Transportation (DOT) Act, Section 4(f) properties are publicly owned parks, recreational areas, wildlife and waterfowl refuges, and historic sites that are protected by the DOT Act of 1996 (now codified at 49 U.S.C. § 303).

The Act states that the Secretary of Transportation may approve a transportation project requiring the use of a publicly owned park, recreational area, or wildlife and waterfowl refuge of national, state, or local significance, or land of a historic site of national, state, or local significance under these circumstances:

- If there is no prudent and feasible alternative that would avoid using those resources.
- If the project includes all possible planning to minimize harm to the site.

Cottonwood Park, Sons of Norway Park, and Tatley-Eagles Park are community resources within a 1-mile radius of BIS that fit these criteria.

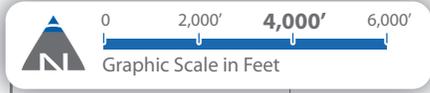
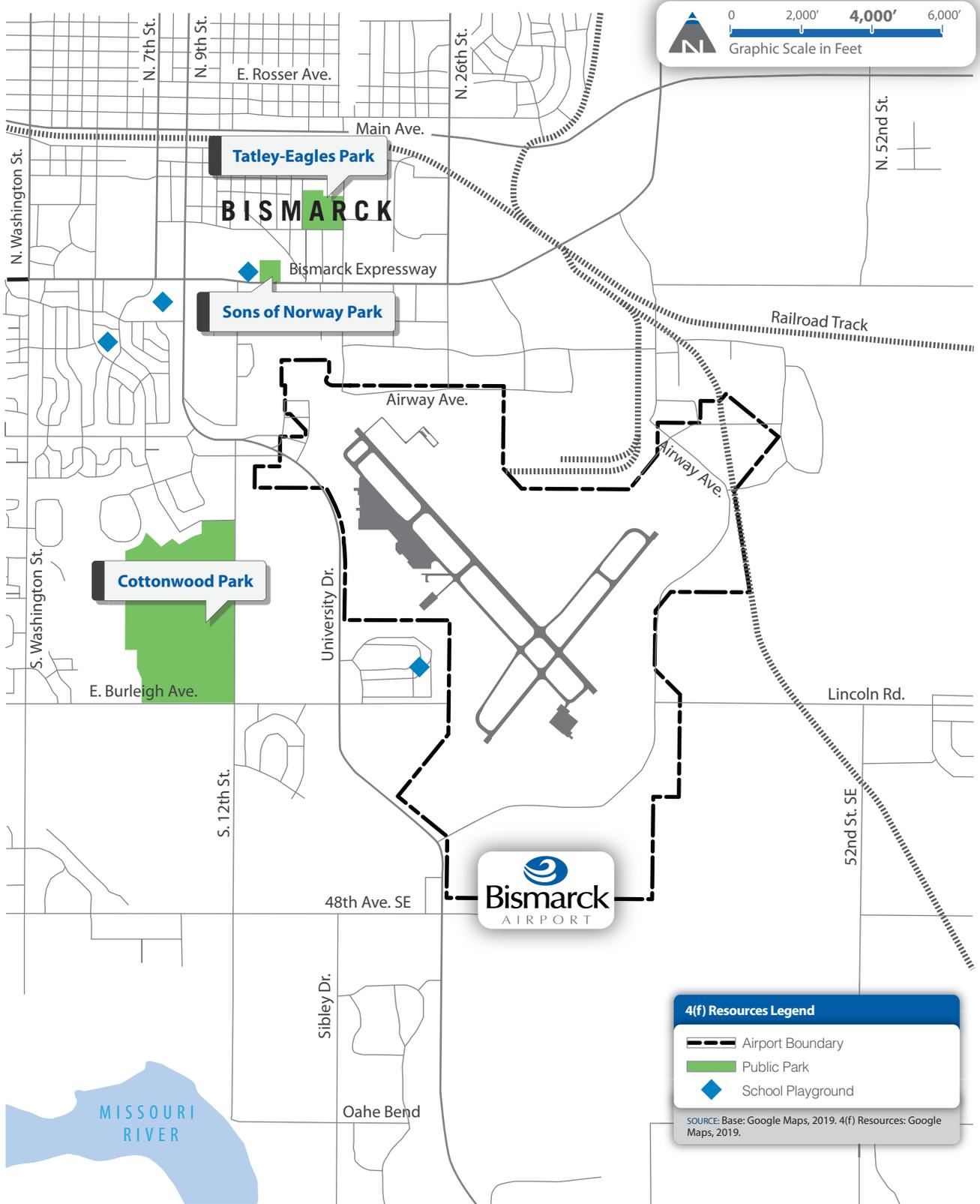
Cottonwood Park encompasses more than 200 acres and is approximately 0.5 miles west of BIS. This park has facilities for bocce ball, softball, and baseball. Over time, improvements to the baseball field include lights, batting cages, a press box, a ticket booth, and a scoreboard. According to the North Dakota Parks and Recreation department website, Cottonwood Park received federal grant funding from the Land and Water Conservation Fund in fiscal year 2018. Because federal funds were used, Cottonwood Park is also protected by Section 6(f). Section 6(f), administered by the National Parks Service, requires that land funded through the program remain available for public outdoor recreation use or be replaced by lands of equal value, location, and recreation usefulness.

Sons of Norway Park consists of approximately 5 acres and is approximately 0.6 miles northwest of BIS. This park has two picnic shelters, a skate park, a softball field, and a replica of a Norwegian farm storage house (stabbur).

Tatley-Eagles Park is approximately 0.8 miles north of BIS and encompasses approximately 19 acres. This park features baseball diamonds, a playground, restrooms, a warming house, skating rinks, sand volleyball courts, and community gardens.

The elementary and middle schools within a 1-mile radius of BIS also have playgrounds or other recreational features. Potential 4(f) resources near BIS are shown in **Figure 5-2**.

This page is intentionally blank



**4(f) Resources Legend**

- Airport Boundary
- Public Park
- School Playground

SOURCE: Base: Google Maps, 2019. 4(f) Resources: Google Maps, 2019.

Figure 5-2 Location of 4(f) Resources

This page is intentionally blank

Based on an Information for Planning and Conservation (IPaC) *Trust Resources Report*, there are no listed wildlife refuges or wildlife management areas within the vicinity of BIS. Area historic sites will be discussed under **Section 5.5 Historical and Archeological**.

Projects proposed under the Master Plan are not anticipated to cause physical “taking” or constructive use of Section 4(f) lands in the area because the proposed development would occur on existing Airport property.

### 5.2.5 Floodplains

A floodplain is a flat, low area, adjacent to a stream, river, or creek, that may flood during high water flow conditions. A 100-year floodplain includes the area that has a 1 percent chance of flooding in any given year. Projects within a 100-year floodplain are discouraged.

The City and County zoning maps indicate that portions of Airport property as well as the area near the Airport contain floodways and are within a 100-year floodplain. For further confirmation, review of the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) encompassing the Airport (**Figure 5-3**) was necessary. The review shows the bulk of a 100-year floodplain and a floodway associated with Apple Creek on Airport property near the runway intersection as well as east, northeast, and southeast of the property boundary. This FIRM also shows other flood areas adjacent to airfield pavement, a floodway associated with Apple Creek, and a floodplain associated with Cottonwood Park Pond.

FEMA regulations stipulate that any development in the floodplain must not increase the base flood elevation by more than 12 inches. The projects proposed under this Master Plan are not anticipated to impact floodplains; however, further analysis may be required project by project for proposed actions located within a designated flood hazard area.

### 5.2.6 Farmlands

The Farmland Protection Policy Act of 1981 (FPPA) was enacted to minimize the extent to which federal actions and programs contribute to the unnecessary and irreversible conversion of farmland to non-agricultural uses. Farmland can be classified as “prime farmland,” “unique farmland,” or “farmland that is of statewide or local importance,” pursuant to the FPPA. Prime farmland has the best combination of physical and chemical characteristics for producing food, forage, fiber, and oilseed crops. Unique farmland is defined as land other than prime farmland that is used to produce specific high-value food and fiber crops such as citrus, tree nuts, olives, cranberries, fruits, and vegetables. Farmland of statewide or local importance includes soils that do not meet prime farmland criteria, but economically produce high yields of crops when treated and managed. Any federal action that may result in conversion of farmland to a non-agricultural use requires coordination with the United States Department of Agriculture Natural Resource Conservation Services (NRCS).

According to the NRCS Web Soil Survey Data Explorer, BIS property contains prime farmland (32 percent, 695 acres) and farmland of local importance (34 percent, 736 acres) with the remainder designated as not prime farmland (35 percent, 759 acres).

**Figure 5-4** presents a farmland classification map generated from the NRCS Web Soil Survey Data Explorer.

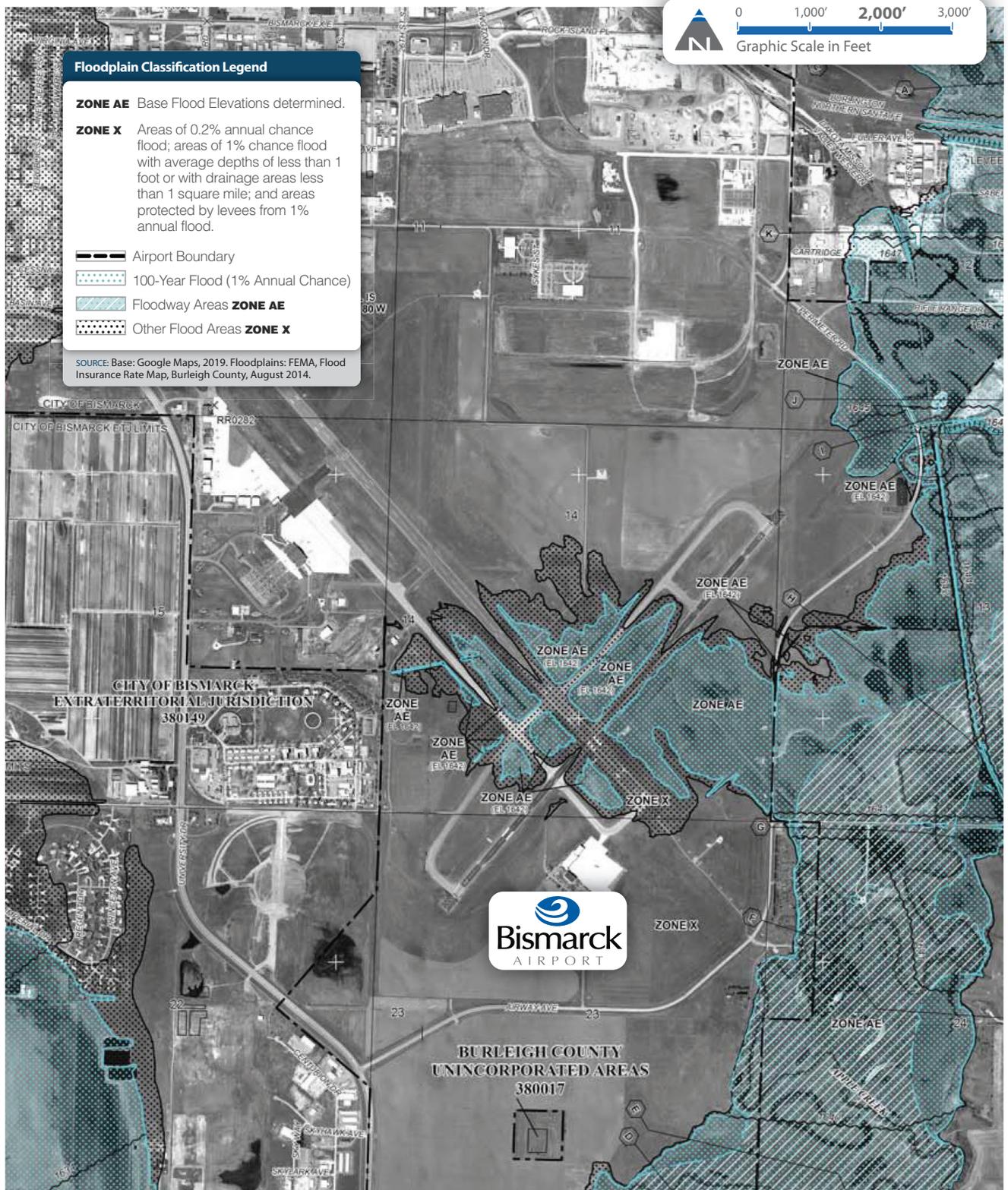


Figure 5-3 Floodplain Map

This page is intentionally blank

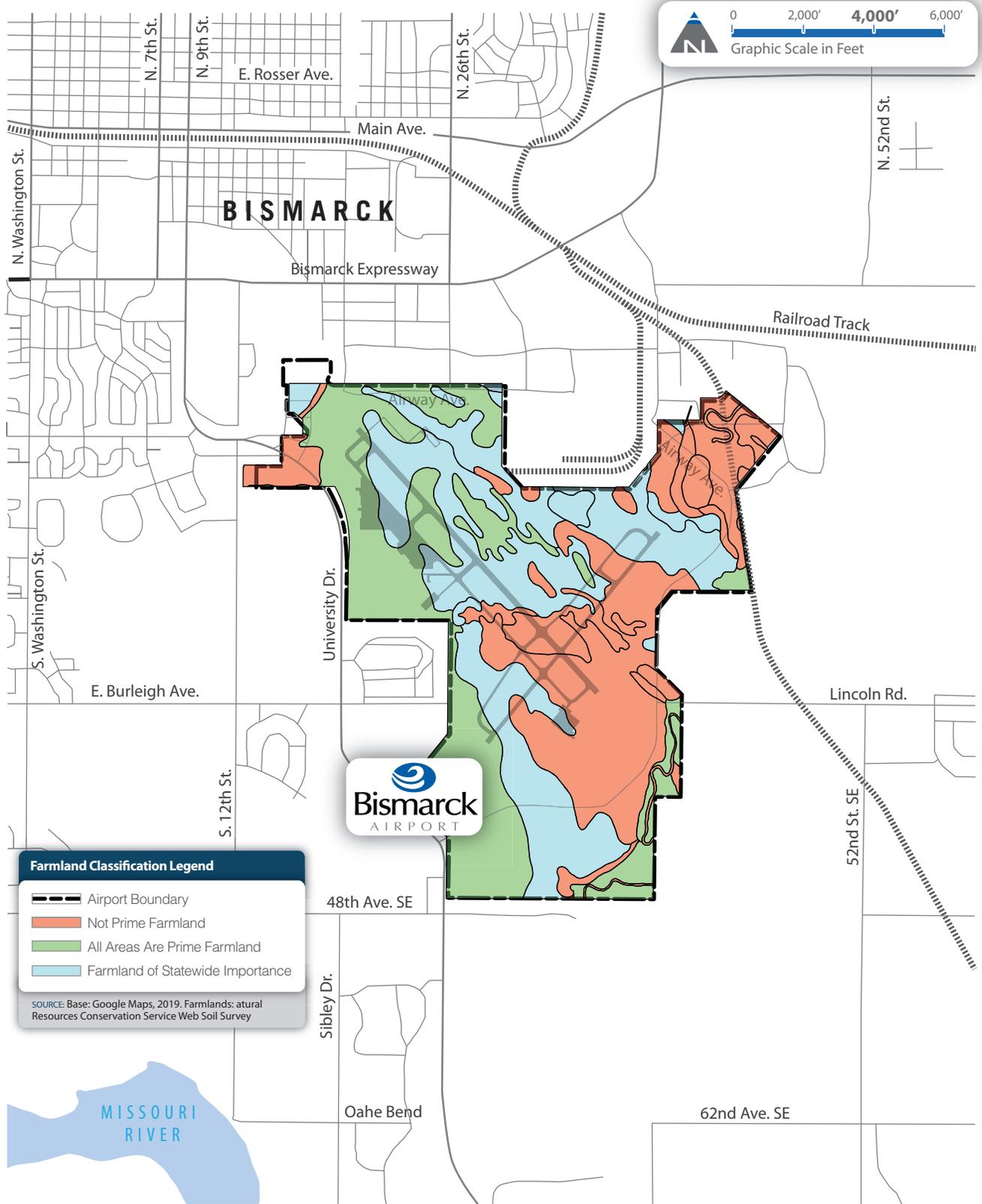


Figure 5-4 Farmland Classification Map

This page is intentionally blank

The Farmland Protection Policy Act exempts farmlands “already in or committed to urban development... [including] lands identified as ‘urbanized area’ on the Census Bureau Map.” According to the 2010 Census Urbanized Area Reference Map for Bismarck, North Dakota, BIS is included in the urbanized area associated with the City of Bismarck; therefore, it is anticipated that the farmland at the Airport is exempt from the Act.

### **5.2.7 Land Use Summary**

In summary, land use within the City of Bismarck, Burleigh County, and nearby townships is largely compatible with the neighboring Airport. While there are pre-existing residential areas near the northwest side of BIS, zoning around the airport does not include sensitive uses, meaning that conflicts are unlikely to develop in the future. Some areas in the RPZs are not yet under Airport control, but BIS is pursuing acquisition of this land to ensure compatibility in the future. Land use compatibility should be continually reviewed throughout the planning period to confirm land uses surrounding BIS are compatible with its operations. BIS should work with nearby jurisdictions to ensure that any land currently designated as farmland or open space is zoned appropriately if it comes under development in the future.

## **5.3 LAND USE CONTROLS**

The City of Bismarck has an airport height limit zoning ordinance in place that regulates the height of structures and trees on and near the Airport. Recommendations for updating this ordinance are found in **Section 5.4 GIS Airspace Tool**.

Airport property is zoned as a Public Use district (P). This district is meant to “encourage the continued use of the land for public recreation, education and other government services... [and] To prohibit residential, commercial and industrial uses of the land, and to prohibit any use of the land which would diminish its value in serving the needs of the public.” BIS is permitted as a special use within this district. Conditions of the special use permit are outlined by City of Bismarck Code of Ordinances, Chapter 14-03 – Districts:

Uses. Among other things, the special use permit conditions require that BIS not conflict with any existing master plan, that BIS provides adequate vehicle parking, and ensures that, “There is sufficient distance between the end of each usable landing strip and the airport boundary to satisfy the requirements of the Federal Aviation Administration or any other appropriate authority.” BIS can use aviation easements to satisfy this condition, as they have within the Runway 13 end RPZ. Development alternatives that are recommended in Chapter 4 meet the conditions for use within this district. In addition, an airport specific land use plan has been developed as part of the Bismarck Airport Layout Plan.

## **5.4 GIS AIRSPACE TOOL**

The FAA provides basic guidance regarding airspace in the vicinity of an airport that should be protected from tall buildings, structures, and objects. This guidance is described in Federal Aviation Regulations (FAR) Part 77, “Safe, Efficient Use, and Preservation of the Navigable Airspace.” While the most critical locations are beneath the airport and approach surfaces, the siting of tall facilities, such as multi-story structures, power lines, telecommunication towers, wind turbines, and meteorological towers, should be carefully considered whenever they are near an airport. Areas beneath aircraft traffic patterns, adjacent to a runway, off the runway ends, and even far away from an airport, can be hazardous sites due to the potential obstructions of tall structures.

Airport zoning regulations restricting the height of structures and objects of natural growth in the vicinity of BIS were established by City of Bismarck Code of Ordinances, “Chapter 10-09: Airport Zoning Regulations.” An Airport Zoning Map dated March 5, 1979, is referenced in the current zoning code title 14 10-09-03 but is not readily available to the public. A Geographic Information Systems (GIS) tool for airspace zoning was developed as part of this master plan to assist in the required protection of the airspace while allowing the public to understand the buildable height and allowable land uses within land covered

by the Airport Zoning Ordinance. The tool will help BIS apply zoning regulations consistently to all development impacted by the height restrictions.

Airport Zoning GIS data layers were provided to the City of Bismarck including FAR Part 77 surfaces and areas covered by FAA Form 7460, which requires notice to the FAA of proposed construction or alteration of structures that exceed certain height limits. The layers transferred to the city also included the surface area of the 10,000-foot separation buffer for wildlife attractants around BIS. This information was used to create a map tool that the public has access to. This tool enables users to click on the map and immediately see information about Airport zoning height limits, FAA Form 7460 qualification, and the wildlife attractant buffer. An internal version of this tool will allow BIS and City staff to click areas on the map to access Airport zoning height limits, City parcel information, ground elevation contours, and links to the relevant ordinance.

Not only does the tool help users to visualize zoning for existing and potential development, it can provide guidance for the City to update height limit zoning during the planning period. Recommendations from the development of this tool are to consider referencing FAR Part 77 and basing the Bismarck Airport Zoning Ordinance on an updated zoning map that can be produced with the elevation contours delivered in GIS format to allow for future modifications. Neighboring jurisdictions that are included in the Bismarck Airport 14 CFR Part 77 surfaces should protect this airspace and can do so by incorporating zoning by reference. **Appendix C** contains more information about the Airspace tool, and examples of incorporation of an airport height limit zoning ordinance by reference.

## 5.5 HISTORICAL AND ARCHEOLOGICAL

Historical, architectural, archeological, and cultural resources include a variety of sites, properties, and facilities related to activities as well as societal and cultural institutions. Such resources express past and present elements of human culture and are important to the community. Section 106 of the National Historic Preservation Act is the principal statute concerning historical, architectural, archeological, and cultural resources. Section 106 requires that, prior to undertaking any action (a project, activity, or program), a federal agency consider that action's potential impacts to these resources, specifically those resources included in, or eligible for inclusion in, the National Register of Historic Places.

Review of the National Register of Historic Places found no historic properties or sites within 1 mile of BIS. The closest listed site, Yegen House and Pioneer Grocery, is 1.45 miles away. According to the State Historical Society of North Dakota, there are no state-listed historical sites within 1 mile of BIS. Coordination with the State Historical Society was initiated under this task; to date, no additional information has been provided by the Society regarding resources of historical importance at or near BIS. Locally, the City of Bismarck Historical District and Cathedral Area are approximately 1.5 miles northwest of the Airport in the city core.

A previous EA for the GA apron expansion prepared for BIS was approved by the FAA in 2015. This document included information about five airport buildings in the GA apron area. This EA cited a Class III Architectural Survey that was completed in April 2011. One building (Hangar 5) was found to be eligible for nomination to the National Register of Historic Places. This building will be removed as part of the preexisting north GA development area expansion plan. The Finding of No Significant Impact issued by the FAA for the EA includes recommendations for mitigation: "The preferred mitigation method is to record photographic documentation of Hangar 5 at its current location, find a suitable new owner for Hangar 5, relocate it to another location on the Airport, and

convert it to an aerospace museum.” However, the document also notes that, “if a suitable owner is not identified or is not able to remove Hangar 5 within two years of the date of the execution of the MOA [Memorandum of Agreement], BIS shall be allowed to dismantle and dispose of Hangar 5.” The MOA was executed in February 2015. BIS advertised for the removal of Hangar 5 for a period of two years; however, no acceptable proposals having adequate financial backing were received. Having met the terms of the MOA, the Airport will now proceed in the removal Hangar 5.

Previous assessments of historic, architectural, archeological and cultural resources were also accounted for in the *Bismarck Airport Environmental Assessment to Minimize Hazardous Wildlife Attractants on Airport Property Feb 2012, Reevaluation Approved April 2017*. Records of prior archeological investigations were consulted at this time, and no significant sites were discovered.

The adverse impacts to historical resources discussed above are associated with a pre-existing development plan. It does not appear that historical, architectural, archeological, or cultural resources will be impacted further by future development proposed by this Master Plan. As part of NEPA-level assessments for individual projects, additional architectural or archeological studies may be necessary, and further consultation with the State Historic Preservation Office and Tribal Historic Preservation Office will be required to identify potential impacts, if any, that could result from each proposed project.

## **5.6 WATER QUALITY**

Water resources, such as surface waters and groundwater, are important to the ecosystem and the human environment. Actions that impact water quality can have environmental and legal consequences. The Clean Water Act (CWA) mandates development of comprehensive solutions to prevent, reduce, or remove pollution in U.S. waters. Among several other regulations that protect water quality are those that offer

special protection to drinking water supplies and those that require establishment of spill response plans. In addition, airport sponsors may need to consult with the U.S. Fish and Wildlife Service (USFWS) when bodies of water are controlled, altered, diverted, or drained.

Several activities, such as construction, aircraft and pavement deicing, and fuel or hydraulic spills, if runoff is not properly controlled, can impact the quality of drainage waterways. Careful planning and analysis may be required to determine whether water quality impacts could occur as a result of future airport development.

### **5.6.1 Stormwater**

Stormwater is surface water from precipitation such as rain or snow. When surface water from industrial sites, such as an airport, contains pollutants, environmental impacts can occur. Impacts can also occur due to a high volume of stormwater runoff from impervious surfaces. For this reason, BIS carefully manages stormwater and drainage.

BIS has a general North Dakota permit for industrial stormwater discharge administered by the North Dakota Department of Health, which also establishes testing protocols. FAA regulations concerning culvert design and stormwater ponds do not permit standing water on airport property for periods longer than 48 hours in new or reconstructed detention areas. Additional details on standards for drainage design can be found in AC 150/5320-5D: *Airport Drainage Design* and AC 150/5200-33C: *Hazardous Wildlife Attractants On or Near Airports*.

The Airport conducted a drainage analysis in 2018. During this analysis, BIS updated the stormwater management plan and expanded upon conclusions from several previous stormwater reports and wetland delineations conducted on and near BIS. Several areas

of the existing stormwater drainage system require maintenance or improvements because they experience drainage backups and ponding that can attract wildlife hazards.

A common pollutant that affects stormwater in airport settings is deicing fluid containing propylene glycol. At BIS, deicing fluid is currently treated by discharging through several grassy swales, where bacteria and ultraviolet radiation break down the propylene glycol before it reaches Apple Creek. The 2018 Drainage Analysis concluded that some deicing fluid at BIS was not being captured and made recommendations to upgrade drainage, including regrading surface drainage and installing storm sewer. More information about the existing stormwater system and draft recommendations can be found in the *2018 Bismarck Airport Drainage Analysis Central Airport Watershed* report.

To achieve NEPA approval, FAA may require further analysis of any added impervious surfaces that would increase the amount of stormwater runoff at BIS; however, the planned drainage improvements are anticipated to improve the existing conditions and decrease the amount of pooling water and back-up from storm drains during runoff events.

### **5.6.2 Surface Water**

Surface waters include lakes, ponds, rivers, streams, creeks, and wetlands. The collected water comes from precipitation that does not infiltrate the soil and instead flows across the land. Surface waters can be hydrologically connected (linked) to groundwater. There are two lakes/ponds located near BIS: Cottonwood Park Pond and Cottonwood Lake. Cottonwood Park Pond in Cottonwood Park is approximately 0.85 miles west of BIS, and Cottonwood Lake is in a residential area northwest of Cottonwood Park approximately 1 mile west of BIS.

Apple Creek runs north-south just east of BIS. A section of this creek flows onto Airport property southeast of Runway 31. In addition, small tributaries that appear to be associated with Apple Creek are located within the northeastern segment of Airport property near Airway Avenue.

Hay Creek is located within the vicinity of BIS (northeast near East Bismarck Expressway 810 and Yegan Road). The North Dakota Department of Health Division of Water Quality is responsible for monitoring water bodies in the state and determining if a water body is impaired. A body of water is considered impaired if it fails to meet one or more water quality standards. Historically, the North Dakota Department of Health Division of Water Quality designated segments of Hay Creek near its confluence with Apple Creek as impaired waters by due to sedimentation/siltation (reference ND-10130103-007-S\_00). Per the North Dakota 2014 Integrated Section 305(b) Water Quality Assessment Report and Section 303(d) List of Waters Needing Total Maximum Daily Loads, an assessment conducted in 2013 found that Hay Creek's sediment load met the criteria for a stable site and assumed that sediment is no longer impairing aquatic life. Future projects at BIS should be managed to avoid or minimize impacts to this and other surface water resources in the area.

### **5.6.3 Wetlands**

Wetlands are areas that support specific vegetation due to inundation or saturation by ground water. Sometimes these are called swamps, marshes, or bogs. Wetlands provide benefits to the natural and human environments that include habitat, water filtration, water storage, and recreation. There are several statues, regulations, orders, and other requirements related to wetlands. The CWA regulates the discharge of pollutants into waters of the United States (including wetlands) and establishes a program to regulate discharge of fill material into such waters. The CWA also requires projects not to violate water quality standards.

A water of the United States is considered a jurisdictional surface water or wetland under the CWA; however, not all surface waters are under the jurisdiction of the CWA. The United States Army Corps of Engineers (USACE) determines this case by case. Wetlands are protected under Executive Order 11990, Protection of Wetlands. According to the 2017 Stormwater Analysis, the USACE has designated one of the wetlands near the runway intersection as jurisdictional.

This Master Plan did not include a wetland delineation or a field check of available wetland maps. However, detailed information about wetlands at BIS can be found in the *2017 Bismarck Airport Stormwater Analysis Central Airport Watershed* report. This report discusses a series of wetland delineations conducted from 2008 to 2017. The delineated areas include several wetlands near the runway intersection and in the northwest and northeast portions of BIS property.

A review of US Fish and Wildlife Service's National Wetlands Inventory (NWI) mapping tool (Wetland Mapper), also shows Freshwater Emergent wetlands located near the runway intersection and within the eastern and central portions of Airport property. Through correspondence with BIS staff and review of the *2017 Bismarck Airport Stormwater Analysis Central Watershed* report, wetlands located on the northwest and northeastern portions of airport property have previously been filled in under an approved federal permit. As a result, the current wetlands mapping available online for BIS does not accurately reflect the presence of wetlands in these areas. In fact, most Airport property has been graded, developed and is maintained in a mowed or planted condition. Outside airport property, there appear to be a few wetlands within the general vicinity of BIS, including:

- Freshwater Emergent Wetlands to the east and north

- Freshwater Forested/Shrub Areas in all directions, including Cottonwood Park Pond to the west
- Freshwater Ponds to the south
- A riverine to the northeast
- “Other” wetlands to the northwest and southeast.

Development projects are required to avoid wetlands to the greatest extent possible unless practicable alternatives do not exist. In general, actions that are considered impacts to wetlands include:

- Building structures in a designated wetland
- Dredging, filling, draining, channelizing, creating a dike, or impounding a wetland
- Causing disturbance of a water table
- Indirect impacts affecting areas upstream or downstream from the development site.

Further assessment of potential wetland resources on Airport property may be required for NEPA-level documentation for the individual development projects proposed under this Master Plan. The *2017 Bismarck Airport Stormwater Analysis Central Airport Watershed* includes recommendations to remove some wetlands from Airport property that have undergone review in the Bismarck Airport Environmental Assessment to Minimize Hazardous Wildlife Attractants on Airport Property Feb 2012, Reevaluation Approved April 2017. Past projects have successfully removed wetlands from the airfield. These projects have resulted in noticeable differences in the number of migratory birds within the vicinity of the Airport. Administration will continue to pursue opportunities to appropriately reduce wetlands that may attract or harbor wildlife in the future. Runways 3 and 31 have future projects identified to further reduce wildlife attractants.

#### **5.6.4 Floodplains**

See **Section 5.2.6** above.

### **5.6.5 Groundwater**

Groundwater, or subsurface water, can be an important source of water for households, businesses, industries, and agriculture. Developments proposed under this Master Plan are not anticipated to impact groundwater resources; however, further investigation may be needed to determine any potential impacts to groundwater, aquifers, or other similar water resources in proximity of BIS.

### ***Wild and Scenic Rivers***

The Nationwide Rivers Inventory (NRI) is a list that the United States Department of the Interior National Park Service (NPS) maintains. The list identifies river segments that possess remarkable natural or cultural values and are of more than local or regional importance. All federal agencies are required to seek to avoid or mitigate impacts to NRI segments. While a section of the Missouri River in Burleigh County is listed on the NRI as one of few remaining free-flowing segments of the Missouri River, and considered important due to wildlife habitat and historic and archeological sites, this segment is approximately ten miles northwest of BIS.

The National Wild and Scenic Rivers System preserves rivers with outstanding natural, cultural, and recreational values. The system is administered by the Bureau of Land Management, NPS, USFWS, and the United States Forest Service. Rivers designated as American Heritage Rivers list are also protected. A review of the American Heritage Rivers list and USFWS Wild and Scenic Rivers System map found that no rivers in North Dakota are protected under these programs.

## **5.7 FISH, WILDLIFE, AND PLANTS**

Biological resources include plants (vegetation), animals (wildlife), and the habitats where they occur. Habitats are the resources and conditions that support the continuous existence of plants or animals in any particular area. Together, biological resources form

dynamic ecosystems that respond over time to changes in the environment, whether natural or human-induced. Biological resources provide aesthetic, recreational, and socioeconomic values to society and are valuable in their own right. Accordingly, federal and state laws and statutes exist to protect certain species and habitats of special importance.

The Endangered Species Act (ESA) is the primary statute protecting wildlife, plants, and their habitats. The ESA requires federal agencies to conserve threatened and endangered species and avoid adverse impacts to designated critical habitats. When a development could affect listed species, the Airport sponsor must consult with the USFWS to assess potential impacts on plant and animal species. They must also consult with state wildlife agencies with jurisdiction over the affected resources. The level of analysis depends on whether the proposed development occurs on previously disturbed lands or undisturbed wildlife habitats. Projects located on developed land such as Airport property generally require minimal analysis.

According to the IPaC Report, found in **Appendix G** there are four federally listed endangered species and three federally listed threatened species in Burleigh County. The State of North Dakota does not maintain a state endangered and threatened species list, but instead relies on the Federal lists regarding the status of biological resources.

These are the listed species found in Burleigh County:

- Birds
  - Least Tern – Endangered
  - Whooping Crane – Endangered
  - Piping Plover – Threatened
  - Red Knot – Threatened
- Fish

- Pallid Sturgeon – Endangered
- Mammals
  - Gray Wolf – Endangered
  - Northern Long-eared Bat – Threatened

Of these listed species, only the piping plover has final designated critical habitat in North Dakota, and this habitat is not found on or around BIS. The other species are unlikely to be found on the Airport because there is not suitable wildlife habitat.

More information is available in the *2015 Bismarck Airport Wildlife Hazard Management Plan* and *2013-2014 Wildlife Hazard Assessment of the Bismarck Airport* developed by the Airport.

Review of detailed information about these species and their habitats was not completed under this Master Plan project. Further research and consultation with the USFWS regarding federally listed species will likely be required during NEPA-level assessments conducted for individual projects.

The recommended projects proposed under this Master Plan do not involve modification of a natural stream, body of water, or other water resources; therefore, the projects are unlikely to impact resources protected under the Fish and Wildlife Coordination Act. The projects proposed under this Master Plan are not anticipated to directly or indirectly affect fish species, habitat, or public access. Also, BIS does not appear to include water resources that may be considered fish habitat. Therefore, impacts to resources protected under the Magnuson-Stevens Act are not anticipated from the proposed development projects.

## 5.8 HAZARDOUS MATERIALS

Federal, state, and local laws regulate the handling and disposal of hazardous materials, chemicals, substances, and wastes. Applicable federal statutes include the Resource Conservation and Recovery Act and the Comprehensive Environmental Response, Compensation, and Liability Act as amended by the Superfund Amendments and Reauthorization Act of 1986 and the Community Environmental Response Facilitation Act of 1992.

Information from the United States Environmental Protection Agency's (USEPA's) NEPAAssist and Cleanups in My Community databases indicates that there are several facilities subject to environmental regulation within a 1-mile radius of BIS:

- Four facilities that discharge to a water point
- Five water monitoring stations (four along Apple Creek and one on Hay Creek)
- Four companies registered under the Toxic Release Inventory program
- Five facilities regulated for air emissions
- Eight facilities regulated under the National Pollutant Discharge Elimination System (NPDES) program
- Forty-eight facilities that generate hazardous waste and are regulated under the Resource Conservation and Recovery Act.

These sites are shown in **Figure 5-5**. Activities at BIS may also be potential sources of hazardous materials and wastes, for example aircraft fueling and maintenance.

There are two fuel farms at BIS; one owned by Executive Air Taxi Corporation and the other by Bismarck Aero Center (the Airport's two fixed-based operators). Combined these facilities have nine tanks and store 1,000 gallons of diesel fuel; 32,000 gallons of 100 low lead (LL) fuel; and 82,000 gallons of Jet A fuel. Based on information that BIS provided, these facilities have secondary containment features, approved by the USEPA, to collect

fuel in the event of an accidental release. In addition to the fuel farms, the fixed-base operator operates fuel trucks with a total capacity of 1,750 gallons of 100LL and 13,000 gallons of Jet A. The Airport's fixed-base operators also provide aircraft maintenance.

BIS also has a fleet of equipment that contain potential sources of hazardous materials including snow removal equipment, aircraft rescue and firefighting equipment, mowers and trucks. Each of these equipment types require regular maintenance. Fuel for these vehicles is provided by two diesel fuel tanks consisting of one 1,500 gallon and one 1,000-gallon tank. In addition, BIS has one 1,000-gallon tank containing unleaded fuel. All three of these fuel tanks are located adjacent to the existing BIS maintenance facility. BIS has one 12,000-gallon tank containing unleaded fuel used by the rental car companies. This tank is located near the car rental storage lot. BIS meets current federal and state requirements for operating and servicing equipment to minimize the potential risk of exposure to hazardous materials.

Proximity alone to industrial facilities that are subject to environmental regulation (including those that generate hazardous waste) is not a sufficient indicator of potential hazardous waste impacts or other environmental concerns. Such facilities are heavily regulated and maintained to prevent potential issues. Per FAA Advisory Circular 1050.4A BIS maintains an active spill prevention and response plan to limit and mitigate the impacts of a rare hazardous release. Further assessment of potential hazardous material impacts for example, Phase I or Phase II Environmental Site Assessments, may be required under the preparation of NEPA-level documentation for individual development projects proposed under this Master Plan.

This page is intentionally blank

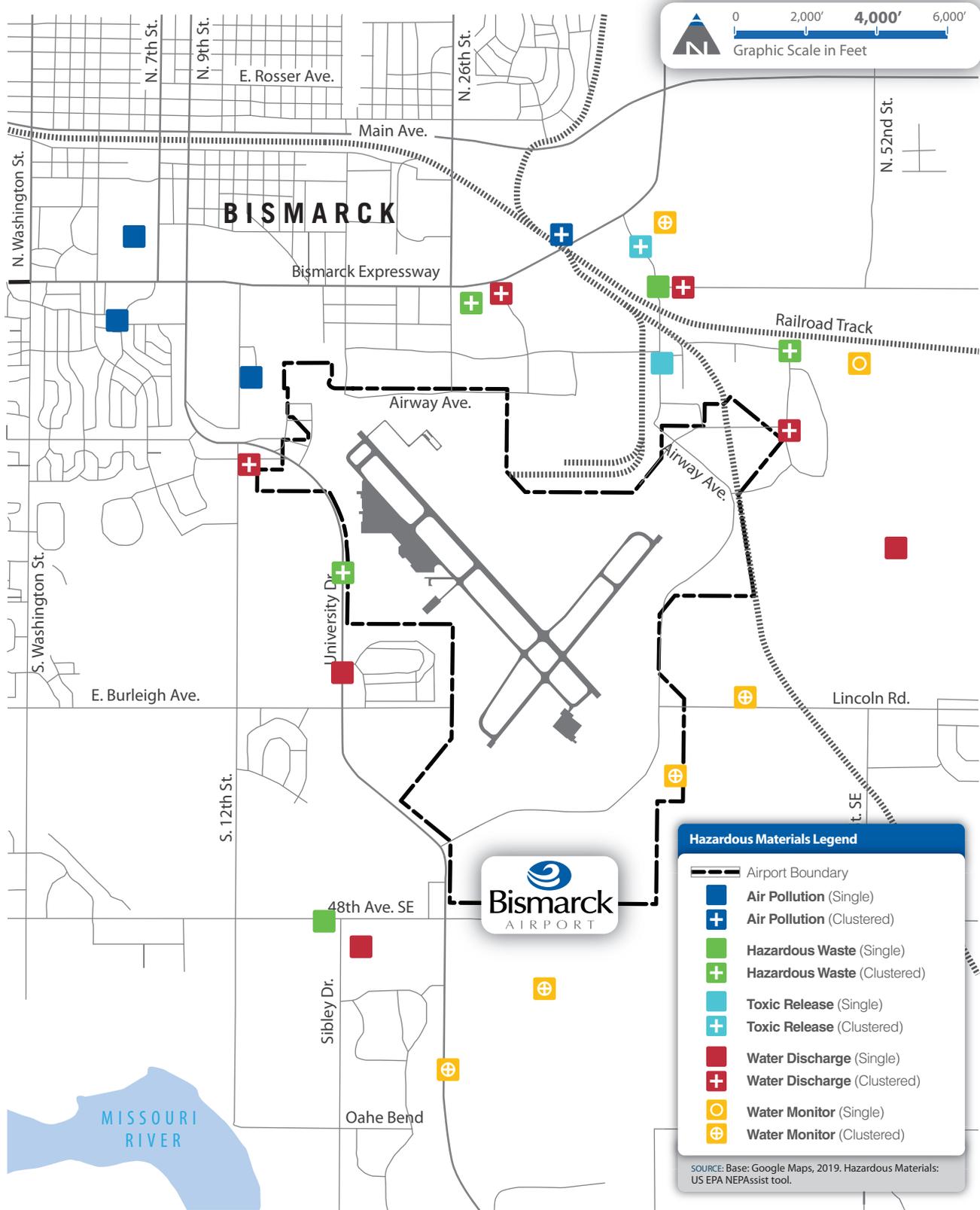


Figure 5-5 Hazardous Materials

This page is intentionally blank

## 5.9 SOLID WASTE AND RECYCLING

Solid waste is defined as any material resulting from industrial, commercial, mining, agricultural, or community activities. Solid waste generated from airport-related construction projects and operation may result in negative environmental effects and, without careful planning and management, may present a danger to human health and the environment. When proposed development could cause or change a solid waste stream, an environmental review should take place to discuss the amount of waste that will be generated by construction and operations and how the waste will be handled and disposed of properly to minimize environmental impacts.

Construction, renovation, or demolition projects produce waste that must be properly disposed. Debris such as dirt, concrete, and asphalt can increase the volume of waste generated, impacting processing and disposal facilities. Waste generated from daily operational activities such as passenger terminal operations, air cargo processing facilities, parking facilities, and rental car operations can also impact waste processing and disposal facilities. NEPA documentation for proposed projects should assess landfill, waste processing, and disposal facilities to determine whether they have the needed capacity to absorb the waste stream.

The FAA Modernization and Reform Act of 2012 updated the definition of airport planning to include waste and recycling that required airports completing a Master Plan to consider issues related to waste and recycling. To meet this requirement, an Airport Recycling, Reuse, and Waste Reduction Plan was developed for BIS and is included in Appendix D of this Master Plan report. This plan evaluated BIS's existing waste and recycling program and provided recommendations for increasing landfill diversion through waste reduction, reuse, and recycling.

A consultant conducted a facility walk-through and informal interviews with Airport staff to develop a baseline and to identify areas of opportunity to divert waste from the landfill. The consultant developed recommendations appropriate for the Airport's waste stream based on the baseline information. Highlights of these recommendations include:

- Establish goals and objectives.
- Track progress and report regularly.
- Promote emptying of water bottles before security and refilling after security.
- Collect and donate food, beverages, and toiletries.
- Encourage reuse of items and materials.
- Continue paper, plastic, plastic bottle, aluminum can, cardboard, and glass recycling and expand to other areas, including deplaned waste.
- Improve education and outreach for passengers, employees, tenants, and contractors.
- Supplement, right size, collocate, and standardize recycling stations and garbage cans.
- Expand and improve signage, specifically at the security checkpoint.
- Update contracts/leases and establish purchasing policy.
- Maintain and improve recycling program according to Plan-Do-Check-Act (PDCA) cycle- a four-step planning process designed to achieve continuous improvements in quality. Information available at: <https://asq.org/quality-resources/pdca-cycle>.

This range of recommendations will allow BIS the flexibility to implement those that are compatible with changing conditions and available resources, while providing the opportunity to increase landfill diversion over time through a phased, comprehensive program. Please see the BIS recycling plan for more detailed information in **Appendix D**.

## 5.10 WETLANDS

See **Section 5.6.3** above.

## 5.11 OTHER ENVIRONMENTAL CONSIDERATIONS

### 5.11.1 Air Quality

An air quality analysis is the measure of the condition of the air in terms of pollutant concentrations. Air quality is regulated out of concern for human health (especially the health of children, the elderly, and those with certain health conditions). Poor air quality can also affect crops and vegetation as well as buildings and other facilities. Air quality is regulated by the USEPA under the Clean Air Act, which includes standards for six pollutants. The USEPA regulates these pollutants to permissible levels via standards called National Ambient Air Quality Standards (NAAQS).

Areas that have concentrations of the criteria pollutants below the NAAQS are designated as “attainment areas.” Areas with concentrations of these pollutants above the NAAQS are designated as “nonattainment areas.” Nonattainment areas must implement plans to lower pollutant levels below the standards. In addition, aviation-related federal actions planned for nonattainment areas must conform to such plans (also known as “General Conformity”).

According to the USEPA’s Current Non-Attainment Counties for All Criteria Pollutants list, all the counties in North Dakota are currently in an attainment for NAAQS pollutants; no counties are listed as being in non-attainment.

Construction activities, such as those required under proposed future projects, may temporarily impact air quality; such impacts should be evaluated project by project to determine whether they would be significant.

### 5.11.2 Climate

Greenhouse gases are those that trap heat in the earth's atmosphere. Both naturally occurring and anthropogenic (man-made) greenhouse gases include water vapor (H<sub>2</sub>O), carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), and ozone (O<sub>3</sub>).

Research has shown a direct link between fuel combustion and greenhouse gas emissions. Therefore, sources that require fuel or power at an airport are the primary sources that generate greenhouse gases. Aircraft jet engines, like many other vehicle engines, produce CO<sub>2</sub>, water vapor, nitrogen oxides, carbon monoxide, oxides of sulfur, unburned or partially combusted hydrocarbons (also known as volatile organic compounds [VOCs]), particulates, and other trace compounds.

Airport development has the potential to both affect climate change and to be affected by it. Changes in resource categories such as air quality, natural resources, and energy supply can potentially contribute to climate change by increasing the amount of greenhouse gases emitted. Conversely, some airport projects may be impacted by the potential effects of climate change.

Based on FAA data, activity at BIS as compared to total aviation activity throughout the United States represents less than 1 percent of U.S. aviation activity. Therefore, assuming that greenhouse gases occur in proportion to the level of activity, greenhouse gas emissions associated with existing and future aviation activity at BIS would be expected to represent less than 0.03 percent of U.S.-based greenhouse gases. Therefore, emissions of greenhouse gases as a result of the proposed projects are not expected to be significant.

### 5.11.3 Coastal Resources

Coastal resources are those within coastal waters and shorelands such as islands, salt marshes, estuaries, beaches, and dunes as well as their wildlife and habitats. Coastal

resources include those along the oceans as well as the Great Lakes. These resources are protected under the Coastal Barrier Resources Act and the Coastal Zone Management Act as well as several other statutes.

North Dakota is located in the upper Midwestern region of the United States, is bordered by three states as well as two Canadian provinces, and does not have any coastal borders. Therefore, no resources in North Dakota or the Bismarck area are protected under the Coastal Barrier Resource Act or the Coastal Zone Management Act.

#### **5.11.4 Natural Resources and Energy Supply**

Airport activities, including construction, operation, and maintenance have the potential to modify a facility's consumption of natural resources (such as water or construction materials) and use of energy supplies (electricity, natural gas, or fuel for aircraft and ground vehicles). Natural resource and energy supply impacts are those that could increase the amount of energy required to operate aircraft, Airport-related service vehicles, terminal lighting, and other uses such as heating and air-conditioning. Except for electricity necessary to operate airfield lighting, navigational aids (NAVAIDs), and other energy dependent components, energy requirements for an airport largely depend upon aviation activity levels.

The FAA defines two types of energy use that should be considered when determining the potential natural resource and energy supply impacts of a proposed project:

- Natural resource and energy supply related to major changes in stationary facilities such as airfield lighting, building heating and cooling needs that may exceed local supply or capacities
- Natural resource and energy supply related to major changes in the movement of aircraft and ground vehicles to the extent that demand exceeds available energy supply.

Aviation activity levels at BIS are forecasted to increase, which may result in an increase in the energy required for aircraft operations at the facility; however, increasing activity levels are not anticipated to create a significant demand for energy or natural resources. Installation of light-emitting diode (LED) airfield lighting that requires less energy than incandescent lighting may also decrease airfield energy consumption.

Given that the availability of natural resources and energy to the Airport as a result of its location near a major metropolitan area and that existing demand for natural resources and energy are within existing capacity, adverse impacts resulting from the proposed projects are not anticipated on energy supplies or natural resources. It is anticipated that existing supplies of natural resources and energy will be adequate to accommodate proposed improvements at BIS and changes to aircraft and other vehicle movement.

#### **5.11.5 Socioeconomics, Environmental Justice, and Children’s Environmental Health and Safety Risks**

Major airport development projects can impact the socioeconomic conditions of the surrounding community. Such projects have the potential to impact neighboring populations, including children, and may do so disproportionately to the overall area population.

Environmental justice requires the fair treatment of people of all races, cultures, and income levels, and no group of people should shoulder a disproportionate share of impacts of a given project. Environmental justice is defined as the right to a safe, healthy, productive, and sustainable environment for all, where environment includes the ecological, physical, social, political, aesthetic, and economic environment. Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations is intended to identify, address, and avoid

disproportionately high and adverse human or environmental impacts on specific populations.

FAA Order 1050.1F requires evaluation of potential environmental health and safety risks that could disproportionately affect children. These could include products or substances a child is likely to encounter or ingest, such as air, food, drinking water, recreational waters, soil, or products they might use or to which they might be exposed.

Information regarding socioeconomic characteristics of the area within a 1-mile radius of BIS was obtained from the US Census Bureau. According to this information, an estimated 7,440 people live within 1 mile of BIS and about 11 percent of those are estimated to represent a minority population (based on trends from the greater Bismarck and Burleigh County areas). The EPA's Environmental Justice Screening tool includes a demographic index that combines minority and low-income population characteristics in census block groups. The concentration of residents who are within an environmental justice population category near BIS are shown in **Figure 5-6**.

The proposed projects including in the near- to mid-term planning period would occur on existing Airport property; therefore, there would be no minority or low-income populations within the proposed project areas. While such populations may exist near BIS, the proposed projects are not anticipated to cause impacts to residents, businesses, or other environmental justice communities in the area.

This page is intentionally blank

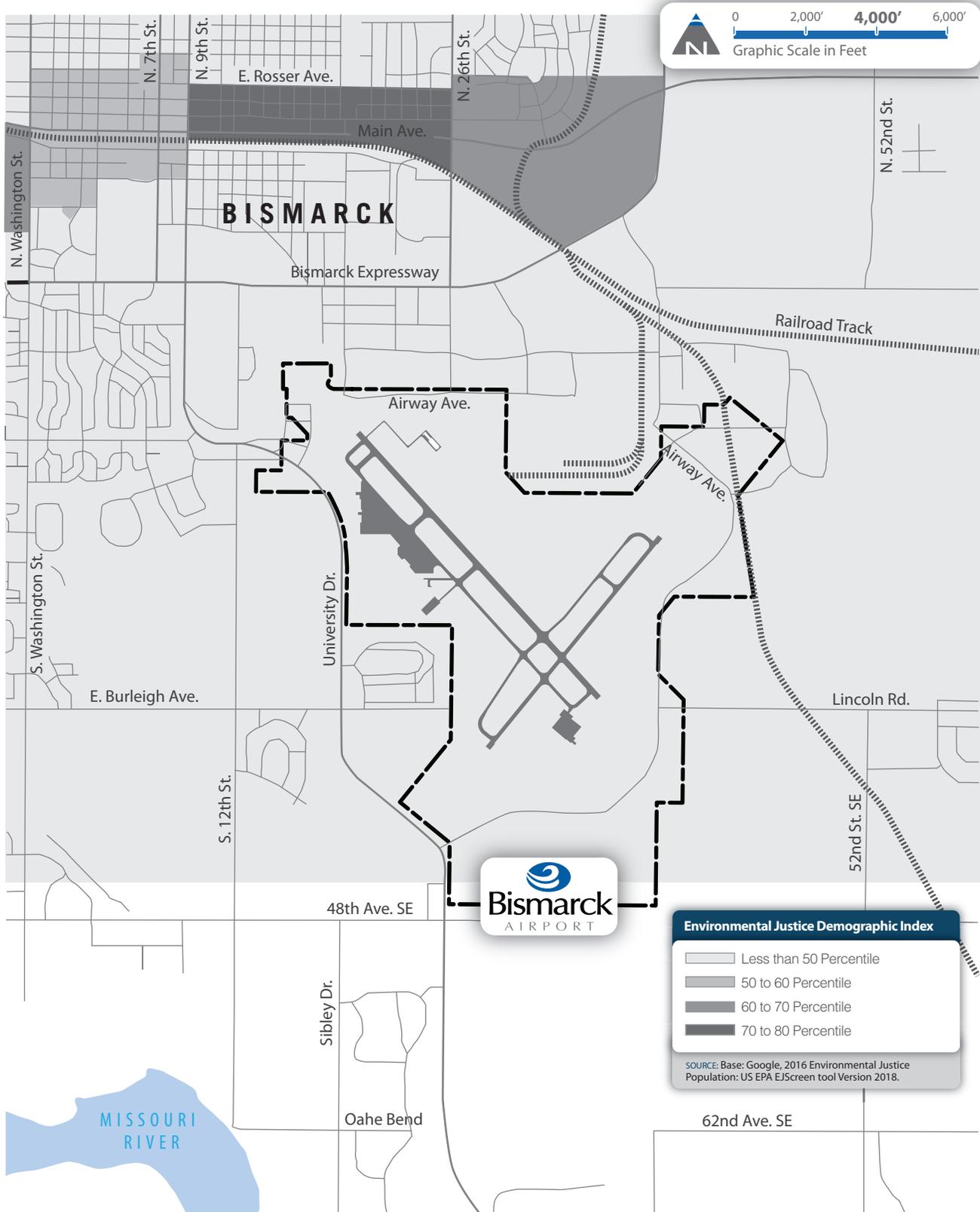


Figure 5-6 Environmental Justice Populations

This page is intentionally blank

### 5.11.6 Visual Effects

Airport lighting such as runway lights, taxiway lights, NAVAIDs, parking lot lights, and terminal/hangar building lights can produce light emissions that could potentially contrast with the visual character of an area. When a project is proposed that would introduce new or relocated airport lighting facilities, a visual effects analysis may be needed to determine the impact to residential or other sensitive areas as well as glare that could affect pilots and air traffic controllers. A complete visual effects analysis can be conducted as a part of the NEPA process prior to the construction of a project. At the time of this environmental overview, an initial review of potential visual effects was conducted.

Overall, the proposed developments are not anticipated to result in visual effects that could impact local residences and other light sensitive areas. Reconfiguration of the airfield may involve relocation or replacement of existing fixtures; however, the total number of fixtures and intensity of airfield lighting is not anticipated to change under the proposed projects. Construction of new structures that could introduce new lighting, such as hangars, may incorporate shielding elements, where appropriate, to reduce visual effects for areas surrounding the immediate vicinity of BIS. Each project may require review for visual effects during the environmental review process to determine if shielding measures are needed.

## 5.12 CONSTRUCTION IMPACTS

Construction results in temporary environmental effects. The primary resource categories that are affected by construction activities are air quality, natural resources and energy supply, stormwater, and solid waste.

Air quality may be temporarily impacted by construction vehicles and equipment that will increase emissions at BIS during implementation of proposed projects. The increase in emissions will be accounted for project by project in environmental review documents.

Construction projects temporarily change an airport’s demand on local energy and natural resource supplies. This has short-term impacts on fuel used by construction vehicles, fuel used by aircraft or other vehicles that must take a detour around construction, and the use of construction materials required for the proposed action. Consumption of energy and natural resources during the construction phase of the proposed projects will consist mainly of construction materials and fuel used by construction machinery. This consumption will be evaluated project by project but is not likely to exceed locally available supplies.

Construction activities can impact stormwater and drainage. Disturbing soil can lead to increased erosion and sediment in runoff, while heavy equipment can compact soil making it more difficult for water to infiltrate. These impacts will be evaluated on a project by project basis, and best management practices should be employed in order to minimize negative impacts.

The proposed projects will produce construction debris such as dirt, concrete, and asphalt. Construction materials and other solid waste should be disposed of at a landfill capable of handling disposal.

### **5.13 CONCLUSION**

This overview identified potential environmental issues that will need to be addressed as BIS moves forward with implementation of its plan. The level of NEPA documentation, whether an Environmental Impact Statement, Environmental Assessment, or Categorical Exclusion, will depend on the needs as defined in the detailed project planning process. The NEPA process will identify required permits and mitigation activities.

Finally, the Consultant reviewed the existing City of Bismarck Zoning Ordinance, Title 10 and Title 14, as it pertains to zoning classifications and the use of an airport noise overlay district to align the current zoning classifications and airport noise overlay district with the airspace mapping tool developed as part of the BIS airport master plan. As shown in **Appendix C**, a list of text revisions for both Title 10 and 14 depict the recommended changes to the City's current zoning ordinance. Consideration and coordination with agencies prior to future development activities will allow BIS to continue to be a good steward of the environment and protect surrounding airspace vital to BIS.