Dual Track Airport Planning Process
Brookings, South Dakota

Final Environmental Assessment

Prepared for

City of Brookings, South Dakota

Prepared by

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In association with

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This Environmental Assessment becomes a Federal document when evaluated and signed and dated by the Responsible FAA official.

Patricia L Dressler
Responsible FAA Official

1/10/2012
Date

****This document is intended to be read in its entirety.****

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1. PURPOSE AND NEED

The Brookings Regional Airport (BKX) is located in the City of Brookings (City) in Brookings County, South Dakota as shown in **Figure 1.** Note that all Environmental Assessment (EA) figures are located at the end of this document in Appendix C. BKX has two runways – a primary Runway 12-30 5,231 feet long and 100 feet wide, and a crosswind Runway 17-35 3,599 feet long and 60 feet wide. The airport layout is shown in **Figure 2**.

Based on the findings of the BKX Master Plan Update in 2006, the City initiated a process that examined alternatives that would expand BKX and alternatives that would develop a new replacement airport – which became known as the Dual Track Airport Planning Process. A copy of the BKX Master Plan can be found on the City's web site at http://www.cityofbrookings.org/. The City has sponsored this Dual Track Airport Planning Process Final Environmental Assessment (EA) to assess and compare the potential environmental consequences of the selected BKX Expansion Alternative with the selected New Airport Alternative.

The Federal Aviation Administration (FAA) may prepare an EA on any action at any time to assist agency planning and decision making (40 CFR 1501.3b). FAA Order 1050.1E, Environmental Impacts: Policies and Procedures, paragraph 404b, states that "Program offices must prepare concise EA documents with a level of analysis sufficient to:

(1) Understand the purpose and need for the proposed action, identify reasonable alternatives, including a no action alternative, and assess the proposed action's potential environmental impacts.

(2) Determine if an EIS is needed because the proposed action's potential environmental impacts will be significant."

If the FAA evaluation of the Dual Track Airport Planning Process Final EA determines that the proposed action will not result in impacts requiring the preparation of an Environmental Impact Statement (EIS), they shall prepare a Finding of No Significant Impact (FONSI)/Record of Decision (ROD). This Dual Track Airport Planning Process Final EA was prepared in compliance with the National Environmental Policy Act of 1969 (NEPA) [42 U.S.C. Section 4321, et seq.], the implementing regulations of the Council on Environmental Quality (CEQ) [40 CFR Parts 1500-1508] and FAA directives (Order 1050.1E, Environmental Impacts: Policies and Procedures, and Order 5050.4B, National Environmental Policy Act (NEPA) Implementing Instructions For Airport Actions.

1.1 PROJECT PURPOSE

Three primary issues face the airport today: one related to incompatible land use and two related to standards. The incompatible land use problem stems from unsuited uses in two of the four Runway Protection Zones (RPZs). The RPZs are intended to protect people and property on the ground in the immediate vicinity of a runway end. They are trapezoidal in shape, with their dimensions determined by the type of aircraft and approach visibility minimums associated with a given runway end. According to FAA standards, the RPZs should be clear of all buildings except those required for airport functions. Runway 35 RPZ and Runway 30 RPZ at BKX do not

meet FAA standards. There are two residences in the Runway 35 RPZ and three residences and 12 businesses in the Runway 30 RPZ (see **Figure 2**). As a result, the FAA notified the City that it is in noncompliance with its contractual obligations in the receipt of federal funds for improvements to BKX (see correspondence between the FAA and the City beginning at Appendix A-1.

The first standards-related problem is that the primary runway length does not accommodate the current and anticipated near future fleet mix at the airport.

The second standards-related problem is a non-standard intersection of the two runways at the Runway 12 and 17 ends. The slightly separated configuration of the north end of the crosswind Runway 17 and the northwest end of the primary Runway 12 closely resembles configurations that have caused accidents due to pilot confusion regarding runway designation during takeoff (e.g., they take off on the shorter crosswind runway instead of the primary runway without realizing the mistake until it is too late to stop).

Taken together, the City assumes that these three issues threaten the airport's ability to maintain its status as a federally funded airport as well as its ability to continue providing the Brookings region with a safe and reliable access point to the nation's air traffic system. Therefore, the purpose of the Proposed Action is to:

- Acquire control over the RPZs,
- Provide sufficient runway length for the existing and anticipated future aircraft fleets, and
- Develop a standard runway intersection.

1.2 PROJECT NEED

The project need is to provide an airport layout that achieves the project purpose, specifically control over the RPZs, adequate runway length, and standard runway intersection. FAA airport design standards must be met in doing so. Those standards are outlined below and in **Table 1** on page 8. Among these needs is the desire to maintain the airports Title 14, Code of Federal Regulations (CFR), Part 139 (14 CFR Part 139) Airport Certification for airports serving scheduled air carrier operations in aircraft designed for more than 9 passenger seats but less than 31 passenger seats. Collectively these comprise the project need.

1.2.1 Airport Reference Code

To determine the design standards applicable to runways, the FAA uses a criterion known as an Airport Reference Code (ARC). It is important to note that ARC selection does not determine runway length. Rather, ARCs help define what safety standards, such as runway and taxiway widths, runway-to-taxiway separations, and runway and taxiway safety areas, are applied to a given runway length. In this way, ARCs create the long-term framework within which the runway lengths and other facility needs are constructed (See Section 1.2.2 for a detailed runway length justification discussion).

An ARC is chosen based on the approach speed and wingspan of aircraft intended to operate at the airport. The most demanding type of aircraft using the primary runway at BKX today can

generally be described as medium-to-large business jet and propeller airplanes. The majority of these aircraft fall into ARCs B-II and C-II, not C-III which is currently applied to BKX. Therefore, standards associated with ARC C-II will be applied to the main runway. The required primary runway width is 100 feet. The major change caused by the decrease in the ARC from C-III to C-II is the main runway's associated taxiway width decreases from 50 to 35 feet.

The crosswind runway needs to accommodate small, single–engine, propeller aircraft. The majority of these aircraft fall into ARC A-I or B-I. B-I is the currently assigned ARC and this ARC will continue to be applied to the crosswind runway. The required runway width is 60 feet.

1.2.2 Primary Runway Design Criteria

Primary Runway Aircraft Approaches

The current primary runway has a variety of instrument approaches to both ends. The best approaches are the Runway 30 (southeast end) Instrument Landing System (ILS) approach with a Medium-Intensity Approach Lighting System with REILS[1] (MALSR) and the Runway 12 (northwest end) area Navigation Global Positioning Satellite (RNAV (GPS)) approach. Due to the fact that they make the airport usable in a wider variety of weather conditions, these approaches need to be maintained.

An ILS approach uses ground-based navigation equipment to provide electronic signals to aircraft on approach to the airport. These signals allow a pilot to attempt a landing when the runway is not visible due to weather conditions, down to certain minimum conditions. Currently at Brookings those minimums are ½-mile forward visibility and a 200-foot cloud cover ceiling. These are the best minimums provided by the type of system Brookings uses and therefore allow the airport to stay open during the widest range of weather conditions. To maintain this level of usability, an ILS with a MALSR is recommended for one end of the primary runway. The RNAV (GPS) approach provides a pilot with information similar to that provided by the ILS approach, but with less precision so the minimums associated with this approach are not as good. In addition, the GPS approach is available only to aircraft with instrumentation capable of receiving the signal.

Because an ILS approach with a MALSR provides the best minimums and is usable to the widest range of aircraft, it should be placed on the end with the best wind coverage during IFR conditions. Wind data indicates that an ILS placed on the northwest (NW) end provides 30% more wind coverage than the southeast (SE) end when the primary runway is oriented NW-SE during IFR conditions, which means that the wind comes from the southeast more often than the northwest during low ceiling and/or visibility conditions. Therefore, the ILS system will be placed on the northwest end of the primary runway if feasible. The criteria associated with an ILS approach and ½-mile visibility will thus be applied to the northwest end and that of an RNAV (GPS) approach with ¾-mile visibility to the southeast end of the primary runway.

Primary Runway Length Requirements

The FAA publishes standards for determining runway lengths in FAA Advisory Circular (AC) 150/5325-4B, "Runway Length Requirements for Airport Design". Two basic ways to

[1] Runway End Identifier Light System

determine runway length requirements are outlined in this AC. One is to use the requirements of a particular family of aircraft (e.g., aircraft having a maximum take-off weight of less than 12,500 pounds), and the other is to use the requirements of a specific aircraft (e.g., a regional jet). Determining runway length based on an aircraft family ensures the greatest flexibility.

The number of jet-only operations within the family ranged from 165 in 2001 to 345 in 2007 prior to the economic recession beginning in 2008, as shown in **Exhibit 1**. As shown in **Exhibit 2**, jet operations at BKX have begun to rebound in 2010 and are projected to return to the 2007 level in 2015 and reach the threshold of 500 operations a year by 2021. Because jets comprise a large portion of the aircraft within the family of aircraft using BKX today and jet operations within this family are anticipated to exceed 500 operations in the future, the more demanding subset of jet requirements was taken into account when determining runway length needs. In this manner, a recommended runway length of 6,000 feet is required; with the assumption that the difference in runway end elevations is similar to the 21 feet existing today (the FAA recommends adding 10 feet of runway length for every 1 foot difference in runway end elevation change). Therefore, the project should provide room for a 6,000 foot runway.

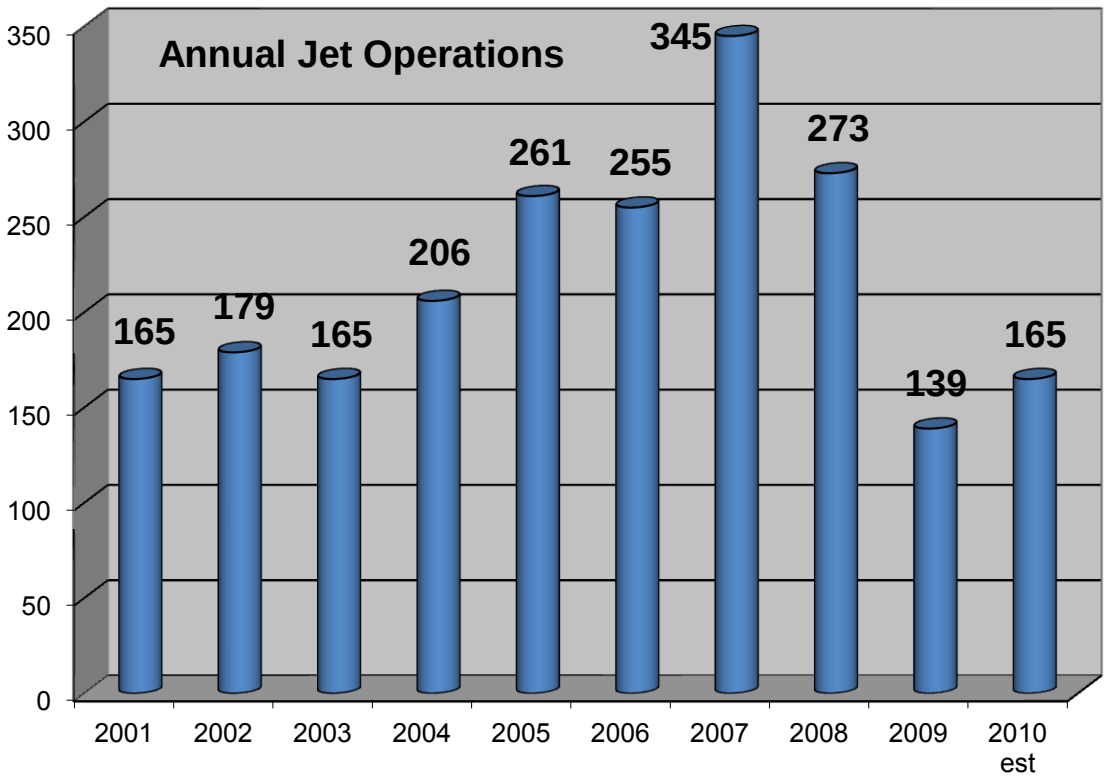

Exhibit 1: 2001-2010 Jet Operations

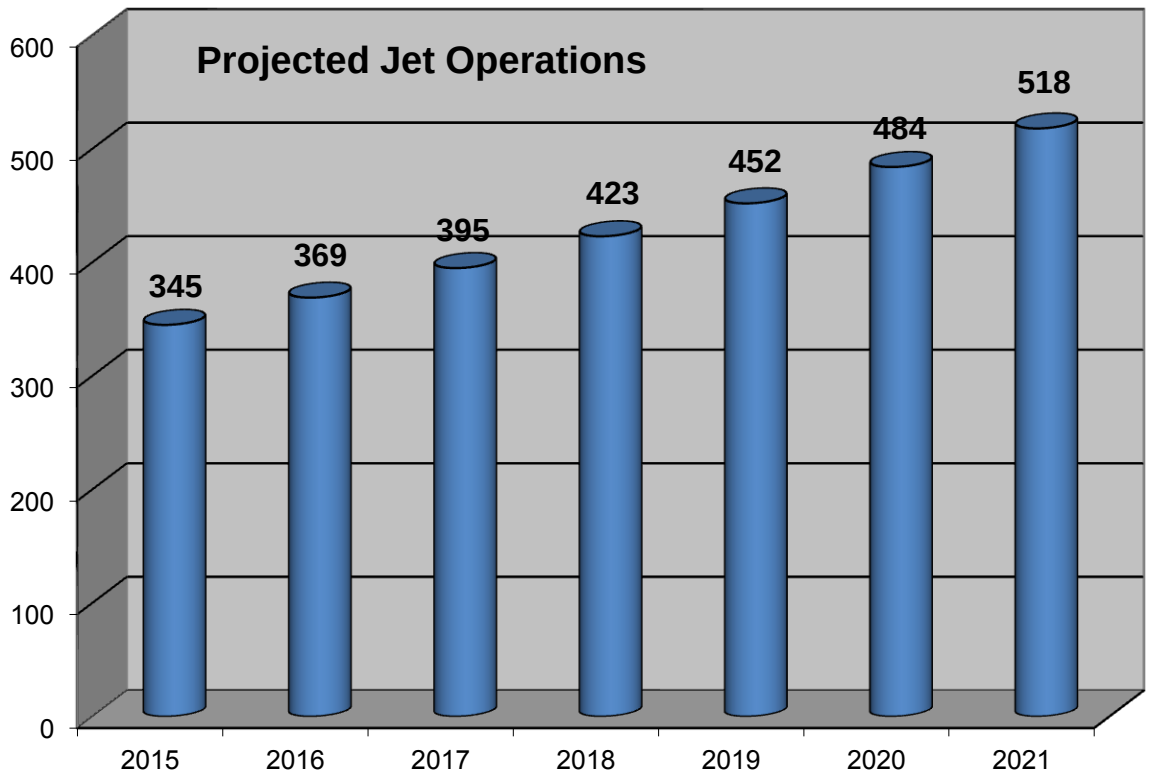

Exhibit 2: Projected Jet Operations

Primary Runway Protection Zones

The RPZ dimensions for the primary runway are determined by the preceding criteria and by applying standards in FAA AC 150/5300-13, "Airport Design". RPZs are intended to protect people and property on the ground in the immediate vicinity of a runway end. They are trapezoidal in shape, with their dimensions determined by the type of aircraft and approach visibility minimums associated with a given runway end. According to FAA standards, the RPZs should be clear of all buildings except those required for airport functions. The primary RPZ dimensions are 2,500 feet x 1,000 feet x 1,750 feet (length x inner width x outer width) for the precision approach end (the one where the ILS will be located) and 1,700 feet x 1,000 feet x 1,510 feet for the opposite end. The current precision approach is on the Runway 30 end, which is the southeast end, with the smaller RPZ on the Runway 12 end (northwest). The future precision approach will be on the northwest end and the smaller RPZ will be on the southeast end of the runway.

1.2.3 Crosswind Runway Design Criteria

Need for a Crosswind Runway

Wind and weather data from the National Oceanic and Atmospheric Administration for the Brookings Airport during the period 1994-2003 was used to analyze the wind coverage. Wind coverage is calculated using crosswind components, which are defined by wind direction and velocity vector taken at a right angle to a runway. Because larger aircraft are better suited to withstand crosswinds, the component used for them is higher than that used for smaller aircraft.

According to guidelines contained in the FAA AC 150/5300-13, a crosswind runway is recommended when wind coverage on the primary runway falls below 95 percent. For a northwest-southeast primary runway, coverage at the 10.5-knot crosswind component associated with small aircraft is below 95 percent. The 10.5-knot component was chosen as it encompasses the small single-engine aircraft (including those used by South Dakota State University and its training program) that use the crosswind runway most often and are more susceptible to crosswinds. Adding a crosswind runway brings the wind coverage over 95 percent for all crosswind components. Therefore, a crosswind runway will be designed for small aircraft.

Crosswind Runway Length Recommendation

According to FAA AC 150/5325-4B, the crosswind runway length should be based on the recommended runway length for aircraft that need it and also meet the substantial use threshold of 500 operations a year. Using these standards, the design aircraft family was identified as "small aircraft with approach speeds of 50 knots or more and less than 10 passenger seats." This family is generally composed of small utility (less than 12,500 pounds) A-I and B-I aircraft. The length of the crosswind runway is based on the needs of the design aircraft family that best matches the needs of A-I and B-I aircraft.

Based on the chosen design family, AC 150/5325-4B Figure 2-1 of this AC was used to calculate the runway length. The 95-percent subgroup was used because it is for "airports that are primarily intended to serve medium size population communities with a diversity of usage and a greater potential for increased aviation activities" (paragraph 205 of this AC). This description generally fits the Brookings community. Using the above inputs, a crosswind runway length recommendation of 3,600 feet was determined.

Crosswind Runway Protection Zones

The RPZ dimensions for the crosswind runway are determined by the preceding criteria and by applying standards in AC 150/5300-13. The RPZ dimensions are 1,000 feet x 250 feet x 450 feet for both ends of a crosswind runway without instrument approaches.

1.2.4 Hazardous Wildlife Attractant Mitigation

General

Comprehensive hazardous wildlife attractant mitigation will be needed to manage hazardous wildlife on and in the vicinity of the airport, especially during peak bird migration periods. FAA recommends airport operators identify hazardous wildlife attractants and any associated wildlife hazards during any planning process for new airport development projects as outlined in FAA AC 150/5200-33B, "Hazardous Wildlife Attractants on or Near Airports."

An evaluation of the hazardous wildlife attractant nature of the alternatives under consideration was performed by the USDA Wildlife Services and a report was published in February 2008 (included at Appendix A-39). Two addenda were also published (in April and October 2008; at Appendix A-58 and A-59). The findings of the report and addenda were utilized in the development of measures to mitigate hazardous wildlife attractants.

1.2.5 Other Facilities

This section summarizes the hangars, businesses, and other facilities that support the airfield functions. For purposes of developing the design criteria, the size of these facilities was based

on the size of the existing airport facilities. Should an alternative involving construction of new facilities (such as a new airport) be chosen, each of these will have to be independently justified.

Using this approach, the following facilities need to be provided:

- Area sufficient to accommodate up to 54,000 square feet (SF) of hangar space and associated taxiways, along with area for up to 32 auto parking spaces.
- Up to 300,000 SF of apron, tie down areas, aircraft parking areas and aircraft circulation taxiway and taxilanes to provide access to and circulation within these areas.
- Aircraft rescue and fire fighting building with 3,500 SF and 7 auto parking spaces.
- A 1,400-SF equipment storage building.
- Area for a complete fixed base operator (FBO) business, including a general use building and aircraft storage and maintenance buildings. This will comprise approximately 15,000 SF of building area along with 20 auto parking spaces. Area for a second FBO facility of the same size should be provided to accommodate long-term planning and to abide by non-exclusive rights set forth in AC 150/5190-6, "Exclusive Rights at Federally Obligated Airports" with current changes.
- Storage tanks for up to 12,000 gallons of AvGAS and 12,000 gallons of Jet-A fuel.
- Passenger terminal with 4,100 SF and 36 auto parking spaces. The timing for construction of this building will depend on charter demand and/or the resumption of passenger service.

Taxiways

The main runway will have a full length parallel taxiway 35 feet wide with up to six connector taxiways going to the main runway. The crosswind runway will have a midpoint connector taxiway and turnaround taxiways at each end. The crosswind design will allow for a full length parallel taxiway 25 feet wide with up to four connector taxiways in the future.

Additional Navigational Aids (NAVAIDS) and Lighting

NAVAIDS include electrical and visual air navigation aids such as lights and approach equipment that help pilots navigate. Both ends of each runway will be equipped with Precision Approach Path Indicators (PAPIs) to provide pilots with visual guidance on approach. The primary runway will be equipped with high intensity runway edge lights (HIRLs) and the crosswind runway with medium intensity runway edge lights (MIRLs). With the exception of the runway end with the approach lighting system, all runway ends will have runway end identifier lights (REILs) installed.

The airport will be equipped with an Automated Weather Observation System (AWOS) to provide up to date weather and wind conditions at the airport. The siting and installation of this station will need to be coordinated with the National Oceanic and Atmospheric Administration (NOAA).

The airport will be served by a Very High Frequency Omni-Directional Radio Range (VOR) to provide additional air navigation information to pilots. The siting and installation of this NAVAID will need to be coordinated with the FAA.

1.2.6 Comparison of Existing and Proposed Design Criteria

The primary design criteria for the existing and proposed runways are compared in **Table 1**.

Table 1: Existing and Proposed Design Criteria

Primary Runway (all measurements in feet unless otherwise noted)	**Existing**	**Proposed**
Length	5,231	6,000 (approximately) *
Width	100	no change
Runway Safety Area Width	500	no change
Runway Safety Area Length Beyond Runway End	1,000	no change
Runway Object Free Area Width	800	no change
Runway Object Free Area Length Beyond Runway End	1,000	no change
Lowest Approach Minimums	1/2 mile and 200 feet	no change
Non predominant IFR RPZ	Runway 12 1,700 x 1,000 x 1,510	Runway 29 1,700 x 1,000 x 1,510
Predominate IFR RPZ (ILS approach)	Runway 30 2,500 x 1,000 x 1,750	Runway 11 2,500 x 1,000 x 1,750
Instrument Landing System Runway 30	Yes, with MALSR	removed
Instrument Landing System Proposed Runway 11	none	Yes, with MALSR
Instrument Approach Procedures	RNAV(GPS) both ends VOR both ends	RNAV(GPS) both ends VOR both ends
Taxiway Width	50	35**
Runway - Taxiway Separation	400	no change
Crosswind Runway (all measurements in feet unless otherwise noted)	**Existing**	**Proposed**
Length	3,599	3,600
Width	60	no change
Runway Safety Area Width	120	no change
Runway Safety Area Length Beyond Runway End	240	no change
Runway Object Free Area Width	250	no change
Runway Object Free Area Length Beyond Runway End	240	no change
Lowest Approach Minimum	Visual	no change
RPZ dimensions	1,000 x 250 x 450	no change
Instrument Landing System	No	no change
Instrument Approach Procedures	none	RNAV(GPS) both ends
Taxiway Width	25	no change
Runway - Taxiway Separation	225	no change

*Actual length is determined at final design of the Airport Layout Plan (ALP) for the specific site chosen.

**The taxiway width can remain 50', but the additional 15' will not be eligible for federal funding.

1.3 PROPOSED ACTION

The Proposed Action is environmental approval, for implementation and use, the expansion of the existing airport (BKX Expansion Alternative) shown in **Figure 3**, as discussed in Section 2.3. The Proposed Action consists of the following:

- Construction of a new approximately 6,000-foot C-II Runway 11-29 with a taxiway on the north side and an ILS with approach lights at the Runway 11 end
- The shift of the crosswind runway 333 feet to the north

- Relocation of all associated FAA navigational and weather aids
- The reroute of Six Mile Creek for approximately 3,790 feet in length around the new Runway 11 end safety area (see **Figure 14a**)
- Construction of flood storage area on the airport as compensation for the 100-year flood storage area removed (see **Figure 14a**)
- The acquisition of approximately 122 acres of property including one residence that was acquired in 2009

MITIGATION COMMITMENTS

The Proposed Action includes the following commitments:

1. In accordance with the issues and considerations addressed in the USDA Wildlife Services' report and addenda (see Appendix A-39 to A-60), the following BKX Hazardous Wildlife Attractant Mitigation Plan will be implemented:

A. The equalization basins will be relocated to the south of the realigned primary runway (see **Figure 3**). According to the USDA report, the equalization basins attract hazardous wildlife, but the attractant potential can be mitigated through design changes and monitoring methods. If the recommendations are followed, the EQ basins can remain on-airport, provided techniques to control bird activity near them are implemented. Hazardous wildlife activity near the basins will be monitored and mitigation measures such as the removal of vegetation from the basin bottoms and/or access control measures such as fencing will be implemented should airport management deem that the basins are attracting hazardous wildlife. In addition, the relocated equalization basins will be designed so that they do not retain standing water for extended periods of time. The design will also accommodate year-around mowing and vegetation control capabilities.
B. The on-airport drainage ditches will be modified so that they do not retain water.
C. Wetland vegetation associated with the drainage ditches and attractive to hazardous wildlife will be controlled.
D. On-airport crops will be replaced with more appropriate vegetation (such as warm season grasses) and be managed in a way that does not attract wildlife that pose a hazard to airport operations.
E. Ground Squirrel populations will continue to be controlled in the same manner they are at present.
F. All sections of the perimeter fence will be increased to a height of 10 feet to control deer access to the airfield.
G. The living snow fence will be monitored, with pruning or removal occurring if it becomes a hazardous wildlife attractant.
H. The Airport is working with the USDA and the FAA and coordinating with City Landfill staff to minimize the hazardous wildlife attractant potential of the landfill. These efforts will continue and will include an evaluation of the measures taken by other area airports with landfills nearby.
I. Spring floods of the Big Sioux River and Six Mile Creek create massive wetlands within ¼ mile of BKX. Migrating waterfowl utilizing the floodplain create severe hazards for aircraft for four to six weeks each spring. In addition to the bird activity monitoring, the

City will work with the USDA and FAA to take practical steps to minimize the severity of this hazard.

J. Several gravel pits are located along I-29 to the east and southeast of BKX. The City will take practical steps to work with the gravel pit owners to attempt to minimize the creation of sandbars and shallow areas in these pits.

In addition to the above measures recommended in the USDA Wildlife Services' report, the City will implement the following measures:

K. The City will develop a comprehensive program to monitor bird activity and educate pilots on the dangers of bird strikes. The bird monitoring activity at a minimum will include monitoring of the Big Sioux River and Six Mile Creek during peak migration periods (especially spring flood events). The bird monitoring activity will be conducted by City staff. The City will provide pilot updates on bird activity.

L. A general and on-going pilot education aimed at raising the awareness of aircraft/bird strikes will also be developed, preferably in conjunction with the SDSU aviation program.

M. Although the final locations and dispositions of the outer marker, middle marker and VOR are not currently known, it is assumed that an associated relocation, decommissioning and/or removal will not result in significant environmental impacts. In the event that it is determined there may be significant impacts a re-evaluation of the EA would be prepared to address these issues.

2. The City of Brookings will obtain the following environmental permits and will comply with their terms and conditions:

- Section 404 Permit from the US Army Corps of Engineers
- NPDES General Storm Water Permit for Construction Activities from the DENR
- NPDES Storm Water Permit for Industrial Activities from the DENR
- Conditional Use Permit for Construction of an Airport from Brookings County
- Section 401 Certification from the DENR
- Road Closure Permit, General Grading Permit and Floodplain Development Permit from the City of Brookings

1.4 PERMITS AND APPROVALS

The anticipated permits and approvals required to implement either the BKX Expansion Alternative or the New Airport Alternative are provided in **Table 2**.

Table 2: Permits and Approvals

Unit of Government	BKX Expansion Alternative	New Airport Alternative
Federal		
Federal Aviation Administration (FAA)	Approval of Revised Airport Layout Plan	Approval of Airport Layout Plan
	Approval of Airport Improvement Program Funding	Approval of Airport Improvement Program Funding
	Formal ESA Section 7 Consultation with USFWS	Environmental clearance for land release on existing airport for redevelopment
Army Corps of Engineers (COE)	Section 404 Permit (Wetlands) Letter of Map Revision (LOMR)	
State		
South Dakota Department of Environment and Natural Resources (DENR)	General Storm Water Permit for Construction Activities and Storm Water Permit for Industrial Activities (National Pollution Discharge Elimination System (NPDES) Permits)	General Storm Water Permit for Construction Activities and Storm Water Permit for Industrial Activities (National Pollution Discharge Elimination System (NPDES) Permits)
	Coordination/Approval of closure/replacement of Biosolids Drying Beds & Equalization Basins	
	Section 401 Certification (Wetlands)	
Local		
Brookings County	Conditional Use Permit for Construction of an Airport	Conditional Use Permit for Construction of an Airport
		Extra territorial jurisdiction boundary changes
	Annexation of unplatted territory (SDCL 9-4-5)	Annexation of unplatted territory (SDCL 9-4-5; 9-4-14)
City of Brookings	Storm Water Permit; Notice of Intent (NOI) for Storm Water Permit submitted to DENR	Storm Water Permit; NOI for Storm Water Permit submitted to DENR
	Prepare Storm Water Pollution Prevention Plan	Prepare Storm Water Pollution Prevention Plan
	Road Closure Permit	Road Closure Permit
	General Grading Permit	General Grading Permit
	Submittal of Site Plan to Brookings County	Submittal of Site Plan to Brookings County
	Annexation of contiguous territory	Annexation of territory for municipal airport outside corporate limits (SDCL 9-4-14)
	Land use classification changes (Airport District)	Land use classification changes (Airport District)
		Extra territorial jurisdiction boundary changes
	Approval of Storm Water Pollution Prevention Plan	Approval of Storm Water Pollution Prevention Plan
	Review of Site Plan	Review of Site Plan
	Floodplain Development Permit	Floodplain Development Permit

1.5 REQUESTED FEDERAL ACTIONS

The proposed action will include final airspace determination for the development on the Airport Layout Plan (ALP), provide eligibility for federal grants-in-aid funds for eligible items, and provide the environmental approval for the development, implementation, and use of air traffic/flight procedures for full use of the proposed development.

FAA AC 150/5300-13, Airport Design, was used to determine airport design criteria (including RPA and ROFA) of ARC C-II for the main runway and ARC B-I for the crosswind runway. FAA AC 150/5325-4B, Runway Length Requirements for Airport Design, was used to determine runway length requirements.

FAA AC 150/5200-33B, Hazardous Wildlife Attractants on or Near Airports, was used to determine land use compatibility with regard to hazardous wildlife attractants in and near the airport and compatible land use siting requirements.

Subject to completion of the environmental document approval and availability of funding, implementation of the preferred alternative will commence. The City will construct, operate, and maintain the preferred alternative for the Airport.

1.6 Capital Improvement Program (CIP) Milestones

1.6.1 No Action Alternative

The following are the projects to implement the No Action Alternative. The projects are primarily maintenance projects and equipment to keep the airport in minimal operating condition. It is important to note that had the City chosen the No Action Alternative, it is assumed that these projects would be done at City expense, as failure to address the incompatible land uses in the RPZ's could result in an FAA determination that the City has not met its contractual obligations regarding the receipt of federal funds (see Sections 1.1 and 2.1.1).

- Finish EA/Update Airport Layout Plan (ALP)
- Design for Parallel Taxiway Reconstruction (existing location)
- Reconstruct Parallel Taxiway
- Snow Removal Equipment Purchase
- Design for Runway 12-30 Reconstruction (existing location)
- Reconstruct Runway 12-30 (With New Lighting System)
- Design Engineering for Runway 17-35 Reconstruction (existing location)
- Reconstruct Runway 17-35

1.6.2 BKX Expansion Alternative

The following are the projects to implement the BKX Expansion Alternative.

- Finish EA/Update ALP/Land Appraisal
- Land Purchase; Design Engineering for Expansion
- Construct Runway 11-29 Expansion (new alignment and extension, including Brookings Municipal Utilities (BMU) Facilities Relocation)
- Snow Removal Equipment Purchase
- Design Engineering for Terminal Renovations
- Construct Terminal Renovations
- Design Engineering for Crosswind Parallel Taxiway & Runway 17-35 Reconstruction (shifted location)
- Construct Crosswind Parallel Taxiway & Reconstruct Runway 17-35

1.6.3 New Airport Alternative

The following are the projects to implement the New Airport Alternative.

- Finish EA/New ALP/Land Appraisal
- Land Purchase; Design Engineering for New Airport - Phase I & Phase II
- Construct New Airport - Phase I (Grading)
- Construct New Airport - Phase II (Surfacing & Electrical)
- New Terminal / Existing Hangar & ARFF Building Relocation/Decommission existing airport
- Snow Removal Equipment Purchase
- Formal release of existing airport property
- Design Engineering for Cross-Wind Parallel Taxiway
- Construct Cross-Wind Parallel Taxiway

2. ALTERNATIVES

2.1 ALTERNATIVES UNDER CONSIDERATION

The following three alternatives are included in this Dual Track Airport Planning Process Final EA for detailed analysis: No Action Alternative, BKX Expansion Alternative and New Airport Alternative.

2.1.1 No Action Alternative

The No Action Alternative represents the course of action that would be pursued if the proposed project is not implemented. It consists of the existing airport facilities and is shown in **Figure 2**. Under this alternative, the City would take no additional action to address the incompatible land use issues and hazardous wildlife attractants facing the airport. Because this alternative would not address these issues, the City assumes that it may lose eligibility for future FAA funding and may be required to repay some or all of the grants that it has received in the last 20 years. The City also assumes some or all of the currently published aircraft approaches to BKX may be decommissioned.

Even though no additional action would be taken to resolve the incompatible land use issues, hazardous wildlife attractant and maintenance projects, most notably the reconstruction of the primary runway and associated parallel taxiway, would still need to occur in the very near future. Without these maintenance projects, over a period of a few years the pavement would degrade to the point where its weight bearing capacity would begin to diminish and the cracking and splitting pavement would introduce foreign object debris (FOD) into the runway environment. FOD is hazardous to all aircraft operations, but especially dangerous for jets. The deteriorating runway condition, combined with limited runway length and fewer aircraft approaches, would result in a decreased level of safety and eventually lower activity levels at the airport. This in turn would bring a diminished role for the airport in the economic, educational, and business aspects of the Brookings region.

Purpose and Need Evaluation

The No Action Alternative would not meet the project purpose and need. The hazardous wildlife attractant and incompatible land use issues would remain, the non-standard runway intersection would not be addressed, and the runway length would remain deficient.

FAA Design Criteria Evaluation

Primary Runway

Eventually, the runway pavement would deteriorate to the point that the FAA may deactivate all approaches to both ends of the primary runway. As mentioned above, the length does not meet the FAA standard of approximately 6,000 feet and the incompatible land uses in the Runway 30 RPZ would remain.

Crosswind Runway

With no change in the alignment of the primary runway, the crosswind runway would still be justified and would remain a visual-only runway with no instrument approaches. Its length would remain at 3,599 feet and the incompatible land uses in the Runway 35 RPZ would not be addressed.

Other Associated Facilities

Taxiways

The primary runway taxiways and all connector taxiways on the airfield would remain, but they may not be eligible for Federal funding for maintenance projects. The crosswind runway may not receive a parallel taxiway.

Additional NAVAIDS and Lighting

All of these facilities would remain, but FAA support and maintenance of the VOR and AWOS may eventually be discontinued.

Miscellaneous

All other existing facilities would remain, with the City assuming the cost for all those features currently eligible for federal funding. Most notable among these features is the 300,000-SF of apron and associated taxiways.

Hazardous Wildlife Attractant Mitigation

General

The City will take no additional action other than maintaining current practices.

Brookings Municipal Utilities (BMU) Facilities

Under this alternative, the hazardous wildlife attractant potential of the BMU Equalization (EQ) Basins would not be mitigated. The EQ Basins will remain as they currently are and continue to attract hazardous wildlife. The biosolids drying beds will be removed but are not a cost of this project.

Estimated Cost

The preliminary cost estimate for this alternative is $11.18 million, as summarized in **Table 3**. See Appendix A-82 for the detailed cost estimate.

Table 3: Estimated Costs – No Action Alternative

Description	Total Price
CONSTRUCTION TOTAL	$10,214,752.00
LAND ACQUISITION	$0
DESIGN ENGINEERING	$350,000.00
BID AND NEGOTIATIONS	$25,000.00
CONSTRUCTION ENGINEERING	$550,000.00
OUTSIDE TESTING (ASPHALT)	$20,000.00
ADMINISTRATION	$20,248.00
ESTIMATED PROJECT COST	$11,180,000.00

2.1.2 BKX Expansion Alternative

This alternative constructs a new approximately 6,000-foot C-II Runway 11-29 with a taxiway on the north side and an ILS with approach lights at the Runway 11 end. Six Mile Creek will be rerouted around the proposed runway safety area. This reroute adds approximately 1290' to the existing creek and allows for standard safety areas near NW runway end (see Sections 4.7 and 4.8 for more discussion regarding this proposed creek rerouting.). This alternative also shifts the crosswind runway 333 feet to the north to remove incompatible land uses from the RPZ and provide a standard runway intersection. A portion of the southern and northern RPZs would still be on private property, but they would be within the setbacks, so no structures could be constructed within either of them. The BKX Expansion Alternative is shown in **Figure 3**.

This alternative would require the acquisition of approximately 122 acres of property. Included within the acquisition is one residence.[2] The majority of the acquisition area (110 acres) is west of the current airport. Approximately 12 of these acres are already owned by the City and would need to be incorporated into the Airport property. An additional 10 acres in the southeast corner of the airport are also owned by the City and will need to be incorporated into the Airport property. Less than four acres of easement would need to be acquired – 3.6 of which is over the national guard facility to the north of the existing runway and 0.2 acres near the funeral home to the south.

A portion of Brookings Township road 469th Avenue is within the Runway Object Free Area (ROFA) of Runway 11-29 and objects non-essential for air navigation or aircraft ground maneuvering purposes are not to be placed in the ROFA, in accordance with FAA AC 150/5300-13, paragraph 307. 469th Avenue is within land that would be acquired by the City. Once the land is acquired, this road would be closed. Access from the north on 469th Avenue to one residence would be lost when the road is closed. Access from the south would remain.

A small portion of Brookings Township road 212th Street is within the extension of the standard length of the ROFA in the RPZ (i.e., the Central Portion of the RPZ) for Runway 11-29, and FAA AC 150/5300-13, paragraph 307, encourages the removal of objects non-essential for air

[2] This residence was put up for sale in 2009 and was acquired by the City.

navigation or aircraft ground maneuvering purposes to the extent feasible. The location of 212th Street is at the furthest part of the Central Portion of the RPZ from the runway end and therefore would have the least impact on air navigation from a road within the Central Portion. 212th Street provides for the movement of farm machinery from field to field, the direct farm to market transportation of grain, and the movement of forage for livestock. An alternate route would be SD 14, which is a major arterial whose function is to move people and goods quickly and efficiently. Introduction of slow moving farm machinery would be a substantial adverse impact on the users of SD 14. Other potential alternate routes in the Township are designated "Minimum Maintenance" and would require necessary upgrades and additional maintenance and snow removal expense, which would have an adverse economic impact on the Township. The City has therefore determined that the closure of 212th Street within the RPZ is not practical.

Six Mile Creek

As mentioned above, this alternative would require the placement of a portion of the airfield over a section of Six Mile Creek. Options involving creek reroutes, channeling the creek into a culvert, and a combination of a reroute and a culvert were considered. The goal of all the options was to provide the full runway and taxiway safety areas as required by the Airport Reference Code of C-II (see Section 1.2.1). A feasibility analysis was performed and sent to the US Army Corps of Engineers (COE) (at Appendix A-97) and the COE response is at Appendix A-106.

Preferred Option:

Reroute the current Six Mile Creek alignment around the proposed runway safety area. The proposed rerouted creek is estimated to have a bottom width of 90', top of 138', 4:1 sideslopes, and a 6' depth. The slope of the creek will be approximately 0.04%. The gradient of the existing portion of the creek (approximately 2500') that would be realigned is approximately 0.06%. The new realigned portion of the creek would be approximately 3,790' long. (See Appendix A-81 for additional information on flow rates and preliminary re-route design.) This option was selected for the following reasons:

- Reroute alternative is much more cost effective than the alternative culvert option of installing seven 720' long box culverts side by side to accommodate 100 year flood requirements.
- Avoids critical airport design surfaces by rerouting the creek. The critical surfaces are the Runway Safety Area and Runway Object Free Area.
- Provides much more attractive habitat for the Topeka shiner minnow than the culvert option.

Other Option Considered:

Direct the creek into a single straight culvert near the runway end. This option would require seven approximately 720' long culverts and approximately 0.4 acres of creek realignment. In order to accommodate 100 year flood requirements, six 8' high by 10' wide box culverts and one 8' high by 12' wide box culvert 720' long placed side by side would be required. This alternative was not selected because of low cost/benefit ratio, creek realignment required and the low desirability for Topeka shiner habitat.

Estimated Cost

The preliminary cost estimate for this alternative is $17.9 million, as summarized in **Table 4**. See Appendix A-84 for the detailed cost estimate.

Purpose and Need Evaluation

The BKX Expansion Alternative would meet the purpose and need. The incompatible land uses in the Runway 30 and 35 RPZs, the non-standard runway intersection off the ends of Runways 17 and 12 and the runway length needs would all be addressed. The Airport would remain eligible for Federal funding.

Table 4: Estimated Costs – BKX Expansion Alternative

Description	Total Price
CONSTRUCTION TOTAL (1)	$15,827,730.50
LAND ACQUISITION (APPROX. 122 ACRES & 1 RESIDENCE)[3]	$640,000.00
DESIGN ENGINEERING	$600,000.00
BID AND NEGOTIATIONS	$25,000.00
CONSTRUCTION ENGINEERING	$750,000.00
OUTSIDE TESTING (ASPHALT)	$25,000.00
ADMINISTRATION	$22,269.50
ESTIMATED PROJECT COST	$17,890,000.00

Notes: (1) Includes costs to relocate Flow Equalization Basins and Wetland Mitigation (see Appendix A-77).

FAA Design Criteria Evaluation

Primary Runway

Construct new Runway 11-29 and parallel taxiway. Remove Runway 12-30 and parallel taxiway. New approaches to both ends of the primary runway would be developed. The primary runway would be extended to a length of approximately 6,000 feet (assuming the same gradient as the existing runway). The incompatible land uses in the Runway 30 RPZ would be resolved by shifting the runway to the northwest and moving the ILS approach to the Runway 11 end (thereby resulting in a smaller RPZ on the Runway 29 end). A portion of a funeral home parking lot remains within the RPZ for Runway 29.

Crosswind Runway

Wind coverage on the primary runway would be 85.6 percent for A-I / B-I aircraft. Therefore, the crosswind runway would still be needed to provide 95% coverage. It would remain a visual-only runway with no instrument approaches. Its length would be 3,600 feet.

The incompatible land uses in the south RPZ for Runway 35 would be resolved by shifting the crosswind runway 333 feet to the north. The private properties remaining within the RPZ would fall within the City and County ordinances for building setback limits in these areas and any additional construction within the RPZs would not be allowed.

[3] This residence was put up for sale in 2009 and was acquired by the City.

Other Associated Facilities

Taxiways

The main runway will have a full length parallel taxiway 35 feet wide with up to six connector taxiways going to the main runway. The crosswind runway will have a midpoint connector taxiway and turnaround taxiways at each end. The crosswind design will allow for a full length parallel taxiway 25 feet wide with up to four connector taxiways in the future.

Additional NAVAIDS and Lighting

All runway ends would have PAPIs. The new primary runway would have HIRLs. The crosswind runway would have MIRLs. The approach lighting system would be moved to the northwest end of the primary runway and all other ends would have REILs. Access to the MALSR would be provided via a road starting at the west end of the parallel taxiway connecting to the closed portion of 469th Avenue and will utilize the closed portion of 469th avenue as well 212th Street. A bridge will be constructed over the rerouted portion of Six Mile Creek. At the far end of the Runway 11 RPZ off 212th Street a maintenance road would be constructed ending at the first row of MALSR lights from the runway end. The AWOS and VOR would need to be relocated, after coordination with NOAA and the FAA (respectively). **Figure 3** shows preliminary locations for the AWOS and VOR. Installation of an Outer Marker will require the acquisition of up to 2 acres between 4.5 and 7 miles from the Runway 11 end.

All other existing facilities would remain.

Hazardous Wildlife Attractant Mitigation

General

As part of this alternative, the hazardous wildlife attractant mitigation referenced in Section 4.3.2 would be implemented. This would include relocating and modifying attractants such as equalization basins and ditches, rerouting Six Mile Creek, construction of a perimeter fence to help control hazardous wildlife and improve safety, monitoring hazardous wildlife activity and pilot education to mention a few. FAA recommends airport operators identify hazardous wildlife attractants and any associated wildlife hazards during any planning process for new airport development projects as outlined in FAA AC 150/5200-33B, "Hazardous Wildlife Attractants on or Near Airports."

Brookings Municipal Utilities Facilities

The BMU EQ basins would be relocated south of their current location. They will also be modified so they won't attract wildlife. The biosolids drying beds will be removed but are not a cost of this project. See section 4.3.2 for more detail on the design of the EQ basins and the BMU letter at Appendix A-28.

2.1.3 New Airport Alternative

Site Selection

The site of the New Airport Alternative is located in the northwest portion of Area #5 shown in **Figure 11** (see Section 2.2.2 for more information on the site selection process). Area #5 was chosen because it is outside of floodplains, free of wetlands, outside of major bird attractant separation areas, and sufficiently distant from tall objects that could interfere with air navigation. The northwest portion of Area #5 was chosen because the needed facilities could be sited

without requiring the relocation of any homes and because it provided the best access to Highway 324 and Interstate 29. The site is east of I-29 and just south of Highway 324 in Trenton Township. It is approximately 9.9 miles and an 18-minute drive from the City Hall.

This alternative would construct a new airport with an approximately 6,000-foot C-II Runway 12-30 with a full length parallel taxiway, an ILS with approach lights at the Runway 12 end and related navigational aids. It would construct a 3,600-foot B-I crosswind Runway 04-22, a taxiway on the west side and related navigational aids. The airport geometry would have standard runway intersections. It would require the acquisition of approximately 865 acres of property. It would close portions of 474th Ave, 475th Ave and 218th Street. The New Airport Alternative is shown in **Figure 4**.

The proposed land acquisition area provides RPZs free of incompatible land uses. Other project purposes are met by providing an approximately 6,000 foot runway, an intersecting runway configuration that provides greater than 95% wind coverage and sufficient area for all needed landside facilities.

Estimated Cost

The preliminary cost estimate for this alternative is $23.7 to 28.9 million depending upon the re-sale value of the existing airport land. Costs are summarized in **Table 5**. See Appendix A-86 for the detailed cost estimate.

Redevelopment of Existing Airport Site

The New Airport Alternative would allow for the redevelopment of the existing airport site. While no final detailed plan for this redevelopment has yet been created, the City of Brookings has indicated that any such redevelopment would strive for compatibility with adjacent uses and be comprised of a mix of residential, commercial and industrial land and may include a neighborhood park. Wetlands and floodplains would retain federal regulatory status as per Executive Order 11990: Protection of Wetlands and Executive Order 11988: Floodplain Management.

The resale value of the airport land is estimated between $3.7 – 8.9 million, according to the City planner. This does not include the cost of land preparation. This would offset a portion of the cost of the new airport site.

This redevelopment would only occur after a revision to the current City of Brookings Comprehensive Plan and FAA approval of land release. See the letter from the City of Brookings at Appendix A-32.

Table 5: Estimated Costs – New Airport Alternative

Description	Total Cost
CONSTRUCTION TOTAL	$24,222,952.00
LAND ACQUISITION (APPROX. 865 ACRES)	$3,320,000.00
RELOCATION OF EXISTING HANGARS AND BUILDINGS TO NEW AIRPORT (INCLUDING MOVING COST; CONCRETE FOUNDATIONS; & UTILITIES)	$1,450,000.00
NEW TERMINAL BUILDING (INCLUDING UTILITIES)	$1,250,000.00
RELOCATION OF FUEL SYSTEM & TANKS TO NEW AIRPORT	$75,000.00
DESIGN ENGINEERING	$950,000.00
BID AND NEGOTIATIONS	$45,000.00
CONSTRUCTION ENGINEERING	$1,250,000.00
OUTSIDE TESTING (ASPHALT)	$25,000.00
ADMINISTRATION	$40,448.00
ESTIMATED PROJECT COST	$32,630,000.00
LESS SALE VALUE OF EXISTING AIRPORT LAND (site prep not included)	($3,700,000 to $8,900,000)
NET PROJECT COST	**$23,730,000-$28,930,000**

Purpose and Need Evaluation

The New Airport Alternative would meet the project purpose and need. The new airport would be constructed to resolve the incompatible land uses in the RPZs, the non-standard runway intersection and the runway length needs. The Airport would be eligible for Federal funding.

FAA Design Criteria Evaluation

Primary Runway

Construct new Runway 12-30 and parallel taxiway. New approaches to both ends of the primary runway would need to be developed. The primary runway would be constructed to a length of approximately 6,000 feet (assuming the same gradient as the existing runway). Sufficient land would be acquired to allow for airport control of all RPZs.

Crosswind Runway

Construct new Runway 4-22 and parallel taxiway. Wind coverage on the primary runway would be 90.2% for A-I / B-I aircraft. Therefore, the crosswind runway would still be needed. It would remain a visual-only runway with no instrument approaches. Potential future upgrades to GPS (RNAV) on both ends of the crosswind would be possible, but are not included in the initial construction. The crosswind runway length would be 3,600 feet. Sufficient land would be acquired to allow for RPZs clear of all incompatible uses.

Other Associated Facilities

Taxiways

The main runway will have a full length parallel taxiway 35 feet wide with up to six connector taxiways going to the main runway. The crosswind runway will have a midpoint connector taxiway and turnaround taxiways at each end. The crosswind design will allow for a full length parallel taxiway 25 feet wide with up to four connector taxiways in the future.

Additional NAVAIDS and Lighting

All runway ends would receive PAPIs. The new primary runway would receive HIRLs. The crosswind runway would have MIRLs. The approach lighting system would be placed on the northwest end of the primary runway and all other ends would have REILS. The MALSR access road will begin at the northwest end of the parallel taxiway and enter the MALSR just the beyond the runway safety area. The road will extend from the first row of MALSR lights from the runway to the light furthest from the runway. The AWOS and VOR would need to be sited, after coordination with NOAA and the FAA (respectively). **Figure 4** shows preliminary locations for the AWOS and VOR.

Sufficient space for all the other facilities itemized in Section 1.2.5 will be provided. Installation of an Outer Marker would require the acquisition of up to 2 acres between 4.5 and 7 miles from the Runway 12 end. The exact dimensions and layout of these facilities would be determined during the design phase.

Hazardous Wildlife Attractant Mitigation

General

As part of this alternative, hazardous wildlife attractant mitigation (see section 4.3.3) will be fully implemented. This would include replacing crops, tree removals, construction of a perimeter fence, and monitoring hazardous wildlife activity. FAA recommends airport operators identify hazardous wildlife attractants and any associated wildlife hazards during any planning process for new airport development projects as outlined in FAA AC 150/5200-33B, "Hazardous Wildlife Attractants on or Near Airports."

Brookings Municipal Utilities Facilities

The BMU EQ basins will remain on the existing airport site and would not be a hazardous wildlife attractant issue for this alternative.

2.2 ALTERNATIVES ELIMINATED

The alternatives discussed in this section fall into two categories – those examined during the 2006 master plan process and those examined during the 2006 and 2007 new airport site selection study.

2.2.1 BKX Expansion Alternatives Eliminated

The following alternatives were considered in the 2006 Master Plan Update.[4] With the exceptions of Alternatives A and B, they all met the criteria outlined in the Project Purpose, but did so with more adverse effects on the environmental than the BKX expansion alternative.

[4] Because the Master Plan Update occurred before the EA process began, these alternatives were evaluated before the runway length requirements and design criteria described in the purpose and need were developed. Therefore, the runway lengths shown are 6,500 feet for the main runway and 4,400 feet for the crosswind runway. Also, the crosswind runway is shown as a B-II, not a B-I runway. These differences in design criteria do not change the reasons for eliminating these alternatives from further consideration.

BKX Alternative B – Minimal Improvements

Alternative B shows the primary runway length reduced to 3,800 feet to resolve the primary runway RPZ land use incompatibilities. The crosswind runway RPZ incompatibilities would be resolved by purchasing the homes in the RPZ.

This alternative does not meet the project purpose as it would not address the primary runway length needs nor would it resolve the non-standard runway intersection. It is shown in **Figure 5**.

BKX Alternative C – Railroad Relocation

BKX Alternative C would require a box culvert to cross Six Mile Creek and the relocation of the railroad. This alternative would allow for a 6,000-foot runway. Replacing the Runway 30 ILS with a GPS approach would reduce the size of the RPZ, thereby reducing the number of property acquisitions off Runway 35 to eliminate existing incompatible uses. The crosswind runway would remain on its current alignment with an increased length to 4,400 feet. Though the figure depicts the purchase of the homes in the crosswind runway RPZ, these purchases could be avoided by implementing the 333-foot crosswind runway shift north depicted in the BKX Expansion Alternative. This alternative would also extend existing Taxiway A parallel with the runway extension. BKX Alternative C is shown in **Figure 6**.

This alternative was eliminated because it required the railroad relocation, the purchase/relocation of several homes and business and still caused wetland and flood plain impacts.

BKX Alternative D – Construct New East-West Runway

BKX Alternative D would add a new Runway 9-27. This alternative would allow construction of a 6,000-foot runway. Though the figure depicts the purchase of the homes in the crosswind runway RPZ, these purchases could be avoided by implementing the 333-foot crosswind runway shift depicted in the BKX Expansion Alternative. This alternative would require the relocation of the existing airport hangars. It is shown in **Figure 7**.

This alternative was eliminated because it caused greater wetland and floodplain impacts than the BKX Expansion Alternative and also required the relocation of many of the current airport buildings.

BKX Alternative E – Construct New North-South Runway

BKX Alternative E shows a new 6,000-foot Runway 17-35. It also provides a 5,231-foot B-II crosswind runway (existing Runway 12-30). It is shown in **Figure 8**. (Note: **Figure 8** is oriented with north to the right).

This alternative was eliminated because it caused greater community impacts through road closures and home purchases.

BKX Alternative F – Construct New Northwest-Southeast Runway

BKX Alternative F constructs a new 6,000-foot Runway 11-29. The crosswind runway is upgraded to a B-II runway and extended to approximately 3,900 feet. It is shown in **Figure 9**.

This alternative was eliminated due to the fact that it caused more extensive wetland and floodplain impacts than the BKX Expansion Alternative.

BKX Alternative I – Maintain Primary Runway Length

This alternative is contained in the 2008 Master Plan Addendum (see Appendix A-14). Alternative I involves a reduction of the Runway 30 RPZ through a visibility minimum increase. There are still three buildings in the RPZ which need to be purchased. The crosswind runway is relocated to resolve the non-standard runway intersection and the RPZ land use incompatibilities.

This alternative was eliminated primarily because it does not allow the primary runway to be extended from its current length. Its costs would be similar to the BKX Expansion Alternative.

BKX Alternative J – Purchase all land within existing RPZs

This alternative was formalized during the Dual Track Airport Planning Process. Alternative J involves maintaining the current length, alignment, and NAVAID configuration of both runways. It resolves the incompatible land uses in the RPZ by purchasing the homes in the Runway 35 RPZ and all the businesses in the Runway 30 RPZ. The cost of these purchases is approximately $5.5 million (this cost was developed using 120% of the 2008 assessed value). It is shown in **Figure 10**.

This alternative was eliminated because it does not meet the runway length standard nor address the non-standard runway intersection.

2.2.2 New Airport Alternatives Eliminated

The following alternatives were examined during the 2006 and 2007 site selection study. They all had the potential to meet the Project Purpose, but did so with more adverse effects than the site chosen as the New Airport Alternative (Area #5).

New Airport Site Search Areas

An overall search area 15 miles north to south and 17 miles east to west was developed (**Figure 11**). Roughly centered on the City of Brookings, the north-to-south boundaries were determined by the Brookings County boundary on the south and a desire to maintain reasonable separation from the Watertown Airport to the north. The east-west area was slightly larger than the north-south area and was largely limited by drive time along Highway 14 and other paved roads.

Once the overall search area was defined, individual areas capable of accommodating an airport were identified based on their location within approximately a 10-minute drive time and their ability to accommodate a full airfield (approximately 1,000 acres) while limiting impact on wetlands and floodplains.

Each individual area's proximity to known hazardous wildlife attractants was also examined. In the site selection process, the primary features considered were the City landfill and wastewater treatment facility. A circular five-mile separation area was centered on these facilities. As potential new airport search areas were identified, their proximity to these facilities was one of the evaluation criteria used to determine the preferred new airport site. Neither facility meets the recommended 5 mile separation criteria, however, the wastewater treatment facility was noted to

"not pose any hazard" in the Airport Wildlife Evaluation conducted in 2007 (see Appendix A-39).

Ultimately, seven search areas were identified that generally met the above criteria (see **Figure 11**). Within these areas, the feasibility of developing an airport that could meet the purpose and need was examined. The areas were evaluated based on the following criteria:

- Residential and business acquisitions
- Keep existing roads out of runway protection zones
- Impacts on floodplains, wetlands and tributaries
- Avoidance of overflights of established communities and tall obstructions
- Level of wind coverage
- Ability to accommodate a crosswind runway
- Travel time to City center
- Impact on existing infrastructure such as gas and power lines
- Avoidance of major road and railroad closures

The purpose of this evaluation was to identify at least one site within a search area that could adequately accommodate a new airport. Multiple site area visits were made, including one with members of the Dual Track Advisory Committee (see Section 5.1 for more information), the FAA, SD/DOT, USDA, BKX Airport Board, and City of Brookings Staff.

Ultimately, the northwest portion of Area #5 was selected as the preferred site for the New Airport Alternative (see Section 2.1.3 for more information).

What follows is a description of the other areas considered and why they were eliminated.

Area #1

Area #1 is located approximately 4.6 miles (7 minutes driving time) north of the City center. The area is relatively free of readily apparent wetlands and floodplains and provides ample space (4,400 acres) for an airfield layout.

This area is within the separation area for both the City landfill and the wastewater treatment facility (see section 4.7.4 for more information on separation areas). Its proximity to the city limits means that future development encroachment is possible. Two large power lines would be hazardous for air navigation even if a portion of them were buried or relocated to accommodate the actual airfield. There are several tall objects to the west and northwest of the site.

Because of these disadvantages, the New Airport Alternative (Area #5) is better suited to meet the project purpose and need. Therefore, this area was eliminated.

Area #2

Area #2 is located approximately 10.5 miles (13 minutes) northwest of the City center. The area is relatively free of readily apparent wetlands and is sufficiently far from municipal boundaries so that incompatible uses should not be an issue. It provides sufficient space (2,400 acres) for an airfield layout.

Area #2 is in a relatively inconvenient location. Any development of this area would require the relocation of the paved County Road 7 (466th Avenue/Bruce Road). The southern portion of the site is within a floodplain; which would be disturbed with airport development.

Because of these disadvantages, the New Airport Alternative is better suited to meet the project purpose and need. Therefore, this area was eliminated.

Area #3

Area #3 is located approximately 8 miles (13 minutes) north of the City center. It is relatively free of readily apparent wetlands and floodplains and sufficiently far from municipal boundaries so that incompatible uses should not be an issue. It provides sufficient space for an airfield layout (2,560 acres).

Area #3 is in a relatively inconvenient location. Two large power lines would be hazardous for air navigation even if a portion of them were buried or relocated to accommodate the actual airfield. There are several tall objects to the southeast of the area. In comparison to other areas, a high concentration of residential buildings is present.

Because of these disadvantages, the New Airport Alternative is better suited to meet the project purpose and need. Therefore, this area was eliminated.

Area #4

Area #4 is located approximately 11 miles (13 minutes) northeast of the City center. It is relatively free of readily apparent wetlands and floodplains and sufficiently far from municipal boundaries so that incompatible uses should not be an issue. It provides sufficient space for an airfield layout (7,500 acres).

Two large power lines would be hazardous for air navigation even if a portion of them were buried or relocated to accommodate the actual airfield. The location is relatively inconvenient. A future wind turbine farm has been approved for construction just east of the area.

Because of these disadvantages, the New Airport Alternative is better suited to meet the project purpose and need. Therefore, this area was eliminated.

Area #6

Area #6 is located approximately 8.5 miles (10 minutes) west of the City center. It is relatively free of readily apparent wetlands and floodplains. It provides sufficient space for an airfield layout (5,000 acres).

The City of Volga is adjacent to the northern edge of the site, meaning that under most all possible airfield configurations, either aircraft approaches or aircraft circling patters would be over this city. Current development trends in the area indicate development encroachment into the site. A bean processing plant just to the northeast of the site is a potential hazardous wildlife attractant.

Because of these disadvantages, the New Airport Alternative is better suited to meet the project purpose and need. Therefore, this area was eliminated.

Area #7

Area #7 is located approximately 5.5 miles (7 minutes) east of the City center. This area is divided into two sites, one south and one north of Highway 14. Both sites provide enough room for an airport layout. The south site is relatively free of floodplains and wetlands while the northern portion of the north site contains both floodplain and wetlands. Highway 14 would provide convenient access to either of the sites within the area.

The major disadvantages of this area result from the proximity of the ethanol plant, the City landfill and floodplains. All of these are considered to be hazardous wildlife attractants that are not generally compatible with airports. In addition, encroachment on floodplains should be avoided when possible. Finally, the height of the ethanol plant would be an issue.

Any layout developed within the southern area would result in the ethanol plant being within or very near to flight patterns surrounding the airport. Any layout developed within the northern area would result in encroachment on substantial portions of floodplains and wetlands.

Because of these disadvantages, the New Airport Alternative is better suited to meet the project purpose and need. Therefore, this area was eliminated.

2.3 PREFERRED ALTERNATIVE/PROPOSED ACTION

2.3.1 Comparison of Alternatives

A summary comparison of environmental impacts of the BKX Expansion and New Airport Alternatives is presented in **Table 11** in Section 4.20. In regards to the natural environment, the BKX Expansion Alternative would fill 15.4 acres of wetland, would encroach upon approximately 28 acres of the 100-year floodplain, which would remove approximately 91 acre-feet of flood storage, and adversely affect endangered species Topeka shiner – whereas the New Airport Alternative would not impact wetlands and floodplain and most likely not adversely affect the Topeka shiner. The 15.4 acres of displaced wetlands would be replaced by the restoration of a minimum of 23 acres of drained wetlands. The BKX Expansion Alternative includes the provision of a minimum of 91 acre-feet of flood storage as shown in **Figure 14a**. Although some shiners may be destroyed during construction, the USFWS concluded in its biological opinion that survival of the species' population would not be endangered.

In regards to the economic environment, the New Airport Alternative would cost the City at least $5.8 million to $11.0 million more than the BKX Alternative, depending on resale value of existing airport property. Based on the changes in the economic outlook since this project began in 2006 the City does not foresee the availability of local, state or federal funding nor sufficient demand for the redevelopment of the existing airport property and therefore determined that the New Airport Alternative is not financially feasible.

Regarding farmland, the New Airport Alternative would remove a minimum of 833.7 acres of farmland property of which 746 acres are prime and unique farmland, which could not be replaced in Trenton Township and Brookings County. Also, the acquisition of a portion of a

farm(s) could jeopardize the economic viability of the entire farm(s), which would require acquisition of the entire farm(s). These effects would have an adverse impact on the Trenton Township and Brookings County tax bases. According to the U.S. Department of Agriculture Farmland Conversion Impact Rating Form, this alternative was scored at 181; a score between 160 and 200 requires consideration of alternatives that would avoid this loss of farmland. The BKX Alternative had a score of 83.

In regards to the human environment, the development of an airport in a rural farming environment would introduce unwanted and objectionable aircraft noise and light emissions. The citizens of Trenton Township overwhelmingly oppose the New Airport Alternative. The New Airport Alternative is inconsistent with the Brookings comprehensive plan. Brookings County has jurisdiction over land use in Trenton Township and may determine the development of an airport in the Township objectionable. The BKX Alternative would not adversely affect the human environment and is consistent with the City and County comprehensive plans.

The BKX Alternative requires a Section 404 permit under the Clean Water Act. To obtain a Section 404 permit, compliance with the following criteria of the Environmental Protection Agency Section 404(b)(1) Guidelines must be met.

(i) There must be no other practicable alternatives that are less damaging to the aquatic environment;
(ii) The project must comply with state water quality standards, the Endangered Species Act, and other pertinent statutory provisions;
(iii) The project must not cause or contribute to significant degradation of US waters; and
(iv) Appropriate and practicable measures for minimizing potential adverse impacts of the discharge on the aquatic ecosystem must be taken.

"Practicable" is defined as "available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purpose.

For the reasons stated above, the New Airport Alternative is not a practicable alternative. The No Action Alternative does not meet the purpose and need for the project and therefore is not a practicable alternative. The BKX Alternative will meet the other three criteria. Also, there are no other practicable alternatives that would avoid the impacts of the BKX Alternative on wetlands and floodplain. Therefore, the BKX Alternative is the least environmentally damaging practicable alternative.

2.3.2 Preferred Alternative

Based upon the above comparison of alternatives the city of Brookings selected the BKX Expansion Alternative as the preferred alternative at a City Council meeting on December 14, 2010. A copy of the letter notifying FAA of the selection is included at Appendix A-153.

3. GENERAL SETTING AND RELATION TO ALTERNATIVES

The purpose of this section is to provide the general setting of the area affected by the alternatives. The environment affected by each specific environmental impact category can vary, but is generally confined to the airport property or land that will be within the airport property line. A description of the conditions within the environmental impact categories affected by the alternatives under consideration is presented in Section 4.

3.1 GENERAL SETTING

3.1.1 Brookings County

Brookings County is located in eastern South Dakota and encompasses 805 square miles. Minnesota borders the County to the east. Deuel and Hamlin Counties are directly to the north, Kingsbury County is west and Lake and Moody Counties are south. Interstate 29 and Highway 14 cross near the center of the county.

According to the 2000 Brookings County Comprehensive Plan and the City of Brookings, the primary race in Brookings County is White non-Hispanic (95.9 percent). American Indian (1.2 percent), Hispanic (0.9 percent) and two or more races (0.7 percent) make up the majority of the remainder. The median resident age is 26.6 years, compared with the South Dakota median age of 35.6 years.

The population has ranged from 20,000 in 1960 to 28,000 in 2000. It is forecast to increase to over 30,000 by 2015. The majority of land within the County is unincorporated agricultural land. Other uses include individual farm and non-farm residences, commercial/industrial uses (the majority of which is located directly adjacent to the City of Brookings), public/quasi-public uses, conservation/recreation areas and aggregate mining.

Within the geographic region (Brookings, Hamlin, Moody, Deuel, and Kingsbury Counties in South Dakota and Lincoln County in Minnesota), the total labor force is 32,258.

The county is comprised of nine communities (the City of Arlington is located in both Kingsbury and Brookings Counties) and twenty-three townships. The City of Brookings is the county seat.

3.1.2 City of Brookings

The City of Brookings is a community of 22,056 (as of 2010 US census) located along the I-29 corridor in Brookings County. Its racial make-up is comparable to the rest of Brookings County. It is approximately 20 miles from the Minnesota border and approximately 60 miles from Sioux Falls, SD. The existing Airport is entirely within City limits.

South Dakota State University (SDSU) is inside the city limits and with an enrollment of over 11,000, is an important contributor to the local economy. In addition to SDSU's employment of almost 2,100 Brookings area residents, other large employers include Daktronics (2,300), 3M (800), Larson Manufacturing (710), Hy-Vee Food Store (440), Rainbow Play Systems (420), and Walmart (420).

3.1.3 Trenton Township

Trenton Township is located in the south central portion of Brookings County. It is bordered by I-29 on the west, Moody County on the south and additional Brookings County townships on the other sides. It adjoins the City of Brookings on the northwest and the City of Aurora on the north.

The land area is 35.4 square miles. The predominant land use is agricultural. Its 2000 population was 453 people and its racial make-up is comparable to the rest of Brookings County.

3.2 RELATION TO ALTERNATIVES

3.2.1 No Action Alternative

The existing airport is located on the southwest edge of the city limits. Its northeast, east, and southeast borders are all developed. The remaining borders are near or adjacent to floodplains. Due to these constraints, there are no plans to further develop the area surrounding the airport in the future. This alternative will not generate any development outside of the airport property line. There are no known past, present and reasonably foreseeable future actions that would have cumulative effects with this alternative.

3.2.2 BKX Expansion Alternative

The existing airport and the BKX Expansion Alternative are located on the southwest edge of the city limits. The northeast, east, and southeast borders are all developed. The remaining borders are near or adjacent to floodplains. Due to these constraints, there are no plans to further develop the area surrounding the airport in the future. Therefore, the BKX Expansion Alternative will not generate any development outside of the airport property line. See Sections 4.1–4.18 for cumulative effects of the BKX Expansion Alternative.

3.2.3 New Airport Alternative

The new airport site is located within Trenton Township in Brookings County. The land use of the site is primarily agricultural. Though the site has good ground access by virtue of its location adjacent to SD Highway 324 and near I-29, no development plans for the area appear in the County's Comprehensive Plan (see land use maps on pages A-35 and A-36). Development of the new airport is not expected to generate any unplanned development outside of the property line. See Sections 4.1–4.18 for cumulative effects of the BKX Expansion Alternative.

4. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section assesses the environmental impacts of the alternatives under consideration, in accordance with the policies and procedures contained in FAA Order 5050.4B, National Environmental Policy Act (NEPA) Implementing Instructions for Airport Projects, as revised April 28, 2006 and FAA Order 1050.1E, Policies and Procedures for Considering Environmental Impacts, as revised March 20, 2006, for compliance with NEPA and implementing regulations issued by the Council on Environmental Quality (CEQ) found in 40 CFR parts 1500-1508.

Order 1050.1E describes the 18 environmental impact categories that must be addressed in this Dual Track Airport Planning Process Final EA. These 18 categories are addressed in this Section 4 of the Dual Track Airport Planning Process Final EA in alphabetical order.

The environmental consequences of the No Action Alternative provide the baseline for determining the impacts of the BKX Expansion and New Airport Alternatives.

FORECASTS

The forecast used to assess the environmental consequences of the alternatives is presented in **Table 6** and compared with the FAA Terminal Area Forecast (TAF) prepared in December 2009 for BKX.

Table 6: EA and FAA Forecasts

Activity	2007 Estimate	2025	
		EA Forecast	FAA TAF
Based Aircraft	38	43	40
Total Operations	29,324	32,455	36,193
Single Engine Piston Operations	26,969	29,616	NA
Multi Engine Piston Operations	1,476	1,400	NA
Turboprop Operations	509	541	NA
Jet Operations	345	870	NA
Helicopter Operations	25	28	NA

Sources: HNTB Corporation; December 2009 FAA TAF
NA – Not Available

The Dual Track Airport Planning Process EA Forecast was developed by updating the 2006 Master Plan forecast (which was based on 2003 data) to reflect 2007 operations and based aircraft numbers, and removing the currently discontinued passenger service flights. The 2007 data is more representative of the conditions at BKX than the current conditions caused by the economic recession beginning in 2008, as shown in Exhibit 1 in Section 1.2.2. The Dual Track Airport Planning Process EA forecast must be reasonably consistent with the TAF. To be consistent with the TAF, the Dual Track Airport Planning Process EA 10-year forecast should be within 15% of the TAF (per FAA Order 5050.4B, paragraph 706.b.(3)). The Dual Track Airport Planning Process EA forecast of 2025 operations is 10.3% less than the TAF 2025 operations forecast and will be used in the assessment of impacts. The Dual Track Airport Planning Process EA forecast provides a better representation of future activity at BKX than the TAF.

4.1 AIR QUALITY

The two primary laws that apply to air quality are NEPA and the Clean Air Act, as amended (CAA). The FAA is required under NEPA to prepare an environmental review document for Federal actions that can potentially affect the quality of the human environment including air quality. The CAA established National Ambient Air Quality Standards (NAAQS) for six pollutants, termed "criteria pollutants." The six pollutants are carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), ozone ($O7_3$), particulate matter (PM-10 and PM-2.5) and sulfur dioxide (SO_2). The CAA requires each state to adopt a plan approved by the EPA – called the state implementation plan – to achieve the NAAQS for each criteria pollutant. The proposed action's impact on air quality in a NEPA document is normally assessed by evaluating the impact of the proposed action on the NAAQS. Therefore, Federally sponsored airport development in South Dakota must conform with the South Dakota State Implementation Plan (SIP) in accordance with the criteria and procedures established in the SIP as specified by EPA in 40 CFR Part 51, Subpart W – *Determining Conformity of General Federal Actions to State or Federal Implementation Plans*. According to Subpart W, a conformity determination (with the SIP) is required for each criteria pollutant if the emissions in a non-attainment or maintenance area for that pollutant caused by a federal action (proposed action) would equal or exceed a specified annual emission rate when compared to the no action alternative or would be 10 percent or more of the non-attainment or maintenance area's emission inventory for that pollutant in the SIP.

4.1.1 No Action, BKX Expansion and New Airport Alternatives

Affected Environment

The No Action, BKX Expansion, and New Airport Alternatives are all located in air quality attainment areas for all criteria pollutants.

Air Quality Impacts

The South Dakota (SD) Department of Environment and Natural Resources (DENR) is responsible for the South Dakota SIP. A letter sent to SD DENR on September 13, 2007 and responded to on November 5, 2007, stated that the alternatives under consideration would have little or no impact on the air quality in the area (see letters beginning at Appendix A-37). Further, fugitive dust during construction of any of the alternatives will be minimized by using Best Management Practice (BMP) methods such as treating excavated areas with water and covering graded areas with fast-growing grasses. Therefore, no additional analysis is required.

4.2 COASTAL RESOURCES

Federal activities involving or affecting coastal resources are governed by the Coastal Barriers Resources Act (CBRA), the Coastal Zone Management Act (CZMA) and Executive Order (E.O.) 13089, Coral Reef Protection. The CBRA, as amended, prohibits federal financing for development within the Coastal Barriers Resources System, which consists of undeveloped coastal barriers along the Atlantic and Gulf coasts and along the shores of the Great Lakes. The CZMA requires that a proposed action be consistent with approved coastal zone management programs.

The No Action, BKX Expansion and New Airport Alternatives are not located within a federally-designated coastal barrier area or coastal zone or coral reef area; therefore, analysis of

the alternatives under consideration with respect to the CBRA, CZMA and E.O. 13089 is not applicable.

4.3 COMPATIBLE LAND USE

The compatibility of existing and planned land uses in the vicinity of an airport is associated with the extent of the airport's noise impacts, other impacts exceeding thresholds of significance that have land use ramifications including disruption of communities, relocation and induced socioeconomic impacts, and effects on the safety of aircraft operations,

The Airport Development Grant Program (49 USC 47101 *et seq*.) requires that a project may not be approved unless the Secretary of Transportation is satisfied that the project is consistent with the plans (existing at the time the project is approved) of public agencies for development of the area in which the airport is located (49 USC 47106(a)(1)).

Also, assurance is required in accordance with 49 USC 47107(a)(10), formerly section 511(a)(5) of the 1982 Airport Act, that appropriate action, including the adoption of zoning laws, has been or will be taken to the extent reasonable, to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations, including landing and takeoff of aircraft. The assurance must be related to existing and planned land uses.

Methodology

Runway Protection Zone (RPZ) Protection. According to FAA AC 150/5300-13, "the RPZ's function is to enhance the protection of people and property on the ground. This is achieved through airport owner control over RPZs. Such control includes clearing RPZ areas (and maintaining them clear) of incompatible objects and activities. Control is preferably exercised through the acquisition of sufficient property interest in the RPZ."

While it is desirable to clear all objects from the RPZ, some uses are permitted as long as they do not attract hazardous wildlife, are outside of the Runway Object Free Area (OFA), do not violate other applicable FAA standards, and do not interfere with navigational aids. Automobile parking facilities may be permitted if they meet the above requirements. Land uses prohibited from the RPZ are residences and places of public assembly with concentrations of people such as churches, schools, hospitals, office buildings and shopping centers. Where it is determined to be impracticable for the airport owner to acquire and plan the land uses within the entire RPZ, the RPZ land use standards have recommendation status for that portion of the RPZ not controlled by the airport owner.

Noise Impacts. Noise-sensitive land uses are incompatible if they experience a significant noise impact, as discussed in Section 4.13, Noise.

Hazardous Wildlife Attractants. Land uses that attract hazardous wildlife can result in aircraft collisions with wildlife. For airports that serve jet aircraft, FAA AC 150/5200-33B recommends a separation distance of 10,000 feet between the airport's Air Operations Area (AOA) and land uses that attract wildlife hazardous to airport operations (landfills, wastewater treatment facilities, wetlands, floodplains, etc.). In addition, the FAA recommends a distance of 5 statute

miles between the farthest edge of the airport's approach or departure airspace and the hazardous wildlife attractant, if the attractant could cause hazardous wildlife movement into or across the approach or departure airspace.

4.3.1 No Action Alternative

Affected Environment

The affected environment is the land uses on the airport property and in the RPZ's shown in **Figure 1** and the land uses that attract hazardous wildlife identified in **Figure 12**. Uses on the airport include farmland, wetlands and floodplain. There is commercial/industrial development in the Runway 30 RPZ. The RPZ should not contain this type of development. The City's current Airport Zoning Ordinance includes an area defined as "Safety Zone A" with restrictions similar to those required by the FAA for RPZs. However, the Safety Zone A included in the ordinance does not cover the entire RPZ for Runway 30. As a result, the zoning ordinance allows incompatible uses in the outer portions of the RPZ. An attempt to revise the ordinance to reflect the entire RPZ was made in August 2005, but the City Council voted not to approve the amendment. Therefore, the incompatibility with allowable RPZ uses would continue under the No Action Alternative. The City's current Code of Ordinances Buildings and Building Regulations section includes Article VII: Construction or Alteration of Objects that may affect Navigable Airspace stating that persons or entities wishing to construct a structure within two miles of the airport boundary must file an application with and obtain the approval of the South Dakota Aeronautics Commission (included at Appendix A-109).

Based on the February 2008 report and subsequent addenda from the USDA, the following hazardous wildlife attractants exist in the area within 5 miles of BKX (see **Figure 12**):

> City Landfill (approximately 4.3 miles northeast); 5 gravel pits; wetland vegetation; floodplain; biosolids drying beds on the airport (will be removed from the airport by BMU in 2010-2011); drainage ditches on the airport; BMU EQ basins; and crops on the airport.

From 1990 to 2007, there were nearly 80,000 reported incidents of birds striking nonmilitary aircraft, about one strike for every 10,000 flights according to the FAA and Department of Agriculture. The FAA estimates that only about 20% of the strikes are being reported. A ratio of greater than 1 in 10,000 flights is used to indicate when a "significant" wildlife hazard is posed. As shown in **Table 7** below, wildlife strike data for the years 2001 through 2009 indicates that for 2 of the previous 9 years, BKX had 1.0 or greater strikes for every 10,000 flights (operations) and an average of 0.64 strikes per 10,000 operations.

Table 7: Wildlife Strikes at Brookings from 2001 to 2009

Year	Strikes	Operations[1]	Strikes per 10,000 Operations
2009	4	36,193	1.1
2008	2	36,193	0.6
2007	3	36,622	0.8
2006	1	36,622	0.3
2005	1	26,097	0.4
2004	1	16,897	0.6
2003	2	16,897	1.2
2002	1	26,097	0.4
2001	1	16,897	0.6
Total	16	248,515	0.64

[1] December 2009 FAA TAF

Compatible Land Use Impacts

The DNL contours are shown in **Figure 18**. The DNL 65 contour lies entirely within the airport property. There are no noise-sensitive land uses within the DNL 65 contour. Therefore, the No Action Alternative would not have an adverse noise impact on existing and planned land uses and no further discussion is needed.

The No Action Alternative would have no impact on land use and hazardous wildlife attractants compared to the existing conditions because their effects are identical. This alternative does nothing to address the standards issues of the insufficient runway length and runway intersection or address the hazardous wildlife attractant and incompatible land use problems that exist currently at the airport.

Cumulative Effects

There are no known past or present actions that have incompatible land use effects cumulative with the No Action Alternative. In the future, additional incompatible land use in the RPZs could occur by the unrestricted development of more homes and businesses.

4.3.2 BKX Expansion Alternative

Affected Environment

The affected environment is the land uses on the proposed airport property shown in **Figure 3** and land uses that attract hazardous wildlife shown in **Figure 12**. Uses on the proposed airport property include farmland, wetlands and floodplain. Land purchased to allow the expansion would be annexed into the City limits and would be included in future land use plans and zoning ordinances and would adhere to the City's current Code of Ordinances Buildings and Building Regulations regarding the construction of structures within two miles from the airport boundary (included at Appendix A-109).

Based on the February 2008 report from the USDA the following non-compatible land use hazardous wildlife attractants exist in the area within 5 miles of the BKX Expansion alternative:

City Landfill (approximately 4.3 miles northeast); 5 gravel pits; wetland vegetation; floodplain; biosolids drying beds on the airport (will be removed from the airport by BMU in 2010-2011); drainage ditches on the airport; BMU EQ basins; and crops on the airport.

Compatible Land Use Impacts

The BKX Expansion Alternative would have a beneficial impact on incompatible land use on the airport compared to the No Action Alternative because it would not have incompatible development in the RPZs. With the implementation of the BKX Hazardous Wildlife Attractant Mitigation Plan the BKX Expansion Alternative would have a beneficial impact on land use affecting aircraft safety compared to the No Action Alternative. However, this mitigation plan would remove some habitat for migratory birds, which is protected under the Migratory Bird Treaty Act (MBTA). The Brookings Regional Airport currently has a 2011 Depredation Permit from the USFWS and a 2011 Take Permit from the South Dakota Game Fish & Parks Department for migratory birds. In addition, the airport has a hazardous wildlife assessment that has been completed by Bill Antonides, Gander Island Consulting Services, Inc., recommending harassment and take of migratory birds, as necessary, to prevent against potential aircraft/bird strikes. A copy of the assessment is available on the City's web site at http://cityofbrookings.org/index.aspx?NID=225. The airport currently employs each of these tactics on airport property, as necessary, and must continue to do so in the future, for the continued safety of the flying public. However, with that being said, any wetland disturbance will be mitigated off-site through the Section 404 permitting process in accordance with FAA AC 150/5200-33, which will likely afford some migratory bird benefits in the form of habitat offsets.

With regards to the new construction, additional land will be purchased and more areas will be disturbed, primarily for the approach lighting system and access road for maintenance of this system. The airport personnel will begin harassment of migratory birds in these new areas early in the spring, to the extent as reasonably practicable, so as not to allow nesting prior to construction activities, therefore avoiding unnecessary take of nests and young during construction.

Brookings Municipal Utilities (BMU) has two flow equalization (EQ) basins and two biosolids drying beds located on the airport site just west of the northern portion of the crosswind runway (see **Figure 3** and letter from BMU at Appendix A-28). The biosolids drying beds will be removed by BMU from the airport in 2010 – 2011 (see USDA Addendum at Appendix A-59).

The EQ basins are clay-lined containment basins (with vegetated bottoms and side slopes) used for short-term storage of sanitary sewer flow during periods of high flow due to inflow and infiltration (I&I). The wastewater is pumped to the EQ basins from the collection system via pumps located at the former wastewater treatment plant (WWTP) west of Western Avenue (see **Figure 3**). Once the flow has subsided, the wastewater from the EQ basins is allowed to feed slowly back into the collection system via gravity flow to the WWTP for treatment. The length of time wastewater is stored in the EQ basins varies depending on flow and environmental conditions. Typically, the EQ basins are utilized for flow equalization once or twice per year with water typically remaining in the basins for 7-10 days. Because pumps are used to fill the basins and gravity used to drain them, the basins must be located relatively close to the pumps

and above the sanitary sewer line into which the basins drain. They must also be located outside the floodplain. Their current location on the airport is the only nearby land that meets all these criteria. Therefore, the EQ basins do not need to be relocated off airport property (see USDA Addendum at Appendix A-59).

The DNL contours are shown in **Figure 19**. The DNL 65 contour is entirely within the proposed airport property. There are no noise-sensitive land uses within the DNL 65 contour. Therefore, the BKX Expansion Alternative would not have an adverse noise impact on existing and planned land uses and no further discussion is needed.

Cumulative Effects

Past actions that have been implemented to reduce hazardous wildlife strikes are filing notices to airman (NOTAM's) for birds near the airport, checking the floodplain, EQ basins and biosolids drying beds for birds present during flooding and mowing the airfield. There are no known present or foreseeable future actions that would result in incompatible land use effects that would be cumulative with the BKX Expansion Alternative. This alternative would take steps to eliminate land use incompatibilities within the RPZ and reduce hazardous wildlife attractants.

Proposed BKX Hazardous Wildlife Attractant Mitigation Plan

In accordance with the issues and considerations addressed in the USDA Wildlife Services' report and addenda (see Appendix A-39 to A-60), the following BKX Hazardous Wildlife Attractant Mitigation Plan would be implemented:

A. The equalization basins would be relocated to the south of the realigned primary runway (see **Figure 3**). According to the USDA report, the equalization basins attract hazardous wildlife, but the attractant potential can be mitigated through design changes and monitoring methods. If the recommendations are followed, the EQ basins can remain on-airport, provided techniques to control bird activity near them are implemented. Hazardous wildlife activity near the basins would be monitored and mitigation measures such as the removal of vegetation from the basin bottoms and/or access control measures such as fencing would be implemented should airport management deem that the basins are attracting hazardous wildlife. In addition, the relocated equalization basins would be designed so that they do not retain standing water for extended periods of time. The design would also accommodate year-around mowing and vegetation control capabilities.
B. The on-airport drainage ditches would be modified so that they do not retain water.
C. Wetland vegetation associated with the drainage ditches and attractive to hazardous wildlife would be controlled.
D. The following measures to minimize hazardous wildlife attractant potential of the approximately 3,790 feet of Six Mile Creek that would be within the airport boundary would be considered.
    a. According to the USDA report, an underground channel is one way to reduce the hazardous wildlife attractant potential of the Creek. However, this section of Six Mile Creek is also habitat for the Topeka shiner minnow and placing the entire on-airport length of Six Mile Creek underground may have a negative impact on its habitat. Given the length of the underground channel, this solution could also bring negative impacts downstream due to the resulting increased speed and volume of water flow.

b. Rerouting the creek within the airport boundary into a narrow, straight, above-ground channel with steep sides would reduce the hazardous wildlife attractant potential of the creek. However, this solution would also have a negative impact on the Topeka shiner habitat. Given the length of the reroute, this solution could also bring negative impacts downstream due to the resulting increased speed and volume of water flow.
c. If channeling or rerouting the creek is unacceptable, the hazardous wildlife attractant potential of the creek will be reduced by controlling the attractive vegetation to the extent possible without harming non-hazardous wildlife and fish habitat. In addition, the Airport would include the Creek in its comprehensive bird strike education and minimization program.

E. On-airport crops would be replaced with more appropriate vegetation (such as warm season grasses) and be managed in a way that does not attract wildlife that pose a hazard to airport operations.
F. Ground Squirrel populations would continue to be controlled in the same manner they are at present.
G. All sections of the perimeter fence would be increased to a height of 10 feet to control deer access to the airfield.
H. The living snow fence would be monitored, with pruning or removal occurring if it becomes a hazardous wildlife attractant.
I. The Airport is working with the USDA and the FAA and coordinating with City Landfill staff to minimize the hazardous wildlife attractant potential of the landfill. These efforts would continue and would include an evaluation of the measures taken by other area airports with landfills nearby.
J. Spring floods of the Big Sioux River and Six Mile Creek create massive wetlands within ¼ mile of BKX. Migrating waterfowl utilizing the floodplain create severe hazards for aircraft for four to six weeks each spring. In addition to the bird activity monitoring, the City would work with the USDA and FAA to take practical steps to minimize the severity of this hazard.
K. Several gravel pits are located along I-29 to the east and southeast of BKX. The City would take practical steps to work with the gravel pit owners to attempt to minimize the creation of sandbars and shallow areas in these pits.

In addition to the above measures recommended in the USDA Wildlife Services' report, the City would implement the following measures:

L. The City would develop a comprehensive program to monitor bird activity and educate pilots on the dangers of bird strikes. The bird monitoring activity at a minimum would include monitoring of the Big Sioux River and Six Mile Creek during peak migration periods (especially spring flood events). The bird monitoring activity would be conducted by City staff. The City would provide pilot updates on bird activity.
M. A general and on-going pilot education aimed at raising the awareness of aircraft/bird strikes would also be developed, preferably in conjunction with the SDSU aviation program.

4.3.3 New Airport Alternative

Affected Environment

The affected environment is the airport property shown in **Figure 4** and land uses that attract hazardous wildlife shown in **Figure 12**. The land is designated as "Areas of Development Stability" in the Brookings County Comprehensive Plan. The majority of land in the County falling under this designation is agricultural and the Plan states that the primary focus of this designation should remain agricultural. The proposed new airport site is in the Agricultural District. Airports are specifically mentioned as an allowable use within this district via a Special Exception. The City would pursue a Special Exception from the Brookings County Commission. See memo from City of Brookings Attorney, at Appendix A-64 for more information. Land purchased to allow the expansion would be annexed into the city limits and would be included in future land use plans and zoning ordinances and would adhere to the City's current Code of Ordinances Buildings and Building Regulations regarding the construction of structures within two miles from the airport boundary (included at Appendix A-109).

Based on the February 2008 report from the USDA Wildlife Services (at Appendix A-39), the following hazardous wildlife attractants exist in the area within 5 miles of the new airport alternative (see **Figure 12**):

> Ethanol Plant; 6 gravel pits; feedlot; floodplain; and crops on the site. (The City Landfill is approximately 7 miles away, which is more than the recommended 5 miles.)

Compatible Land Use Impacts

The DNL contours are shown in **Figure 20**. The DNL 65 contour is entirely within the proposed airport property. There are no noise-sensitive land uses within the DNL 65 contour. Therefore, the New Airport Alternative would not have an adverse noise impact on existing and planned land uses and no further discussion is needed.

There are no incompatible land uses on the site but there are some near the site. The New Airport Alternative would be subjected to fewer uses that affect aircraft safety than the No Action Alternative; it would avoid the landfill (a major hazardous wildlife attractant), wetland vegetation and the biosolids drying beds and drainage ditches on BKX. With the implementation of the New Airport Hazardous Wildlife Attractant Mitigation Plan the New Airport Alternative would have a beneficial impact on land use affecting aircraft safety compared to the No Action Alternative. However, this mitigation plan would remove some habitat for migratory birds, which is protected under the Migratory Bird Treaty Act (MBTA). The Brookings Regional Airport currently has a 2011 Depredation Permit from the USFWS and a 2011 Take Permit from the South Dakota Game Fish & Parks Department for migratory birds. In addition, the airport has a hazardous wildlife assessment that has been completed by Bill Antonides, Gander Island Consulting Services, Inc., recommending harassment and take of migratory birds, as necessary, to prevent against potential aircraft/bird strikes. The airport currently employs each of these tactics on airport property, as necessary, and would continue to do so on the new airport property.

Cumulative Effects
There are no known past, present, or foreseeable future actions that would result in incompatible land use effects that would be cumulative with the New Airport Alternative.

Proposed New Airport Hazardous Wildlife Attractant Mitigation Plan

In accordance with the issues and considerations addressed in the USDA Wildlife Services' report (see Appendix A-39), the following New Airport Hazardous Wildlife Attractant Mitigation Plan would be implemented:

A. Crops currently grown on the site would be replaced with more appropriate vegetation (such as warm season grasses) and be managed in a way that does not attract hazardous wildlife.
B. Trees within the airport property line that have the potential to attract hazardous wildlife would be removed.
C. The on-airport drainage ditches would be designed so they do not retain water, and vegetation attractive to hazardous wildlife near them would be controlled.
D. A perimeter fence at least 10 feet high would be constructed.
E. The City would take practical steps to work with the gravel pit owners to minimize gravel pit expansion in the vicinity of the new airport.
F. A feedlot southwest of the site could attract hazardous wildlife in the future, although the USDA did not determine that it was currently doing so. The City would monitor hazardous wildlife activity at the feedlot and work with the feedlot operators to take practical steps to minimize or eliminate its attractant features, should significant hazardous wildlife activity begin to occur there.
G. Several gravel pits are located north of the New Airport Alternative Site. The City would take practical steps to work with the gravel pit owners to minimize the creation of sandbars and shallow areas in these pits.

4.4 CONSTRUCTION IMPACTS

Construction impacts are short-term, occurring only during the period when construction personnel and equipment are operating at the BKX expansion or the new Airport alternative.

Construction noise is very transient in nature and dependant on the type of work. The equipment that produces it is limited to the construction area on airport or to the haul routes. This noise is mitigated by the fact that construction is predominantly performed during daylight hours when people are much less sensitive to noise. Since the alternative sites are already either farmed, used for aircraft operations or both, the noise of construction equipment will be very similar to the large farm tractors and maintenance equipment currently used to work the ground in the area.

Potential temporary air quality impacts from construction include fugitive dust associated with site work and haul routes, exhaust and machinery-related emissions from construction equipment and haul vehicles and potential congestion in the vicinity of construction sites and on haul routes. Contractors would be required to mitigate construction/grading activities disrupting ground cover by controlling fugitive dust emissions and other airborne particulates in accordance with specifications including measures such as applying water to exposed soils, and limiting the extent and duration of exposed soil conditions. All equipment on this project will be required to

be maintained in good working order and all air pollution control equipment will be operational. Contractors would be required to conform to all applicable federal, state, and local regulatory requirements.

The earthwork necessary to construct the alternatives will create the potential for erosion and siltation. Two measures will be taken to mitigate any impact to storm water runoff from the construction site. First, a Storm Water Pollution Prevention Plan (SWPPP) will be prepared as part of the project design. This plan, which is required and regulated by the State of South Dakota, will address runoff and other potential pollution sources; best management practices (BMPs) and other requirements for construction. A General Storm Water Permit for Construction Activities will be required. A Notice of Intent (NOI) to construct must be filed with the State to inform them of the project so that they may conduct inspections as necessary. The FAA AC 150/5370-10E, "Standards for Specifying Construction of Airports," Item P-156 "Temporary Air and Water Pollution, Soil Erosion, and Siltation Control" will be included in the project specifications and the contractor will be required to meet the requirements in it.

All construction debris will be required to be disposed of at an approved site and none of it will be allowed to be deposited in wetlands or other sensitive sites. Also, if dewatering is needed for construction, a Surface Water Discharge Permit will be required

Heavy equipment used during construction would require fueling, routine maintenance, and potentially minor repairs while on site. There is a risk of minor spills or leaks of petroleum products during maintenance and equipment refueling. This risk is typical of any construction project involving similar activities. The contractor is responsible for the implementation of measures to prevent petroleum spills and the reporting and clean-up requirements for any petroleum spills that occur during construction.

4.4.1 No Action Alternative

This alternative would require the rehabilitation and reconstruction of the existing pavements and infrastructure to maintain the airport in a usable condition. The work would require the type of construction equipment used to move and grade the ground, place granular materials, pave the runways and taxiways, place conduit and cable, mill and salvage the existing pavements to be reused as base material and other related items of construction. The equipment would include items such as scrapers, asphalt milling machines, dozers, trucks, loaders, graders, excavators, pavers, trenchers, etc. This work would not be performed all at once but would be spaced out over multiple years as each of the infrastructures wear out and need to be replaced. It would be done during the typical construction season of May to October. However, hauling material to the site could be performed during the winter months.

All of the excavation will take place on the airport as part of this alternative. The granular materials will be hauled in from off site and the necessary haul roads will be identified in the safety phasing plan and incorporated into the SWPPP. The most sensitive area for construction impacts of this alternative would be the possibility of erosion and siltation during the earthwork. However, by implementing the SWPPP and monitoring construction this impact can be avoided.

4.4.2 BKX Expansion Alternative

This alternative would require the type of construction equipment used to move and grade the ground, place granular materials, pave the runways and taxiways, place conduit and cable, mill and salvage the existing pavements to be removed and other related items of construction. The equipment would include items such as scrapers, asphalt milling machines, dozers, trucks, loaders, graders, excavators, pavers, trenchers, etc. This equipment would be used to move approximately 200,000 – 300,000 Cubic Yards (C.Y.) of earthwork to complete all phases of the project. In addition, approximately 200,000 – 250,000 tons of granular material and asphalt mix would be hauled to the site and placed as part of the construction. This work would not be performed all at once but would be spaced out over the multiple year time frame of the different phases. It would be done during the typical construction season of May to October with the exception of construction requirements for the creek re-route. These requirements will be determined as part of the Formal Section 7 consultation. Hauling material to the site could be performed during the winter months.

The excavation will take place on the airport or on the land to be acquired for the airport as part of this alternative. The granular materials will be hauled in from off site and the necessary haul roads will be identified in the safety phasing plan and incorporated into the SWPPP. The most sensitive area for construction impacts of this alternative would be the possibility of erosion and siltation during the earthwork in and around the Six Mile Creek area. However, by implementing the SWPPP and monitoring construction this impact can be avoided.

Heavy equipment used during construction would require fueling, routine maintenance and potentially minor repairs while on site. There is a risk of minor spills or leaks of petroleum products during maintenance and equipment refueling. This risk is typical of any construction project involving similar activities. The contractor is responsible for the implementation of measures to prevent petroleum spills and the reporting and clean-up requirements for any petroleum spills that occur during construction.

4.4.3 New Airport Alternative

This alternative would require the type of construction equipment used to move and grade the ground, place granular materials, pave the runways, taxiways, taxilanes and aprons, place conduit and cable, mill and salvage the existing pavements to be removed and other related items of construction. The equipment would include items such as scrapers, asphalt milling machines, dozers, trucks, loaders, graders, excavators, pavers, trenchers, etc. This equipment would be used to move approximately 450,000 – 550,000 Cubic Yards (C.Y.) of earthwork to complete all phases of the project. In addition approximately 400,000 – 500,000 tons of granular material and asphalt mix would be hauled to the site and placed as part of the construction. This work would not be performed all at once but would be spaced out over the multiple year time frame of the different phases. The work would be done during the typical construction season of May to October. However, hauling material to the site could be performed during the winter months.

Heavy equipment used during construction would require fueling, routine maintenance and potentially minor repairs while on site. There is a risk of minor spills or leaks of petroleum products during maintenance and equipment refueling. This risk is typical of any construction project involving similar activities. The contractor is responsible for the implementation of

measures to prevent petroleum spills and the reporting and clean-up requirements for any petroleum spills that occur during construction.

4.5 DEPARTMENT OF TRANSPORTATION ACT, SECTION 4(f)

This section considers the impacts of the airport alternatives on resources eligible for review under Section 4(f) of the 1966 Department of Transportation Act.[5] Section 4(f) states that the Secretary of the U.S. Department of Transportation may not approve a project that requires the use of any publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, or land in an historic site of national, state or local significance[6]. The act requires that no project be approved unless there is no feasible and prudent alternative to using that land and planning for the project includes all possible measures to minimize harm resulting from the use of the land.

"Use" within the meaning of section 4(f) includes not only actual physical takings of such lands, but adverse indirect impacts (i.e., constructive use) as well. Constructive use would occur if the impacts would substantially impair the section 4(f) resource – that is, when the activities, features or attributes of the resource that contribute to its significance would be substantially diminished. In terms of noise, the land use compatibility guidelines in 14 CFR Part 150 may be used to determine if there would be a constructive use when the guidelines "are relevant to the value, significance, and enjoyment of the 4(f) lands in question. The use of 14 CFR Part 150 guidelines may not be appropriate when a 4(f) property is "located in a quiet setting and the setting is a generally recognized feature or attribute of the site's significance."

4.5.1 No Action Alternative

Public Parks, Recreation Areas, and Wildlife/Waterfowl Refuges

The No Action Alternative does not include the construction or operation of new airfield facilities and therefore would not result in physical or constructive use of a public park, recreation area or wildlife/waterfowl refuge.

Historic Sites

The No Action Alternative does not include the construction or operation of new airfield facilities and therefore would not result in physical or constructive use of a historic site.

4.5.2 BKX Expansion Alternative

Public Parks, Recreation Areas, and Wildlife/Waterfowl Refuges

The BKX Expansion Alternative includes relocating and extending the primary runway as well as land acquisition. These improvements result in physical impacts as well as changes in noise exposure.

[5] In January 1983, as part of an overall recodification of the DOT Act, Section 4(f) was amended and codified in 49 U.S.C, Section 303. This regulation is commonly known as "Section 4(f)."

[6] Except in unusual circumstances, Section 4 (f) only applies to historic properties which are on or eligible to be on the National Register of Historic Places (NHRP). In the situation where formal support documenting the significance of a historic property not eligible to be listed on the NRHP is supplied by a local official, the FAA can determine Section 4(f) applies to this property.

The proposed land acquisition does not include any areas identified as parks, recreation areas or wildlife/waterfowl refuges. Further, all construction would take place on existing and future airport property. Therefore, there would not be a physical impact to a park, recreation area or wildlife/waterfowl refuge.

The potential for constructive use as a result of increased noise exposure was also considered. The nearby park is in an urban setting and used for traditional recreational activities. Because of this, the land use compatibility guidelines in 14 CFR Part 150 may be used to determine if there would be a constructive use. According to these guidelines noise exposure levels of less than DNL 65 are compatible with parks. The noise analysis showed that the nearby park and recreation areas are well outside the DNL 60 contours resulting from the BKX Expansion Alternative. Therefore, it is concluded that the BKX Expansion Alternative would not result in a physical or constructive use of a public park, recreation area, or wildlife/waterfowl refuge.

Historic Sites

As discussed in Section 4.10 the farm at 127 16th Avenue Southwest may be eligible for the National Register of Historic Places (NRHP). Regardless of the final status of this eligibility, the BKX Expansion Alternative would not result in a physical or constructive use of this property.

4.5.3 New Airport Alternative

Public Parks, Recreation Areas, and Wildlife/Waterfowl Refuges

No public parks, recreation areas, or wildlife/waterfowl refuges were identified near the New Airport Alternative site. Therefore, the New Airport Alternative would not result in a physical or constructive use of a public park, recreation area, or wildlife refuge.

Historic Sites

As discussed in Section 4.10, the farms at 47346 SD Hwy. 324, 47358 SD Hwy. 324, 21915 475th Avenue, 47407 218th Street South 47569 218th Street South may be eligible for the NRHP. Regardless of the final status of this eligibility, the New Airport Alternative would not result in a physical or constructive use of these properties.

4.6 FARMLANDS

The Farmland Protection Policy Act (FPPA) regulates Federal actions with the potential to convert farmland to non-agricultural uses. As stated in the Natural Resources Conservation Service (NRCS) Rules, Part 658 -- Farmland Protection Policy Act**,** *Farmland* means prime or unique farmlands as defined in section 1540(c)(1) of the Act or farmland that is determined by the appropriate state or unit of local government agency or agencies with concurrence of the Secretary to be farmland of statewide local importance. It does not include land already in or committed to urban development or water storage. For FPPA-regulated farmland, scoring of the relative value of the site for preservation is performed by the NRCS of the U.S. Department of Agriculture (USDA) and the airport sponsor on NRCS Form AD-1006, Farmland Conversion Impact Rating. If the total score is below 160, no further analysis is necessary. Scores between 160 and 200 may have potential impacts and require further consideration of alternatives that would avoid this loss. A significant impact would occur if the total score is greater than 200.

4.6.1 No Action and BKX Expansion Alternatives

Affected Environment

The affected environment is the farmland within the existing and proposed airport property. In 2008 the airport property had 107 acres used in the production of crops and 167 acres of hay. The City is in the process of eliminating the production of crops due to its attraction of wildlife hazardous to aircraft operations. BKX is located within the City of Brookings and is considered urban development. Therefore, there is no farmland on BKX property as defined by the FPPA.

Farmland Impacts

The No Action and BKX Expansion Alternatives would have no impact on farmland since only land in urban use would be affected.

4.6.2 New Airport Alternative

Affected Environment

The affected environment is the farmland within the proposed airport property. The affected farmland is shown in **Figure 13**.

Farmland Impacts

The New Airport Alternative is designated Site B on the NRCS Form AD-1006 at Appendix A-61. It would convert approximately 833.7 acres of farmland, of which 746 acres are prime and unique farmland. The total score of 181 is less than 200 and the impact is therefore not considered a significant impact by NRCS. However, since the score is above 160, alternatives to reduce the farmland impact need to be explored. The other alternatives under consideration in this Dual Track Airport Planning Process Final EA that would reduce this impact are the No Action Alternative and the BKX Expansion Alternative.

Also, alternative site layouts within the New Airport Alternative Search Area #5 were considered. All of the alternative layouts had a similar amount of farmland that would be converted and therefore would not substantially reduce the impact. These alternative layouts were eliminated because they required homes to be relocated, affected wetlands, or did not provide the best airfield configuration from an airport operations standpoint.

Cumulative Effects

There are no known past or present actions that would result in effects on farmland that would be cumulative with the New Airport Alternative. Any future actions that could convert farmland to residential, commercial or industrial uses related to the development of the New Airport Alternative site are speculative and unknown. The surrounding area is zoned agriculture and would require rezoning and revisions to the Brookings County Comprehensive Plan.

4.7 FISH, WILDLIFE, AND PLANTS

Section 7 of the Endangered Species Act (ESA), as amended, applies to Federal actions and sets forth requirements for consultation to determine if the proposed action may affect an endangered or threatened species. If an endangered or threatened species or its critical habitat may be affected, Section 7(a)(2) of the ESA requires the Federal lead agency to consult with the U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS), as

appropriate, to ensure that the proposed action does not jeopardize the continued existence of the affected species. Threatened, endangered, candidate and proposed state-listed animal and plant species and their habitats that exist in the affected environment must also be considered. Plant or animal species with special status are also included.

4.7.1 Threatened and Endangered Species

Consultation with the USFWS and South Dakota Department of Game, Fish, and Parks was initiated on September 13, 2007 to determine if federal or state listed endangered, threatened or sensitive species (TES) occur within the expansion area of the existing airport or within the alternative airport site. The Department of Game, Fish, and Parks did not identify any important species in the affected environments (see October 16, 2007 letter at Appendix A-94). The USFWS response letter dated October 16, 2007 at Appendix A-89 and conversations with the USFWS note that Six Mile Creek is known to harbor the Topeka shiner and that the Topeka shiner is considered to occur in all the reaches of the stream unless there are impediments (i.e., dams or walls) to the fish movements up and down the stream. Correspondence also suggests that potential Western prairie fringed orchid habitat and American burying beetles may occur at the airport expansion area and at the alternate airport site.

Topeka Shiner

The USFWS listed the Topeka shiner (*Notropis topeka*) as endangered under the Endangered Species Act (ESA) in January of 1999 (USFWS 2001) and has no state status in South Dakota. The Topeka shiner Management Plan for the State of South Dakota states that "Recent studies in South Dakota have documented the Topeka shiner in 80 percent of historically known streams, along with many streams where Topeka shiners were not previously reported. These recent findings suggest Topeka shiners are more abundant in South Dakota than other states within its range."

The Topeka shiner is a small minnow discovered in Shunganunga Creek near Topeka, Kansas (Minckley and Cross 1959). Topeka shiners average 1.5 to 2 inches in length with a maximum length of 3 inches. Distinguishing characteristics include a chevron-shaped black spot at the base of its caudal fin, a dusky stripe along the lateral line, a dark, olive- colored body, and a distinct dark stripe preceding the dorsal fin. Breeding males have an orange-tinted head and fins (Pflieger 1997, USFWS 1998). Studies conducted by Pflieger (1997) indicate that Topeka shiners "generally occupy small, prairie streams with groundwater inputs, high water quality, and sand or gravel substrates." However, other studies have documented this species in degraded streams with silt substrates, in off-channel backwaters, in borrow pits, and sloughs that are connected to occupied streams, in streams with incised channels, high bank erosion, and in intensively grazed areas. Many of the streams occupied by Topeka shiners cease to flow in dry summers, but subsurface flow in the streambed helps maintain permanent pools where Topeka shiners can survive. GIS models have shown that as groundwater delivery to streams increased, the potential for Topeka shiner occurrence also increased (Wall et al. (2001)).

Topeka shiners have apparently declined due to a number of habitat altering activities including; increased siltation pollution, loss or alteration of habitat caused by construction, watershed impoundments, stream channelization (straightening), water withdrawals, channel erosion, and as a result of intensive agricultural practices.

Western Prairie Fringed Orchid

The western prairie fringed orchid (*Platanthera praeclara*) is listed by the USFWS as threatened in 1989 and has no state status in South Dakota. As with many prairie species, western prairie fringed orchid has suffered declines in its population when prairies were converted to crop production. The western prairie fringed orchid is presently known to occur in seven states and one Canadian province. It was first documented by the Lewis and Clark expedition (under the name *Habenaria leucophaea*) apparently in what is now Wyoming, but the heart of its historic range was from the Red River valley of Manitoba, Minnesota, and North Dakota, extending southeastward to Iowa and Missouri and westward to northeastern Oklahoma, eastern Kansas, central Nebraska and eastern South Dakota.

No records of the western prairie fringed orchid have been documented in South Dakota but populations in nearby North Dakota and Minnesota indicate the western prairie fringed orchid occurs in moist, calcareous or subsaline prairies and sedge meadows but has also been observed at disturbed sites. Its historic range extended from Manitoba southeastward to Iowa and Missouri then westward to eastern Oklahoma, Kansas, and Nebraska. In the southern part of its range it is more likely to be found in mesic upland prairies and in the north more frequently in wet prairies and sedge meadows. It is also known from prairies and swales in sand dune complexes that are fed by shallow underground water.

The flowering period for the western prairie fringed orchid in Minnesota has been documented between July 1 and July 29 (Smith 1993). Other sources describe the flowering period as the last week in June through the middle of July. This species is an erect, and long-lived perennial flower with a showy spike distinguished by up to two dozen large, white flowers with deeply fringed margins. The western prairie fringed orchid is always associated with full sunlight and does not tolerate a canopy. This species is difficult to confuse with other species due to its distinct characteristics and its affinity for native prairies.

Since sedge meadows and disturbed grasslands are habitat types that can be utilized by this species, western prairie fringed orchid surveys were conducted on July 17, 2008 by Graham Environmental Services biologists. No orchids were observed within the BKX Expansion Alternative area or the New Airport Alternative site.

The loss of prairie habitat and fragmentation of prairie tracts have reduced the populations of native plant species such as the western prairie fringed orchid. The small size of habitat where the orchid is known to occur and their isolated nature limit the plant's ability to survive long-term. Other factors that have contributed to the decline of this species include development of remnant prairie communities, cattle grazing, the widespread use of herbicides, and gravel mining. Searches for the western prairie fringed orchid on the BKX and the alternative airport site indicate that much of the lands incorporated into each alternative have been converted to pasture, windrows, shrublands, and converted to grasslands dominated by invasive species. Invasive species such as *Bromus inermis*, *Agropyron repens*, *Phalaris arundinacea*, and *Poa pratensis* characterize grasslands at both airport sites.

American Burying Beetle

The American burying beetle (*Nicrophorus americanus*) is classified as endangered under the ESA and has no state status in South Dakota. The American Burying Beetle (*Nicrophorus americanus*) Recovery Plan USFWS Region 5 states "The American burying beetle has been recorded historically from at least 150 counties in 35 states in the eastern and central United States, as well as along the southern fringes of Ontario, Quebec and Nova Scotia in Canada. The American Burying Beetle Recovery Plan also states that since 1970, *N. americanus* has been documented from six states including extant populations in Rhode Island, Oklahoma, and in Nebraska. American burying beetles were historically documented in Brookings County, but none recently. They have recently only been found in Todd, Tripp, Bennett and Gregory Counties.

Characteristics of preferred habitats for the American burying beetle are not well documented; however, areas of mixed woodlands and grasslands with soils suitable for burying carcasses seem to meet the species' requirements. Historic records indicate that the species occurred along water courses where riparian deciduous forests or scrub forests were abundant (Jameson and Ratcliffe 1989). The American Burying Beetle Recovery Plan state that Oklahoma populations occur in habitats described as "a mosaic of vegetation types ranging from deciduous and coniferous forests on slopes and ridge tops to deciduous riparian corridors and extensive pasturelands on the valley floor". USFWS also states that soils at these sites included fine sandy loams, silt loams with a clay component at most capture sites. Considering the broad geographic range formerly occupied by the American burying beetle, it is unlikely that vegetation or soil type were historically limiting. Today, the American burying beetle seems to be largely restricted to areas most undisturbed by human influence. Carrion availability (appropriate in size as well as numbers) may be the more important factor of where beetles occur than the type of vegetation or soil structure.

Prevailing theories for the decline of this species involve habitat fragmentation, a reduction of indigenous species populations associated with native habitats, and an increase in the populations of competitors that remove carrion in which the American burying beetle depends (Brett Ratcliffe, University of Nebraska State Museum, in lit. 1991). Agricultural and grazing practices within the range of the American burying beetle compound changes to vertebrate composition and densities caused by habitat fragmentation.

4.7.1.1 No Action Alternative

Affected Environment

The Topeka shiner is known to occur within the Six Mile Creek that crosses the northwestern portion of the existing airport site. A Western prairie fringed orchid survey was conducted on July 17, 2008 by Graham Environmental Services (GES) biologists since sedge meadows and disturbed grasslands are habitat types that can be utilized by this species. No orchids were observed. Evaluation of American burying beetle habitats within the affected area indicate that this area is dominated by either manicured grasslands with large areas of concrete or agricultural lands planted to row crops. There are small areas of pasture and disturbed grasslands or wetlands. The character and structure of the grasslands suggest that vertebrate populations are extremely limited due to the monotypic nature of the habitat.

TES Impacts

The No Action Alternative would have no effect on the Topeka shiner, Western Prairie Fringed Orchid and American burying beetle.

Cumulative Effects

Topeka Shiner

Past actions affecting the Topeka shiner include changes to prairie stream habitats that include channelization, alteration of adjacent habitats, damming, and introduction of non-native species. These activities have all had a cumulative effect on the character of the existing prairie streams across the eastern half of the state of South Dakota. Recent studies have found that approximately 3 percent of the streams in the James, Vermillion and Big Sioux watersheds of eastern South Dakota have been channelized.

Foreseeable effects are likely to include cropping, road construction, additional human development (i.e., wind power, utility corridors, etc.) upstream of BKX. Two culverts are scheduled for replacement along a portion of Six Mile Creek over 15 miles upstream of BKX in Brookings County. [7]

Western Prairie Fringed Orchid

Past actions include the widespread conversion of suitable habitats to crops, which have resulted in a loss of over 95 percent of its original habitat. There are no known present or foreseeable future actions that would result in effects on the Western prairie fringed orchid that would be cumulative with the No Action Alternative.

American Burying Beetle

Past actions include urban development and the planting of row crops on farmland, which have destroyed burying beetle habitat. There are no known present or foreseeable future actions that would result in effects on the American burying beetle that would be cumulative with the No Action Alternative.

4.7.1.2 BKX Expansion Alternative

Affected Environment

The Topeka shiner is known to occur within the Six Mile Creek that crosses the northwestern portion of the existing airport site. According to the USFWS Biological Opinion (BO) included at Appendix A-189, there is no designated Topeka shiner critical habitat in the affected area of Six Mile Creek. A Western prairie fringed orchid survey was conducted on July 17, 2008 by Graham Environmental Services (GES) biologists since sedge meadows and disturbed grasslands are habitat types that can be utilized by this species. No orchids were observed. Evaluation of American burying beetle habitats within the affected area indicate that this area is dominated by either manicured grasslands with large areas of concrete or agricultural lands planted to row crops. There are small areas of pasture and disturbed grasslands or wetlands. The character and structure of the grasslands suggest that vertebrate populations are extremely limited due to the monotypic nature of the habitat.

[7] Wall, S.S., and C.R. Berry. 2002. Inventory and Mitigation of Culverts Crossing Streams Inhabited by Topeka Shiners (*Notropis Topeka*) in South Dakota.

TES Impacts

Topeka Shiner

The BKX Expansion Alternative would fill 15.4 acres of existing wetlands and require the placement of a portion of the airfield over a section of the stream channel of Six Mile Creek. The portion of Six Mile Creek impacted by the BKX Expansion Alternative was historically straightened and is currently a muck bottom channel with cattails (*Typha* spp.) and reed canary grass (*Phalaris arundinacea*) on the stream banks. Realignment of the channel would be required, which would likely result in decreased Topeka shiner use of the area during construction and limit their use once completed. Impacts to the Topeka shiner may include mortality of individual fish, temporary disturbance of individuals and habitat modification. Therefore, the BKX Expansion Alternative is likely to adversely affect the Topeka shiner, which requires formal Section 7 consultation between the FAA and the USFWS under the ESA. A biological assessment (BA) was prepared and submitted to USFWS on March 22, 2011as part of a Section 7 consultation initiation package included at Appendix A-151. USFWS prepared a BO on September 27, 2011 and concluded that the BKX Alternative, as proposed, is not likely to jeopardize the continued existence of the Topeka shiner. The BO is included at Appendix A-189.

Western Prairie Fringed Orchid

Searches for the western prairie fringed orchid did not reveal the presence of this species. Although alteration to habitats by the BKX Expansion Alternative may affect the Western prairie fringed orchid, it is not likely to adversely affect the survival of this rare orchid.

American Burying Beetle

The age of records for this species in South Dakota, its range-wide decline, and the limited potential for this species occurrence within the affected environment suggest that the BKX Expansion Alternative is not likely to adversely affect individuals of this species or its persistence range-wide.

Cumulative Effects

Topeka Shiner

Past actions affecting the Topeka shiner include changes to prairie stream habitats that include channelization, alteration of adjacent habitats, damming, and introduction of non-native species. These activities have all had a cumulative effect on the character of the existing prairie streams across the eastern half of the state of South Dakota. Recent studies have found that approximately 3 percent of the streams in the James, Vermillion and Big Sioux watersheds of eastern South Dakota have been channelized.[8]

The portion of Six Mile Creek impacted by the BKX Expansion Alternative was previously straightened and is currently a muck bottom channel with cattails (*Typha* spp.) and reed canary grass (*Phalaris arundinacea*) on the stream banks. These past actions have all had an adverse effect on Topeka shiner habitat.

[8] Johnson, R. R, and K. F. Higgins. 1997. Wetland resources of eastern South Dakota. Brookings: South Dakota State University

Past agriculture and grazing activities and urban development occurring in the project area have resulted in such changes as channelization and loss of vegetative cover and permeable surfaces that affect the flows and contribute to the degradation of Six Mile Creek and may have affected Topeka shiner habitat. Present and foreseeable future actions are continued agriculture and grazing activities and likely to include road construction and additional human development (i.e., wind power, utility corridors) upstream of BKX. Two culverts are scheduled for replacement along a portion of Six Mile Creek over 15 miles upstream of BKX in Brookings County[9]. The cumulative effects of these possible actions with the BKX Expansion Alternative are unknown.

Western Prairie Fringed Orchid

Past actions include the widespread conversion of suitable habitats to crops, which have resulted in a loss of over 95 percent of its original habitat. There are no known present or foreseeable future actions that would result in effects on the Western prairie fringed orchid that would be cumulative with the BKX Expansion Alternative.

American Burying Beetle

Past actions include urban development and the planting of row crops on farmland, which have destroyed burying beetle habitat. There are no known present or foreseeable future actions that would result in effects on the American burying beetle that would be cumulative with the BKX Expansion Alternative.

Proposed Topeka Shiner Mitigation

As discussed in Section 2.1.2, a portion of Six Mile Creek would be rerouted around the proposed runway safety area. The rerouted creek is estimated to have an approximate bottom width of 90', top of 138', 4:1 side-slopes, and a 6' depth. The slope of the creek would be approximately 0.04%. The gradient of the existing portion of the creek (approximately 2,500' long) that would be realigned is approximately 0.06%. The new realigned portion of the creek would be approximately 3,790' long.

Only Topeka shiner populations that occur within the permanent grading limits or immediately adjacent to these limits are likely to be affected due to the sedentary nature of the species. The direct effects of construction near Six Mile Creek may result in the release of sediment, cause temporary barriers to fish passage, and remove vegetation adjacent to the existing creek channel. Most of these direct effects will be mitigated or avoided by constructing in the stream outside of the spawning season (i.e., May 15th through July 31). Pre-construction relocations of Topeka shiners to upstream suitable habitat would occur to avoid a "taking" of individuals within the construction footprint. Placement of erosion control devices in-stream and bank stabilization would also be implemented to limit sediment discharge into Six Mile Creek. Other means of maintaining a flow regime in Six Mile Creek and construction monitoring would be implemented to preserve the integrity of downstream habitats and avoid any intake of shiners during flow preservation. Stream design will implement a more natural stream configuration that will benefit the Topeka shiner and will take into account the existing creek profile so as to eliminate the possibility of increasing rate flows in Six Mile Creek. The proposed configuration will be constructed with Topeka shiner habitat components in mind.

[9] Wall, S.S., and C.R. Berry. 2002. Inventory and Mitigation of Culverts Crossing Streams Inhabited by Topeka Shiners (*Notropis Topeka*) in South Dakota.

4.7.1.3 New Airport Alternative

Affected Environment

The Topeka shiner is known to reside in Medary Creek. A Western prairie fringed orchid survey was conducted on July 17, 2008 by GES since sedge meadows and disturbed grasslands are habitat types that can be utilized by this species. No orchids were observed. Evaluation of American burying beetle habitats within the affected area indicate that this area is dominated by either manicured grasslands with large areas of concrete or agricultural lands planted to row crops. There are small areas of pasture and disturbed grasslands or wetlands. The character and structure of the grasslands suggest that vertebrate populations are extremely limited due to the monotypic nature of the habitat.

TES Impacts

Topeka Shiner

The New Airport Alternative may indirectly affect the Topeka shiner due to the increase in storm water runoff and potential discharge of sediment and contaminants.

Western Prairie Fringed Orchid

The deterioration of grassland habitats and the fact that searches for the western prairie fringed orchid did not reveal the presence of this species indicate that alteration to habitats by the New Airport Alternative would not have a detrimental effect on the survival of this rare orchid.

American Burying Beetle

The age of records for this species in South Dakota, its range-wide decline, and the limited potential for this species occurrence within the affected environment suggest that there would be no impact to individuals of this species or its persistence range-wide by the New Airport Alternative.

Cumulative Effects

There are no known past, present, or foreseeable future actions that would result in effects on the Topeka shiner, Western prairie fringed orchid and American burying beetle that would be cumulative with the New Airport Alternative.

4.7.2 Plants

The affected environment is the area that would be directly disturbed by the proposed construction. The affected area occurs within the Great Plains Region and is located at the transition from the Great Plains Steppe Province to the Prairie Parkland (Temperate) Province (Bailey et al. 1994). These Prairie Provinces are also known as mixed-grass prairie and tall-grass prairie, respectively, and are characterized by plant communities that are dominated by grasses that shift with changes in precipitation. These land types lie within a region that is known as the Prairie Coteau, which is bordered by the southwestern edge of the Des Moines lobe in Minnesota, South Dakota, and Iowa. The Prairie Coteau is covered by glacial till and loess that predates the Wisconsin Glaciation period. The Prairie Coteau was formed by debris that accumulated in advance of the most recent glaciers. Ice blocks left buried in the debris later melted and formed large and small depressions that formed pothole lakes and wetlands.

Large portions of mixed-grass and tall-grass prairie ecosystems have been converted to croplands but many of these areas are utilized as range land where cattle are raised. River or creek floodplains within this region are often comprised of forest systems where the woody species were shielded from the periodic fires that maintained the surrounding areas as grassland.

4.7.2.1 No Action and BKX Expansion Alternatives

Affected Environment

The existing airport site has limited natural vegetation or wildlife habitat. The majority of the airport is maintained as close-cropped sod (lawn) to maintain visibility along the existing runways. These lawn areas are generally dominated by common native species such as yellow foxtail (*Setaria glauca*), sedge species (*Carex* sp.) and several invasive or introduced grass species such as Kentucky bluegrass (*Poa pratensis*) and smooth brome (*Bromus inermis*). Six Mile Creek runs across the north and west end of the existing airport. Natural vegetation is more common along the meanders and oxbow wetlands where the creek bed has occurred. Sedges, prairie cordgrass (*Spartina pectinata*), cattails (*Typha* spp.), and willow (*Salix* sp.) are the dominant vegetation types and provide more diverse vegetation stratification. Several seasonally flooded cattail marshes are associated with Six Mile Creek. Much of the adjacent temporarily flooded wetland is mowed and maintained like the surrounding open areas. The airport expansion areas to the north and west include extensive temporarily to seasonally flooded wetlands; however these areas are mowed for hay or heavily grazed, which limits their wildlife habitat value. There is also a narrow band of mature cottonwood (*Populus deltoides*) trees along the channel of Six Mile Creek which provides additional vegetation stratification and increases the diversity to available wildlife habitat.

Plant Impacts

There would be tree removal, but no plant communities dominated by trees or shrubs would be affected by the No Action and BKX Expansion Alternatives.

Cumulative Effects

There are no known past, present, or foreseeable future actions that would result in effects on plants that would be cumulative with the No Action and BKX Expansion Alternatives.

4.7.2.2 New Airport Alternative

Affected Environment

The new airport site has been significantly altered from its pre-agriculture condition. The majority of this site is planted to row crops, primarily corn (*Zea mays*). Plant species are predominantly invasive or introduced grasses such as smooth brome, Kentucky bluegrass, and reed canary grass (*Phalaris arundinacea*). Some small remnant patches of native grasses occur within the road ditches that include grasses such as prairie cordgrass and little bluestem (*Schyzachyrium scoparium*). Several trees and shrubs were planted around the rural residences to serve as windbreaks for the farm and offer limited food and habitat value to wildlife. Tree species in the area are predominantly cottonwood and occasionally black willow (*Salix nigra*). Grassed waterways on the site may also be used by some wildlife species but have limited food or cover value because of their fairly monotypic vegetation and lack of connection to any other preferred wildlife habitat areas.

Plant Impacts

No tree or shrub community would be affected by the New Airport Alternative.

Cumulative Effects

There are no known past, present, or foreseeable future actions that would result in effects on plants that would be cumulative with the New Airport Alternative.

4.7.3 Fish and Wildlife[10]

4.7.3.1 No Action Alternative

Affected Environment

Although wildlife habitat is limited on the existing airport site, several species may utilize the close-cropped lawn areas to fulfill all or a portion of their life requirements such as nesting habitat, home territory, or for foraging habitat. Bird species such as Western meadowlark, horned larks, eastern kingbird, barn swallows, song sparrows, American robin, mourning doves, and Killdeer commonly utilize open grassland communities such as lawns for home territories, nesting, or foraging territory. Although species such as meadowlarks, kingbirds, and horned larks are considered grassland species, the majority of the species that utilize lawn habitats are considered habitat generalists and can utilize grassland, brushy habitats, semi-forested habitats, or rural and urban habitats. In addition to the bird species listed above, several common small rodents such as meadow voles, grasshopper mice, prairie deer mouse, thirteen lined ground squirrels, and jackrabbits could also utilize the grassy portions of the existing airport. With the presence of the species listed above, several predatory species would be expected to also utilize the airport property such as red-tailed hawks, red fox, coyote, striped skunk, and raccoons.

Fish and Wildlife Impacts

The No Action Alternative would not introduce any changes to the fish or wildlife habitats.

Cumulative Effects

There are no known past, present, or foreseeable future actions that would result in effects on fish and wildlife that would be cumulative with the No Action Alternative.

4.7.3.2 BKX Expansion Alternative

Affected Environment

The expansion area northwest of the existing airport is likely to provide habitat for many or all of the species listed above for the No Action Alternative, but would be expected to also provide habitat for additional species due to the additional vegetation stratification provided by the trees and shrubs that occur in this area and wetland dependent species. Additional nesting, foraging, and home range habitat would be expected for species such as house sparrows, house finches, red-winged blackbirds, common yellowthroats, mallards, great blue heron, sedge wren, blue jay, tree swallow, downy woodpecker, hairy woodpecker, indigo bunting, and cottontail rabbit. Reptiles that may occasionally use the existing airport site include skinks, hognose snake, fox snake, bull snake, milk snake, and red-bellied snake. Reptile use is probably very limited due to

[10] The Topeka shiner and American burying beetle are discussed in TES Section 4.7.1.

the lack of habitat. Amphibian (frog, toad, and salamander) use may be common along Six Mile Creek in the western part of the site where seasonal standing water exists.

Fish and Wildlife Impacts

Airport expansion at the existing airport is expected to have little impact on habitat generalists and minimal impact to grassland species due to the limited impact that airport expansion will have on grassland habitats. Wetland species such as amphibians, red-winged blackbirds, and common yellowthroats that utilize wetlands for nesting, breeding, and foraging habitat will experience the greatest impacts. Other noted wetland species that are likely to utilize the seasonal wetlands for a portion of their life requirements such as foraging habitat will likely only experience minor displacement in their search for adequate prey. Habitat generalists are likely to continue to utilize the expansion areas after impacts occur and are unlikely to be negatively affected by the proposed changes to existing habitats. However, those species that are deemed hazardous to aircraft operations would be controlled through the proposed BKX Hazardous Wildlife Attractant Mitigation Plan presented in Section 4.3.2. It is therefore concluded that the BKX Expansion Alternative would not have an adverse impact on fish and wildlife, other than the Topeka shiner, which is discussed in Section 4.7.1

Cumulative Effects

There are no known past, present, or foreseeable future actions that would result in effects on fish and wildlife that would be cumulative with the BKX Expansion Alternative.

4.7.3.3 New Airport Alternative

Affected Environment

Wildlife habitat is extremely limited on the site due to the use of the site for row-cropping (which has altered the natural animal habitat). The primary areas where potential wildlife habitat occurs, although in very limited amounts, are along fence rows, within grassed waterways, in road ditches, and near rural residences on the site. These areas tend to be very narrow, and thus provide little cover and habitat value for wildlife. Species that may utilize the new airport site are species that have acclimated to limited cover, windrow tree areas, rural building structures, annual row cropping and farming practices. Most of the species that can utilize these areas are thought of as habitat generalists. Species that may utilize the row cropped areas would include; ring-necked pheasant, gray partridge, American crow, American robin, rock dove, song sparrow, vesper sparrow, Western meadowlark, horned lark, Killdeer, mourning doves, red-winged blackbird, indigo bunting, downy woodpecker, hairy woodpecker, dickcissel, barn swallows, red-tailed hawk, American kestrel, blue jay, and brown thrasher. Wetland species would be similar to those listed on the existing airport site but would likely be fewer in number due to the smaller amount of wetland present at the new airport site. Mammal species are likely to be similar to those listed for the existing airport site.

Fish and Wildlife Impacts

Airport development at the new airport site is expected to have minor impacts on habitat generalists but would impact other species more negatively due to the greater acreage that would be impacted compared to acres impacted at the existing airport site. Wetland species and game species such as amphibians, pheasants, partridge, mallards, red-winged blackbirds, and common yellowthroats that utilize wetlands for nesting, breeding, and foraging habitat would experience

the greatest impacts. Other noted wetland species that are likely to utilize the seasonal wetlands for only a portion of their life requirements such as foraging habitat or cover would likely only experience minor displacement in their search for adequate prey or cover. Habitat generalists are likely to continue to utilize the expansion areas after impacts occur and are unlikely to be negatively affected by the proposed changes to the habitats affected by the New Airport Alternative. However, those species that are deemed hazardous to aircraft operations would be controlled through the proposed New Airport Hazardous Wildlife Attractant Mitigation Plan presented in Section 4.3.3. It is therefore concluded that the New Airport Alternative would not have an adverse impact on fish and wildlife.

Cumulative Effects

There are no known past, present, or foreseeable future actions that would result in effects on fish and wildlife that would be cumulative with the New Airport Alternative.

4.8 FLOODPLAINS

Executive Order 11988 directs Federal agencies to take action to reduce the risk of flood loss, minimize the impact of floods on human safety, health and welfare, and restore and preserve the natural and beneficial values served by floodplains. Order DOT 5650.2 contains DOT policies and procedures for implementing the executive order. Agencies are required to show there is no practical alternative before taking action that would have a significant encroachment on a 100-year floodplain based on a 100-year flood. In terms of NEPA, a significant encroachment would occur when the proposed action would have notable adverse impacts on the natural and beneficial values of the floodplain.

Floodplains are defined as that portion of lowland and flat area adjoining waters subject to a one percent or greater chance of flooding in any given year (i.e., a 100-year flood event). Federal Emergency Management Agency (FEMA) 100-year and 500-year floodplain data were reviewed for the existing airport site and alternative new airport site to determine potential impacts.

Methodology and Assumptions

Federal Emergency Management Agency (FEMA) 100-year and 500-year floodplain data were reviewed for the existing site and new airport site to determine potential encroachment. The existing site was reviewed both in its current runway configuration (no action alternative) and the proposed on-site alternative. In addition, the Army Corps of Engineers was solicited for comment by HNTB Corporation. Comments were received October 1, 2007 (included at Appendix A-62).

4.8.1 No Action Alternative

Affected Environment

The affected environment is the Six Mile Creek floodplain shown in **Figure 2**. The northwest corner of airport property is within the FEMA 100-year floodplain. There are no structures or pavement areas currently within the 100-year floodplain boundary, although runway protection zones for the 12 end of Runway 12-30 and the 17 end of Runway 17-35 are within the 100-year floodplain. Portions of the north end of Runway 17-35 cross through portions of the FEMA 500-year floodplain. Flooding of critical structures/pavements has not been an issue historically at the airport.

Floodplain Impacts

The No Action Alternative maintains the airport as is. The runway reconstruction activities associated with the No Action Alternative would not change the relationship between the existing airport and the floodplain. Therefore, there would be no floodplain impacts associated with the No Action Alternative compared to the existing conditions.

Cumulative Effects

There are no known past, present, or foreseeable future actions that would result in effects on the floodplain that would be cumulative with the No Action Alternative.

4.8.2 BKX Expansion Alternative

Affected Environment

The affected environment is the Six Mile Creek floodplain shown in **Figure 14**. The northwest corner of airport property is within the FEMA 100-year floodplain. There are no structures or pavement areas currently within the 100-year floodplain boundary, although runway protection zones for the 12 end of Runway 12-30 and the 17 end of Runway 17-35 are within the 100-year floodplain. Portions of the north end of Runway 17-35 cross through portions of the FEMA 500-year floodplain. Flooding of critical structures/pavements has not been an issue historically at the airport.

Floodplain Impacts

The BKX Expansion Alternative would extend airport property to the west/northwest into the southwestern boundary of the Six Mile Creek 100-year floodplain. A short portion of the northwest end of the proposed new approximate 6000-foot NW-SE Runway, associated taxiway, MALSR access road, and runway safety area (RSA) would encroach on the 100-year floodplain. Approximately 28 acres of floodplain would be encroached upon and approximately 91 acre-feet of flood storage removed, based on the proposed grading/construction area.

In addition, a portion of the 28 acres would be within a FEMA designated floodway, which is contrary to the criteria set forth in the U.S. Army Corps of Engineers (COE) October 1, 2007 letter at Appendix A-62. This floodway encroachment (approximately 5.3 acres) includes portions of the proposed runway extension that would cross the current Six Mile Creek streambed. An approximately 3,790-foot reroute of Six Mile Creek would be required to allow for a standard safety area beyond the end of Runway 11 and address floodplain/floodway encroachment issues. The proposed reroute is shown in **Figure 14a.** A decrease in the existing Six Mile Creek Floodway flow capacity could increase flood elevations and expand the upstream 100-year floodplain extent. Appropriate design and construction in the areas encroaching the floodplain and floodway would adequately maintain the natural and beneficial floodplain values and would have “no significant impact” to the floodplain. The re-route would maintain the cross-sectional area of the creek and the floodplain. The depth and velocity of the water would not change. The channel elevation up and down stream would be preserved. Proper slopes, vegetation and rip-rap would be used to mitigate impacts.

The proposed Six Mile Creek reroute and flow analysis was sent on November 18, 2009 to the US Army Corps of Engineers (COE) for their review as a viable option (at Appendix A-97). The

COE in correspondence dated November 19, 2009 concurred that this alternative is a viable option for Section 404 of the Clean Water Act permit review (at Appendix A-104).

Due to the proposed new runway/taxiway impervious areas, increased surface water run-off rates are possible from these surfaces. However, any increase in localized run-off rates would be minor and any increase in downstream velocities due to this would be negligible.

Prior to developing the area within the floodplain, a floodplain development permit must be applied for and obtained. Currently, the proposed extension that resides within the floodplain is in both the City and County of Brookings. Based on conversations with the Brookings City Planner, it is likely that the City would annex the appropriate land such that the proposed alternative is within city limits. The City would then have jurisdiction over the floodplain development permitting process.

Should the City not annex the land, there is a joint jurisdiction zoning ordinance that has been adopted by the City and County that would determine the regulatory agency for the floodplain permit for the area outside of city limits (portions of the floodplain encroachment reside both within and outside of city limits. Any land zoned for agricultural use would fall under the jurisdiction of the County; non-agricultural zoned land would be the responsibility of the City. The City Planner indicated that, based on his experience, it was likely the Board of County Commissioners and the City of Brookings would find it in their best interests to take appropriate steps so that the permitting would be controlled by one entity.

According to the National Flood Insurance Program (NFIP) requirements, for a project to be constructed in the floodway, a "no rise" analysis must be conducted and certified by a professional engineer to confirm the proposed project would not result in an increase in flood levels. Title 44 in the Code of Federal Regulations, Chapter 60.3(d) states the following:

> 44 CFR 60.3(d) *[In the regulatory floodway, communities must] Prohibit encroachments, including fill, new construction, substantial improvements, and other development within the adopted regulatory floodway unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base flood discharge.*

The "no rise" certification must be supported by technical data that utilizes the same modeling as was used to develop the floodway designations for Six Mile Creek. COE correspondence dated December 1, 2008 (at Appendix A-95) indicated that the effective hydraulic model for Six Mile Creek can be obtained from FEMA to assist with the "no rise" analysis. The "no rise" analysis would evaluate the proposed design and stream reroute using this model. Should the results of the "no rise" analysis indicate that the proposed conveyance around the RSA be inadequate to maintain a zero increase in flood elevations, design modifications to that conveyance would be required prior to the "no rise" certification being provided.

The "no rise" certification would then be submitted to the City of Brookings (assuming they have jurisdiction) when applying for the floodplain development permit.

Cumulative Effects

There are no known past, present, or foreseeable future actions that would result in effects on the floodplain that would be cumulative with the BKX Expansion Alternative.

Proposed BKX Floodplain Mitigation

The floodplain impacts would be mitigated by:

- Constructing a minimum of approximately 91 acre-feet of compensatory flood storage on the airport property, as shown in **Figure 14a**.
- Complying with special flood-related design criteria in the design of the reroute of Six Mile Creek in order to preserve existing flows and water surface elevations.
- Minimizing fill placed in floodplains (e.g., runway approach lights could be installed on individual stanchions.
- Detention ponds would be designed, engineered, constructed and maintained for a maximum 48-hour detention period. They will be steep-sided, rip-rap lined, narrow, linearly shaped water detention basins.

The storm water system would be designed to ensure the rate of discharge to Six Mile Creek and the conveyance capacity of the Six Mile Creek floodway after construction would not exacerbate either upstream or downstream flooding issues. This would require modeling during preparation of the floodplain development permit application through a "no rise" analysis/certification. This may result in design modifications to the proposed reroute to ensure sufficient floodway conveyance capacity if the current proposed reroute is inadequate to achieve the "no rise" certification. Preliminary analysis of the shape and slope of the creek were based on the updated creek flow data (included at Appendix A-97).

4.8.3 New Airport Alternative

Affected Environment

The affected environment is the Medary Creek floodplain shown in **Figure 15**. The new airport site consists entirely of farmland, none of which is in the floodplain.

Floodplain Impacts

The New Airport Alternative would not encroach upon either the 100-year or 500-year Medary Creek floodplain; therefore, there are no direct floodplain impacts.

Storm water discharge flowing to the southwest of the proposed site enters a 100-year floodplain downstream of the proposed facility. The proposed site's proximity to floodplains warrants proper planning and design of the storm water system to ensure that downstream flow rates to this floodplain would not substantially increase. The proposed alignment of the airport does not suggest significant increases in flow rates would be expected to the southwest.

Cumulative Effects

There are no known past, present, or foreseeable future actions that would result in effects on the floodplain that would be cumulative with the New Airport Alternative.

Proposed New Airport Floodplain Mitigation

Storm water run-off from the new site to the southwest would be designed such that the rate of discharge would not negatively impact the downstream floodplain. It is not expected based on proposed airport layout and typical storm sewer system design, that downstream floodplain would be adversely affected. Nevertheless, should this alternative be selected, storm sewer system engineers should design this alternative so that post construction discharge rates do not exceed pre construction discharge rates for the 100-year storm.

4.9 HAZARDOUS MATERIALS, POLLUTION PREVENTION AND SOLID WASTE

Four primary laws have been passed governing the handling and disposal of hazardous materials, chemicals, substances and wastes. The two statutes most important to this project are the Resource Conservation and Recovery Act (RCRA), as amended, and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended. RCRA governs the generation, treatment, storage and disposal of hazardous wastes. CERCLA provides for consultation with natural resources trustees and cleanup of any release of a hazardous substance (excluding petroleum) into the environment. Agencies should include an appropriate level of review regarding the hazardous nature of any materials or wastes to be used, generated or disturbed by the proposed action, as well as the control measures to be taken.

In March 2008, HNTB Corporation requested an environmental data search from Environmental Data Resources Inc (EDR). The data search included a review of federal, state, and local government agency databases for both the BKX Expansion Alternative and New Airport Alternative. These data searches found minimal RCRA, CERCLA, and fifteen petroleum release sites within approximately one mile of the No Action and BKX Expansion Alternatives. No RCRA, CERCLA, or Leaking Underground Storage Tank (LUST) issues were noted within the affected area of the New Airport Alternative.

In addition, correspondence with personnel at the South Dakota Department of Environment and Natural Resources, noted the following (see Appendix A-69 for more information):

- "Currently, the only thing we have regarding the Brookings Municipal Airport is that TSA operates out of the airport and will periodically send small amounts of hazardous waste (mostly lighters confiscated from passengers) to a disposal facility. In and around the airport area are about six businesses that are considered hazardous waste generators. Of those, only one is considered a large quantity generator (Star Circuits). Currently there are no cleanup activities or unresolved hazardous waste-related enforcement actions at any of these sites."
- "Our records do not show that any hazardous waste generators are located within the area encompassed by the proposed Off-Airport site."

Therefore, in accessing current and historical documents, the following assumptions were made to complete this review:

- Information obtained from the vendors, regulatory reports, interviewees, previous investigations reports, and physical and historical resources are accurate and do not require verification.
- The detailed history of ownership and land use for the purpose of the assessment was able to be determined from the site's current user, which was consistent with the records reviewed through the EDR report and discussions with key state regulatory personnel.
- The main objective of this review was to identify the presence or likely presence, use, or release of hazardous substances or petroleum products such as is defined in ASTM E1527-05 as a *recognized environmental condition*.

The City of Brookings Landfill has solid waste on-site, which can be a hazardous wildlife attractant. See Section 4.3.2 for more information on how this attractant potential would be mitigated.

4.9.1 No Action and BKX Expansion Alternatives

Affected Environment

The affected environment consists of the materials or wastes to be used, generated or disturbed. Based on the available information presented above, chemical usage and storage at the airport property are in compliance with local, state, and federal rules and regulations (see Appendix A-28 for more discussion regarding the on-airport BMU facilities).

Hazardous Materials Impacts

The alternatives are not expected to use or generate materials or wastes in the future that would not be in compliance with local, state, and federal rules and regulations. Based on the above review, no known soil contamination was identified within the airport boundary from previous investigations that would warrant site remediation or long term monitoring. Therefore, the No Action and BKX Expansion Alternatives are not expected to have an adverse impact on hazardous materials, wastes and substances.

4.9.2 New Airport Alternative

Affected Environment

Based on the above review, no known soil contamination has been identified within the New Airport Alternative site and the existing airport area that would warrant site remediation or long term monitoring.

Hazardous Materials Impacts

The New Airport Alternative is not expected to have an adverse impact on hazardous materials, wastes and substances.

In the implementation of either alternative, if contamination is encountered during the activities, or caused by the activities, the City or designated representative will report the contamination to the DENR. Any contaminated soil encountered will be temporarily stockpiled and sampled to determine disposal requirements, and the materials of construction through the contaminated area will be evaluated for chemical compatibility and adjusted accordingly. Best management practices will be employed in the handling and storage of petroleum and other chemicals at the site.

4.10 HISTORICAL, ARCHITECTURAL, ARCHAEOLOGICAL AND CULTURAL RESOURCES

Historical, architectural, archaeological and cultural resources that would be affected by federally funded/licensed undertakings come under the protection of the National Historic Preservation Act of 1966 (16 U.S.C.470), as amended. This act, in Section 106, requires federal agencies to consider the effects of such undertakings on properties listed, or eligible for listing, in the National Register of Historic Places (NRHP). Regulations related to this process are described in 36 CFR Part 800: Protection of Historic Properties.

A broader range of cultural resources comes under the protection of Section 4(f) of the U.S. Department of Transportation (DOT) act of 1966, which requires projects funded by the DOT to avoid significant historic sites unless there is no “feasible and prudent" alternative. In general, this provision applies to resources that are in, or are eligible for inclusion in, the NRHP. However, at the discretion of the DOT, Section 4(f) protection may also be extended to properties that do not meet NRHP criteria as long as the responsible jurisdiction advocates Section 4(f) status.

The area of potential effect (APE) is the geographic area or areas within which an undertaking may cause changes in the character or use of archaeological sites or historic properties. A potential effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property’s location, design, setting, materials, workmanship, feeling or association. Examples of adverse effects include physical damage or alteration of the property, change of the character of the property’s use or of physical features within its setting that contribute to its historical significance, and introduction of visual, atmospheric or audible elements that diminish the integrity of the property’s significant historic features. The alternatives under consideration would not introduce atmospheric or audible elements when compared to the No Action Alternative as presented in Section 4.1 and Section 4.13.

Therefore, the APE for historic properties is the area that contains a property that would be acquired or physically disturbed to the extent that its current use may be affected, or that would be significantly visually affected by the alternatives (see Section 4.10.1). For archaeological sites, the APE is the area where the ground could be disturbed as a direct or indirect consequence of the alternatives under consideration (see Section 4.10.2).

4.10.1 Historic Properties

Physical and visual effects are the most likely direct effects that the proposed project alternatives might have on properties in the APE that are listed or determined eligible for the NRHP. Determining whether an effect on a property is adverse requires an evaluation of both the effect and the potential eligibility of the property for the NRHP. The determination of eligibility of a property for the NRHP is based on an assessment of the following criteria:

- Criterion A: Properties associated with events that have made a significant contribution to the broad patterns of our history.
- Criterion B: Properties associated with the lives of persons significant in our past.

- Criterion C: Properties that embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.
- Criterion D: Properties that have yielded, or may be likely to yield, information important in prehistory or history.

Changes in the surrounding environment might not adversely affect a property eligible under Criterion C for its architectural characteristics. On the other hand, rural surroundings might be a key element of the integrity of a farm property eligible under Criterion A for its representation of agricultural traditions. A reconnaissance-level architectural/historical survey was undertaken. Information from this survey was evaluated in light of the proposed project alternatives, which was refined after the survey was initiated, and APEs were developed. The rationale for the APE limits is described under each alternative below.

4.10.1.1 No Action Alternative

Affected Environment

The APE is the existing airport property boundary. No structure or property in the APE has been determined eligible for listing on the NRHP.

Historic Effects

The No Action Alternative would not have an adverse effect on properties potentially eligible for the NRHP since there would be no change to the existing conditions.

4.10.1.2 BKX Expansion Alternative

Affected Environment

The APE includes the existing airport property, any property to be acquired and areas containing properties potentially eligible for the NRHP that could be physically or visually affected. A record search found that no structure or property in the APE has been determined eligible for listing on the NRHP.

The application of the above factors resulted in an APE shown in **Figure 16** that follows the existing or ultimate property boundary along most of the project area. The rationale for not extending the APE is itemized by airport area below:

- North side: The primary runway realignment will not introduce new physical or visual impacts and the relatively minor crosswind runway shift to the north will not materially change existing visual effects or introduce new physical effects.
- East side: The primary runway will be shifted away from this area and the existing MALSR system will be relocated from this area to the west end of the realigned primary runway. Therefore, there will be no visual or physical effects in this area.
- South side: Though the primary runway is being realigned closer to this area, this change will not introduce new visual effects due to tree shelter lines and/or the still relatively long distance between properties in this area and the realigned primary runway. This area will also not be physically affected.

- Southwest corner: The relatively long distance between this area and the airfield modification areas eliminates visual effects and no physical effects will occur in this area.
- Northwest corner: The ultimate property line encompasses the area of physical impact and there are no properties in the area outside the ultimate property line that would be physically or visually affected.

The APE does differ from the existing and proposed airport property line in the west-central portion of the airport because of the relocated MALSR approach lighting system off Runway 11, which resulted in the farm at 127 16th Avenue Southwest being included in the APE.

Historic Effects

For purposes of this EA, it was assumed that the farm at 127 16th Avenue Southwest would be eligible for the NRHP under Criterion A and/or Criterion C, though a formal evaluation was not completed. This farm would not be physically or audibly affected by the BKX Expansion Alternative. The start of the MALSR would be approximately 0.25 miles to the northwest of the farm. Therefore, even if the farm were found to be eligible for the NRHP, the FAA has determined that it would not be visually affected and therefore the BKX Expansion Alternative would have no adverse effect on the farm. FAA submitted this assessment and determination to the South Dakota State Historic Preservation Officer (SHPO) for review in accordance with Section 106 of the National Historic Preservation Act of 1966 (see FAA letters dated December 18, 2009 at Appendix A-112, March 28, 2010 at Appendix A-124 and October 27, 2011 at Appendix A-145). The SHPO concurred with the assessment and determination of no adverse effect (see SHPO letters dated April 16, 2010 at Appendix A-143 and November 1, 2011 at Appendix A-212).

Based on the above assessment, the FAA determined that Hangar 1 and Hangar B are not eligible for listing on the NRHP and, therefore, the New Airport Alternative would have no adverse effect on the hangars and no adverse effect on the five farms. FAA submitted this assessment and determination to the SHPO for review in accordance with Section 106 of the National Historic Preservation Act of 1966 (see FAA letters dated December 18, 2009 at Appendix A-112 and March 28, 2010 at Appendix A-124). The SHPO concurred with the determination of effect (see SHPO letter dated April 16, 2010 at Appendix A-143).

4.10.1.3 New Airport Alternative

Affected Environment

The boundaries of the New Airport Alternative APE were developed based on the potential for visual effects from the MALSR approach lighting system and airport buildings, potential economic effects via land purchases, and potential traffic effects. The APE is shown in **Figure 17**. A record search found that no structure or property in the APE has been determined eligible for listing on the NRHP.

The APE boundary that resulted from applying these factors to the New Airport Alternative site is somewhat irregular in appearance due to effects that existing terrain had on the distance of potential visual impacts, the fact that only parcels containing a property potentially eligible for the NRHP were included, and inclusion of the entire parcel (as opposed to only the building

footprint) on which a potentially eligible property was located. In all, five properties were included in the APE (see **Figure 17**).

The affected environment includes the existing airport property, which would be redeveloped. The farm at 127 16th Avenue Southwest may be eligible for the NRHP and a formal evaluation would be completed if the proposed redevelopment would adversely affect the farm.

Historic Effects

For purposes of this Dual Track Airport Planning Process EA, it was assumed that the five farmsteads in the APE would be individually eligible for the NRHP under Criterion A for their association with the development of agriculture in Brookings County. Individual barns and outbuildings on some of the properties were also assumed to be eligible under Criterion C as excellent examples of barn and outbuilding construction in Brookings County. It should be noted that all of the five property owners refused access to their property, thereby preventing a closer inspection regarding the assumption of NRHP eligibility.

Since none of the five farms would be physically or audibly affected by the New Airport alternative, the focus was on the potential visual effect of the proposed airport lights and airport buildings associated with the New Airport Alternative. Each is discussed below:

<u>47407 218th Street South</u>
The nearest airport building would be 0.8 miles away from the property and there is a line of trees between property and airport buildings. Therefore, the introduction of airport buildings would not constitute an adverse visual effect on the property.

<u>47569 218th Street South</u>
The nearest airport building would be 1 mile away and the buildings back from the road. The view from the buildings to the proposed airport buildings are obscured by evergreen and deciduous trees. Therefore, the introduction of airport buildings would not constitute an adverse visual effect on the property.

<u>21915 475th Avenue.</u>
The nearest airport building would be 0.6 miles away from the property and there is a line of evergreen trees between property and airport buildings. Therefore, the introduction of airport buildings would not constitute an adverse visual effect on the property.

<u>47346 SD Hwy. 324 and 47358 SD Hwy. 324</u>
The MALSR would be approximately 0.2 miles from these buildings. The entirety of the MALSR system would be located on airport property. The last light station in the system would be approximately 800 feet from a main State Highway 324, which itself introduces light emissions. The end of the MALSR would be approximately 0.2 miles to the southwest of the nearest home. The residents of that home may find the light emissions objectionable but would not likely interfere with normal daily activities (see Section 4.11 for more information). Therefore, the introduction of airport buildings and MALSR would not constitute an adverse visual effect on the properties.

Hangar 1 and Hangar B

In contrast to the five farms discussed above, if the New Airport Alternative is selected as the proposed project, the existing airport land owned by the City would be redeveloped in some form. It was assumed that this would result in an adverse effect if the hangars are determined eligible for the NRHP. Therefore the focus of the assessment was whether the hangars would be eligible for the NRHP.

The hangars are not associated with events that have made a significant contribution to the broad patterns of our history or with lives of persons significant in our past. They do not embody the distinctive characteristics of a type, period or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction. They have not, nor are they likely to yield, information important in prehistory or history.

The SHPO concurred with the determination of eligibility on structures but cannot concur with the determination of effect on archaeological sites at this time and request additional survey if this site is selected (see SHPO letter dated April 16, 2010 at Appendix A-143).

4.10.2 Archaeological Sites

A cultural resource reconnaissance was conducted within the APE by Archaeological Research Services (ARS). Field work was preceded by a records and literature search conducted for ARS by staff at the South Dakota Archaeological Research Center. Results indicated no known archaeological sites either within the boundaries or within a mile radius of the two airport alternatives. An archaeological reconnaissance survey was then conducted during late November 2007 and early May 2008, each time under good to excellent survey conditions.

4.10.2.1 No Action and BKX Expansion Alternatives

Affected Environment

The APE is shown in **Figure 16**. No known archaeological resources are in the APE.

Archaeological Effects

Most of the soils within the existing airport have been deeply disturbed by construction and subsequent use of the runways and other airport facilities. Surrounding areas within the airport boundaries, mainly those west and south of the runways, are either low and marshy or significantly affected by other land uses, primarily more than a century of farming. A number of fields are still under cultivation, including an area in the western part of the airport property. Along Six Mile Creek, there is also extensive erosion. In the wooded pasture near the western edge of the proposed new perimeter of the property, considerable disturbance has recently been caused by the clearing and grubbing of mature trees with extensive root systems. Together, these disturbances provided enough subsoil exposure to eliminate the need for shovel testing. All exposures were inspected with negative results. Negative survey results within the existing airport indicate that continued use and future expansion within the proposed boundaries would not harm any archaeological resources. Therefore, the No Action and BKX Expansion Alternatives would not adversely affect archaeological sites/resources. The SHPO concurred with this determination (see SHPO letter dated April 16, 2010 at Appendix A-143).

4.10.2.2 New Airport Alternative

Affected Environment

The APE is shown in **Figure 17**. No known archaeological resources are in the APE.

Archaeological Effects

Due to some property owners' refusal to grant access, ARS staff could only survey a portion of the new airport alternative, consisting of four properties in the western part encompassing the NE 1/4 of Section 20 and the NW 1/4, SW 1/4 and SE 1/4 of Section 28 in T109N, R49W (Trenton Township). All of these properties are farmland and are generally still under cultivation, or at least have been until very recently. When the survey was conducted on May 12 and 13, 2008, conditions were excellent, with 90 to 100 percent exposure of the field surface, which had not yet been disced after the fall harvest -- just washed by recent rainfalls. Visual inspection at intervals of 10-15 meters or less proved completely negative. Those uplands closest to Medary Creek (and also bisected by some of its tributaries), were, prior to the survey, considered to have the highest archaeological potential of this entire study area. However, the negative results of the field inspection strongly indicate that the properties affected by the New Airport Alternative that were not surveyed are even less likely to produce any archaeological evidence. It is concluded that the New Airport Alternative would most probably not adversely affect archaeological sites/resources, but if it is selected as the proposed project, then additional cultural resource survey would be required prior to the commencement of construction activities, subject to coordination with the SHPO (see SHPO letter dated April 16, 2010 at Appendix A-143) through a Memorandum of Agreement between FAA and SHPO.

Although no known archaeological sites in the APE for any alternative would be disturbed, as-yet-unknown artifacts could be unearthed during construction activities. If this occurs, construction will be halted until the SHPO is consulted and appropriate preservation procedures can be established.

4.10.3 Cultural Resources

Letters were sent to Tribal Historic Preservation Officers in South Dakota and neighboring states requesting that any issues, concerns or resources potentially affected by the alternatives under consideration be identified. A complete list of the tribes to which letters were sent can be seen at Appendix A-71. Responses were received from the Rosebud Sioux Tribe and the Flandreau Sioux Tribe (at Appendix A-72 to A-75). The Rosebud Sioux Tribe stated they have no concerns for the project to proceed as planned and the Flandreau Sioux Tribe indicated no objections to the proposed undertaking. The letters do mention the potential for finding cultural resources. Should any be found once the proposed action is undertaken, construction will be halted, additional contacts with the above tribes will be made and appropriate action taken.

4.11 LIGHT EMISSIONS AND VISUAL IMPACTS

Light emission effects consider the extent to which any lighting associated with the undertaking would create an annoyance among people in the vicinity or interfere with their normal activities. Visual or aesthetic effects deal more broadly with the extent that the undertaking contrasts with the existing environment, architecture, historic or cultural setting, or land use planning, and whether the jurisdictional agency considers this contrast objectionable.

Airport Lights and Approach Lighting System

All of the alternatives would have similar airfield lighting components. The runways and taxiway would have edge lighting and the runway ends without the approach lighting system will have runway end identifier lights. Both ends of the primary runway would be served by Precision Approach Path Indicators (PAPIs). An airport beacon would be located near the center of the airfield. For the new airport alternative, shielding would be incorporated into the design of the beacon to reduce potential visual impact while maintaining the safety required for operations. None of these lighting features would contribute significant light emissions beyond the airport property. The airfield lighting (including approach. runway, taxiway, and apron lights) would be activated by radio control by pilots on an on-demand basis.

The primary feature having the potential to introduce light emissions and visual effects beyond the airport property line is the MALSR approach lighting system. This system, which is designed to assist approaching aircraft to visually acquire the runway end during low visibility conditions, consists of an arrangement of steady burning and flashing strobe lights placed along the runway centerline and extending 2,500 feet from the runway end. Under all alternatives, the MALSR lights would be entirely within airport property. A typical MALSR configuration is shown on Exhibit 3.

MALSR lights are not always on, but rather are activated by a pilot (generally during poor weather conditions or at night). The lights have different intensities, the highest of which are used when aircraft are approaching the airport. Activating the MALSR lights activates other airfield lights, including runway and taxiway edge lights. Once activated, the lights (including the MALSR) stay on for approximately 15 minutes.

It is assumed that every nighttime operation would result in airport light (including MALSR) activation, regardless of the type or direction of the operation. In 2025, approximately 16 nightly operations (eight take offs and eight landings) are forecast. Assuming that the airfield lights would be on for 15 minutes for each operation, the airfield lights would be on approximately five hours a night. During the time that all airfield lights are on, the MALSR lights will only be on high intensity when an aircraft is on approach to the runway end with the MALSR. It is estimated that six of the eight nighttime approaches will be to the end with the MALSR. During these six nighttime approaches, a pilot will trigger the highest intensity about 20 miles from the airport to ease the visual acquisition of the runway end and decrease the light intensity about 5 miles from the airport. A typical aircraft using the Brookings airport will travel these 15 miles in about 8 minutes. Therefore the MALSR lights will be on their highest intensity setting for approximately 48 to 64 minutes a night.

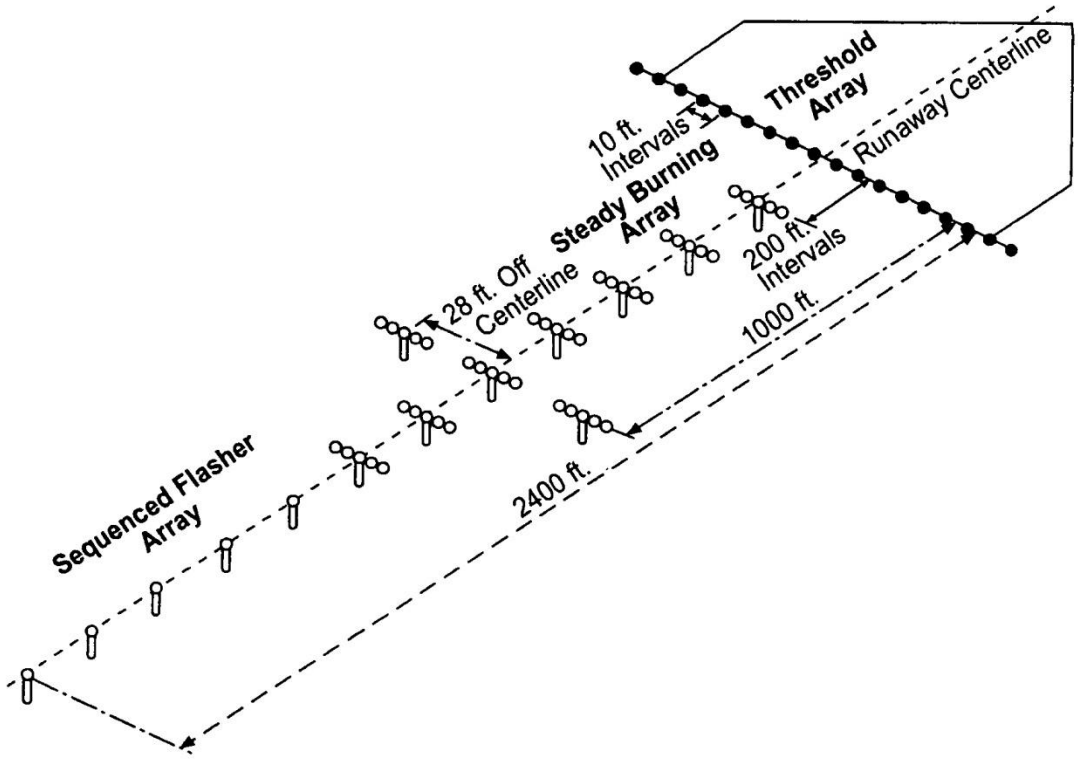

Exhibit 3: Typical MALSR Configuration

4.11.1 No Action Alternative

Affected Environment

The affected environment is the APE shown in **Figure 16**.

Light Emissions and Visual Impacts

The No Action Alternative would not change the existing conditions and therefore would have no light emissions and visual/aesthetic impacts.

4.11.2 BKX Expansion Alternative

Affected Environment

The affected environment is the APE shown in **Figure 16**.

Light Emissions and Visual Impacts

The BKX Expansion Alternative would reduce light emissions near populated areas by switching the MALSR from the developed southeast end of the airport to the relatively undeveloped northwest end of the airport. The BKX Expansion Alternative would not have adverse light emission effects since the airfield reconfiguration generally moves the runways away from developed areas. The reconfiguration does move the primary runway approximately 250 feet closer to a developed area in the southwest corner of the airport, but any potential annoyance is mitigated by a stand of trees between the airfield and the homes.

The BKX Expansion Alternative would not have a visual/aesthetic impact since it would not change the existing environment.

4.11.3 New Airport Alternative

Affected Environment

The affected environment is the APE shown in **Figure 17**.

Light Emissions Impacts

The New Airport Alternative would introduce light emissions from runway and taxiway lights, lighting around the airport support buildings, the airport beacon and the MALSR lights on the northwest end of the airfield. With the exception of the MALSR and the beacon, the light emissions on off airport property would be minimal, but some residents may find any new light emissions an annoyance. The entirety of the MALSR system would be located on airport property. The last light station in the system would be approximately 800 feet from a main State Highway 324, which itself introduces light emissions. The end of the MALSR would be approximately 0.2 miles to the southwest of the nearest home. The residents of that home may find the light emissions an annoyance but the emissions should not interfere with normal daily activities. The beacon would also be on airport property and the nearest residence is approximately half a mile away and shielded by groups of trees. Baffles can be added to the beacon for mitigation if necessary.

Visual/Aesthetic Impacts

Introduction of an airport in Trenton Township would contrast with the existing rural, agricultural and architectural environment. The New Airport Alternative would introduce aircraft activity that may be considered visually objectionable to the community. The nearest home would be 0.2 miles from the airfield; two more would be ½ mile from the airfield and five more within one mile. Residents in this area would see a new road providing access to the airport, various airport support buildings and the airfield itself. The City of Brookings would initiate an annexation. Brookings County is responsible for planning and zoning in Trenton Township and therefore has jurisdiction over use of the affected land. Trenton Township has voted unanimously each year beginning at a special meeting on June 28, 2007 in opposition to the New Airport Alternative (see Appendix A-108).

Proposed Visual/Aesthetic Mitigation

The City would consult with Brookings County, Trenton Township and affected residents in the design of the airport. Design elements that would reduce the adverse effects of visual encroachments into residential areas or that disrupt scenic vistas would be considered, including landscaping. Architectural treatments of airport facilities that reflect light so the light blends in with nearby architectural styles would be considered. Painting or shielding of structures, such as landing aid supports, would be employed to reduce visual effects.

4.12 NATURAL RESOURCES AND ENERGY SUPPLY

The proposed action is to be examined to identify any proposed major changes in stationary facilities or the movement of aircraft and ground vehicles that would have a measurable effect on local supplies of energy or natural resources. For most actions, natural resource consumption does not typically result in significant impacts. If it is determined that demand will exceed supplies, impacts would be deemed significant and further review required.

The alternatives under consideration would have no adverse effect on local energy supplies.

4.12.1 No Action and BKX Expansion Alternatives

The No Action and BKX Expansion Alternatives would have no adverse effect on local water, wastewater and power supplies. The airport's water supply is provided by the Brookings Municipal system, and the system has ample capacity to supply the projected facility and passenger activity in the future. Current usage rates are approximately 1,200 cubic feet per month for the entire airport, including the terminal, fixed-based-operators, and the fire station. Sanitary discharges are handled by the Brookings sewer system and the No Action and BKX Expansion Alternatives would not affect the current disposal scenario.

4.12.2 New Airport Alternative

The New Airport Alternative would have no adverse effect on local power supply. It would require wastewater disposal facilities that do not exist on site. The Big Sioux Community Water Systems, Incorporated have 1.5 inch water supply lines on the site, but they are far away from the pumping station and cannot handle the additional water needed for a new airport.[11] Options exist for either on-site solutions or use of the City of Brookings water distribution and sanitary

[11] Personal communication between the City of Brookings and the Big Sioux Community Water Systems, Inc., February 12, 2010

system. Well installation logs and hydrogeologic information indicate that on-site water supply wells would satisfy the new airport's water needs. Wastewater demands are relatively low and could be managed through on-site systems. If the City of Brookings water distribution system or the wastewater treatment facility is relied upon for water supply/wastewater, it would require approximately seven miles of new supply lines and/or sanitary sewer lines to connect to the existing networks, which would not be cost effective. It is therefore assumed that these facilities would be provided on site. Neither of these options is anticipated to have a substantive impact on water supply or wastewater resources.

If the New Airport Alternative is selected as the proposed action, water conservation measures in design and equipment procurement would be considered in an effort to conserve water resources. These could include closed-loop cooling systems, low-flow water usage plumbing fixtures, low water use landscaping, and other water conservation measures.

4.13 NOISE

The analysis of noise considers the effects of aircraft noise on residential population and noise-sensitive activities at other places (schools, hospitals, nursing homes, churches, auditoriums, outdoor amphitheaters, and concert halls). FAA's most recent compatible land use noise guidelines are contained in Appendix A of Title 14 CFR Part 150.

For aviation noise analysis, the FAA has determined that the cumulative noise energy exposure of individuals resulting from aviation activities must be established in terms of annual average day/night sound level (DNL) as FAA's primary noise metric. According to FAA land use compatibility guidelines, noise exposure levels of less than DNL 65 dBA are compatible with residential and other noise-sensitive land uses.

Significant Noise Impact Thresholds

According to FAA Order 1050.1E, a significant noise impact would occur if the analysis shows that the proposed project would cause noise sensitive areas to experience an increase in noise of DNL 1.5 dB or more at or above DNL 65 dB noise exposure when compared to the no action alternative for the same timeframe. For example, an increase from DNL 63.5 to 65 dB is considered a significant impact.

Methodology

The FAA Integrated Noise Model (INM) version 7.0 was used to analyze potential noise impacts. The aircraft fleet used for the alternatives is identical to the existing 2009 fleet, except in the case of the Stage Two aircraft. Stage Two aircraft are generally older, noisier aircraft that are being gradually removed from service. Based on the assumption that the noisier Stage Two aircraft will be phased out by 2025, the future scenarios were modeled without Stage Two aircraft. The fleet mix is presented at Appendix A-76.

Standard aircraft types and profiles for INM version 7.0 were used in the noise model. For aircraft not included in INM, the FAA's pre-approved substitution list was used to identify appropriate substitution aircraft. The departure stage length for all aircraft was modeled as stage one. While the runway designations change in the future scenarios, the runway use is expected to remain the same. It was determined that helicopter operations will use the same runways and

flight tracks as the single engine piston (SEP) aircraft. Flight tracks were designed and modeled as straight-in and straight-out arrival and departure tracks for all types of aircraft operations. The Touch and Go training operations conducted by the SEP aircraft were modeled on standard left pattern tracks on all runways. This applies to all of the alternatives.

4.13.1 No Action, BKX Expansion and New Airport Alternatives

Affected Environment

The affected environment is the noise-sensitive land uses in the DNL 65 contours shown in **Figures 18**, **19** and **20**.

Noise Impacts

In each alternative the DNL 65 contour lies entirely within the airport property. There are no residential or other noise-sensitive land uses within the DNL 65 contour for any of the alternatives. Therefore, none of the alternatives would cause a noise sensitive area to experience an increase in noise of DNL 1.5 dB or more at or above the DNL 65 dB noise exposure level. Therefore, no alternative would have an adverse noise impact.

4.14 SECONDARY (INDUCED) IMPACTS

Induced or secondary impacts include any shifts in patterns of population movement and growth, the demand for public services, and changes in business and economic activity to the extent influenced by proposed airport development. According to Order 1050.1E, secondary impacts would not normally be significant except where there is also a significant impact to another category; particularly noise, land use, or direct social impacts.

4.14.1 No Action and BKX Expansion Alternatives

Affected Environment

The affected environment is the land use/development and public services in the City of Brookings.

Secondary (Induced) Impacts

These alternatives are compatible with the existing and planned land use and would not materially shift the development pattern or change business and economic activity. Therefore, they would not introduce secondary impacts.

Cumulative Effects

There are no known past, present, or foreseeable future actions that would result in secondary effects that would be cumulative with the No Action and BKX Expansion Alternatives.

4.14.2 New Airport Alternative

Affected Environment

The affected environment is the land use and public services in jurisdictions in Brookings County.

Secondary (Induced) Impacts

As described in Section 2.1.3, the New Airport Alternative is expected to induce change on the existing airport site in the form of redevelopment after the airport is relocated. The effects of this redevelopment would not be known until the redevelopment plans are fully developed and revisions to the City of Brookings Comprehensive Plan are made. The New Airport Alternative would cause development of an airport on the New Airport site, but it is not expected to influence any existing and planned development or public service demands outside the airport property line. Therefore, it would not materially change development patterns or business and economic activity in Trenton Township and Brookings County.

Cumulative Effects

There are no known past, present, or foreseeable future actions that would result in secondary effects that would be cumulative with the New Airport Alternative.

4.15 SOCIOECONOMIC IMPACTS, ENVIRONMENTAL JUSTICE AND CHILDREN'S ENVIRONMENTAL HEALTH AND SAFETY RISKS

4.15.1 Socioeconomic Impacts

Socioeconomic impacts include the displacement of persons and businesses as a result of the acquisition of real property, disruption of local traffic patterns that substantially reduce the levels of service of the roads serving the airport and surrounding communities, and a substantial loss in community tax base.

4.15.1.1 No Action Alternative

Affected Environment

The affected environment is the area and infrastructure surrounding the airport property and the City's tax base.

Socioeconomic Impacts

The No Action alternative would have no socioeconomic impacts since there would be no changes in the existing conditions.

Cumulative Effects

There are no known past, present, or foreseeable future actions that would result in socioeconomic effects that would be cumulative with the No Action Alternative.

4.15.1.2 BKX Expansion Alternative

Affected Environment

The affected environment is the area and infrastructure surrounding the airport property and the City's tax base.

Socioeconomic Impacts

This alternative would require the acquisition of approximately 110 acres to the west of the current airport property. The land is currently undeveloped farmland and would become airport use. See Section 4.6.2 for more discussion on farmland impacts. Within the land to be acquired, there is one residence that would be displaced. Ten undeveloped acres to the SW of the airport

would also be acquired and become airport use. Less than four acres of easement would also be acquired but would not change the land use currently existing in these areas. There would be no adverse impact on the City's tax base.

A portion of Brookings Township road 469th Avenue is within the land that would be acquired by the City. Once the land is acquired, this road would be closed. Access from the north on 469th Avenue to one residence would be lost when the road is closed. Access from the south would remain.

Cumulative Effects

There are no known past, present, or foreseeable future actions that would result in socioeconomic effects that would be cumulative with the BKX Expansion Alternative.

Proposed Mitigation

The acquisitions and relocations would be implemented in accordance with 49 CFR Part 34, as amended, which implements the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970.

4.15.1.3 New Airport Alternative

Affected Environment

The affected environment is the area and infrastructure within and surrounding the new airport site and the City and County's tax bases.

Socioeconomic Impacts

A total of 15 separate parcels (approximately 885 acres) owned by 10 different entities and one trust would be acquired. The New Airport Alternative would not require the displacement of any residences. However, some farmland adjacent to residences would be acquired. It is possible that this acquisition could diminish the economic viability of the overall property such that the owner may request a purchase of the entire property including the residence, if the affected property(s) rely on income from the cultivation of the acquired land.

Portions of 474th Ave, 475th Ave and 218th Street would be closed; however, other roads would be available to provide access to the affected properties. The New Airport Alternative land acquisition would remove some annual property tax from the County and Trenton Township tax bases. The redevelopment of existing BKX would increase the City and County tax bases.

Cumulative Effects

There are no known past, present, or foreseeable future actions that would result in socioeconomic effects that would be cumulative with the New Airport Alternative.

Proposed Mitigation

The acquisitions and potential relocations would be implemented in accordance with 49 CFR Part 34, as amended, which implements the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970.

4.15.2 Environmental Justice (EJ)

The U.S. Department of Transportation (DOT) issued DOT Order 5610.2, Environmental Justice (EJ) in Low-Income Populations and Minority Populations (62 FR 18377, April 15, 1997) to implement in part Executive Order (E.O.) 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations (59 FR 7629, February 16, 1994) and the accompanying Presidential Memorandum, and the DOT Strategy (60 FR 33896, June 29, 1995). EJ is concerned with whether or not a federal action would result in a disproportionate environmental or public health adverse impact to minority populations or low income populations. E.O. 12898 requires an examination of whether these impacts are disproportionately high and adverse, and evaluation of measures to avoid or minimize the identified disproportionately high and adverse impacts.

Methodology

All of the environmental impact categories for each alternative are examined to determine if the effect of an alternative would affect the general population, and if so would it meet the significance threshold for that resource as defined in Appendix A of FAA Order 1050.1E. Impacts that could affect the general population are noise, air quality, water resources, hazardous materials, cultural resources and socioeconomic. A conclusion that an impact is significant indicates the impact's potential to cause a disproportionately high and adverse effect to a minority or low-income population.

The percentage of low-income or minority population the alternative would adversely affect is determined by dividing the number of low-income or minority population identified by the general population (the population that an action affects, but that is not a low-income or minority population). It is assumed that if the results are disproportionately high, an adverse effect on low-income or minority populations may occur. U.S. census data does not provide low income and minority status at the household level, but provides it at the block group and jurisdiction levels. It is therefore assumed in the analysis that the population affected by an impact category is both low income and minority. The total population and number of minority and low income populations in the affected census block group[12] or affected jurisdiction are determined from the 2000 Census data, Individual(s) who are members of the following population groups are considered minority: American Indian or Alaskan Native; Asian or pacific Islander; Black not of Hispanic origin; or Hispanic. DOT Order 5610.2 defined low-income population as a person whose median household income is at or below the Department of Health and Human Services (HHS) poverty guidelines. The 2000 HHS poverty guideline is $14,150 for a family of 3 and $17,050 for a family of 4.

4.15.2.1 No Action Alternative

Affected Environment

The affected environment is the low income and minority populations in census Block Group 4 surrounding BKX.

[12] Block groups are statistical geographic divisions of a census tract, defined for the tabulation and presentation of decennial census data. Each block group comprises a reasonably compact and contiguous cluster of census blocks; up to nine block groups can be contained within a single census tract.

EJ Impacts

No impact category would have a significant impact on the affected population. Therefore, there would not be a disproportionate adverse effect on low-income or minority populations from the No Action Alternative.

4.15.2.2 BKX Expansion Alternative

Affected Environment

The affected environment is the low income and minority populations in the census Block Group 4 surrounding the airport.

EJ Impacts

There are no significant impacts from noise, air quality, water resources, hazardous materials, and cultural resources. From above Section 4.15.1.2, one household (HH) would be displaced. The HH is in Block Group 4 of Census Tract 9588. The average family size was 2.78. There were 497 HH and 929 persons in Block Group 4 in the 2000 census – of which 169 HH reported income less than $15,000 and 34 persons were minority. The average HH size was 1.87 persons. For low income, the general population is therefore 328 (497-169) and the percent of potentially affected low income population is 0.3% (1/328 * 100). For minority, the general population is 895 (929-34) and the percent of potentially affected minority population is 0.2% (1.87/895 *100). The BKX Expansion Alternative would not have a disproportionately high and adverse effect on low-income or minority populations.

Cumulative Effects

There are no known past, present, or foreseeable future actions that would result in EJ effects that would be cumulative with the BKX Expansion Alternative.

4.15.2.3 New Airport Alternative

Affected Environment

The affected environment is the low income and minority populations in Trenton Township.

EJ Impacts

There would be no significant impacts from noise, air quality, water resources, hazardous materials, and cultural resources. From above Section 4.15.1.3, five households in the general population could potentially be adversely affected. The five HH are located in Block Group 3 in Census Tract 9586. Block Group 3 includes all of Trenton Township; therefore the census data for the Township is used in the analysis. The average family size was 3.09. There were 178 HH and 453 persons in Trenton Township in the 2000 census – of which 38 HH reported income less than $15,000 and 12 persons were minority. The average HH size was 2.54 persons. For low income, the general population is therefore 140 HH (178-38) and the percent of potentially affected low income population is 3.6% (5/140 * 100). For minority, the general population is 441 persons (453-12) and the percent of potentially affected minority population is 2.9% (5*2.54/441*100). The New Airport Alternative would not have a disproportionately high and adverse effect on low-income or minority populations.

Cumulative Effects

There are no known past, present, or foreseeable future actions that would result in EJ effects that would be cumulative with the New Airport Alternative.

4.15.3 Children's Environmental Health and Safety Risks

The purpose of this impact category is to determine whether or not adverse impacts to the health and safety risks of children as a result of the Federal action are disproportionate.

4.15.3.1 No Action, BKX Expansion and New Airport Alternatives

The impact categories that could adversely affect children's health and safety are noise, air quality, water quality and hazardous materials. Based on the assessment of impacts in these categories and known past, present and foreseeable future actions, the No Action, BKX Expansion and New Airport Alternatives would not adversely affect the health and safety of children.

4.16 WATER QUALITY

The Federal Water Pollution Control Act (commonly referred to as the Clean Water Act) provides for the establishment of water quality standards, control of discharges, development of waste treatment management plans and practices, prevention or minimization of the loss of wetlands, the location with regard to an aquifer or sensitive ecological area such as a wetlands area, and the regulation of other issues concerning water quality. The purpose of this section is to determine if the proposed action has the potential to exceed water quality standards from the discharge of surface water runoff or the impact to the groundwater and water supply/drinking water sources, or affect waste treatment management plans and practices. Wetland impacts are discussed in Section 4.17.

The affected environment consists of the receiving waters for storm water runoff and groundwater underlying the alternatives under consideration.

This impact category as defined for this Dual Track Airport Planning Process EA includes the potential impacts the alternatives could have on local surface water and groundwater resources. The Federal Water Pollution Control Act (Clean Water Act), State, and local regulations typically govern the activities that have the potential to impact these resources through the permitting process. The intent within the Dual Track Airport Planning Process EA is to identify which aspects of the alternatives may have potential to impact these resources and identify foreseeable difficulties that may exist in attaining the necessary permits.

Methodology

Information was gathered through documents, research, and phone interviews regarding airport operations that have potential to impact surface water discharges and/or impact groundwater. The regional hydrogeologic setting was researched to understand the potential for surface impacts to effect groundwater resources. In addition, comments were solicited from various state regulatory agencies including the Department of Environment and Natural Resources regarding the proposed project. This information was consolidated to determine if major concerns exist for any of the alternatives regarding surface and groundwater impacts. See letter from the South Dakota Department of Environmental and Natural Resources at Appendix A-38.

4.16.1 No Action Alternative

Affected Environment

The affected environment is Six Mile Creek, on site wetlands, wildlife resources, and the water quality of Six Mile Creek and the Big Sioux River. There are no water supply wells in the affected environment. See Sections 4.7 and 4.17 for discussion of wildlife resources and wetlands. Surface water discharges can potentially impact downstream receiving waters if contaminants are present at elevated levels. Six Mile Creek is on the western boundary of the facility and receives the majority of the storm water discharges. Six Mile Creek flows into the Big Sioux River approximately three miles downstream of the airport. South Dakota Department of Environment and Natural Resources (DENR) Administrative Rule 74:51:03:07 lists Six Mile Creek's uses as "warmwater marginal fish life propagation" and "limited contact recreation." The Big Sioux River's listed uses are "Domestic Water Supply", "warmwater semipermanent fish life propagation," and "limited contact recreation." Storm water discharge permits are required to ensure that discharges are protective of water quality standards. (DENR is authorized to implement the federal National Pollution Discharge Elimination System (NPDES) permit program.) The water body classification establishes minimum water quality standards for each category of use. Airport operations with the greatest likelihood of affecting surface water discharges include aircraft fueling, fuel storage, aircraft and pavement deicing, and vehicle maintenance activities.

Groundwater in the area is shallow, especially toward the northwest of the airport property. The airport site resides on a sequence of glacial deposits approximately 400 feet thick. Outwash sand and gravel exhibit unconfined aquifer characteristics. The aquifer supplying water to this area is the Big Sioux – Aurora aquifer. The shallow occurrence of groundwater allows for quick recharge and relatively easy access. Shallow groundwater is more susceptible to impacts from surface spills that have the potential to migrate vertically through the soils to the groundwater. Groundwater impacts can potentially affect irrigation, livestock, and municipal water supplies. Airport operations with the greatest likelihood of groundwater impacts are spills from aircraft fueling, fuel storage, and vehicle maintenance activities.

Aircraft deicing rarely occurs at BKX, as aircraft are generally moved indoors if icing conditions or wintertime precipitation is forecasted. General Aviation aircraft are also either stored indoors or not flown during icing conditions. These management practices reduce the aircraft deicing fluid use considerably. In a typical winter, approximately 200 gallons of aircraft deicing fluid is applied. This minimal volume does not present an adverse effect to the surface water or groundwater resources. BKX uses sand to control pavement icing; chemical deicers are not used.

Approximately 250,000 gallons of aviation fuel is transferred into aircraft annually at Brookings. The fuel is stored in two aboveground storage tanks (ASTs). The fuel handling activities can potentially impact surface water if spills are not appropriately contained and recovered. Best management practices with proper training can minimize the potential for surface water contamination and/or groundwater impacts. The fuel storage facilities have the higher potential to impact groundwater should tank integrity fail and contents of the tank leak to the subsurface. Tank monitoring activities and best management practices can minimize the potential for an AST release to the groundwater.

Water Quality Impacts

Vehicle and aircraft maintenance typically includes the use of petroleum oils and lubricants that if spilled have the potential to adversely affect surface water or groundwater. Best management practices including performing maintenance activities indoors and adequate clean-up of spills can minimize this potential.

The activities occurring at BKX with the potential to affect surface water and groundwater are typical industrial activities for an airport of this size and do not pose a threat to local water quality if managed appropriately through the State's General Industrial Storm Water Permitting process. This includes best management practices to minimize the potential for adverse effects from these activities. The General Permit for Storm Water Discharges Associated with Industrial Activity at BKX last renewed in November 2002 has expired, but the DENR has administratively continued it and is in the process of reissuing the permit.

Six Mile Creek is impaired for ammonia. The No Action Alternative would not affect this impairment further as chemical pavement deicers are used sparingly (less than 50 gallons per year and are not urea based).

The potential for impacts would increase marginally if aircraft operations increase as forecast, but the likelihood of substantive adverse effects is negligible.

Cumulative Effects

There are no known past, present, or foreseeable future actions that would result in water quality effects that would be cumulative with the No Action Alternative.

4.16.2 BKX Expansion Alternative

Affected Environment

The affected environment is the same as the No Action Alternative described above.

Water Quality Impacts

The BKX Expansion Alternative would have the same water quality impacts as the No Action Alternative with the exception of construction impacts. Local groundwater dewatering may be necessary during construction. If needed, this would require temporary dewatering, thus lowering the water table locally (in the immediate vicinity of the construction area via under drains) during construction. A Surface Water Discharge (SWD) Permit may be needed if construction dewatering is required.

There is also potential for surface water impacts during the construction process. The runway extension and associated projects will expose significant materials to precipitation and run-off. Best management practices such as silt fences and limiting storm water exposure, will minimize the potential for adverse impacts during construction activities. Measures will be taken to ensure that total suspended solids do not exceed 1.50 mg/L during construction. A General Storm Water Permit for Construction Activities would be required and would regulate activities to minimize the potential for significant impacts from construction activities.

Appropriate construction storm water permits are required to minimize impacts during the construction activities. The General Storm Water Permit for Industrial Activities would provide appropriate measures to ensure best management practices are followed in conducting airport operations following construction to minimize the potential for adverse impacts to regional surface water and groundwater resources.

Cumulative Effects

There are no known past, present, or foreseeable future actions that would result in water quality effects that would be cumulative with the BKX Expansion Alternative.

4.16.3 New Airport Alternative

Affected Environment

The affected environment is on-site wetlands, wildlife resources, and the water quality of Medary Creek and the Big Sioux River. There are no water supply wells in the affected environment. See Sections 4.7 and 4.17 for discussion of wildlife resources and wetlands.

Water Quality Impacts

The New Airport Alternative would have similar impacts from airport operations as discussed in the No Action and BKX Expansion Alternatives. Storm water discharges from the proposed site would likely be discharged to Medary Creek, which flows into the Big Sioux River approximately four miles downstream. Measures will be taken to ensure that total suspended solids do not exceed 1.50 mg/L during construction. The DENR Administrative Rule 74:51:03:07 lists Medary Creek's uses as "warmwater marginal fish life propagation" and for "limited contact recreation". The Big Sioux River's listed uses are "Domestic Water Supply", "warmwater semipermanent fish life propagation", and "limited contact recreation".

The hydrogeologic conditions are similar to those of BKX, although drilling logs indicate larger clay deposits in the area and in some areas greater depths to viable supply aquifers. Due to the heterogeneous nature of the glacial till in the area of the proposed site, the hydrogeologic details are site-specific. The presence of clay reduces the potential for vertical migration of surface pollutants to any deeper groundwater sources.

The New Airport Alternative may require localized groundwater dewatering during construction. If required, this would temporarily lower the water table locally (in the immediate vicinity of the construction area via under drains) during construction. A Surface Water Discharge (SWD) Permit may be needed if construction dewatering is required.

The operational activities at the new airport site would be similar to the existing facilities and include the same potential impacts as discussed above in the No Action and BKX Expansion Alternatives. As discussed above, in areas near the proposed site, well installation logs indicated that there are significant clay deposits which can reduce the vertical migration potential of impacts to deeper groundwater sources. Shallow groundwater exists at the site and would remain susceptible to surface spills. The new facility could utilize above ground storage tanks with secondary containment which would reduce the potential for significant groundwater impacts from the existing facility.

There is also potential for surface water impacts during the construction process. The construction projects will expose materials to precipitation and run-off. Best management practices, such as silt fences and limiting storm water exposure, would minimize the potential for adverse effects during construction activities. A General Storm Water Permit for Construction Activities would be required and would regulate activities to minimize the potential for adverse impacts from construction activities.

Design of the New Airport facility would include measures to reduce the potential for airport operations to adversely affect storm water and groundwater. These measures may include oil/water separators near fueling operations, apron drainage systems to reduce potential for spills or residual deicing fluids to reach storm drains or soils, fuel storage facilities using above ground storage tanks with appropriate secondary containment, and indoor storage and maintenance facilities to reduce the exposure of equipment and materials to storm water run-off.

Cumulative Effects

There are no known past, present, or foreseeable future actions that would result in water quality effects that would be cumulative with the New Airport Alternative.

4.17 WETLANDS

Executive Order 11990, DOT Order 5660.1A: Preservation of the Nation's Wetlands, the Rivers and Harbors Act of 1899 and the Clean Water Act, Section 404, address activities in wetlands.

The US Army Corps of Engineers (USCOE) has jurisdiction over wetlands that are adjacent, tributary, or have significant nexus to waters of the US. The USCOE 1987 manual outlines the criteria and procedures for identifying wetlands. Once the USCOE receives a project specific permit application or request for a jurisdictional determination, the USCOE will determine if the affected wetlands are adjacent, tributary or have significant nexus to waters of the US. Isolated wetlands and areas created in upland which are not intended to create wetland conditions, such as the active waste water treatment ponds on the existing airport property, are not USCOE jurisdictional wetlands. Wetlands that are adjacent or tributary to Six Mile Creek, which is a tributary to the Big Sioux River, and in turn the Missouri River, will likely be considered USCOE jurisdictional wetlands.

The extent of the wetlands on both alternative sites has been preliminarily determined by comparing the National Wetlands Inventory (NWI) map, the Brookings County Soil Survey map, various available aerial photos, an on-site cursory review by experienced wetland consultants and on discussions with NRCS. Based on this information it was determined that the NWI map reasonably depicted the extent of the wetlands on the two alternative sites for planning purposes. The relative quantities of wetlands and wetland impacts for both alternatives are based on the NWI map. On-site wetland delineation will need to be completed on the selected alternative site to make a final accurate determination of the extent of proposed wetland impacts for the USCOE permitting process.

4.17.1 No Action Alternative

Affected Environment

The on-airport wetlands, excluding the BMU facilities, are shown in **Figure 2**. Six Mile Creek runs along the north and west end of the existing runway.

Wetland Impacts

There would be no impacts to wetlands from the No Action Alternative.

Cumulative Effects

There are no known past, present, or foreseeable future actions that would result in wetland effects that would be cumulative with the No Action Alternative.

4.17.2 BKX Expansion Alternative

Affected Environment

The BKX expansion alternative would extend into an area where there are approximately 77 acres of wetlands. These wetlands are shown in **Figure 21** and listed in **Table 8**. The majority of the wetlands are Palustrine, Emergent, Temporarily Flooded, (PEMA) or Palustrine, Emergent, Seasonally Flooded (PEMC) wetlands (surface water is present for extended periods especially early in the growing season, but is absent by the end of the season in most years). There is one small area of Palustrine, Forested, Temporarily Flooded (PFO1A) wetland along Six Mile Creek (surface water is present for brief periods during the growing season). The wetlands outside of the existing airport all appear to be affected by on-going grazing or haying for agricultural purposes. The proposed airport expansion would not impact all of the wetlands on the site because much of the wetland areas are in runway protection zones and not in the footprint of the actual runway or associated facilities.

Wetland Impacts

The BKX Expansion Alternative would fill approximately 15.4 acres of wetland as shown in **Figure 21** and noted in **Table 8**. Approximately 0.3 acres of the 15.4 acres would occur in isolated or non-jurisdictional wetlands. The majority of the affected wetlands occur in the floodplain of Six Mile Creek. These wetlands are already severely impacted by agricultural practices, which limit the quality of the wetlands. However, the wetland impacts would substantially alter the hydrology, vegetation and soils needed to sustain the functions and values of the affected wetlands (FAA Order 1050.1E, Appendix A, Section 18.3b, c & d).

Approximately 15.1 acres would occur in wetlands adjacent to and/or tributary to Six Mile Creek which is tributary to Navigable Waters of the United States. A USCOE Clean Waters Act Section 404 permit would be required. A Section 404 permit would require demonstration that there is no other feasible and practical alternative that would affect fewer wetlands. The proposed project would also be required to demonstrate that wetland impacts have been minimized as much as practicable. When those two conditions are met the next step in the Section 404 permitting process would be to provide compensatory mitigation to off-set the loss of the functions and values in the impacted wetlands.

Cumulative Effects

There are no known past, present, or foreseeable future actions that would result in wetland effects that would be cumulative with the BKX Expansion Alternative.

Table 8: Affected Wetlands – BKX Expansion Alternative

Wetland	On-Site Size (acres)	Proposed Impact (acres)	NWI Classification	Assumed COE Jurisdictional Status
1	0.1	0.1	PEMA	Non Jurisdictional
2	0.2	0.2	PEMA	Non Jurisdictional
3	0.5	0	PEMAd	Non Jurisdictional
4	1.3	0	PEMAd	Non Jurisdictional
5	2.3	0	PEMAd	Non Jurisdictional
6	4.1	2.8	PEMC	Jurisdictional
7	10.3	0.4	PEMC, PEMA	Jurisdictional
8	0.2	0.0	PEMC	Non Jurisdictional
9	1.3	0	PEMA	Jurisdictional
10	4.5	.4	PEMC	Jurisdictional
11	0.2	0	PEMA	Jurisdictional
12	1.4	.2	PEM/ABF	Jurisdictional
13	42.3	9.4	PEMA, PEMC, PEM/ABF	Jurisdictional
14	3.7	1.7	PEMA	Jurisdictional
15	0.5	0.2	PFOA	Jurisdictional
16	1.9	0	PEMA, PEMC	Jurisdictional
17	0.7	0	PEMA	Jurisdictional
18	1.1	0	PEMA	Jurisdictional
19	0.3	0	PEMA	Jurisdictional
20	0.1	0	PEMA	Jurisdictional
Jurisdictional Total	72.4	15.1		
Non-Jurisdictional Total	4.6	0.3		
Overall Total	77	15.4		

Wetland Mitigation

According to the USCOE Standards for Compensatory Mitigation and Mitigation Banking in the Omaha District, the minimum mitigation ratio needed to off-set the lost wetland functions and values is dependent on the method of establishing the mitigation wetlands. The ratio for wetland restoration is 1.5:1 whereas providing mitigation by establishing new wetlands in historic upland locations would require a 2:1 mitigation ratio. The non-jurisdictional wetlands are expected to be mitigated using the same ratios, which has been the requirement in the recent past.

Proposed wetland mitigation should have the goal of replacing a similar set of wetland functions and values as those that are impacted by the proposed project. Generally, successfully restoring or establishing wetland of the same type, in a similar topographic setting, and at the minimum replacement ratio should approximately replace the same wetland habitat functions as those impacted by the proposed project. In the case of an airport, this mitigation should occur at least five miles from the airport site so as to not introduce new hazardous wildlife attractant areas in the airport environment.

Approximately 15.4 acres of wetlands would be filled, which would require between 23 and 31 acres of wetland mitigation. Because many of the wetlands that would be filled are in the floodplain of Six Mile Creek, flood storage compensation would be an important function that would need to be specifically mitigated. Although wetlands generally provide flood storage functions, it may be more beneficial on a watershed basis to provide flood storage compensation separately from the wetland habitat mitigation. Another specific mitigation concern related to the wetlands and Six Mile Creek is the potential presence of Topeka shiners. The section of Six Mile Creek on the airport site is a man-made channel that was created as a result of relocating the Creek for the existing airport runway. If Topeka shiners are present in this section of Six Mile Creek, it would indicate that it is possible to construct suitable habitat conditions to mitigate the effects of proposed construction. Specific requirements in dealing with the potential impact to the Topeka shiners are addressed in Section 4.7.1.

Currently there are no approved wetland mitigation banks in the same banking service area as the proposed project. However, based on the NWI map, there are several drained wetlands that could be restored, as shown in **Figure 21a** and listed in **Table 9**. A permanent easement or purchase of the property would most likely be required. Ultimately, the issue of wetland mitigation would be addressed during the permitting process with the USCOE. A permit under Section 404 cannot be issued until the USCOE accepts the mitigation plan including the mitigation location, design, wetland functions and values and quantity of wetlands created or restored.

Table 9: Potential Wetland Mitigation Sites -- BKX Expansion Alternative

	Drained Wetland Type	Area (Sq. Ft.)	Acres
1	PEMAd	982582.3	22.6
2	PEMCd	423267.5	9.7
3	PEMAd	3882704.2	89.1
4	PEMCd	103971.4	2.4
5	PEMCd	228730.0	5.3
6	PEMCd	1114793.6	25.6
7	PEMCd	82171.5	1.9
8	PABFd/PEMFd	210537.2	4.8
Total Drained Acres			**161.4**

Source: NWI Map

4.17.3 New Airport Alternative

Affected Environment

At the New Airport Alternative site, the NWI map identifies four small wetlands totaling less-than one acre in size as shown in **Figure 22** and **Table 10**. One of these NWI wetland areas was observed during the site visit and was noted as a potential wetland area. The other three are in cropped fields and there were no visible indications of wetland at the time of the site visit. The observed wetland is classified as a Palustrine, Emergent, Seasonally Flooded, excavated

(PEMCx) basin. The other three wetlands are classified as Palustrine, Emergent, Temporarily Flooded, drained (PEMAd) wetlands on the NWI map. These four wetlands appear to be isolated and therefore would not be USCOE jurisdictional wetlands.

The affected environment also includes the wetlands on the existing airport listed in **Table 8**.

Table 10: Affected Wetlands – New Airport Alternative

Wetland	On-Site Size (acres)	Proposed Impact (acres)	NWI Classification	Estimated USACOE Jurisdictional Status
A	0.3	0	PEMA	Non Jurisdictional
B	0.3	0	PEMCx	Non Jurisdictional
C	0.1	0	PEMAd	Non Jurisdictional
D	0.1	0	PEMA	Non Jurisdictional
Total	0.8	0		

Wetland Impacts

None of the wetlands in **Table 10** are located within the New Airport Alternative construction limits, so this alternative would not require a Section 404 wetland permit or have any direct wetland impact on these wetlands. Impacts on the existing airport wetlands would depend on the extent of redevelopment construction. If the redevelopment would fill portions of these wetlands, then a Section 404 wetland permit and appropriate compensatory wetland mitigation would be required as discussed above in Section 4.17.2.

Cumulative Effects

There are no known past, present, or foreseeable future actions that would result in wetland effects that would be cumulative with the New Airport Alternative.

4.18 WILD AND SCENIC RIVERS

The Wild and Scenic Rivers Act, as amended, describes those river segments designated or eligible to be included in the Wild and Scenic Rivers System. River segments eligible for protection are those that are free flowing and have "outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural and other similar values." River segments that appear to qualify for inclusion in the National Wild and Scenic River System are listed on the Nationwide Rivers Inventory (NRI), compiled by the National Park Service of the U.S. Department of Interior.

No wild and scenic river or NRI river segment is located in the affected environment of any alternative. Therefore, the alternatives under consideration would not impact a wild and scenic river or NRI river segment.

4.19 CUMULATIVE EFFECTS

A cumulative effect on the environment results from the incremental effect of a proposed action/alternative when added to other past, present and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions. The CEQ Handbook "Considering Cumulative Effects" (January 1997) recommends that a list of

potential effects and issues be established during the scoping process; that a geographic boundary and timeframe be established, that a list of other actions contributing to cumulative effects be identified, and that information related to the affected environment and environmental consequences be obtained. This information should include thresholds, standards, guidelines and planning goals.

Cumulative effects are effects the alternative would have on a particular resource when added to effects on that resource due to past, present, and reasonably foreseeable actions within a defined timeframe and geographical area. The primary purpose of this analysis is to determine if the cumulative effects exceed the threshold of significance for the particular resource and therefore require either avoidance or mitigation. This requires the availability of quantitative data. Therefore, the timeframe used in this Final EA is five years for past actions. Reasonably foreseeable future actions include actions that the proponent has committed to completing within the same timeframe as the implementation of the BKX Expansion or New Airport Alternatives.

Known past, present and reasonably foreseeable future actions that would have a cumulative effect with the effects of the alternatives under consideration are addressed in Sections 4.1-4.18. None of the resources in Sections 4.1-4.18 would have a cumulative effect that would result in a significant impact from the alternatives under consideration.

4.20 ALTERNATIVE IMPACTS SUMMARY TABLE

A summary comparison of the impacts of each alternative under consideration is presented in **Table 11**.

Table 11: Summary of Impacts of Alternatives

Impact Category	No Action Alternative	BKX Expansion Alternative – Preferred Alternative	New Airport Alternative	Commitments and Compliance of Preferred Alternative
Purpose and Need	Does not meet Purpose and Need	Meets Purpose and Need	Meets Purpose and Need	
Air Quality	Not located in a nonattainment area; no NAAQS Assessment is required	Not located in a nonattainment area; no NAAQS Assessment is required	Not located in a nonattainment area; no NAAQS Assessment is required	Include BMPs to minimize construction impacts.
Coastal Resources	Not located in the Coastal Barrier Resource System	Not located in the Coastal Barrier Resource System	Not located in the Coastal Barrier Resource System	N/A
Compatible Land Use	No Impact, however, it does not fix the RPZ and hazardous wildlife issues.	Compatible with area land use plans. Incompatible land uses that attract hazardous wildlife will be addressed through the hazardous wildlife attractant mitigation plan.	Incompatible w/ area land use plans; amendments to both the City of Brookings and Brookings County Comp Plans may be required. Incompatible land uses that attract hazardous wildlife would be addressed through the hazardous wildlife attractant mitigation plan.	Implementation of the hazardous wildlife attractant mitigation plan
Construction Impacts	Temporary impacts including large equipment with the associated noise and possible air pollution, soil erosion, dust and the closing of portions of the airport to comply with the FAA safety plan requirements.	Temporary impacts including large equipment with the associated noise and possible air pollution, soil erosion, dust and the closing of portions of the airport to comply with the FAA safety plan requirements.	Temporary impacts including large equipment with the associated noise and possible air pollution, soil erosion, dust and the closing of portions of the airport to comply with the FAA safety plan requirements.	Conformance with AC 150/5370-10E, Item P-156 "Temporary Air and Water Pollution, Soil Erosion, and Siltation Control." Include BMPs to minimize construction impacts. Prepare a SWPPP for construction and submit a Notice of Intent to the DENR. Obtain a Surface Water Discharge Permit from the DENR (if applicable). Stop construction if any spills or discovery of contaminants occurs and report to the National Response Center 800-424-8802 and SD DENR 605-773-3351.
Department of Transportation Act: Section 4(f)	No Impact	No Impact	No Impact	N/A

Impact Category	No Action Alternative	BKX Expansion Alternative – Preferred Alternative	New Airport Alternative	Commitments and Compliance of Preferred Alternative
Farmlands	No Impact	No Impact	Conversion impact rating of 181, no significant impact.	N/A
Fish, Wildlife and Plants	No Impact	Reroute of Six Mile Creek not likely to jeopardize the continued existence of endangered species Topeka shiner. Not likely to adversely affect endangered species American burying beetle and Western prairie fringe orchid.	Topeka shiner may be adversely affected by surface flows to Medary Creek. Not likely to adversely affect endangered species American burying beetle and Western prairie fringe orchid.	Comply with the Terms and Conditions of the USFWS Biological Opinion.
Floodplains	No Impact	Approximately 28 acres of encroachment on 100-year floodplain, including approximately 5.8 acres of floodway; approximately 91 acre-feet of flood storage removed; mitigation required.	No Impact; project is outside of the 100-year floodplain.	Floodplain Development permit for compensatory flood storage required
Hazardous Materials, Pollution Prevention and Solid Waste	No Impact	No Impact	No Impact	Prepare a SWPPP for construction and submit a Notice of Intent to the DENR. Stop construction if any spills or discovery of contaminants occurs and report to the National Response Center 800-424-8802 and DENR 605-773-3296. See Comment 3 in letter from DENR found on page B-19 of Appendix B of this Final EA.
Historical, Architectural, Archeological and Cultural Resources	No Impact	No adverse effect	Determination of effect pending additional archaeological survey of New Airport site and effect of BKX redevelopment on potential historic property.	N/A

Impact Category	No Action Alternative	BKX Expansion Alternative – Preferred Alternative	New Airport Alternative	Commitments and Compliance of Preferred Alternative
Light Emissions and Visual Impacts	No Impact	No Impact	Approach lights and other airport lights would be visible, but the impact would not be significant.	N/A
Natural Resources and Energy Supply	No Impact	Use of increased energy and materials for construction. Reuse of salvaged material will be incorporated in plans.	Use of increased energy and materials for construction.	N/A
Noise	No Impact	No Impact	No noise sensitive uses in the DNL 65 contour; introduction of unwanted aircraft noise into rural environment	N/A
Secondary (Induced) Impacts	No Impact	No Impact	Existing airport site would be redeveloped, but no expected adverse impact. Potential induced development in Trenton Township unknown and subject to County rezoning.	N/A
Socioeconomic Impacts, Environmental Justice and Children's Environmental Health and Safety Risks	No Impact	1 Household Displaced. No impact on low income and minority persons and children.	May impact economic viability of farming operations due to land acquisitions; loss of Brookings County and Trenton Township tax bases. No impact on low income and minority persons and children.	Provide relocation assistance in accordance with Uniform Relocation Assistance and Real Property Acquisition Act of 1970
Water Quality	No Impact	Filling of wetlands. Wetland loss will be minimized and mitigated.	No Impact	Obtain General Storm Water for Construction Permit. Maintain state industrial storm water permit.
Wetlands	No Impact	15.4 acres would be filled; mitigation required.	No Impact at New Airport site; impact on BKX wetlands and mitigation TBD.	On-site wetland delineation will need to be completed. Obtain Section 404 permit; prepare and submit a LOMR.
Wild and Scenic Rivers	No Impact	No Impact	No Impact	N/A

Impact Category	No Action Alternative	BKX Expansion Alternative – Preferred Alternative	New Airport Alternative	Commitments and Compliance of Preferred Alternative
Direct, Indirect and Cumulative Impacts	No Impact	There are no known past, present and foreseeable future actions that would result in a cumulative impact, including endangered species American burying beetle and Western prairie fringed orchid. Endangered species Topeka shiner habitat may have been and could continue to be affected by agricultural and grazing activities and urban development that could affect flows in Six Mile Creek..	There are no known past, present and foreseeable future actions that would result in a cumulative impact.	N/A

5. PUBLIC AND AGENCY COORDINATION

5.1 PUBLIC COORDINATION

The scoping of alternatives public process was comprised of two public open houses and four Dual Track Advisory Committee (DTAC) meetings. The purpose of the first open house was to present the findings of the 2006 Master Plan and to outline the reasons for the upcoming site selection and Dual Track Airport Planning Process EA. It was held on April 17, 2006. The second public open house was held on June 6, 2007 to present the findings of the new airport search process. During that open house, the findings of the 2006 Master Plan, the search area establishment, and the process by which the final search area and the final alternatives within it were determined, were presented for public review.

The DTAC was formed to help develop search area criteria and to concur with the final conclusions of the search team prior to public presentation. It was comprised of 15 local, state, and federal governmental representatives, SDSU and members of the public.

The first DTAC meeting was held on June 14, 2006. The committee concurred with the site selection criteria and overall airport search area to be limited to Brookings County. The second meeting was held on September 13, 2006. Seven new airport search areas within the County were presented, with the recommendation that Search Areas 5 and 6 be selected for further study. The DTAC concurred with this recommendation.

On December 14, 2006, the third DTAC meeting was held. During this meeting, the project team presented example airport layouts within both Search Areas 5 and 6. Based on the project team's analysis coupled with the DTAC recommendation, Search Area 5 was selected as the preferred area for final airport layouts. On May 24, 2007, the final DTAC meeting was held. Two airport layouts were recommended for final study by the project team. This recommendation was approved by the DTAC, with the understanding that the single final alternative (the New Airport Alternative) would be selected based on aeronautical suitability and compatibility with results of the then forthcoming wildlife study (ultimately published in March 2008). The preferred alternative from the 2006 Master Plan, Alternative G (now called the BKX Expansion Alternative), was also approved for final refinement in the Dual Track Airport Planning Process EA.

The Draft EA was distributed on October 1, 2010 and a public hearing was held on November 8, 2010. Following the close of the Draft EA comment period on November 15, 2010, the City Council held additional public hearings on November 23 and December 14, 2010 to gather further public information prior to the selection of the preferred alternative. The City selected the BKX Alternative as the preferred alternative at the city council meeting on December 14, 2010. See letter from the City to FAA at Appendix A-153.

5.2 INTERAGENCY COORDINATION

Throughout the process, various meetings were held with the City Council, City staff, airport board members and various governmental officials. The purpose of these meetings was both to garner input regarding the process and to keep all parties informed of its progress. The FAA

initiated consultation with the USFWS and submitted a biological assessment in accordance with Section 7 of the ESA on potential impacts by the preferred alternative on endangered species Topeka shiner. The USFWS prepared a biological opinion in coordination with the City and FAA.

5.2.1 Interagency Meetings

Below is a list of the interagency meetings held during the process.

2006

March 31	South Dakota Aeronautics Commission Meeting in Deadwood, SD
April 17	City Staff Coordination Meeting
June 14	City Council Coordination Meeting
Sept. 13	Site Selection w/City/County/FAA Meeting; City Council Coordination Meeting; Airport Advisory Committee Meeting
Nov. 8	City Council Coordination Meeting
Dec. 14	Airport Advisory Committee Meeting

2007

January 11	FAA/City Staff Coordination Meeting in Bismarck, ND
April 19	Airport Board Meeting
May 21	South Dakota Aeronautics Commission Meeting
May 21	Coordination with USDA
June 21	Airport Board Coordination Meeting
October 2	FAA/City Staff Coordination Meeting in Bismarck, ND
October 23	City Council Coordination Meeting
November 13	City Council Coordination Meeting
December 20	Airport Board Coordination Meeting

2008

January 22	City Council Coordination Meeting

2009

January 22	State Historical Preservation Meeting
January 22	USFWS/US COE/FAA/SD-DOT/City Staff Coordination Meeting in Pierre, SD Meeting
Feb. 19	Airport Board Coordination Meeting
March 25	City Staff Coordination Meeting in Aberdeen, SD
April 28	City Council Coordination Meeting
May 11	City Staff/FAA/SD-DOT/ Coordination Meeting
May 11	Airport Board Coordination Meeting
October 9	FAA/City Staff Coordination Meeting in Bismarck, ND

2010

August 5	FAA/State/City Staff/Consultant EA Review Meeting

5.2.2 Agency Letters

In addition to the meetings, letters were sent to various Native American Tribes (see Appendix A-71), the US Army Corps of Engineers, the South Dakota Department of Game, Fish and Parks, the US Fish and Wildlife Service, the US Department of Agriculture, and the South Dakota Department of Environmental and Natural Resources.

6. LIST OF PREPARERS

The following individuals assisted in the preparation of this document.

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Michael Wilson	BKX Airport Manager	BS Aviation Management	3	EA Review

A list of acronyms included in this EA is presented in **Table 12**.

Table 12: List of Acronyms

AC	Advisory Circular
ALP	Airport Layout Plan
AOA	Air Operations Area
APE	area of potential effect
ARC	Airport Reference Code
ARFF	Aircraft Rescue and Fire Fighting
ARS	Archaeological Research Services
AST	aboveground storage tank
AWOS	Automated Weather Observation System
BKX	Brookings Regional Airport
BMP	best management practice
BMU	Brookings Municipal Utilities
C.Y.	Cubic Yards
CAA	Clean Air Act, as amended
CBRA	Coastal Barriers Resources Act
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CIP	Capital Improvement Program
CO	carbon monoxide
COE	Army Corps of Engineers
CZMA	Coastal Zone Management Act
dBA	Decibels on the A-weighted scale
DENR	South Dakota Department of Environment and Natural Resources
DNL	annual average day/night sound level
DOT	Department of Transportation
DTAC	Dual Track Advisory Committee
EDDA	Environmental Due Diligence Audit
E.O.	Executive Order
EA	Environmental Assessment
EDR	Environmental Data Resources Inc
EJ	Environmental Justice
EPA	United States Environmental Protection Agency
EQ	Equalization
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FAA	Federal Aviation Administration
FBO	Fixed base operator
FEMA	Federal Emergency Management Agency
FONSI/ROD	Finding of No Significant Impact /Record of Decision

FPPA	Farmland Protection Policy Act
FR	Federal Register
GES	Graham Environmental Services
HH	household
HIRL	High Intensity Runway Edge Light
HNTB	HNTB Corporation
ILS	Instrument Landing System
INM	FAA Integrated Noise Model
MALSR	Medium-Intensity Approach Lighting System with REILS
MIRL	Medium Intensity Runway Edge Light
NAAQS	National Ambient Air Quality Standards
ND	North Dakota
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NMFS	National Marine Fisheries Service
NO_2	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NOTAM	notice to airman
NPDES	National Pollution Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRI	Nationwide Rivers Inventory
NWI	National Wetlands Inventory
$O7_3$	ozone
PAPI	Precision Approach Path Indicator
Pb	lead
PEMA	Palustrine, Emergent, Temporarily Flooded (wetland)
PEMC	Palustrine, Emergent, Seasonally Flooded (wetland)
PM 2.5	particulate matter less than 2.5 microns in diameter
PM-10	particulate matter less than 10 microns in diameter
RCRA	Resource Conservation and Recovery Act
REIL	Runway End Identifier Light System
RNAV (GPS)	Area Navigation Global Positioning Satellite
RPZ	Runway Protection Zone
SO_2	sulfur dioxide
SD	South Dakota
SD/DOT	South Dakota Department of Transportation

SDSU	South Dakota State University
SEP	single engine piston
SF	square feet
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SWD	Surface Water Discharge
SWPPP	Storm Water Pollution Prevention Plan
TAF	FAA Terminal Area Forecast
TBD	To be determined
TES	Threatened and endangered species
US	United States
USDA	United States Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
VOR	Very High Frequency Omni-Directional Radio Range
WWTP	wastewater treatment plant

7. LIST OF AGENCIES, JURISDICTIONS, PRIVATE PARTIES AND DEPOSITORIES THAT RECEIVED THE DUAL TRACK AIRPORT PLANNING PROCESS DRAFT EA

7.1 FEDERAL

U.S. Army Corps of Engineers
U.S. Environmental Protection Agency
U.S. Department of the Interior, Fish and Wildlife Service
U.S. Department of Agriculture

7.2 STATE

State Historic Preservation Officer
Department of Environment and Natural Resources
Department of Game, Fish and Parks

7.3 REGIONAL

City of Brookings
Brookings County
Trenton Township

7.4 LIBRARIES

Brookings Public Library

7.5 OTHERS

The Dual Track Airport Planning Process Draft EA was published on the City of Brookings website http://www.cityofbrookings.org/.

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City of BROOKINGS

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February 15, 2006

Mr. Steven J. Obenauer, Manager
Federal Aviation Administration
Bismarck Airports District Office
2301 University Drive, Building 23B
Bismarck, ND 58504

Dear Mr. Obenauer:

Thank you for your recent letter concerning the future of the Brookings Airport. This letter is intended to serve as a response to your letter dated May 10, 2005 regarding compliance issues at the Brookings Airport, specifically addressing Runway Protection Zone (RPZ) issues for Runways 30 and 35, as well as setting a future direction to enhance the growth and economic development of our region. Subsequent to our previous interactions, our Washington, DC trip and the Aberdeen Seminar, we believe we more clearly understand the related compliance issues, and also clearly understand the responsibility of the City of Brookings related to our airport and compliance issues. We also recognize past compliance issues have not been adequately addressed and the City is determined to rectify any unaddressed compliance issues.

The future for the City of Brookings is growth and the Brookings Airport needs to grow hand-in-hand with our community. Recent inquiries verify the importance of continued and progressive investment in this essential tool for our economy. The only way we can achieve this growth is with the help of the State of South Dakota, Federal Aviation Administration (FAA), and the Federal Government. We understand a large project in Brookings will place funding constraints on the region, potentially affecting other regional airport projects. However, it is time for the City of Brookings to move forward, as the Brookings Airport plays a vital role in the South Dakota Airport System. By making the proper improvements to the Brookings Airport over the next several years, the City of Brookings, the State of South Dakota and the FAA will be partnering in an investment for South Dakota and the Great Lakes Region in general.

Over the past year, the City of Brookings has made significant progress toward the completion of its Airport Master Plan. The Master Plan will address the need for additional primary runway length, adding to the current 5,231 foot long primary runway, 12/30, thereby allowing for larger

aircraft. It is the intention of the City of Brookings to follow the findings of this Master Plan, which we believe, will include the long-term need for a 6,500 foot runway. However, the City of Brookings will be unable to accommodate a runway of 6,500 feet, utilizing the current alignment. Numerous issues related to the Eighth Street South and Main intersection, as well as, railroad issues to the north, make this alternative difficult.

Attachments D, G, and H, specifically address the analysis of several on site alignment changes to the current primary runway. Each of these alternatives demonstrates the ability to extend the current primary runway to 6,500 feet in length and the ownership of the relative RPZ. These alignments will allow the City of Brookings to gain indisputable land use control and avoid potential zoning litigation, clearly improving the long-term benefits for such alignments. In the event the City of Brookings fails to build community support associated with such expenditures of public funds, the City has also included a compliance alternative (Alternative B) that will shorten Runway 12/30 or eliminate the ILS, maintaining the longer runway. Alternative B will bring the Runway 12/30 RPZ, back on to existing airport property. The City of Brookings considers Alternative B a last resort to comply with RPZ requirements, and at this point is an undesirable alternative.

The City of Brookings has examined 8 different alternatives and further developed 3 sub-alternatives. Regardless of the eventual alternative, the potential cost will approach several million dollars. The City of Brookings has classified the alternatives into three separate groupings: utilize current alignment in some form, utilize some form of realignment, or a complete, airport relocation. The importance of the Brookings Airport relative to continuing economic growth for the City is paramount. Therefore, each alternative has been thoroughly evaluated and the following preferences have been developed.

> Current Alignment Compliance: The current airport is land locked. The major obstacle to this alternative is purchasing the privately held properties. This scenario appears to be a "go it alone" approach and our past experience has not been positive. As you know, the City of Brookings purchased a small corner of property that appraised at approximately $80,000, with the owner claiming value of $479,000, which the judge awarded. The "value" of the existing businesses could potentially be prohibitive. Additionally, the City of Brookings, in an era of declining sales tax revenue, cannot afford to eliminate the current, productive, retail operations that exist in the RPZ. At least one of those businesses produce significant sales taxes and the combined effect would be potentially devastating to our City finances. Finally, the City of Brookings lacks sufficient commercial/retail corridors necessary to relocate the number of businesses that would be displaced. The future of Runway 35 has only been addressed, to this point, by shortening it. The City Council has not looked into the possibility of purchasing the houses or realigning it related to future expansion. If the existing site is maintained, the City will have to further analyze the cost of purchasing the houses versus changing the runway alignment. Nevertheless, the City would realign or purchase the two houses to clear the Runway 35 RPZ if the airport remains, as this would be necessary to achieve compliance.

Realignment Compliance: While this alternative is more attractive, it too presents challenges and increased costs. Wetland issues to the W/NW are potentially problematic, particularly related to acquiring additional wetlands at a 2:1 ratio. Additionally, the DM&E railroad is in the final stages of a significant upgrade plan and awaiting approval from the Surface Transportation Board. Not only would moving the tracks be expensive and time consuming, that alternative might meet significant opposition from DM&E due to potential delays and additional EIS issues. It is questionable whether DM&E would be a cooperative and willing partner. The wetlands issues and DM&E realignment will certainly add to the cost, but not eliminate other existing land use issues. Essentially, the Brookings Airport would still be land locked. However, this alternative has merit based upon potential alternatives, numerous realignment scenarios and the potential of strong funding support.

Relocation Compliance: Because the future growth of the Brookings Airport is imperative, initial examination appears to make this a viable alternative. Although airport relocations are extremely rare, our proximity to the city, inability to expand, and surrounding wetlands have limited our site and will continue to do so, if either of the above alternatives are chosen. Either of the above alternatives will alleviate our immediate land use and compliance issues but create other noise and wind coverage issues, as we anticipate increased air traffic. Therefore, we feel the relocation alternative requires extensive analysis. It is also the only alternative that allows for additional cost recovery from the sale of the current land and building assets. This would certainly assist the City financially, preserve some of the sales tax base, eliminate noise complaints and allow for future expansion. However, it also carries the highest potential cost and potential difficulty related to land acquisition. Federal and State funding will be key considerations for this alternative.

The City of Brookings is undertaking the appropriate steps required to gain full and complete compliance. The City of Brookings is nearing the completion of the Master Plan and the City Council has endorsed and approved the funding necessary for a site selection/feasibility study. These two steps will provide a clear, long-term plan, the City of Brookings is committed to follow in order to gain full and complete compliance. The City previously met with Senators Thune and Johnson, and just recently with Senator Thune and four representatives of the FAA in Washington, DC. We clearly understand the resolution to our compliance issues will take time.

Immediate Compliance Issues: The City of Brookings has carefully examined the immediate compliance issues, primarily involving structures located within the RPZ. In 1989, the City attempted to gain avigational easements from several of the landowners located within the RPZ. Most of those requests were denied by the landowners. Additionally, the City attempted to purchase several key land parcels, several of which were successfully completed. In order to solve the short-term compliance issues, the City denied a building permit in 2005, to Mr. Dean Gulbranson, related to a property that was partially within the existing RPZ. Consequently, the City was sued and ultimately lost that case. The judge in the case clearly stated, the assurances or federal circulars have no force of law. Additionally, the one purchase in 1989 set the tone for future purchases and negotiations. The parcel in question was

appraised at $80,000. However, the landowner felt the land value was considerably higher at $479,000. The City again lost in court and the landowner was awarded the full $479,000. The 1989 award and the recent court decision, have made landowners within the RPZ very aware of the issues and have potentially emboldened them to seek higher land prices or litigation for resolution of airport related issues. Using building permits, at this juncture, is not a viable compliance alternative. Additionally, extensive land purchases appear to be cost prohibitive and only serves to lock the City into a position where, immediate compliance might be achieved, but the long-term problems continue to exist.

Another consideration with respect to purchasing property within the RPZ is the considerable amount of "commercial/retail" property within the zone. Along south Main there are numerous, profitable businesses that produce large amounts of sales tax for the City. This City could not afford to lose these sales tax producers, there may not be land available for their relocation and there are no guarantees they would ever be able to achieve the level of sales they currently enjoy. In essence, the City could dramatically damage its own retail sales core. As an example, if the City were to lose the Homestead "Do It" Building Center, there might be a potential loss of nearly $200,000 in sales tax to the City. In addition, if a judge were to award a huge settlement for Homestead or any other business within the RPZ, considering loss of income and value of the property, it could potentially bankrupt the City.

Zone changes are another mitigation tool the City has given considerable thought. The City Council proposed a zone change, similar in time frame to the Gulbranson lawsuit. Nearly every property owner within the RPZ indicated they would engage in a lawsuit to protect their interests, primarily "takings" considerations due to a perceived loss of value. We believe a zone change, or individual/select zone changes would result in either individual lawsuits and/or a class action lawsuit. The City Council actually arrived at a second reading of the ordinance that would have provided the zone change to an RPZ. Due to public input and the volatile nature of the meetings, the ordinance was withdrawn/defeated.

It has also been suggested the City could engage in securing "options" on all of the properties within the RPZ. Securing those options would vary in price and difficulty, we believe, with some individual property owners again, choosing to engage in litigation, rather than cooperation. Furthermore, we are skeptical that an option will surface that makes those options a viable alternative for the Brookings Airport.

Given these factors, the City of Brookings does not consider land purchases, land purchase options, zone changes or other mitigation methods, within the RPZ, feasible in the short-term. Given the Gulbranson lawsuit and the history of land costs when contested, we don't believe there are any rational or reasonable alternatives available to us, as immediate compliance tools.

As for our current airport and our compliance issues, the City of Brookings asks that the FAA allow us to operate under our existing conditions, aggressively pursuing the pending outcomes of the Master Plan and site selection/feasibility study and any unexpected interim solutions that may reveal themselves based upon ongoing assessment of the issues. Upon completion of the Master Plan and site selection/feasibility study, the City of Brookings will diligently pursue an alternative that addresses and alleviates all compliance issues. Once an appropriate alternative

is chosen, the City will pursue appropriate project funding necessary to complete the chosen alternative. The City has included the time line for the realignment and relocation alternatives that anticipate a "best case" scenario for construction/reconstruction, depicted in years.

At this time, the City is not pursuing changes to our minimums, unless it is deemed absolutely necessary. Changing our minimums will cripple our airline service reliability, make our airport less attractive to corporate traffic and hinder the ability of our flight school to use the airport for training to its fullest capability.

Should you have any comments, questions or concerns please feel free to contact me at 605.692.6281.

Sincerely

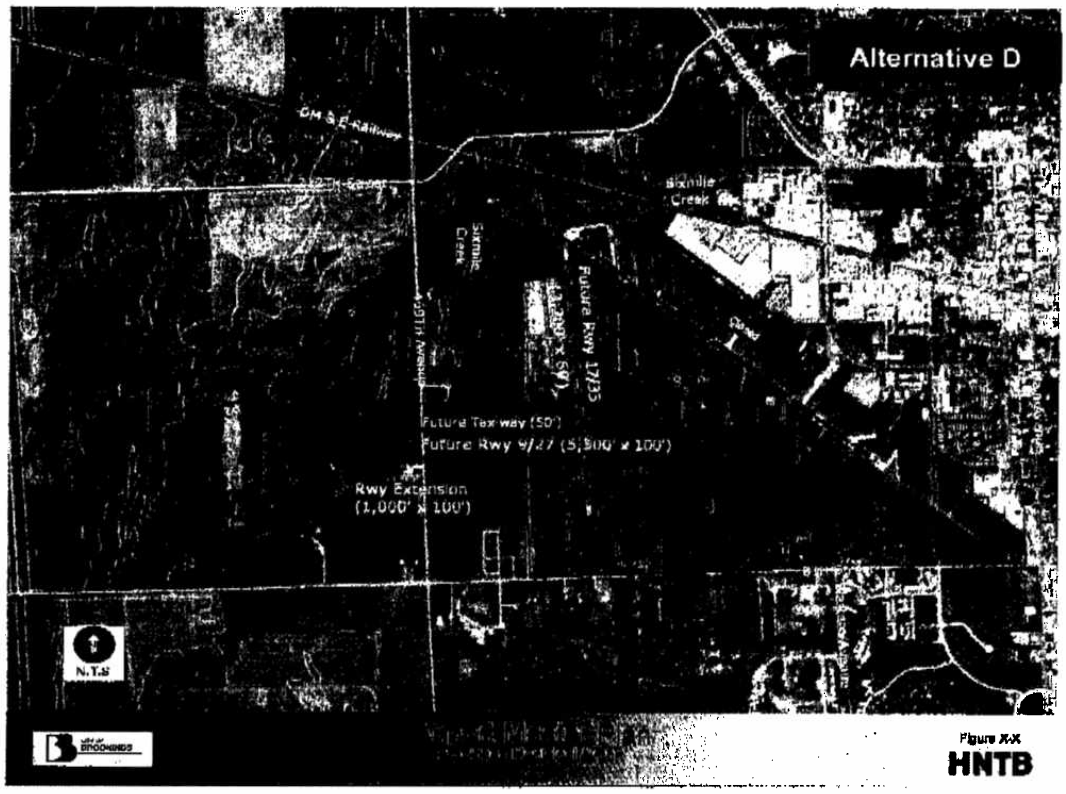
Scott D. Munsterman
Mayor, City of Brookings

cc: Senator Tim Johnson
Senator John Thune
Representative Stephanie Herseth
Wayne Nelson, SD Department of Transportation

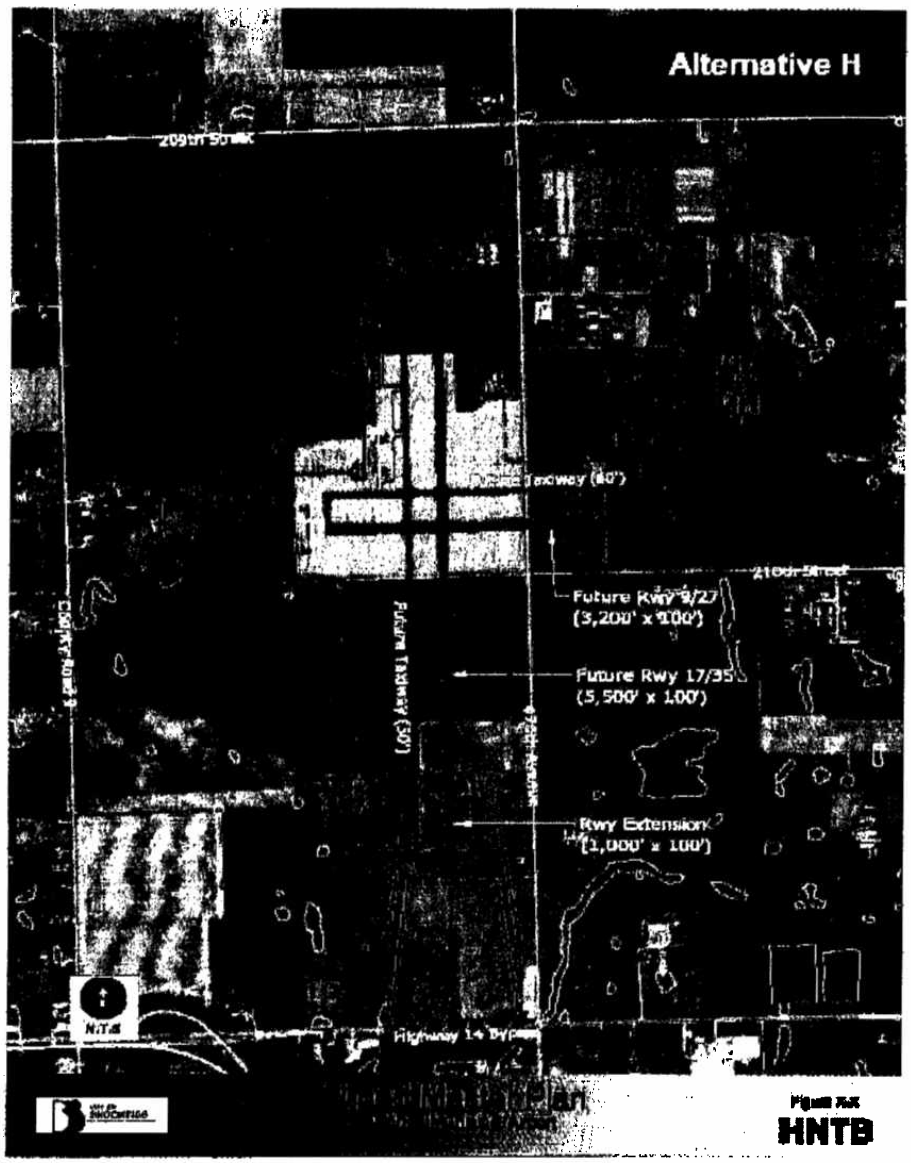
Attachments

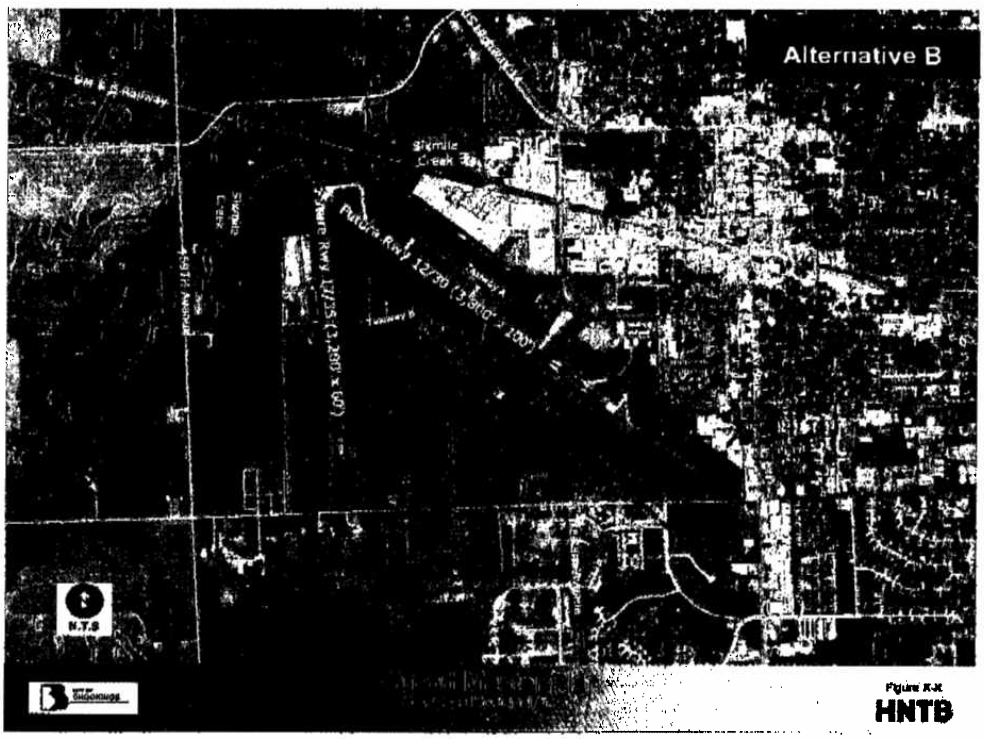
New Airport Time Breakdown	
YEAR	**CIP**
2006	Dual Track Environmental Assessment (E.A.)
2007	Ultimate ALP/Finish E.A.
2008	Land Appraisal/Land Purchase
2009	Design Engineering for Phase I
2010	Phase I Construction
2011	No Project
2012	No Project
2013	Design Engineering for Phase II
2014	Phase II Construction
2015	No Project
2016	No Project
2017	Design Engineering for Phase III
2018	Phase II Construction
2019	No Project
2020	No Project
2021	Design Engineering for Phase IV
2022	Phase IV Construction
2023	No Project
2024	No Project
2025	Design Engineering for Rehabilitation

Realignment Time Breakdown	
YEAR	**CIP**
2006	Dual Track Environmental Assessment (E.A.)
2007	Ultimate ALP/Finish EA
2008	Land Appraisal/Land Purchase
2009	Design Engineering
2010	Construction Phase I
2011	No Project
2012	Design for Phase II
2013	Construction Phase II
2014	Design of Phase III
2015	Phase III Construction
2016	No Project
2017	Overlay of 17/35


Alternative D
CM & E Railway
Sixmile Creek
Sixmile Creek
Future Rwy 17/35
(1,200' x 50')
Future Tex way (50')
Future Rwy 9/27 (5,300' x 100')
Rwy Extension
(1,000' x 100')
N.T.S.
Figure X-X
HNTB

Alternative G
Closed
Closed
Future Rwy 11/29 (5,500' x 100')
Future Rwy 17/35
(1,200' x 100')
Rwy Extension
(1,000' x 100')
N.T.S
Figure X-X
HNTB


Alternative H
Future Taxiway (80')
Future Rwy 9/27
(3,200' x 100')
Future Rwy 17/35
(5,500' x 100')
Future Taxiway (50')
County Road 3
Rwy Extension
(1,000' x 100')
N.T.S.
Highway 14 Byp
HNTB


Alternative B
Sixmile Creek
Future Rwy 12/30 (3,900' x 100')
Rwy 17/35 (1,200' x 60')
N.T.S.
Figure X-X
HNTB

U.S. Department
of Transportation
**Federal Aviation
Administration**

Federal Aviation Administration
Bismarck Airports District Office
2301 University Drive, Building 23B
Bismarck, North Dakota 58504

September 9, 2005

Mr. Alan Lanning, City Manager
City of Brookings
211 3rd Avenue
PO Box 270
Brookings, South Dakota 57006

Dear Mr. Lanning:

In our letter to you, dated May 10, 2005, we expressed concerns about the City's compliance with its Federal obligations regarding compatible land use around the Brookings Municipal Airport. We had requested a response regarding the City's plans to address incompatible land use, specifically the land within the Runway Protection Zones (RPZs) for the airport's runways.

The City's first response, dated June 7, 2005, recognized the importance of the RPZs and proposed the adoption of a zoning ordinance to address the land use issue. However, we understand the City is now reviewing the recommendations from a current airport master plan study as possible solutions to the land use issue.

The magnitude of the issue facing the City is considerable and the final solution must meet the needs of the City as well as ensure compliance with its Federal obligations. We have had many discussions and meetings with City officials about this issue, and we realize the City must make a number of complex decisions to resolve this issue.

However, since the City is now considering other alternatives to address the land use issue, an additional response to our May 10, 2005 letter is necessary to further clarify the City's plans. Therefore, we request the City provide a written plan, documenting the actions and associated time frames the City intends to implement to address its obligations regarding land use in the RPZs. Your response should reach our office by November 10, 2005.

If you have any questions, please contact our office at 701-323-7380.

Sincerely,

Steven J. Obenauer, Manager
Bismarck Airports District Office

cc: SD Department of Transportation

U.S. Department
of Transportation
**Federal Aviation
Administration**

Federal Aviation Administration
Bismarck Airports District Office
2301 University Drive, Building 23B
Bismarck, North Dakota 58504

April 3, 2006

The Honorable Scott D. Munsterman, Mayor
City of Brookings
PO Box 270
Brookings, SD 57006

Dear Mayor Munsterman:

We have reviewed your letter, dated February 15, 2006, responding to our concerns about compliance issues at the Brookings Municipal Airport. As the sponsor of a Federally obligated airport, the City of Brookings has a number of issues before it, regarding the operation and future development of the Brookings Municipal Airport.

Our initial letter to the City of Brookings, dated May 10, 2005, expressed the concern that the City may not be complying with its grant assurances regarding incompatible land use in several of the airport's Runway Protection Zones (RPZs). We had requested the City provide our office with documentation of the actions the City had taken that would constitute a reasonable effort to mitigate the incompatible land use in the RPZs.

Although the City has recently begun efforts to address the issue of incompatible land use in the RPZs, we are disappointed by the City's lack of action in the past. The City's past efforts on this issue have been less than effective and have placed the City of Brookings in a difficult position. Further, the limited documentation provided in response to our request makes it difficult to determine the reasonableness of the City's actions in controlling incompatible land use.

We concur with the City's assessment that shortening runways, eliminating the Instrument Landing System (ILS), or reducing approach minimums are undesirable alternatives. The runways and ILS were constructed with Federal aid as an investment to support aeronautical users and the City of Brookings. Taking these steps to correct a situation created by the City's action or lack of action would be extremely difficult to justify and would be in direct opposition of the City's stated needs for development of the airport. Considerable analysis of the potential impacts to aeronautical users and determination of reimbursement costs would be required before we could consider approval of such actions.

The current effort to develop a master plan for the airport is critical in identifying solutions to address the airport's development needs. At the same time, some of the identified solutions

may be equally effective in addressing the airport's current compliance issues. However, solutions requiring significant funding or complex construction usually take a considerable amount of time to implement and complete. In the interim, the incompatible land use in the RPZs continues.

We recognize that it may not be fiscally prudent to make large investments to resolve the incompatible land use issue when the City may adopt a master plan recommendation that would eliminate the need for such action. Therefore, we will hold in abeyance any further action regarding incompatible land use in the RPZs for Runways 30 and 35, provided the following actions occur:

1. The City takes aggressive and expeditious action to bring the master plan effort to conclusion and implement an acceptable course of action.
2. The City takes reasonable action where appropriate to prevent additional incompatible land use in the Brookings Municipal Airport's RPZs.
3. The City meets with our office on a periodic basis to discuss progress on the selected course of action.

We will continue to monitor the City's efforts to control incompatible land use in the airport's RPZs and address the airport's development needs. If the City's selected course of action does not adequately address the issue of incompatible land use or if additional incompatible land use occurs, we will be obligated to resume the process of making a compliance determination.

If you have any questions, please contact our office at 701-323-7380.

Sincerely,

Steven J. Obenauer, Manager
Bismarck Airports District Office

cc: SDDOT
AGL-620
AAS-400

Addendum to the 2006

Airport Master Plan

Brookings Regional Airport

May 2008

CITY OF BROOKINGS

HELMS and ASSOCIATES
CONSULTING ENGINEERS AND LAND SURVEYORS

HNTB

Master Plan Addendum

1.1. Introduction

This Addendum to the 2006 Brookings Regional Airport Master Plan documents the results of additional planning efforts undertaken in the fall of 2007 and the winter of 2007-2008.

The primary focus of those efforts was the evaluation of a new on-airport alternative (referred to here as Alternative I) and an update of airport activity, and an update to runway length requirements.

1.1.1. Master Plan Alternatives

The Master Plan examined eight alternatives aimed at resolving the existing safety and capacity issues at the Airport. Seven of those alternatives were on-airport and one was an off-airport (new airport) alternative. They were named alternatives A-H. See the Master Plan for more information on these alternatives and the issues they address.

With the exception of Alternatives A (no-action) and B (primary runway length reduction), the basic starting point of all on-airport alternatives was a resolution of incompatible land uses in the Runway 30 Runway Protection Zone (RPZ) through the realignment or relocation of the primary runway. The RPZ off south end of the crosswind runway (Runway 35) also has incompatible uses and the alternatives examined sought to resolve those as well.

1.1.2. Runway 30 RPZ Evolution

The primary factors determining the size of the Runway 30 RPZ are the visibility minimums contained in the published aircraft approaches for that runway end. The Runway 30 RPZ has the best possible visibility minimums (200 feet and ½ mile) for the type of approach it offers. Therefore, the Runway 30 RPZ is the largest possible RPZ.

Up until 1989, the Runway 30 RPZ was free of buildings and was completely owned by the airport, except for a small portion near the National Guard site on the southeast edge. In 1989 the RPZ dimensions were 1,700’ X 500’ X 1,010’ (length X inner-width X outer-width).

In 1990, the FAA installed an Instrument Landing System (ILS), which resulted in lower minimums and a wider, but not longer, RPZ. From 1990 – 1992, the RPZ dimensions were 1,700’ X 1,000’ X 1,510’. This increase in width resulted in three structures owned by a single business being encompassed by the RPZ. These buildings existed prior to the RPZ expanding.

In 1992, an approach lighting system known as a MALSR (Medium Intensity Approach Light System with Runway Alignment Indicator Lights) was installed. This resulted in the lowest possible minimums and a longer and wider RPZ (the same configuration that exists today). The RPZ dimensions from 1992 to the present are 2,500’ X 1,000’ X

1,750'. The number of buildings within the RPZ has varied over the years, but generally has remained greater than 10. Most of these buildings existed prior to the RPZ expanding in 1992.

Using Federal Airport Improvement Program (AIP) funding to the extent it was available, the Airport purchased property and obtained easements over portions of the RPZ. However, but successful lawsuits against the City have largely prevented them from enforcing zoning in the uncontrolled areas of the RPZ. In addition, due to the expense of purchasing all of the lots containing existing buildings, purchasing all of the remaining unowned land has not been feasible. As a result of these mostly unsuccessful attempts to get the RPZ into compliance, incompatible land uses have existed in the RPZ since 1990.

1.2. Alternative I Development

A plan to revert the RPZ to the 1990-1992 dimensions through a minimums increase came up early in the Master Plan process. It was discussed internally by HNTB personnel during the spring and early summer of 2005. At the time, the feasibility of the idea was questionable due to the fact that the FAA would need to approve any change to the approach minimums.

Helms and Associates and HNTB (airport consultants for the City) discussed the concept of reducing the RPZ size through a minimum increase with the FAA prior to the July 5, 2005 presentation of Master Plan concepts to the Brookings City Council. At the time, the FAA stated that it would not look favorably on any alternative that resolved the RPZ problems by reducing the usability of the airport (which an increase in approach minimums would do, however minimally). Therefore, FAA indicated that any scenario involving raising minimums was not preferred and could result in entire ILS being pulled. This general position was also expressed in the FAA's letter to the City dated April 3rd, 2006 (see Appendix 1).

Based on this, any alternative which raised the approach minimums was dropped from further consideration and the Master Plan was completed without including such an alternative.

Throughout the next two years, questions continued to come up regarding this alternative from the City Council, advisory committee and the general public. The explanation that the FAA did not prefer such an alternative satisfied most of those asking the questions.

In late summer 2007, the Dual Track process (which is to culminate in an Environmental Assessment (EA) for the preferred alternative) was at a critical point. A new airport site had been identified, the preferred on-airport realignment alternative from the 2006 Master Plan had been refined and the consultants were preparing to coordinate the work of the environmental specialists. The specialists work would involve considerable expense to the City and the FAA and also, for the first time, inform property owners on the preferred off-airport site that their land was formally being looked at as a possible location for a new airport.

At this time, after discussing the matter internally and informally with the City, the consultants once again began to look at an alternative that resolved the RPZ issue through an approach minimum increase (Alternative I). Throughout September, 2007, a new alternative was sketched out that included the smaller RPZ, but also showed how the other issues facing the airport would be addressed if the RPZ size reduction was approved.

Following meetings with the City on October 1st, 2007 and the FAA on October 2nd, 2007 all parties felt that Alternative I had enough merit that it should be presented to the City Council.

After further refinement of the Alternative I, it was presented to the City Council on October 23rd, 2007. At that meeting, the Council requested additional information. The alternative was again presented to the Council on November 13th, 2007 authorization was given to perform the Alternative I analysis, including an in depth runway length investigation.

1.3. Jet Operations

1.3.1. Jet Operations Estimation Method

BKX does not have an Air Traffic Control Tower so it is difficult to determine the number and types of operations at the airport. However, flights entering the national en route air traffic control system are recorded in an FAA database. All flights activating a flight plan enter the national en route system and the vast majority of jets activate a flight plan. Since jets are typically the most demanding aircraft regularly using an airport, using the FAA database information provides a way to evaluate the runway length needs at Brookings.

To establish an adequate timeframe, flight plan records from 2001 – 2007 were examined. Due to the timing of the analysis, each year was comprised of a November to October period. For simplicity, each time period was assigned a calendar year period which corresponded to when the majority of the operations occurred. For example, operations referred to as occurring in 2001 actually occurred from November, 2000 to October, 2001.

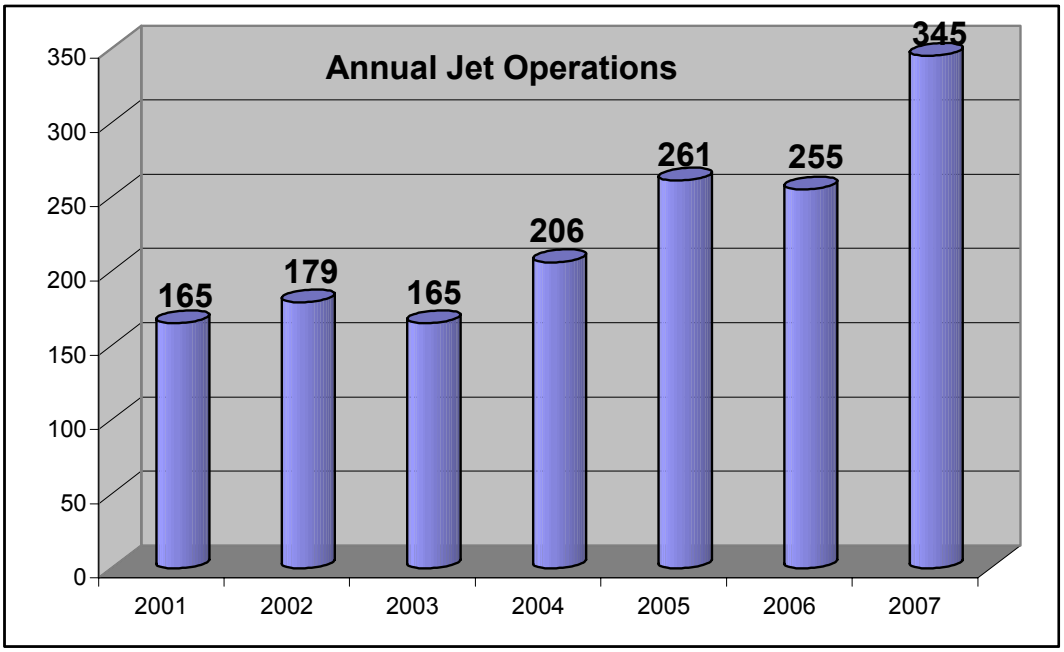
It is important to note the limitations of this method of estimating operations. The examination of flight plan records results in only a partial count of overall operations. Local flights that occur without a flight plan may never be seen by the en route system and therefore may be accounted for in the data. In addition, no effort was made to estimate how many aircraft were by passing Brookings due to concerns about the length of the existing runway.

In summary, the method used to estimate jet operations most likely undercounts those operations and does not provide a method to estimate overall operations. What this method does provide is an adequate way of determining jet operations for purposes of evaluating runway length.

1.3.2. Current Jet Operations

Using the data in the FAA database, jet operations per year were summarized. The results are shown in Figure 1.

Figure 1: 2001-2007 Annual Jet Operations

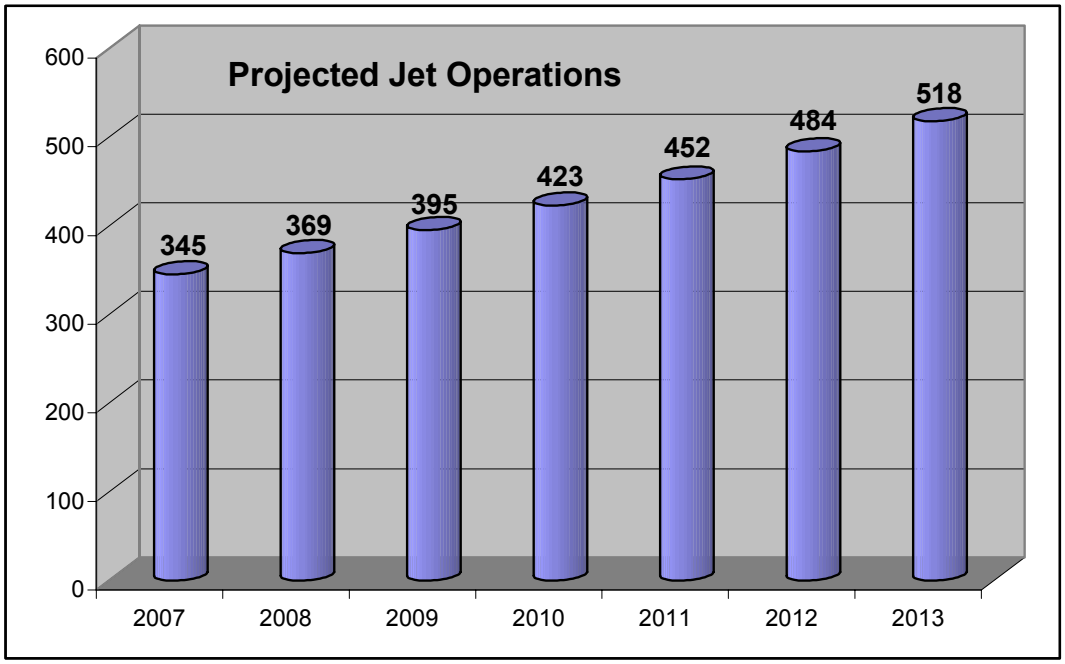


The table shows that from 2001 – 2007, jet activity increased by an average of 14% per year, with especially strong growth occurring in 2007. This growth was significantly higher than that forecast in the Master Plan. As a result, jet activity in 2007 was near the 360 operations forecast for 2015 in the Master Plan.

1.3.3. Projected Jet Operations

For purposes of projecting future jet operations, the 7% annual growth rate from the 2006 Master Plan forecasts was used. Using the 345 2007 jet operations as the baseline, the Airport should reach 500 jet operations by 2012 or 2013, as shown in Figure 2.

Figure 2: Projected Jet Operations



1.4. Runway Length Background

The Master Plan recommended an initial runway length of 5,500' and an ultimate length of 6,500'. The on-airport Master Plan alternatives either maintained the existing runway length but eliminated the possibility of continued Federal funding (Alternative A), significantly reduced the primary runway length (Alternative B), or completely realigned and extended the primary runway (Alternatives C-G).

With this range of options, the question of how simply maintaining the existing runway length would impact the Airport's ability to serve its role in the community was not examined because there was no viable option that allowed the current runway length to be maintained.

With the emergence of Alternative I (which does not allow for any runway extension but does allow the current runway length to be maintained with Federal funding), the question of how the existing runway length would impact existing and future airport users became very important. The number and type of current and forecast flights (also known as operations) were re-examined in an attempt to judge the impact of freezing the runway at its current length.

1.5. Runway Length Requirements

1.5.1. Design Aircraft Selection

The FAA publishes guidance for determining runway lengths in Advisory Circular (AC) 150/5325-4B "Runway Length Requirements for Airport Design" (7-2005). Two basic ways to determine runway length requirements are outlined in this AC. One is to use the requirements of a particular group of aircraft (e.g. aircraft having a maximum take-off weight of less than 12,500 pounds), and the other is to use the requirements of a specific aircraft (e.g. a regional jet).

The Master Plan used a specific aircraft (the regional jet Embraer 135) on the basis of its potential use as a charter aircraft and as a baseline for future business jet aircraft. The recommended runway length was based on its needs. In order to base runway lengths on an aircraft family or specific aircraft, it must be shown that the aircraft family or specific aircraft will have at least 500 operations a year. As shown in Figure 2, jet operations at BKX are projected to reach this threshold within five to six years.

Therefore, it is now appropriate to use a family of aircraft to determine runway length requirements. The FAA provides different aircraft families in the AC. Based on the fleet mix of aircraft using BKX today, the family defined as aircraft weighing over 12,500 pounds but not more than 60,000 pounds was chosen.

The FAA breaks this family down into two subgroups. The first comprises 75% of the fleet, the second 100%. The second group is made up of the more demanding aircraft. Based on the aircraft using BKX today, it was determined that the group comprising 75% of the fleet mix should be used as the primary design aircraft family. However, approximately 30% of the identifiable jets using the airport in 2007 fell into those comprising the more demanding 100% group. Therefore, the requirements of this group will also be considered when determining runway length requirements.

1.5.2. Useful Load Factor

The term "useful load" generally refers to the weight of passengers, cargo and useable fuel on an aircraft. Two useful load percentages are used in the AC – 60% and 90%. According to the AC, the useful load percentage selection should be based on "the haul lengths and service needs of the critical design airplanes" (Paragraph 302) and the 60% recommendation should only be used for "those airplanes operating with no more than a 60 percent useful load factor" (Paragraph 303).

1.5.3. Basic Runway Length Recommendation

The runway length calculation figure that corresponds to the 75% of the design aircraft family is AC Figure 3-1. The BKX temperature and elevation and an adjustment for wet and slippery runways was applied to the figure and resulted in runway length recommendations of 5,500' for 60% of useful load and 7,000' for 90% of useful load.

The AC also references design software that can be used to provide estimates of runway length needs. The results of running that program for BKX are summarized in Table 1. These results formed the basis of the updated runway length needs for BKX.

The specific results that apply to this analysis are in bold text. As can be seen, the computer application recommended a runway length between 5,500' and 7,000' for 75% of the family and between 5,910' and 8,730' for 100% of the family.

Table 1 Runway Length Requirements from AC 150/5300-13

Airport and Runway Data	
Airport elevation	1648 feet
Mean daily maximum temperature of the hottest month	85 F
Maximum difference in runway centerline elevation	22 feet
Length of haul for airplanes of more than 60,000 pounds	1,400 miles
Wet and slippery runways	
Runway Lengths Recommended for Airport Design	
Small airplanes with approach speeds of less than 30 knots	350 feet
Small airplanes with approach speeds of less than 50 knots	930 feet
Small airplanes with less than 10 passenger seats	
75 percent of these small airplanes	3,010 feet
95 percent of these small airplanes	3,590 feet
100 percent of these small airplanes	4,210 feet
Small airplanes with 10 or more passenger seats	4,500 feet
Large airplanes of 60,000 pounds or less	
75 percent of these large airplanes at 60 percent useful load	**5,500 feet**
75 percent of these large airplanes at 90 percent useful load	**7,000 feet**
100 percent of these large airplanes at 60 percent useful load	**5,910 feet**
100 percent of these large airplanes at 90 percent useful load	8,730 feet
Airplanes of more than 60,000 pounds	7,410 feet

Source: FAA's Airport Design software (Version 4.2D)

1.5.4. Near-Term and Ultimate Runway Length Recommendations

The 7,000' runway associated with 90% useful load for 75% of the aircraft family should be planned for as the ultimate condition but its immediate construction is not warranted. In the near term, limiting the runway to 5,500' would restrict the amount of fuel, cargo and/or passengers that jets using the airport could place aboard the aircraft prior to departure. Therefore a runway longer than 5,500' but less than 7,000' should be built.

As mentioned previously, aircraft comprising 100% of the aircraft family made up 30% of the jets using the airport in 2007. For this group, the software program recommended a 5,910' runway. Additional analysis of individual aircraft operational requirements indicated that 40% - 45% of aircraft using Brookings need a 6,000' foot runway.

Therefore, a 6,000' runway is justified according to FAA guidelines and supported by individual aircraft operational requirements. A 6,000' runway will be 669' longer than

the current runway and allow for greater aircraft operational flexibility than is currently the case. It also aligns with the near-term runway length recommendation from the Master Plan. Therefore, up to a 6,000' runway is recommended as the initial build length, subject to adjustments related to ultimate runway end elevations. Depending on those elevations, the recommended length could decrease to 5,700 feet.

Despite the fact that construction of a 7,000' runway is not justified at this time, long term plans should include a runway of this length to provide the greatest degree of flexibility to accommodate future growth. Therefore, an ultimate length of 7,000' should be included on future Airport Layout Plans (ALPs).

1.6. Alternative I Recommendation

As shown in the previous analysis, a longer runway is essential in allowing the airport to continue serving its role in the community. Any alternative that does not provide for a longer runway should not be pursued. Since Alternative I does not provide for a longer runway, it should not be pursued. A recommendation not to pursue Alternative I any further was made to the City Council on January 22, 2008. They voted to not pursue Alternative I in the EA.

1.7. Alternative I Description

Alternative I involves a reduction of the Runway 30 RPZ through a visibility minimum increase. There would still be three buildings in the PRZ which would need to be purchased. The other primary component of Alternative I is a relocated crosswind runway, which improves the runways' intersection and the incompatible uses off Runway 35. Other issues are also addressed (see Figure 3 for overall configuration)

1.8. Alternative Scoring

In order to put Alternative I in context with the other alternatives contained in the 2006 Master Plan, it was scored in a similar way. The following criteria are taken directly out of the 2006 Master Plan. Each alternative in that document was scored based on how well it achieved each objective under each goal. Alternative I was scored in the same way.

The alternative was scored based on how well it met the objectives outlined in the following subsections.

1.8.1. Safety-related objectives

- Minimize obstructions
- Achieve full taxiway object free area (TOFA)
- Achieve standard runway - taxiway separation
- Achieve intersecting runways
- Minimize incompatible land use in RPZs
- Achieve standard runway object free areas

Improving the functionality of the existing AWOS was another objective. This objective was not included in the following analysis as it was assumed that this issue will be

addressed regardless of which alternative is chosen.

A related objective was implementing new or modifying existing zoning. This objective also was not included in the following analysis since this issue needs to be addressed regardless of which alternative is chosen.

1.8.2. Capacity-related objectives

- Provide room for terminal expansion
- Provide primary runway extension (to 6,000' near term and 7,000' ultimately*)
    - *This was updated as part of the Master Plan Addendum process
- Provide crosswind runway extension to 4,400' and upgrade to B-II standards
- Provide area for new hangars
- Provide room for expanded maintenance facilities
- Improve wind coverage during poor weather conditions

1.8.3. Compatibility and cost-effectiveness-related objectives

- Minimize land acquisition
- Minimize road closures
- Minimize home and business purchases
- Minimize impact to wetlands
- Minimize need to relocate hangars
- Capital improvement cost

1.9. Scoring System

Scoring was divided into three categories, corresponding to the objective groupings above. If an alternative fully met a given objective under a goal, it was awarded 10 points. If it somewhat met the objectives, 5 points were awarded and if it clearly did not meet the objective, 0 points were awarded. Each alternative could score a maximum of 60 points under each category, for a total of 180 points.

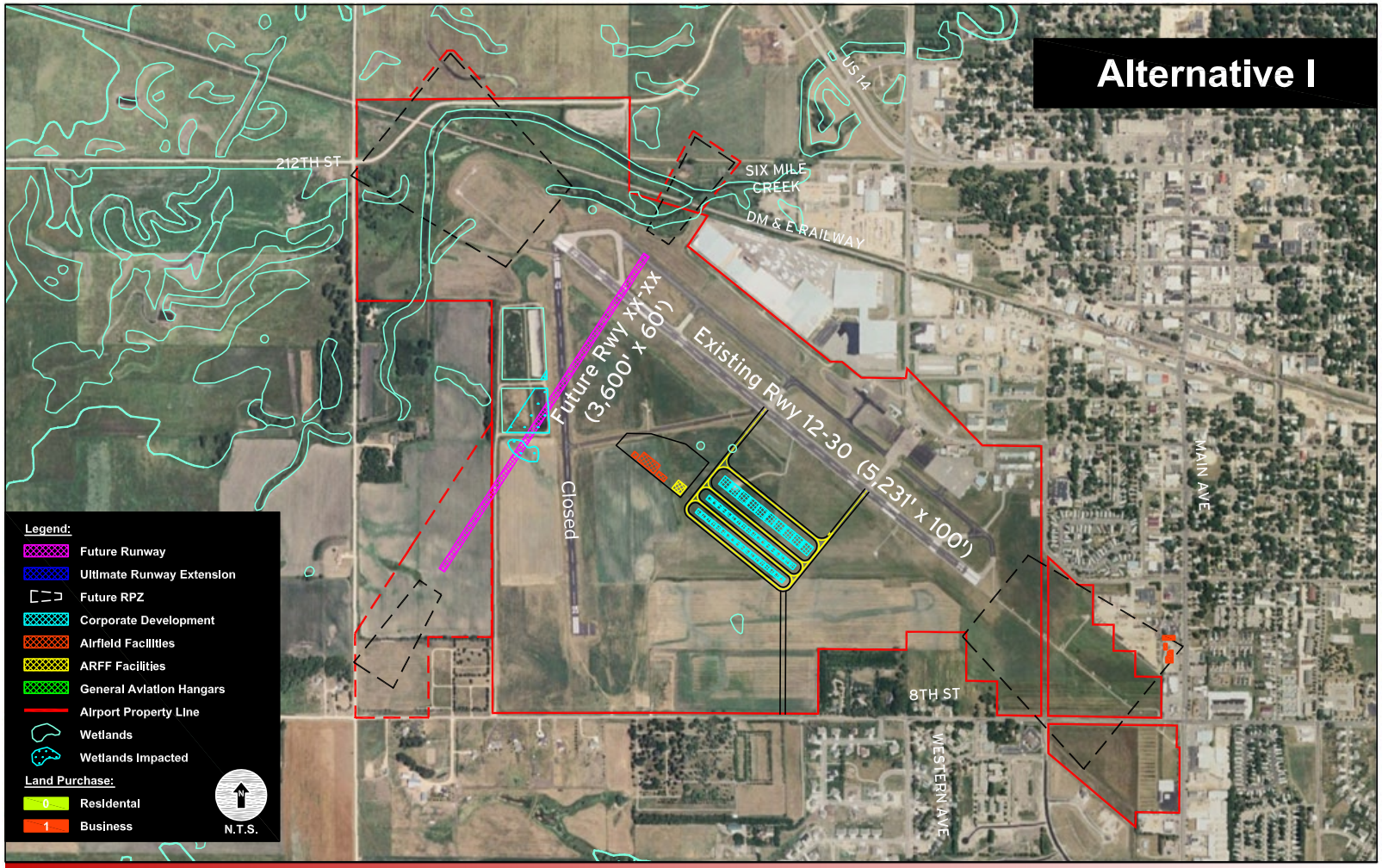
The scoring was not strictly relative; so many alternatives could receive the same score under a given objective. Variations between 0, 5, and 10 were also allowed, meaning that an alternative could receive a 2, 7, 9 etc under a given objective.

1.10. Alternative I Scoring

Alternative I Scoring Summary		
	Score	**Comments**
Option Summary	**N/A**	Alternative I depicts the resolution of the Runway 30 RPZ through an increase in visibility minimums and depicts a new crosswind runway
Goal 1: Safety (60 Points)	**35**	
Minimize obstructions	5	No action taken.
Achieve full taxiway OFA	0	No action taken.
Achieve standard runway - taxiway separation	10	Achieved.
Achieve intersecting runways	10	Achieved.
Minimize incompatible land use in RPZs	10	Achieved.
Achieve standard runway object free areas	0	No action taken.
Goal 2: Capacity (60 Points)	**30**	
Provide room for terminal expansion	10	Achieved.
Provide primary runway extension	0	No action taken.
Provide crosswind runway extension and upgrade	0	No action taken.
Provide area for new hangars	10	Achieved.
Provide room for expanded maintenance facilities	10	Achieved.
Improved wind coverage during poor weather conditions	0	No action taken.
Goal 3: Meet Goals 1 and 2 in a compatible and cost-effective manner (60 Points)	**50**	
Minimize land acquisition	8	Requires purchase of 54 acres of undeveloped land.
Minimize road / railroad closures	10	No action taken.
Minimize home and business purchases	8	1 business purchased.
Minimize impact to wetlands	10	No Impact.
Minimize need to relocate hangars	10	Achieved.
Capital Improvement Cost (20 points)	4	$12.9M
Total (180 Possible Points)	**115**	
Percent of Possible Points	**64%**	

Scoring:
Meets objective: 10 points
Somewhat meets objective: 5 points
Does not meet objective: 0 points

All objectives worth 10 points unless otherwise noted



Airport Master Plan

Brookings Regional Airport

Figure 1-3

HNTB

U.S. Department
of Transportation
**Federal Aviation
Administration**

Federal Aviation Administration
Bismarck Airports District Office
2301 University Drive, Building 23B
Bismarck, North Dakota 58504

April 3, 2006

The Honorable Scott D. Munsterman, Mayor
City of Brookings
PO Box 270
Brookings, SD 57006

Dear Mayor Munsterman:

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We concur with the City's assessment that shortening runways, eliminating the Instrument Landing System (ILS), or reducing approach minimums are undesirable alternatives. The runways and ILS were constructed with Federal aid as an investment to support aeronautical users and the City of Brookings. Taking these steps to correct a situation created by the City's action or lack of action would be extremely difficult to justify and would be in direct opposition of the City's stated needs for development of the airport. Considerable analysis of the potential impacts to aeronautical users and determination of reimbursement costs would be required before we could consider approval of such actions.

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may be equally effective in addressing the airport's current compliance issues. However, solutions requiring significant funding or complex construction usually take a considerable amount of time to implement and complete. In the interim, the incompatible land use in the RPZs continues.

We recognize that it may not be fiscally prudent to make large investments to resolve the incompatible land use issue when the City may adopt a master plan recommendation that would eliminate the need for such action. Therefore, we will hold in abeyance any further action regarding incompatible land use in the RPZs for Runways 30 and 35, provided the following actions occur:

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3. The City meets with our office on a periodic basis to discuss progress on the selected course of action.

We will continue to monitor the City's efforts to control incompatible land use in the airport's RPZs and address the airport's development needs. If the City's selected course of action does not adequately address the issue of incompatible land use or if additional incompatible land use occurs, we will be obligated to resume the process of making a compliance determination.

If you have any questions, please contact our office at 701-323-7380.

Sincerely,

Steven J. Obenauer, Manager
Bismarck Airports District Office

cc: SDDOT
AGL-620
AAS-400

BROOKINGS
municipal utilities

525 Western Ave., P.O. Box 588
Brookings, SD 57006-0588
(605) 692-6325 voice
(605) 697-8485 fax

MEMORANDUM

To: **Jackie Lanning, City Engineer**

From: **Eric Witt**

cc: **Michael Wilson, Jeff Weldon, Steve Meyer, Paul Melby, Gary Englund, Larry Mutchler**

Date: **Updated 10/19/09**

Subject: **Airport Environmental Assessment Issues**

Re: **Equalization Basins and Biosolids Drying Beds**

As requested at a September 30, 2008 meeting, a memo dated October 14, 2008 was distributed as a follow up to the discussion of the BMU facilities currently located at the Airport. This memo serves as an update to the October 14, 2008 memo:

Background

The September 30, 2008 meeting and discussion was prompted by the pending completion of the Environmental Assessment (EA) for the Airport and the eventual decision whether to relocate the Airport or modify the existing Airport runway alignment. At our meeting, Michael Wilson, Airport Manager, presented excerpts from the draft EA, supporting FAA information, and the currently proposed runway re-alignment (if the airport remains at its current location). The proposed runway re-alignment will intersect the BMU facilities at the Airport.

Existing BMU Facilities Located at the Airport Property

The existing BMU facilities consist of two biosolids drying beds and two flow equalization (EQ) basins; the facilities each have significantly different purposes:

Biosolids Drying Beds

The biosolid drying beds are clay-lined containment basins used to store and further dry liquid biosolids from the municipal wastewater treatment plant (WWTP); biosolids are the end product of the anaerobic digestion process common at mechanical WWTPs. Once the digestion process is complete, the liquid biosolids (approximately 2% solids) is hauled via semi tanker to the drying beds to air-dry to a dry solid (approximately 35 – 45% solids – a cake or soil like consistency). Once dried, the material is excavated from the drying beds, hauled and applied to agricultural fields as a beneficial re-use for nutrient application. The nutrient application is very similar to applying manure to agricultural fields that will benefit from the nitrogen application. The drying beds are used in rotation so that liquid biosolids are being added to only one basin

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each year while the other basin is allowed to dry and the material disposed of in the fall of the year.

Both the US EPA and SD DENR regulate the handling and ultimate disposal of municipal biosolids (40 CFR Part 503 Regulations) via permit. Testing of biosolids for both the nutrient content and heavy metals is required. Field application of biosolids must be done in accordance with the permit and BMU's Biosolid Management Plan. BMU's biosolids and their disposal have historically been well within the criteria set forth in the 40 CFR Part 503 regulations.

The biosolids drying beds are storage and drying facilities that are currently required for biosolids management. Assuming the airport runway is re-aligned, options for removal of the drying beds include either replacement at another location or replacement with mechanical dewatering equipment at the WWTP. After consideration of both operational issues and airport facility considerations, BMU is currently pursuing mechanical dewatering equipment which will eliminate the need to replace the drying beds. Equipment evaluation and demonstrations are underway and dewatering equipment is expected to be acquired and operational within the next year.

If dewatering equipment procurement and installation proceed as anticipated, the biosolids drying beds will be loaded with liquid biosolids during the winter/spring of 2010 and cleaned out for the final time in either the fall of 2010 or 2011. Abandonment of the biosolids drying beds was addressed in the October 14, 2008 memo.

Flow Equalization Basins

The EQ basins are clay-lined containment basins (with vegetated bottoms and side slopes) used for short-term storage of sanitary sewer flow during periods of high flow due to inflow and infiltration (I&I). The Brookings WWTP has a peak treatment capacity of 6 million gallons per day (MGD). During periods of high flows due to I&I, the collection system can deliver significantly more flow to the WWTP than can be processed. The EQ basins provide an approximate combined storage capacity of 22 million gallons (MG). Without short-term flow equalization storage, the WWTP would either need to bypass untreated wastewater to the Big Sioux River (which would result in violation of our DENR permit), or expand the WWTP to handle significantly higher peak flows during storm events.

High peak flows due to I&I during storm events is a common problem in communities with heavy soils and an aging collection system; managing the I&I events with flow equalization is a common and economical method of addressing this issue and reduces the capital cost and WWTP operational issues that are associated with significantly over-sizing a treatment plant to manage relatively infrequent flow conditions.

During periods of high flows associated with storm events, wastewater is diverted from the west side collector sewer that drains some of the older areas of Brookings. The wastewater is pumped from the collection system via pumps located at the former WWTP west of Western Avenue to the EQ basins. Once the flow has subsided, the wastewater from the EQ basins is allowed to feed slowly back into the collection system via gravity flow to the WWTP for treatment. The length of time wastewater is stored in the EQ basins varies depending on flow and environmental conditions; generally, during periods of high groundwater and saturated soils (more typical during spring conditions) it takes longer to drain the EQ basins as some amount of infiltration into the collection system continues to take place after the actual storm event. Typically, the EQ basins

are utilized for flow equalization once or twice per year. A review of EQ basin utilization for the last ten years follows:

High Flow Events

Year	Storm Event	Approximate Days Water in EQ Basins
1999	May 6-7	7
2000	Not used	0
2001	April 22-24 (1st event), May 7-8 (2nd event)	21 (Back to Back Storm Events)
2002	Not used	0
2003	Not used	0
2004	Sep 23-24	7
2005	Sep 8-12	14
2005	Oct 5-8	10
2006	Apr 1-2	7
2007	Apr 21-22	7
2007	May 4-6	10
2008	May 13-16	10
2009	Not used to date	0 to date

The EQ basins are critical to the WWTP operations, even though they are utilized relatively infrequently. If they are required to be abandoned due to the runway realignment, they will need to be replaced at another location. However, the replacement location siting will be difficult; property acquisition would be required for a suitable replacement property that is:

1) out of the floodplain (to avoid extensive fill and a possibly a liner system above the floodplain elevation),

2) preferably a reasonable distance from current and future residential areas,

3) within close proximity to the oldest portion of the wastewater collection system to avoid significant pump station and pumping costs to and from the basins. (The current location of the existing facilities takes advantage of existing pumping facilities to the EQ basins and gravity-flow out of the basins back to the collection system).

As such, if the Airport runway is realigned, BMU would strongly prefer to work with City, Airport, and FAA requirements to relocate the EQ basins south of the existing location but still within the Airport property. Measures to minimize the wildlife attractiveness of these facilities can be implemented during construction and management of replacement facilities, including but not limited to reducing and/or eliminating vegetated bottom conditions, and installation of wire and/or other measures to deter birds and other wildlife.

If the EQ basins are allowed to be relocated to the south within the Airport property, land acquisition issues will be eliminated from the relocation time frame, as will significant redesign of piping and pumping station(s) to and from the basins. As such, the design and construction of the replacement EQ basins would likely require at least a year, assuming there is approximately 6 – 9 months available for design and approvals prior to a full construction season. Once replacement EQ basins have been constructed and are available for use, the existing EQ basins could be abandoned. No “remnant” material is expected in the EQ basins, however, testing to prove such could be conducted if required by the DENR. Approval of the replacement EQ basins would likely be required by the DENR, along with closure/abandonment plans for the existing

basins. General site grading work associated with the runway re-alignment (a general grading permit / Notice of Intent will likely be required as part of the airport runway re-alignment project and would presumably incorporate site grading around closure/abandonment of the EQ basins.

October 20, 2008

Andy Olson, AICP
Senior Aviation Planner
HNTB Corporation
7900 International Drive, Suite 600
Minneapolis, MN 55425-8910

RE: New Airport Alternative

Dear Mr. Olson:

The selection of a new site for the Brookings Regional Airport by the City Council will require a comprehensive review of the current airport. The review will involve a complete redevelopment plan that includes major street extensions and new streets, land use classification proposals for residential, commercial, and industrial zoning districts, park land dedication, open space for stormwater detention/retention, and preservation of environmentally sensitive areas.

A preliminary design will strive for continuity and compatibility with adjacent uses. The design calls for extensions to major streets such as Second Street South, Western Avenue, and Division Avenue. The projected ratio of residential, commercial, and industrial land will be in the range of 45, 30, and 25 percent, respectively. A neighborhood park would be proposed to serve the residential population. Certain lands will remain undeveloped due to topographical and environmental constraints.

Sincerely,

Dan Hanson
Planning, Zoning, and Housing
Administrator

DKH:dms

October 20, 2008

Andy Olson, AICP
Senior Aviation Planner
HNTB Corporation
7900 International Drive, Suite 600
Minneapolis, MN 55425-8910

RE: No action alternative

Dear Mr. Olson:

The Brookings Regional Airport, in its present location, is a pre-existing use that conforms to the current Comprehensive Land Use Plan.

Sincerely,

Dan Hanson
Planning, Zoning, and Housing
Administrator

DKH:dms

October 20, 2008

Andy Olson, AICP
Senior Aviation Planner
HNTB Corporation
7900 International Drive, Suite 600
Minneapolis, MN 55425-8910

RE: BKX Expansion Alternative

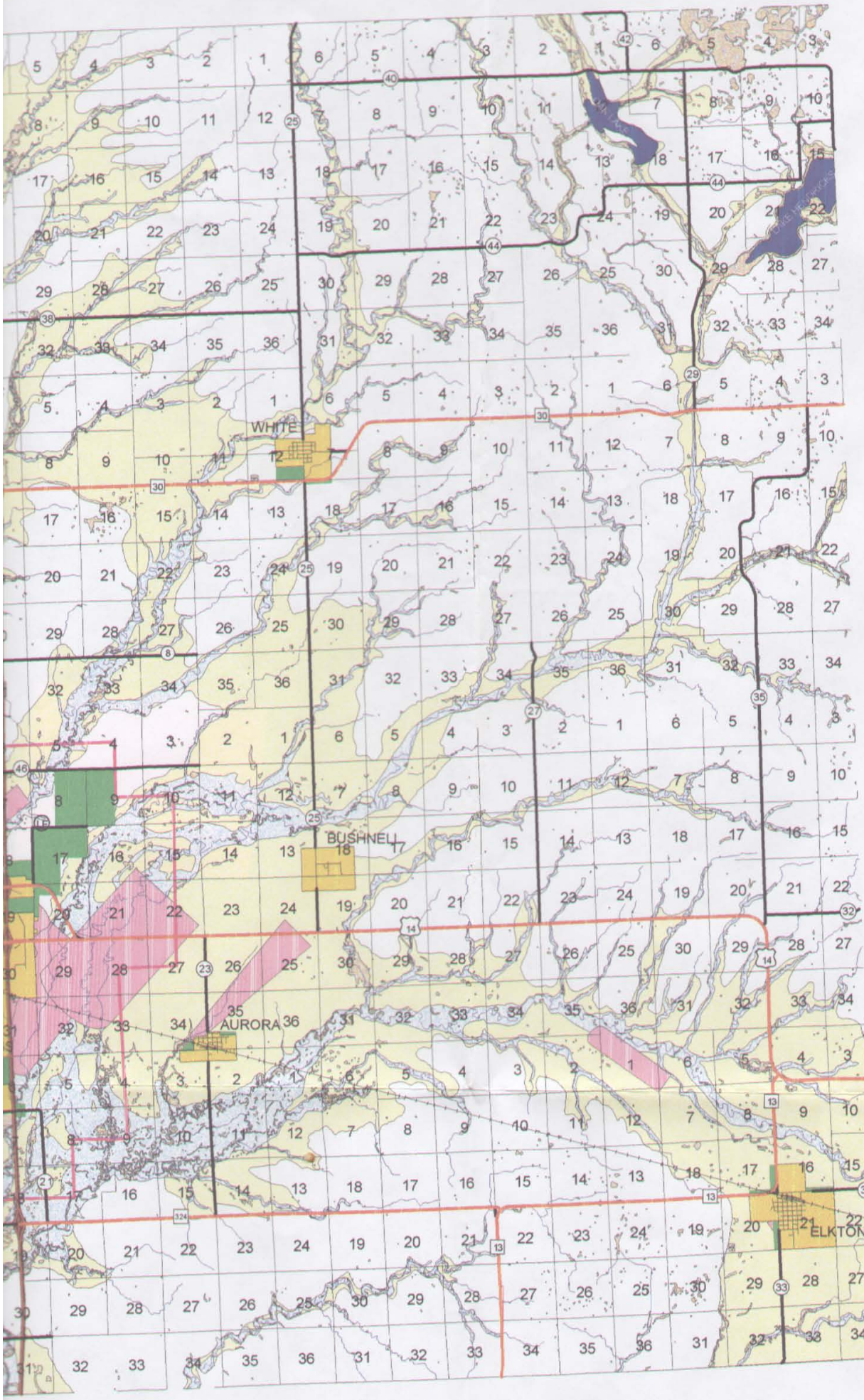
Dear Mr. Olson:

The selection of the Brookings Regional Airport expansion alternative by the City Council will initiate several municipal planning and zoning procedures. The Comprehensive Plan will be reviewed and modified as necessary to reflect the proposed changes. The city will subsequently pursue annexation and land use classification changes in all areas affected by the expansion. Any changes would be accompanied by appropriate zoning restrictions and regulations to insure no land uses would be permitted that would have an adverse impact on the operation of the airport.

Sincerely,

Dan Hanson
Planning, Zoning, and Housing
Administrator

DKH:dms



FUTURE LAND USE MAP
BROOKINGS COUNTY

PLANNING AREAS

- Municipalities - Areas of Development Opportunity
- Areas of Development Transition
- Areas of Development Stability
- City of Brookings/Brookings County Joint Jurisdiction Boundary

HYDROLOGIC FEATURES

- Lakes
- Big Sioux River
- Wetlands
- Streams and Rivers
- Floodplain
- Aquifer
- Wellhead Protection Area

TRANSPORTATION FEATURES

- Interstate 29
- State and Federal Highway
- County Highway
- County and Township Gravel Roads
- Railroad

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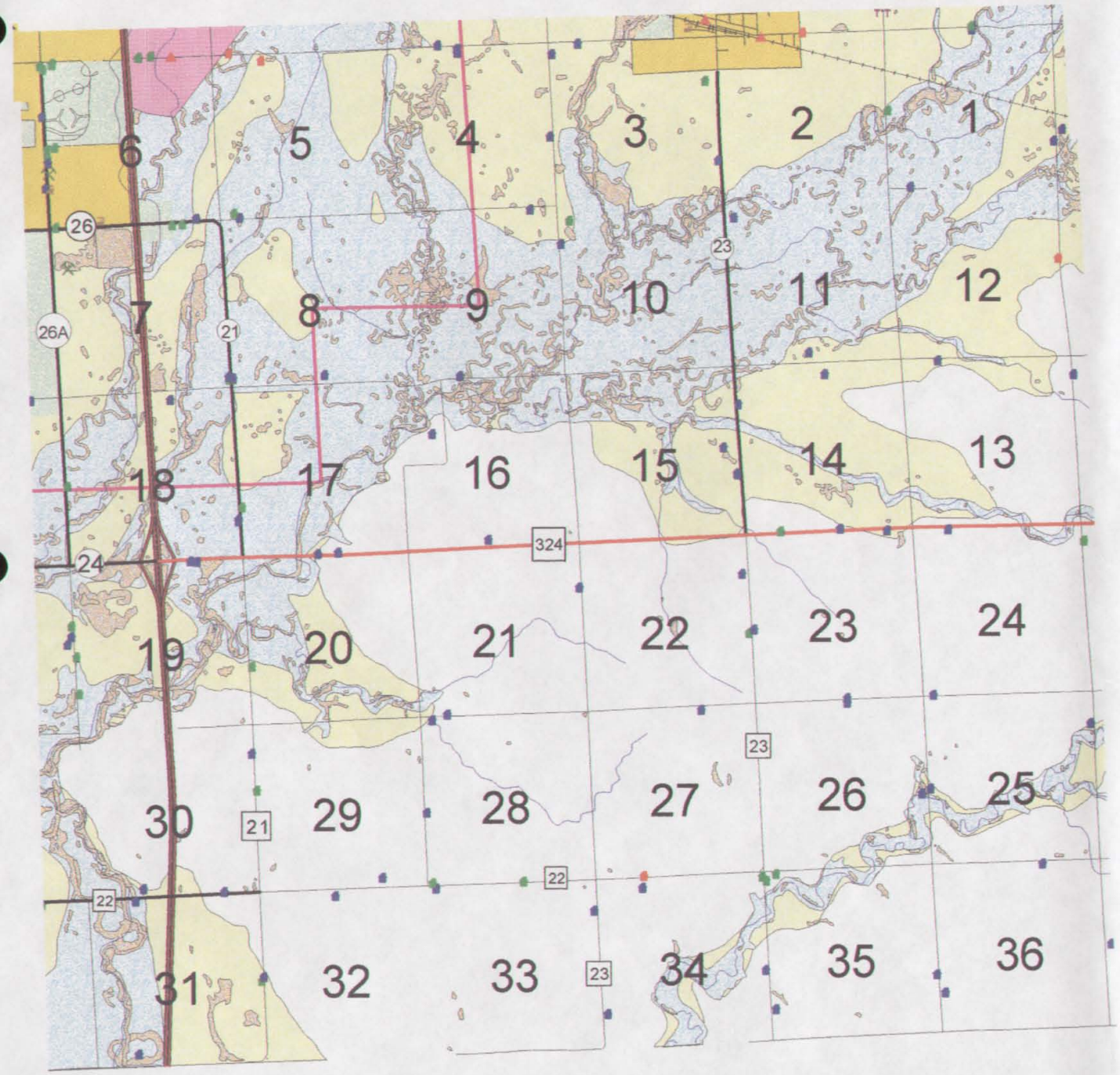
DEVELOPMENT MAP
TRENTON TOWNSHIP



PLANNING AREAS

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- Areas of Development Transition
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- City of Brookings/Brookings County Joint Jurisdiction Boundary

HYDROLOGIC FEATURES

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- Wellhead Protection Area

TRANSPORTATION FEATURES

- Interstate 29
- State and Federal Highway
- County Highway
- County and Township Gravel Roads
- Railroad

STRUCTURES

- Farm
- Rural Residence (Non-Farm)
- Abandoned Residences
- School
- Business
- Church

Special Features

- Cemetery
- Gravel Pit
- Utilities
- Landfill

N

HNTB Corporation
THE HNTB COMPANIES
Engineers Architects Planners

7900 International Drive
Suite 600
Minneapolis, MN 55425-8910

Telephone (952) 920-4668
Facsimile (952) 920-0173
www.hntb.com

RECEIVED
SEP 17 2007
SURFACE WATER PROGRAM

September 13, 2007

HNTB

Mr. John Miller
Surface Water Program
Dept of Environment and Natural Resources
Joe Foss Building
523 East Capitol Avenue
Pierre, SD 57501

Subject: Analysis of Alternatives for the Development of the Brookings Regional Airport in the City of Brookings, South Dakota

Dear Mr. Miller,

The HNTB Corporation is assisting the City of Brookings in the consideration of three alternatives concerning the provision of airport facilities and services – expansion of the existing airport, development of a new airport site and no expansion of the existing airport. An environmental assessment (EA) will be prepared in accordance with Federal Aviation Administration (FAA) policy. The EA will disclose the impacts on the environment of the three alternatives under consideration. The areas potentially affected by construction of the alternatives are shown on the attached maps. Your assistance is requested in identifying issues, concerns and resources that could be affected by development of these areas, permits that would be needed to implement the project, and measures to be considered in the mitigation of potential adverse effects.

Your response by October 1, 2007 would be greatly appreciated. Please contact me at 952-920-4668 if there are questions.

Sincerely yours,

HNTB Corporation

Andy Olson
HNTB Project Coordinator

Attachments: Location Map
Map showing Existing Airport Alternative Site
Map showing New Airport Site

RECEIVED
NOV 13 2007
MINNEAPOLIS
HNTB

AIR QUALITY DETERMINATION
It appears, based on the information, that the project will have little or no impact on the air quality in this area. This project is approved.
Approved By: Brad Schulz
Date: 11/8/2007
(605) 773-6038 Fax: (605) 773-5286
South Dakota Department of Environment
And Natural Resources

DEPARTMENT of ENVIRONMENT and NATURAL RESOURCES
PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

GREAT FACES. GREAT PLACES.

November 5, 2007

Andy Olson
HNTB Corporation
7900 International Drive
Suite 600
Minneapolis, MN 55425-8910

NOV 7 2007

Dear Mr. Olson:

The South Dakota Department of Environment and Natural Resources (DENR) reviewed the information provided dated September 13, 2007 concerning alternatives for the Development of the Brookings Regional Airport in the City of Brookings and has the following comments:

1. Best Management Practices (BMP) for sediment and erosion control should be incorporated into the planning, design, and construction of this project.

2. A Surface Water Discharge (SWD) permit may be required if any construction dewatering should occur as a result of this project. Please contact this office for more information.

3. A General Storm Water Permit for Construction Activities may be required. If you have any questions, please contact Stacy Splittstoesser at 1-800-SDSTORM (1-800-737-8676).

4. It appears that the new site will impact surface water bodies the least. However, impacts may occur at either site. These surface water bodies are considered waters of the state and are protected under the South Dakota Surface Water Quality Standards. The discharge of pollutants from any source, including indiscriminate use of fill material, may not cause destruction or impairment except where authorized under Section 404 of the Federal Water Pollution Control Act. Please contact the U.S. Army Corps of Engineers concerning this permit.

If you have any questions concerning these comments, please contact me at (605) 773-3351.

Sincerely,

John Miller
Environmental Program Scientist
Surface Water Quality Program

United States
Department of
Agriculture

Animal and
Plant Health
Inspection
Service

Wildlife Services

North Dakota
South Dakota

2110 Miriam Circle
Suite A
Bismarck ND 58501
(701) 250-4405

420 S. Garfield
Suite 300
Pierre SD
57501
(605) 224-8692

February 29, 2008

Final Report
Airport Wildlife Evaluation
Brookings Municipal Airport
City of Brookings, South Dakota

Prepared by: Timothy Pugh, Wildlife Biologist

I. INTRODUCTION

Wildlife Services was requested by the City of Brookings to identify and evaluate the wildlife hazards associated with two potential airport sites. The first site under consideration is the existing airport location (BKX) on the west side of the city of Brookings. In general, the area west of BKX is low agricultural land in the Big Sioux River drainage while the city of Brookings encompasses the area east of the airport. An interest in runway expansion and a need to keep the runway protection zones free of obstacles has prompted the city to explore changes to the current site. Also under consideration is relocating the airport to a new site. Six sections of land located approximately 4 miles southeast of Brookings in Trenton Township were identified as a possible relocation site. Specifically, these are Sections 21, 22, 23, 26, 27 & 28. For purposes of this report, this site will be referred to as "Study Area #5". Both sites are identified on the attached Map 1.

II. OBJECTIVES

1. Determine current and expected wildlife hazards associated with each site.

2. Identify features and activities on or within 5 miles of each site that could potentially contribute to wildlife hazards.

3. Evaluate each site for its suitability for an airport location, with respect to wildlife hazards.

4. Provide management recommendations aimed at minimizing wildlife hazards at each site.

III. METHODS

Initial visits to the Brookings area and the two sites were made during March, 2007 (14th - 15th, 28th - 29th). The various habitats of the two airport sites were identified and the observed wildlife activity on the two sites was noted.

With the aid of a vehicle, maps, and aerial photographs, the local habitats within the general zone were also identified. Additionally, all features expected to potentially

attract or influence hazardous migratory birds were identified. Utilizing these habitats and features, a 75 mile survey route around the Brookings area, with 15 observation points was established (Map 2.). The survey route was designed to sample bird activity in the dominate habitat types of the area. Some of the 15 observation points were located in rural areas in the surrounding habitats such as the Big Sioux River and Medary Creek floodplains. Other points were located at expected migratory bird attractants i.e. landfill, gravel pits, ethanol plant, a feedlot, Lake Campbell, wastewater treatment plant and the Brookings Airport.

The survey route was run a minimum of two times per month from April 10th through December 11th, 2007, with additional surveys conducted in October and November. Each month, at least one morning survey and one evening survey was conducted. Morning surveys began within one half hour of sunrise. Evening surveys were timed to end within one half hour of sunset. These times were chosen because these are the times of the day when bird activity is typically the greatest. At each of the 15 points, with the aid of binoculars, all birds considered most hazardous to aircraft were recorded. This included large bodied, slow moving flocking birds (i.e. gulls, waterfowl and pelicans) as well as hawks. Smaller birds such as blackbirds and starlings were recorded whenever they were observed in large flocks. All other birds were not recorded. Additionally, all hazardous birds observed while driving between points were recorded.

Each month, additional general notes of the habitats on and around the two airport sites were taken.

IV. BROOKINGS GENERAL ZONE

The first objective in evaluating the hazards or potential hazards associated with an airport site is to identify the features in the airport environment that are likely to attract or influence wildlife activity. The second is to determine if the movement of wildlife, primarily birds, to and from, or between, these attractants will put them in the path of an aircraft and increase the likelihood of a strike. All attractants within a 5 mile radius of the site were evaluated. A 5 mile radius, referred to as the "general zone' is recommended because aircraft normally have reached 2000 feet AGL within this zone. This level is significant because over 90% of bird strikes occur below 2000 feet.

Additionally, for airports that serve turbine powered aircraft, FAA Advisor Circular 150/5200-33B (Hazardous Wildlife Attractants on or Near Airports) recommends a separation distance of 10,000 feet for hazardous wildlife attractants i.e. landfills, wastewater lagoons, etc. In addition, FAA recommends a distance of 5 miles between the airport and an attractant that could cause hazardous wildlife movement into or across the approach/departure airspace.

All of the significant habitats and attractants within a 5 mile radius of each site were identified and evaluated. Information gathered during the surveys for each attractant is discussed below.

A. General Zone Habitats

1. Landfill. The city landfill is located just northeast of Brookings, approximately 4 ½ miles from BKX and 7 miles north of Study Area #5. During the initial surveys in March, it was noted that the landfill was already attracting gulls, crows and starlings. Gulls were the only hazardous birds at the landfill that were present in significant numbers during the study period. During March and April, gulls began to utilize the landfill in moderate numbers. During May and June, gulls were not observed at the landfill as they likely migrated north or began feeding or nesting in the out lying areas. In July, gulls began to accumulate at the landfill in increasing numbers. As many as 2500 gulls were observed at the landfill at any one time from August through October (See Figures 1 and 2). Gulls remained in the area until December.

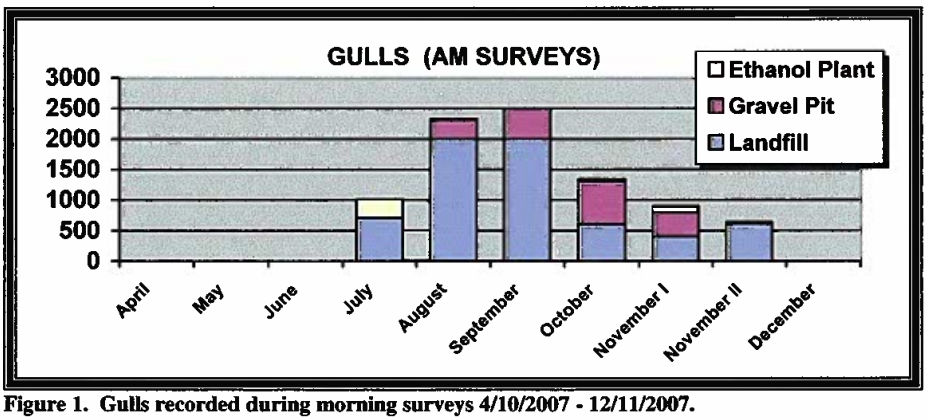


Figure 1. Gulls recorded during morning surveys 4/10/2007 - 12/11/2007.

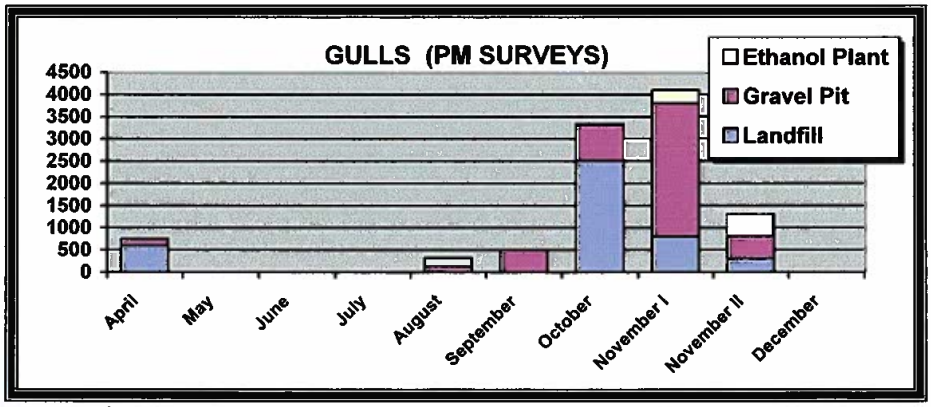


Figure 2. Gulls recorded during evening surveys 4/10/2007 – 12/11/2007.

2. Ethanol Plant. An ethanol plant is located at Aurora, SD, approximately 4 miles north of Study Area #5 and 5 miles east of BKX. Distillers grain, a corn based by-product of ethanol production is attractive to gulls. Gulls were occasionally observed

feeding at the ethanol plant. Numbers of gulls observed during the surveys ranged from 0 to about 300 (See Figures 1 & 2).

3. Gravel Quarries. Several sand and gravel quarries are located in the area. Most of these are concentrated along I-29 south of Brookings. These are located approx 2-3 miles east and southeast of BKX and approx 2-4 miles northwest of Study Area #5. These pits continue to expand and new ones are being created in the area. During the study, a new quarry appeared to open slightly more than a mile northwest of Study Area #5 (see Pit #5 on Map 3.). These pits attracted geese, ducks and gulls throughout the study. The primary area utilized by gulls was a shallow sandbar area on the north side of gravel Pit # 1 (See Map 3.). Gulls used this spot for staging and loafing throughout the day. Ducks and geese were also attracted to this sandbar area in smaller numbers. Only occasionally were gulls seen on other gravel pit areas. This open, un-vegetated sandy area provided the gulls an area to loaf, access water, and good visibility (their main protection from predators). This was the only area of this type noted in the quarries. These types of areas should be eliminated and prevented. It should be relatively easy to have the gravel companies take measures to avoid creating areas such as this.

Although several pairs of geese nested around the quarries and had successful nests, their movements in the summer are minimal. The gravel pits did not create hazards during the summer months. However, in the late fall, when waterfowl began to migrate through the area, geese utilized the gravel Pit #3, west of Interstate 90. As many as 1000 geese at any one time utilized this pit until cold weather froze the lakes and the geese were forced to move on. Except for Pit #3 in the fall, geese were not noted in large numbers on any pit at any time of the year.

The future expansion of gravel mining in the area should be considered. Gravel mining appears to be expanding to the south and east, towards Study Area #5. Gravel Pit #5 may already be becoming a hazard for an airport located in Study Area #5. Additional gravel pits could become waterfowl attractions and should not be developed within 10,000 feet of either airport site. The City of Brookings should ensure that future gravel pits are not created anywhere that would cause increased hazards for aircraft.

4. Waste Water Treatment Facility. The wastewater treatment facility located ~3.5 miles south of BKX and ~4 miles west of Study Area #5, was within the general zone of both airport sites. This plant is enclosed and does not allow hazardous birds to access it. It is therefore not an attractant. Three pairs of geese did raise successful nests on the small pond next to the facility. This pond was similar to many small ponds of the area and did not pose any hazard.

5. Feedlot. One medium sized cattle feedlot is located adjacent to the southwest side of Study Area #5. Other small livestock feeding operations are common in the Brookings area. Feedlots have the potential to attract large numbers of flocking birds, especially starlings during late fall and winter. More and more, feedlots are feeding distiller grain, the by-product of ethanol plants. Distiller grain is very attractive to gulls. Gull activity at

feedlots in general is becoming a significant problem in eastern South Dakota. Gulls however, were never observed at this feedlot during the surveys. About 1000 starlings were observed feeding at this location during the November observations. Large feedlots are generally not compatible with an airport. It is uncertain how this feedlot will influence hazardous birds. If and when a runway location is determined at Study Area #5, further monitoring may be required to determine its influence. There is a possibility that this feeding operation may not be compatible with airport operations.

6. Wetlands and Watersheds. The Big Sioux River and its tributaries, Six Mile Creek, Medary Creek and Deer Creek, and their network of smaller tributaries are located in the Brookings area. In early March, frozen ground and massive snow melt created considerable open water in these areas. Flooding of roads, cropland and hayfields created tremendous marsh and wetland habitat attractive to waterfowl. It was a good opportunity to observe where water accumulates, how it moves during periods of high water and what areas were most attractive to waterfowl. The floodplains identified on the attached Map 1. is representative of the flooded areas.

The flooding of the Big Sioux River and Six Mile Creek area north, west and south of the current BKX site was much more massive and widespread than the Medary Creek and Deer Creek areas north of Study Area #5. The fields adjacent to the Big Sioux River north of about 220th Street is very wide and flat with several tributaries flowing into the Big Sioux River. This created a contiguous area of flooded crop, hay and pasture land 3 to 5 miles wide that extended for many miles to the northwest of BKX. As the Big Sioux River floodplain continues to the southeast, south of approximately 220th Street, it becomes more narrowed.

The floodplain habitats of Medary and Deer Creek were very similar to that of the Big Sioux River. However, their widest areas were only about 1.5 miles across.

Several large groups of geese (a few hundred to several thousand) and early ducks were present in mid to late March. However, the extreme numbers of migrating waterfowl that were likely present at times during this migratory period were not seen as they had already passed through the area. The bulk of the waterfowl that were present during the study period were found predominately in the vast floodplain of the Big Sioux River area north of 220th Street. Except for some smaller groups, most waterfowl appeared to avoid the areas south of 220th Street or east of Interstate 29.

In early April, flooding and standing water in the Big Sioux and Six Mile Creek area was still substantial but was greatly diminished in the Medary & Deer Creek area. The Brookings area in early April still had some large groups of snow geese in the area and numerous ducks, predominately northern shovelers. Several pairs of giant Canada geese were establishing nesting territories.

Water levels and flooding in these drainage areas did subside as spring passed and summer came on. As the water dissipated from the area, crops and tall vegetation

emerged. The waterfowl dispersed to nest. Occasionally nesting pairs of geese were seen near open water. Rarely were ducks observed.

As fall neared, these creek areas were dried and did not attract the large groups of waterfowl as they did in the spring.

7. Lake Campbell. Lake Campbell is a large lake located about 6 miles southwest of Brookings. Although Lake Campbell is located more than 5 miles from either airport site, it attracts and holds many of the hazardous birds (gulls, waterfowl and pelicans) that fly through the airport general zones.

8. Agricultural Land. Most of the area around Brookings is used for agriculture in one form or another. Various farming practices and well as crops influence bird activity and movement. Gulls were noted on a few occasions feeding in crop fields. This is expected in the spring and fall when farmers are working their fields. Ducks utilized the tall grass areas for nesting while geese used the more open areas near water. The agricultural lands were not used much during the summer by waterfowl. However, the migratory waterfowl that concentrated in the Brookings area in October and November, fed heavily in the harvested crop fields.

9. City Influences. Urban environments usually contain many bird attractants i.e. parks, lakes, structures, food facilities, grain elevators etc. No birds in hazardous numbers were noted in the urban area of Brookings. The only city attractant of concern identified was the mature trees adjacent to the BKX airfield which will be discussed further in section V.

B. General Zone Bird Activity & Discussion

During the study, the hazardous bird groups present in significant numbers were waterfowl, gulls and blackbirds. Individual hawks were present on occasion. Other hazardous birds such as pelicans or herons were common in the area but either, were not seen in large groups or did not utilize habitats close to the airport. Habitats and attractants influence the number of birds in the area and how they move around the area. This study attempted to understand this relationship, which is a key to determining bird movements through aircraft flight paths in the general zone.

1. Waterfowl.

Spring. In March and early April, the Brookings area attracts massive numbers of waterfowl. Tens of thousands of snow and Canada geese pass through the region as they work their way north toward Canada and the Arctic to nest. As these geese migrate through the area, their movements cannot be controlled. They become a threat to all aircraft in the area, regardless of where an airport is located. However, many of these geese will stop over in the Brookings area to rest and feed as they wait for more favorable conditions to continue their migration north. As discussed above, the open crop and hay

land of the Big Sioux River floodplain had massive amounts of water from snow melt during this time. Many road ditches were full of water and there was considerable standing water throughout the area. Along with its tributaries, the Big Sioux floodplain to the west of BKX was 3 to 5 miles wide in most areas. The flooding of Six mile Creek on the north side of BKX created open water within ¼ mile of the airfield. Waterfowl that concentrated in the Brookings area mainly utilized the Big Sioux floodplain west of BKX to feed and rest. For this reason, the floodplain area of the Big Sioux River, immediately west of BKX becomes a highly hazardous area for planes flying over it for 4 to 6 weeks (early March to mid April) every spring.

The floodplains of Deer Creek and Medary Creek did attract some ducks and small groups of geese as well. However, these floodplains are narrow, compared to the large expanse of the Big Sioux floodplain west of BKX and did not attract large numbers. Additionally, as noted above, the Big Sioux River floodplain as it continues to meander south and east of BKX becomes more narrowed. Therefore, waterfowl in general during this period, tended to concentrate in the large floodplain area west of BKX. Waterfowl activity near Study Area #5 appeared to be considerably less, as the area floodplains were a little farther away from the site and held considerably less birds. Additionally, the smaller floodplains of Medary Creek and Deer Creek drained and dried up much sooner than that of the Big Sioux River.

Summer. After the large migratory groups passed through the Brookings area, very little hazardous waterfowl activity took place through the summer months. Ducks and geese disperse to nest. Nesting pairs of Giant Canada geese were occasionally seen throughout the area but were rarely seen in flight. For a few weeks in early summer, the adult geese and their goslings are flightless. They spent much of the summer feeding on vegetation and loafing on adjacent water. Waterfowl pose little hazard at this time of year.

Fall. In the late fall, when the migratory waterfowl returned to eastern South Dakota, the massive wetlands of the Big Sioux River floodplain were gone. The bulk of the geese moved on to the large lakes farther to the west of Brookings, between Arlington and Lake Preston. Only about 1000 geese were noted in the Brookings area at any one time during the surveys. They arrived in the area in early November and remained for a few weeks until the area wetlands froze. For whatever reason, these geese appeared to mainly use gravel Pit #3 (Map 3.) for a staging/resting area. The Brookings area is surrounded in cropland and the geese fed in harvested crops throughout the area. It is likely that other small wetlands in the area were utilized by geese as well. The Brookings area has considerable water and cropland to support fall migrating geese. It is impossible to predict which wetlands and crops will be used by geese at any one time or year. Since the gravel pits appear to provide large bodies of protected water, it is likely some geese will use them in the future. Although goose numbers were not particularly high, they could increase in the future. The gravel pits vary from 13,000 feet to 21,000 feet from each site. Fall migrating geese should not influence decisions on where to locate an airport. However, NOTAM's should be issued whenever fall geese are in the area.

2. Gulls.

Spring. Gulls moved into the area early in March and April. These gulls were attracted to the landfill and gravel pits. In late April the gulls dispersed to nest, feed in agricultural fields and/or migrate to other areas.

Summer and Fall. In July, the gulls began returning to the area. It appeared that the gulls frequented 4 locations in the Brookings area: Lake Campbell, gravel Pit #1, the landfill and the ethanol plant. On a daily basis, gulls appeared to leave the Lake Campbell area in the morning and trickle to the sandbar area of gravel Pit #1. After staging there for a while they would fly to the landfill to feed, and loaf through most of the day. Occasionally during the day, some gulls would feed at the ethanol plant or return to the gravel pit to loaf or get water. In the evening the gulls would return in small groups to the gravel pit before making their way back to the Lake Campbell area. This daily pattern is diagramed on Map #3. Gull counts in the area ranged from about 1000 in July and built to a peak of over 4000 in November (See Figures 1 & 2). With the cold weather and lack of open water, gulls left the area by December.

Although the landfill is 4.5 miles from BKX and 7 miles from Study Area #5, it contributes to attracting gulls through the general zone and through the flight paths of planes using both airport sites. The path the gulls currently take brings them within approximately 10,000 feet of BKX and 15,000 feet from Study Area #5. Although this is still a considerable distance from the two sites, it would be prudent to eliminate this hazard if reasonably possible.

The landfill appears to be the main attractant influencing gull movements in the area. Currently, it is a reliable food source that gulls utilize on a daily basis, for at least part of the year. Eliminating the attraction that the landfill poses will likely cause the gulls to feed somewhere else, most likely out of the area altogether.

The ethanol plant at Aurora provides a food source on a frequent basis. However, it does not always have distillers grain available. Since it is not be a reliable food source, it will not keep the gulls in the area by itself.

Spending time at the sandbar area on the north side of gravel Pit #1 is also part of the gulls' daily routine. Eliminating this sandbar area from the gravel pit may cause the gulls to change their route. It will not however, cause them to stop feeding at the landfill. If any more gravel pits are established in the area, it would be wise to ensure that any shallow sandbar areas are not created.

The City of Brookings should strongly consider implementing a gull control program at the landfill. By taking effective measures to exclude gulls from feeding at the landfill, the city will likely eliminate gull hazards to aircraft at both airport sites. Additionally, gull control will reduce the nuisance and human health concerns that likely exist at the landfill.

3. Blackbirds and Starlings.

Tens of thousands of flocking blackbirds typically migrate through the Brookings area in spring and fall. During the spring migration, when food is limited, the blackbirds will feed in stubble fields and occasionally at feedlots. In early April, these large flocks of blackbirds were in the Brookings area. A few were noted feeding around livestock but none were observed feeding at the feedlot on the southwest corner of Study Area #5.

Starlings often congregate around livestock feeding areas in fall and winter. Approximately 1000 starlings were observed at the feedlot near Study Area #5 in November. It certainly has the potential and likelihood to attract many more through the winter months. As noted above, if an airport is located at Study Area #5, further monitoring should be conducted. Depending upon where an airport is located, this feeding operation may need to be removed.

V. BROOKINGS REGIONAL AIRPORT (BKX) SITE

A. BKX Habitats.

There are several features and habitats on and adjacent to the BKX site that influence hazardous bird activity. These habitats were monitored through the duration of the study and are discussed below.

1. Sewage Lagoons. Four sewage lagoons are located on the BKX airfield. Open water and sewage typically attracts a variety of hazardous birds including waterfowl, gulls and crows. These lagoons had only a small amount of water and muck during the most of the study and therefore, no hazardous birds were observed. Sewage lagoons are not compatible with airport operations. Not only should these lagoons not be used for sewage, they should be removed so that rain water and snow melt do not accumulate in them.

2. Airfield Drainage. Many of the ditches on the airfield and along the runway/taxiway areas contained standing water through the spring and early summer. The drainage system on the current or any future airfield will need to be modified or designed so that rainwater and snowmelt is quickly drained from the airfield. Wetland vegetation grew well in the wet ditches and created attractive habitat adjacent to movement areas. Wetland vegetation is best controlled by keeping the airfield free of standing water. However, if wetland vegetation does emerge on the airfield, it should be controlled.

3. Six Mile Creek. As Six Mile Creek passes through the airfield to the north, it creates a cattail marsh area which attracts nesting/loafing ducks, nesting/roosting blackbirds, and an occasional heron or other wading bird. Pheasants utilizing the airfield also use this area for cover. The creek on and adjacent to the airfield will need to be modified to

eliminate this attractive habitat. An underground canal that prevents wildlife from accessing open water and prevents wetland vegetation may be a good way to accomplish that.

4. Crops. Small grains, row crops and alfalfa should not be grown on the airfield. These crops produce seeds or attract insects which in turn attract rodents and small birds. These small prey species attract large bodied hawks which were routinely noted on the airfield and pose a hazard to aircraft. All alfalfa and crop areas on the airfield should be replaced with warm season grasses. Vegetation should be maintained at a height that does not attract hazardous birds, typically between six and twelve inches.

5. Living Snow Fence. The shrubs along the southeast perimeter fence were planted to control drifting snow. It did not appear that these shrubs were attracting anything more than a few very small birds. They should be monitored. If they grow to a point that they create perches for hawks or provide cover for medium sized mammals (rabbits and coyotes) they should be pruned or removed to eliminate their attraction.

6. Adjacent Trees. Adjacent to the BKX airfield along its south side are many mature trees. These are mostly associated with residential homes and cemeteries. Although they create attractive perch sites for hawks and potential nesting/roosting sites for a variety of birds, no hazardous birds were observed utilizing these trees during the study. If the airport remains at this site, these trees will always be an attractant to perching, roosting and nesting birds.

7. North Lakes. Two small manmade lakes lie to the north of BKX. The first is a small lake that lies a half mile north of BKX. Although hazardous birds were not observed on this lake, it undoubtedly holds birds at times. Currently this lake lies 3000 feet from the current crosswind runway and less than 1000 feet from the approach/departure path. If any future runway alignments direct aircraft flight paths over or near this lake, it should be removed. A second lake is about ¾ of a mile northeast of BKX. It is very small and surrounded by townhomes. It did not contain birds during the study and it is doubtful that it will attract much in the future.

8. Other. Richardson's ground squirrels have colonized on part of the eastern side of the airfield. These rodents not only do damage to airport turf and electrical systems, but also attract predatory birds and mammals. The ground squirrels on the airfield should be removed. Additionally, deer are common on the BKX airfield. A wildlife fence of at least 10 feet in height is required to effectively exclude deer. Since parts of the perimeter fence are less than 10 feet, deer are likely jumping the fence at these locations. All sections of the BKX perimeter fence should be increased to a height of 10 feet.

B. BKX DISCUSSION

As discussed above, this current airport location in Brookings has several items onsite that should be addressed to reduce potential hazards to aircraft. Some of these can be easily corrected. Others, such as the wetlands onsite will take more effort and expense. Others, such as the adjacent trees in the cemeteries and residences will probably not be done.

Offsite, the major issue for this BKX site is the enormous number of waterfowl that utilize the large floodplain immediately to the west of BKX for 4 to 6 weeks each spring. This area creates an extremely hazardous situation for this short period. Little if anything can be done to modify this habitat or discourage migratory waterfowl from utilizing this area. Planes approaching and departing BKX from the southeast would avoid flying over the floodplain. A runway alignment that parallels the Big Sioux River floodplain (340/160) is likely the only way to avoid this hazard. Except for advising pilots of the potential hazards associated with flying over the area northwest of BKX (NOTAMS), Wildlife Services is unaware of anything else that can be done to minimize this safety threat.

Immediately to the east and southeast of BKX, the city of Brookings does buffer wildlife hazards to a large extent. Except for occasional geese in spring and fall that fly over the city, the city attracts relatively few hazardous birds.

The pattern of daily gull movements in the Brookings area, while 12,000 feet or more from the airfield, poses a moderate hazard. The attraction posed by the landfill attracts gulls through the airspace of planes approaching the main runway from the southeast. Eliminating the landfill as a food source for gulls would likely be the best way to decrease gulls in the Brookings area and minimize their general threat to aircraft.

The numbers of migrating geese utilizing the Brookings area in the fall may vary greatly from year to year. Which wetlands and which crop fields they utilize will always be unpredictable. Many did fly over the city and did pose a small hazard to aircraft at BKX. It is uncertain if the gravel pits play a role in the annual abundance of waterfowl in the Brookings area each fall. Overall, fall waterfowl only presented a small hazard in the Brookings area, and there appears to be little that can be done to control the hazard that they do present.

A Review of Issues and Considerations for the BKX Site	
A	Wastewater lagoons need removed from the airfield or modified so that they cannot hold water.
B	Drainage ditches need to be put underground or modified so that they do not hold water on the airfield for any length of time.
C	Wetland vegetation associated with drainage ditches will need controlled.
D	Six Mile Creek will need modified so that open water and marsh habitat will be eliminated from the north side of the airfield.
E	Crops on the airfield need replaced with a grass hay and managed so that it does not attract hazardous birds.
F	Ground Squirrels on the airfield should be controlled.
G	Increase all sections of the perimeter fence to at least 10 feet in height, to exclude deer.
H	Trees at residences and cemeteries will continue to be unavoidable bird attractants.
I	Living snow fence will need monitored. Pruning or removal will be necessary if it becomes an attractant.
J	The manmade lake to the north may need removed if it is near the approach/departure space of a new runway.
K	Attraction of the landfill should be removed.
L	Flooding of the Big Sioux and Six Mile Creek in early spring create massive wetlands within 1/4th mile of BKX. Migrating waterfowl utilize the floodplain create **severe** hazards for aircraft for 4 to 6 weeks each spring.
M	Ensure that open sandbars and shallow areas are not created on gravel pits.

VI. STUDY AREA # 5 SITE

A. Study Area #5 - Habitats.

This site consists mainly of undeveloped agricultural crop land. Natural drainages, rural farm houses, trees and shelterbelts were the only features of significance identified on this site.

1. Agricultural Land. All 6 sections of this study site are predominately croplands. To ensure that the airfield does not become an attraction to hazardous birds, all crops within the perimeter of an airport should be re-vegetated with warm season grasses that discourage migratory birds. The grass can be managed as a hay crop. Grass height should be maintained at a length that does not attract hazardous birds. Typically, a height of 6 to 12 inches will discourage gulls and geese while not providing cover for pheasants and medium sized mammals.

2. Trees and Shelterbelts. Trees provide perches for a variety of birds. Hawks and owls will be the birds most likely to pose a hazard at this site as it currently exists. Flocks of grackles and other blackbirds may also be a concern as they often utilize these shelterbelts to nest and roost. All trees and shrubs should be removed from the airfield, regardless of where a runway may be located.

3. Drainages. Study Area #5 is outside of the floodplain of the major drainages in the area. The largest drainage on this site passes through the southeast corner of the site. It contains several pockets of open water, but it is not very wide and moves very slowly, even when spring runoff was at its peak. Although there are some small cattail wetland areas associated with this drainage, most of it is in grazed pasture land. Wetland vegetation appears to be minimal. This drainage continues to meander toward the southwest in a low valley where it eventually empties into the Big Sioux River three miles south of Study Area #5. No birds were observed using this waterway during the study. It appears to be a very minor attraction. However, any airfield location should be located such that is does not have open water. Therefore, if this drainage is located on a proposed airport, it will need to be modified so that it does not create open water or wetland vegetation on the airfield.

Other small drainages and ditches are located on this site. Any parts of these drainages that become part of an airport should be modified so that open water and wetland vegetation are prevented on any airfield.

4. Other. Regardless of what habitat management takes place on a new airfield, deer are common throughout the area and will frequent the airfield. A deer proof perimeter fence of at least 10 feet in height will be required effectively exclude deer from the airfield.

B. Study Area # 5 - Discussion

This undeveloped site has relatively few onsite issues. As discussed above, the trees and cropland should be relatively easy to alter if an airfield is established at Study Area #5. Depending upon where an airfield is situated, drainages may or may not be difficult to avoid or alter.

No significant wildlife attractants were identified to the east of this site and attractants to the south of the site were minimal as well.

The Big Sioux River floodplain lies three miles west of this site and begins to narrow as it continues southeast. The concentration of spring waterfowl activity is therefore a considerable distance away. South to southwest of Study Area #5 the Big Sioux River floodplain narrows considerably and is only a minimal attractant to waterfowl. The Medary Creek floodplain lies a mile to the north and northwest of this site. It does attract some geese and other waterfowl in the spring, but not in extreme numbers as does the Big Sioux River floodplain west of BKX. This is not to say that the tens of thousands of migrating geese that pass over in the vicinity of Study Area #5 site do not create a hazard to aircraft. They do. However, those geese that stay and rest in the Brookings area tend to utilize the more massive floodplain habitat of the Big Sioux River west of BKX rather than the more narrowed floodplain habitat of Medary Creek, Deer Creek and the Big Sioux River southwest of Study Area #5. Furthermore, the Medary Creek and Deer Creek floodplains dry up a few weeks sooner than the Big Sioux River, and therefore are attractive to waterfowl for a shorter period.

Gulls traveling daily between Lake Campbell, gravel Pit #1 and the landfill pass within 17,000 feet of the northwest corner of this site. This is not considered a severe hazard but since these gulls will potentially pass through the flight path of aircraft using this site (depending upon where a runway might be located), there is an increased potential for a strike. It would be prudent for the City of Brookings to take measures to eliminate the landfill as an attractant. Similarly, the ethanol plant at Aurora attracts some gulls to within 4 miles of this site and is a small threat. Eliminating gull activity at the landfill will likely eliminate activity at the ethanol plant. Similarly, the ethanol plant may wish to take measures to exclude gulls. As the ethanol plant continues operation, especially if production increases, it may become an even greater attractant. Avoiding a north/south runway alignment at Study Area #5 will keep the landfill and the ethanol plant from being in the direct route of approaching/departing aircraft.

Gravel Pit # 3, about 15,000 feet northwest of Study Area #5 held a small number of geese (~1000) during the fall migration. These geese fed in crops throughout the area, including the Study Area #5 site. Fall migrating geese that stop over and utilize the Brookings area will be difficult to control. Although they did pose some hazard, it is an unavoidable hazard. Future growth of gravel pits in the area could influence this hazard considerably.

Finally, as discussed in section IV. A 5, the feedlot adjacent to the southwest corner of this site may be an unacceptable hazard attractant for this site. This will depend upon where an airfield is located and the number and types of birds that may be attracted to this site. This feedlot should probably be kept at least 5000 feet from a runway. This distance may need to be further if the feedlot expands or bird activity at the feedlot is greater than observed during the study.

Aligning runways so they are not in line with any of the hazardous attractants in the general zone would be the ideal situation. However, this is not possible as whatever alignment is chosen, it will be in line with the gravel pits, landfill, ethanol plant and/or the area flood plains. As discussed earlier in this section, avoiding a north/south runway if possible is probably the best approach of all choices.

A small gravel pit is being developed approximately 6500 feet northwest of Study Area #5 (Pit #5, Map 3). At this point this is a small pit and is not attracting hazardous birds. Future growth of this pit and others could lead to further increases in bird hazards in the area. If an airport is located at Study Area #5, Brookings should, at a minimum, ensure that large gravel pits that attract waterfowl and gulls are not created within 10,000 feet of this site.

Review of Issues and Considerations for the Study Area #5 Site	
A	Land on the airfield will need replaced with a grass hay and managed so that it does not attract hazardous birds.
B	Trees on or near the airfield will need removed.
C	All drainages on the airfield will have to be modified so that open water and wetland vegetation will be prevented.
D	A deer proof perimeter fence of at least 10 feet in height will be required effectively exclude deer from the airfield.
E	Avoiding North – South runway alignment is preferable
F	Attraction of the landfill should be removed.
G	Monitor gravel pit expansion and ensure gravel pits are not created within 10,000 feet.
H	Keep feedlot a safe distance from airfield. Eliminate feedlot if it creates hazards at the airport.
I	Ensure that open sandbars and shallow areas are not created on gravel pits.

VII. CONCLUSION

Both sites under consideration have issues on and offsite that will need addressed if they are to be used as an airport now or in the future. WS has attempted to identify all of the

major wildlife related issues that should be considered for each site. In making a final choice on airport locations, WS believes that there are two very critical issues that must be considered. The first is the fact that the floodplain area west of BKX is a severe hazard for 4-6 weeks each spring. This hazardous area cannot be changed. Whether a runway alignment is developed to avoid this area or pilot advisories are put into place, the fact remains that planes flying over this area will be subject to a highly hazardous situation for those few weeks each year.

Secondly, the future growth and expansion of the sand and gravel industry in the area needs to be understood. Gravel quarries create permanent open water lakes and ponds. Their future growth will influence hazardous bird numbers and movements throughout the area. Most importantly is the fact that these quarries appear to be increasing in the direction of Study Area #5. If Study Area #5 is to be considered as a future airport site, the City of Brookings should ensure that gravel pits are not created near the airport or anywhere that would cause increased hazards at this site.

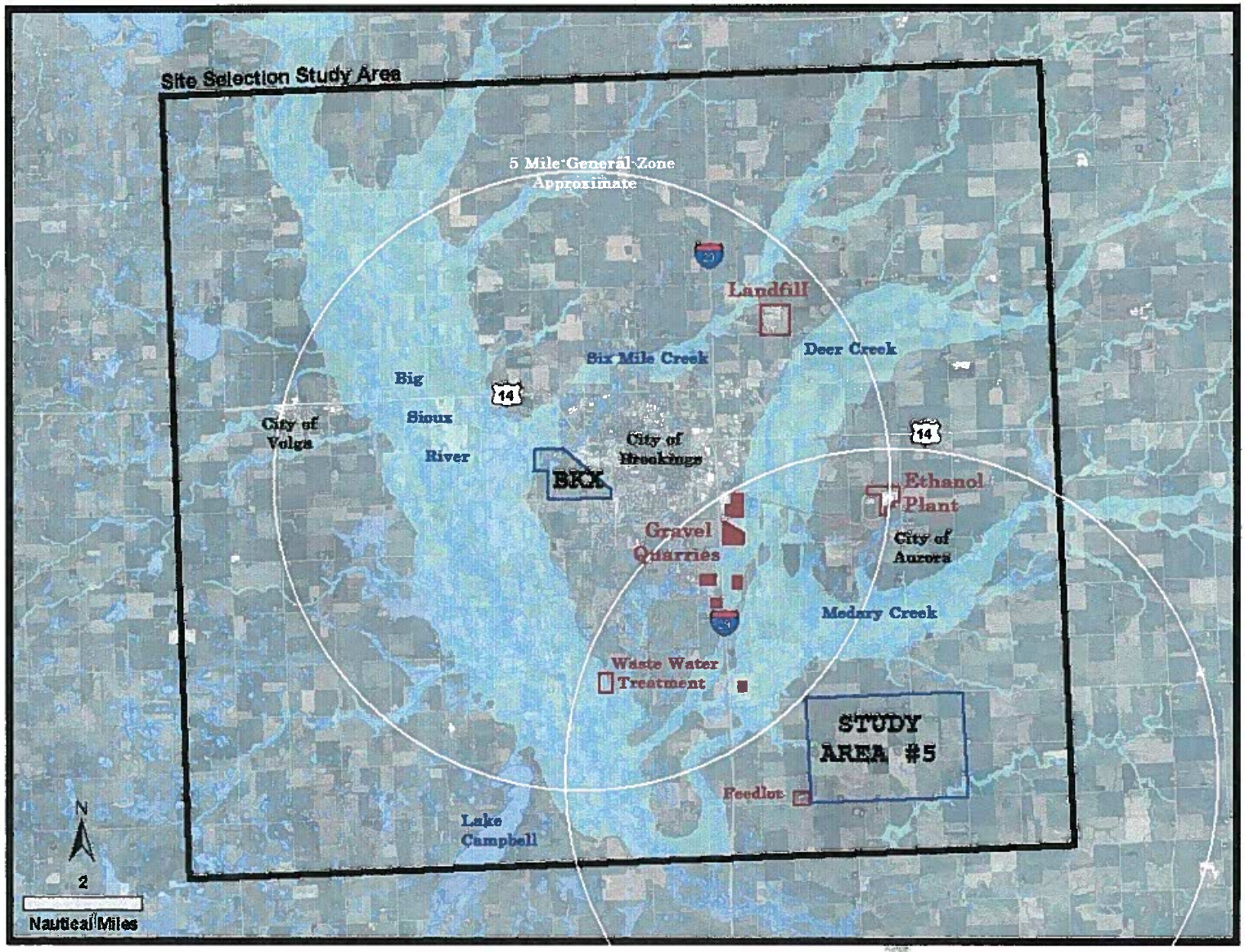
To a lesser extent, but still very important is the effect the landfill ultimately has on gull movements through the general zones and flight paths of both sites. Regardless of which site is chosen, measures should be taken to eliminate the landfill as an attraction.

This study included the time period from late spring through the completion of the fall migratory period. WS believes that this time and effort was necessary, and adequate, to identify the major influences in the area and to gain an understanding of the movements of hazardous birds in the area. However, the general zones of the two sites comprised over 120 square miles of land. Surveys and observations were conducted over a mere two day period each month, in most cases. Once final decisions on the future Brookings airport have been made and any construction changes have taken place, a formal, year long wildlife hazard assessment should be conducted. This will provide a more in depth and detailed understanding of the major and minor hazards associated with the airport that could not be gained through this broad study.

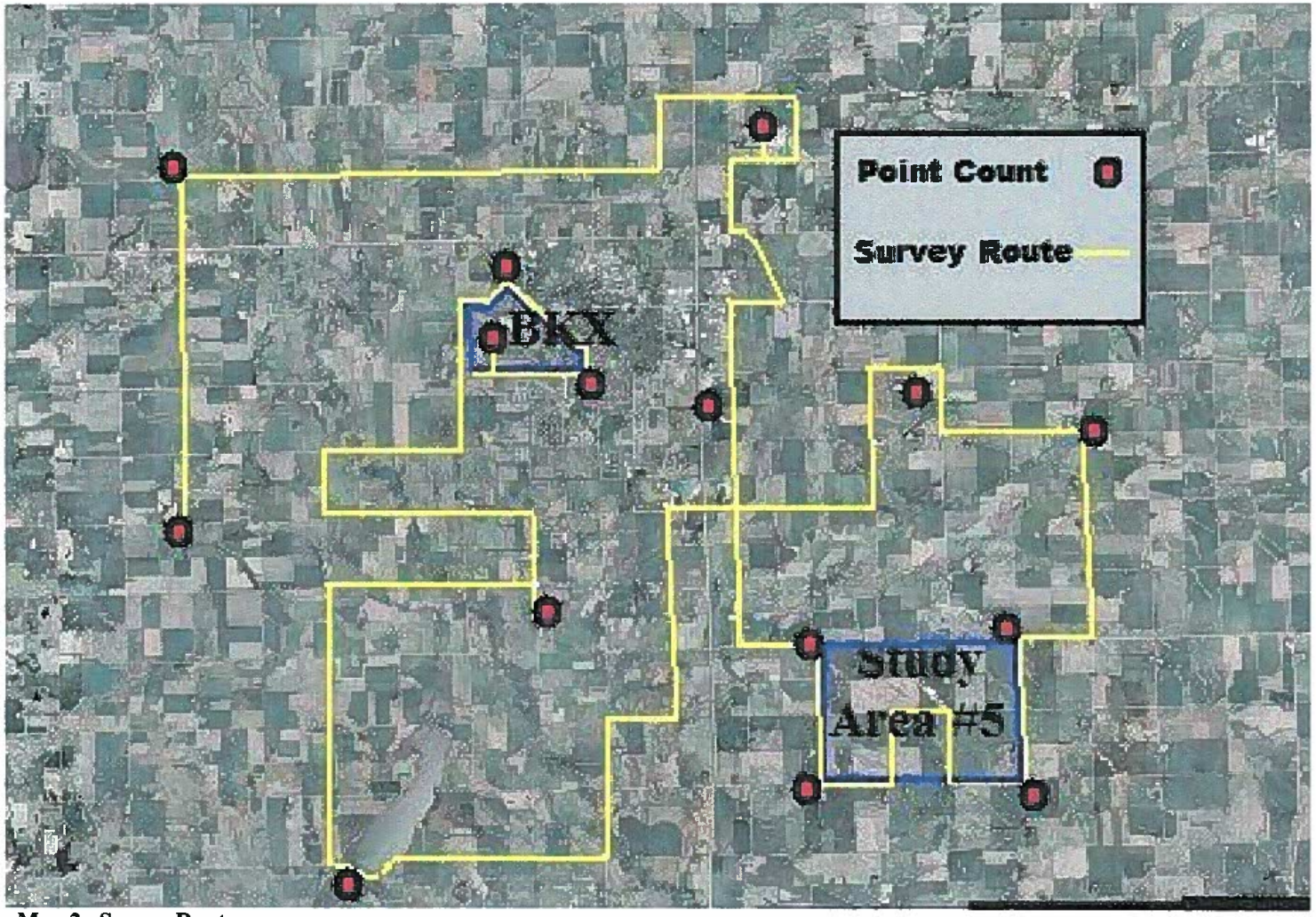
If you have any questions or want to discuss this report further, please contact Tim Pugh at (605) 224-8692.

Attachments:

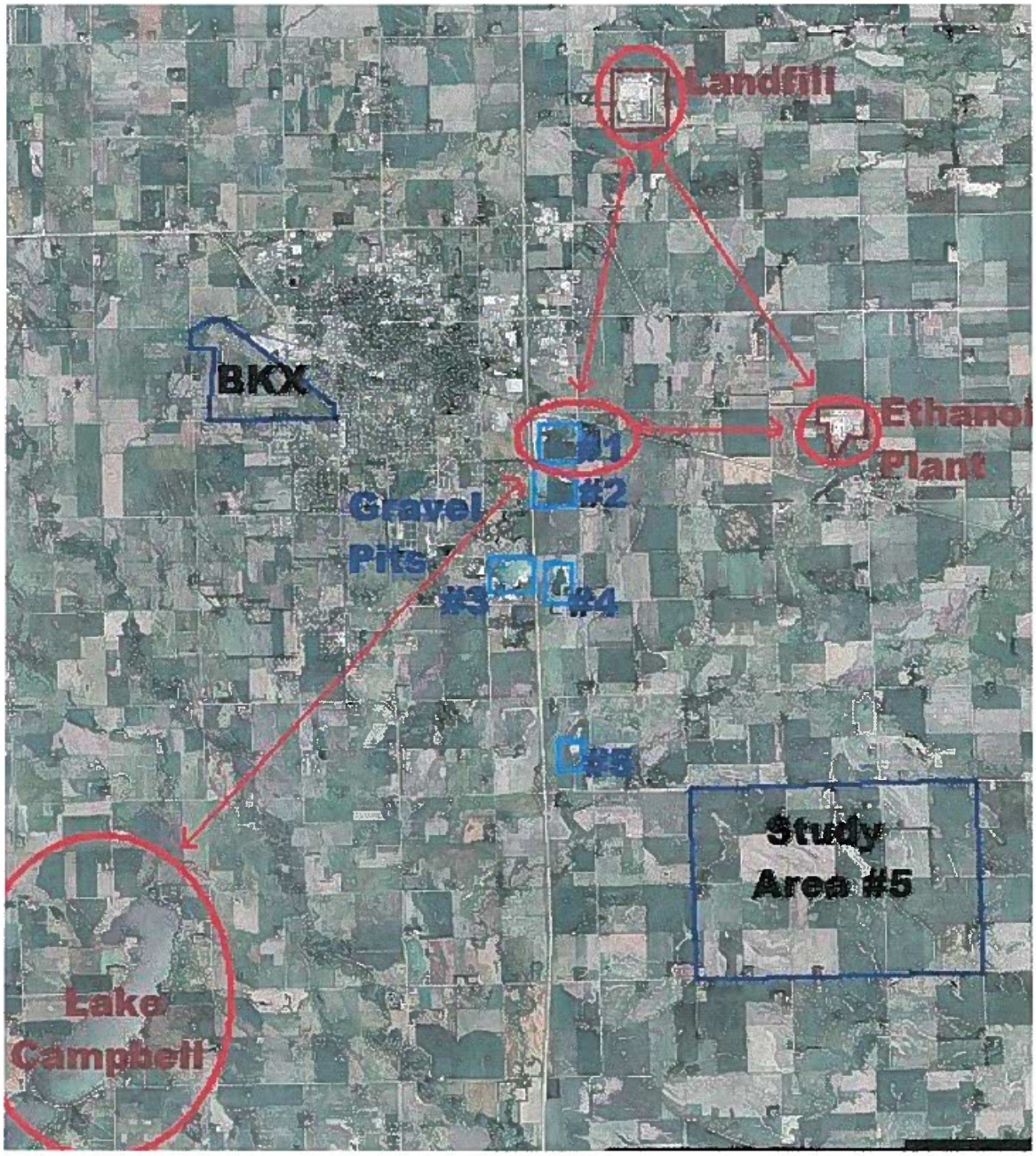
Map 1. General Zone Features of the Brookings Area.
Map 2. Survey Route with Observation Points.
Map 3. Daily Gull Movements in the Brookings Area.



Map 1. General Zone Features of the Brookings Area.



Map 2. Survey Route.



Map 3. Daily Gull Movements in the Brookings Area.

USDA

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April 7, 2008

Addendum to: Airport Wildlife Evaluation (2/29/2008)
Brookings Municipal Airport
City of Brookings, South Dakota

This is an addendum to the Brookings Wildlife Evaluation conducted for the City of Brookings. Its purpose is to address two items in the Final Report (dated February 29, 2008) that might need clarification. These two items are discussed below:

1.) In the Final Report, there are several references and recommendations regarding runway alignments and their influence on wildlife hazards. For example, on Page 11 in the discussion concerning the current BKX site, there is reference that a runway alignment that parallels the Big Sioux River floodplain is likely the best way to avoid migratory birds using the floodplain. It should be noted that all of the references to runway alignment in the report are based on the assumption of aircraft following extended runway centerlines.

In many cases, planes approaching runways do not follow extended runway centerlines. Planes often approach an airport from various directions, circle and then turn sharply to align with a runway at a short distance from the airport. That distance can be considerably less than a mile. In these situations, depending upon the distance from the attractant to the runway, aircraft hazards may not be influenced by runway alignment.

2.) On Page 15, Line B of the table entitled, Review of Issues and Considerations for the Study Area #5 Site," it states "Trees on or near the airfield will need to be removed." The term "airfield" is meant to identify all lands, regardless of type, inside the airport perimeter fence.

Airfield perimeter fences can vary considerably in shape and size. Some airfields may be large rectangles that encompass the runways, safety zones and considerable additional land. Others may be very narrow, with perimeter fences lying only a minimal distance from aircraft movement areas. In these situations, trees could potentially lie very near runways, yet remain outside of a perimeter fence. Therefore, Recommendation B that states "Trees on **or near** the airfield....." refers to those trees in the immediate vicinity of the airfield, regardless of which side of a perimeter fence they might be.

Prepared by:

Timothy Pugh

Timothy Pugh
Wildlife Biologist

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October 21, 2008

Addendum to: Airport Wildlife Evaluation (2/29/2008)
Brookings Municipal Airport
City of Brookings, South Dakota

This is an addendum to the Brookings Wildlife Evaluation conducted for the City of Brookings. Its purpose is to provide additional information and recommendations concerning the four "sewage" or "wastewater" lagoons, as they were referred to in the Final Report (dated February 29, 2008).

More specifically, two of these four basins are biosolids drying beds while the other two are flow equalization basins. The wildlife hazard implications associated with these basins may be different than sewage lagoons, as they were believed to be during the wildlife evaluation. Upon reviewing the 10/14/08 memorandum to Jackie Lanning from Eric Witt concerning these basins, Wildlife Services (WS) believes this addendum is necessary to address these basins more accurately.

Biosolids Drying Beds. The two biosolids drying beds are clay-lined containment basins used to store and further dry liquid biosolids from the municipal wastewater treatment plant. Biosolids are the end product of the anaerobic wastewater treatment plant's digestion process. This liquid, which contains approximately 2% solids, is stored in the drying beds until it is dry to a soil like consistency. This process can take several months.

While liquid biosolids are in the drying beds, there is a high probability that they will attract migratory birds, especially waterfowl. WS does not believe that the biosolid drying beds are compatible with safe aircraft operations at the Brookings Municipal Airport, and therefore recommends that they be relocated away from the airport.

Flow Equalization Basins. The two flow equalization basins are clay-lined containment basins used for short-term storage of untreated wastewater. High flows of wastewater following storm events can sometimes exceed the wastewater treatment plants' capacity to process it. Therefore, excess wastewater is stored in the equalization basins for short periods until the treatment plant has the capacity to process it.

These ponds do not contain raw sewage and only hold water for brief periods. According to information provided in the 10/14/08 memorandum from Eric Witt, the basins have held water on only 8 occasions during the last 10 years. The duration of time that the basins have held water averaged 11.6 days per event, or 9.3 days per year. The remainder of the year the basins remain empty.

Basins with water, regardless of how brief, will attract wildlife. However, considering how brief and infrequent water is held in these basins, it is unlikely that wildlife will

habituate to it. Considering these factors, exclusion methods (overhead wires, netting etc.) and an organized harassment program (pyrotechnics, visual deterrents, lethal control etc.) employed whenever the basins contain water, should be effective in keeping wildlife hazards to aircraft to a minimum. The airport should contact WS for assistance in developing an effective harassment program.

Prepared by:

Timothy L Pugh

Timothy Pugh
Wildlife Biologist

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request 10/31/08
Name Of Project Brookings Airport Alternatives	Federal Agency Involved FAA
Proposed Land Use Airport	County And State Brookings, South Dakota
PART II *(To be completed by NRCS)*	Date Request Received By NRCS 5/9/08

Does the site contain prime, unique, statewide or local important farmland? *(If no, the FPPA does not apply -- do not complete additional parts of this form).*	Yes ☑	No ☐	Acres Irrigated --	Average Farm Size 435 ac.
Major Crop*(s)* Corn, Soybeans	Farmable Land In Govt. Jurisdiction Acres: 441,708 % 86		Amount Of Farmland As Defined in FPPA Acres: 441,383 % 86
Name Of Land Evaluation System Used South Dakota Department of Revenue	Name Of Local Site Assessment System None		Date Land Evaluation Returned By NRCS 11/17/08

PART III *(To be completed by Federal Agency)*	Alternative Site Rating Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	695.5	833.7		
B. Total Acres To Be Converted Indirectly	0.0	0.0		
C. Total Acres In Site	695.5	833.7	0.0	0.0
PART IV *(To be completed by NRCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	335.8	746.0		
B. Total Acres Statewide And Local Important Farmland	259.6	87.7		
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted	0.0	0.2		
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value	95.0	23.0		
PART V *(To be completed by NRCS)* Land Evaluation Criterion Relative Value Of Farmland To Be Converted *(Scale of 0 to 100 Points)*	44	86		

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(These criteria are explained in 7 CFR 658.5(b)*	Maximum Points	Site A	Site B	Site C	Site D
1. Area In Nonurban Use		7	15		
2. Perimeter In Nonurban Use		5	10		
3. Percent Of Site Being Farmed		12	20		
4. Protection Provided By State And Local Government		0	0		
5. Distance From Urban Builtup Area		0	15		
6. Distance To Urban Support Services		0	10		
7. Size Of Present Farm Unit Compared To Average		10	10		
8. Creation Of Nonfarmable Farmland		0	0		
9. Availability Of Farm Support Services		5	5		
10. On-Farm Investments		0	10		
11. Effects Of Conversion On Farm Support Services		0	0		
12. Compatibility With Existing Agricultural Use		0	0		
TOTAL SITE ASSESSMENT POINTS	160	39	95	0	0
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland *(From Part V)*	100	44	86		
Total Site Assessment *(From Part VI above or a local site assessment)*	160	39	95	0	0
TOTAL POINTS *(Total of above 2 lines)*	260	83	181	0	0

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? Yes ☐ No ☒

Reason For Selection:

Note: "Site A" is the preferred On Airport Alternative, "Site B" is the preferred Off Airport Alternative. This amends the rating dated 10/16/2007.

(See Instructions on reverse side) **Form AD-1006 (10-83)**

This form was electronically produced by National Production Services Staff

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
106 SOUTH 15TH STREET
OMAHA NE 68102-1618

REPLY TO
ATTENTION OF

October 1, 2007

Planning, Programs, and Project Management Division

OCT 05 2007

Mr. Andy Olson
HNTB Corporation
7900 International Drive, Suite 600
Minneapolis, Minnesota 55425-8910

Dear Mr. Olson:

The U.S. Army Corps of Engineers, Omaha District (Corps) has reviewed your letter dated September 13, 2007 regarding the analysis of alternatives for the development of the Brookings Regional Airport in the City of Brookings, South Dakota. The Corps offers the following comments:

The Federal flood plain management criterion basically states, construction that could be damaged by floodwaters or could obstruct floodflows should not be located in the 100-year flood plain. The North West side of the original site is currently in a Zone A, which means that any further construction will have to be elevated or flood proofed to the 100 year flood elevation. All construction should be designed to minimize potential harm to or within the flood plain. Higher levels of protection are encouraged to provide added safety. If the operation of the constructed facilities is considered critical during flood periods, the facilities should be protected from at least the 500-year flood.

If construction must occur in the flood plain, it must be located outside the floodway. If a floodway has not been determined and designated, the construction should be as far from the stream channel as possible. The goal of any construction in the flood plain is to achieve the highest level of flood protection with zero impact to adjacent property.

The new site located South East of Brookings, is located outside of the 100-year flood plain according to the Brookings County FIRM, panel number 460253 0008 B, dated January 1, 1987. The possibility may exist, however, for a flood-hazard that could result from heavy rainfall in the immediate area, which would produce runoff in excess of storm sewer and local drainageway capacities. Flooding which results from this phenomenon is usually quite localized and shallow. Detailed definitions of this hazard would require a site-specific investigation.

Your plans should be coordinated with the U.S. Environmental Protection Agency, which is currently involved in a program to protect ground water resources. If you have not already done so, it is recommended you consult with the U.S. Fish and Wildlife Service and the South Dakota Game, Fish and Parks Department regarding fish and wildlife resources. In addition, the South Dakota State Historic Preservation Office should be contacted for information and recommendations on potential cultural resources in the project area.

If construction activities involve any work in waters of the United States, a Section 404 permit may be required. For a detailed review of permit requirements, preliminary and final project plans should be sent to:

U.S. Army Corps of Engineers
Pierre Regulatory Office
Attention: CENWO-OD-R-SD/Naylor
28563 Powerhouse Road, Room 120
Pierre, South Dakota 57501

If you have any questions, please contact Mr. Dave Crane of my staff at (402) 221-4882.

Sincerely,

Larry D. Janis, Chief
Environmental, Economics, and
Cultural Resources Section
Planning Branch

Steven J. Britzman
Attorney at Law

521 Sixth Street, Suite 104
Brookings, South Dakota 57006

Telephone (605) 697-9058
Facsimile (605) 697-9060

Memorandum

To: Mike Wilson, Airport Manager

From: Steven J. Britzman, City Attorney

cc: Jeff Weldon, City Manager and Shari Thornes, City Clerk, Jackie Lanning, City Engineer

Date: June 23, 2009

Re: Issues relating to land for municipal airport

This memo is likely to be the first of several concerning procedures for airport land acquisition. Some issues may require further research. The focus of this memo concerns:

1. Whether land outside the limits of the city may be acquired by eminent domain (condemnation) for purposes of a municipal airport.

2. How are township roads likely to be treated if land for an airport road outside the municipal limits intersects a township road or the airport footprint overlays a township road?

3. Outline the steps the City of Brookings used to acquire land for the Brookings Landfill as well as the zoning procedure for the landfill, as these procedures would be analogous to some degree to the acquisition and zoning of an airport outside the city limits of the city.

Discussion

Issue 1. 1. Whether land outside the limits of the city may be acquired by eminent domain (condemnation) for purposes of a municipal airport.

SDCL 9-27-1 provides the authority for a municipality to condemn land located outside the city limits. The purpose for a land condemnation must be authorized by the City Council and is found in SDCL 50-6-10 (below), which authorizes an airport board, with the approval of the governing body, to acquire land for airport purposes. These two statutes, together with the South Dakota Supreme Court decisions touching on the issues,

provides the authority for condemnation of land outside the municipality's limits for airport purposes.

9-27-1. Real estate - Appropriation and condemnation - Resolution of necessity.

Except as otherwise specially provided, whenever the governing body of any municipality shall deem it necessary to appropriate or damage any private property, either within or without the corporate limits of the municipality, for any purpose authorized by law, it shall, by a resolution passed by a two-thirds majority of all the members elected thereto, declare such appropriation necessary, stating the purpose and extent of such appropriation. Thereupon the proceedings for such appropriation and condemnation **shall** be as provided by law and the rules of practice and procedure adopted by the Supreme Court.

50-6-10. Authority of board - Regulation of municipal airports - Buildings and structures - Acquisition of land - Airports without corporate limits - Definition of municipal airport.

The airport board shall have the power to establish, improve, care for, regulate, and manage any municipal airport and erect buildings and structures thereon **and, with the approval of the governing body, acquire land for airport purposes.** The governing body may place under the control and management of the board, the control, management and operation of such municipal airport as lies within the corporate limits of the first or second class municipality **or elsewhere**. For the purposes of this chapter, a municipal airport shall be deemed to be as defined in this title.

Issue 2. How are township roads likely to be treated if land for an airport road outside the municipal limits intersects a township road or the airport footprint overlays a township road?

The following statute provides the authority of either county commissioners or township supervisors—depending upon whether the public highway is a county or a township road—to vacate, change or locate a public highway (township road or county highway). I believe township supervisors, in exercising this discretion, would be held to the standards stated in the South Dakota Supreme Court case of Conditional Use Permit Denied to Meier, a 2000 decision, which held in part that a Board may not act in an arbitrary or capricious manner, based on personal, selfish, or fraudulent motives, or on false information, or characterized by a lack of relevant and competent evidence to support the action taken.

If the airport footprint intersects with or overlays a township road, it would appear the municipality would likely own both sides of the township road or land which a road intersects. A petition to vacate the road submitted by the municipality, where the road is

located upon or the road intersects airport land, would likely present a strong case for road closure.

31-3-6. Highways location - Power of county commissioners and township supervisors to vacate, change or locate highway on petition - Contents of petition.

Upon receiving the petition of two or more voters of an organized civil township or of the number of voters equal to or greater than one percent of the ballots cast for the last gubernatorial election in the affected county, the board of supervisors of the township or the board of county commissioners wherein the highway is located or is proposed to be located may, except as provided in §§ 31-3-12 and 31-3-44, vacate, change or locate any highway located or to be used within the township or county, if the public interest will be better served by the proposed vacating, changing or locating of the highway. The petition of the voters shall set forth the beginning, course and termination of the highway proposed to be located, changed or vacated, together with the names of the owners of the land through which the highway may pass.

Issue 3. Outline the steps the City of Brookings used to acquire land for the Brookings Landfill as well as the zoning procedure for the landfill, as these procedures would be analogous to some degree to the acquisition and zoning of an airport outside the city limits of the city.

A discussion was held on February 13th, among Bob McGrath, Jackie Lanning, Mike Wilson and Steve Britzman concerning the land acquisition procedure. Bob McGrath handled nearly all of the landfill land acquisition in about 1989 (and several preceding years) with Steve Britzman assisting to some degree. With respect to the landfill land acquisition, a lawsuit for condemnation was not filed, however, although Bob McGrath dealt for an extended period with site selection and negotiations with landowners of the desired site, resolution of the land acquisition did not occur until condemnation was imminent. Bob McGrath developed, at that time, a detailed time line, which may be a helpful procedure should airport land acquisition by condemnation be required.

The zoning discretion for an airport outside the city limits rests with the Brookings County Commission. The current Brookings County Zoning ordinance permits “Airports and airstrips” in the Agricultural District (Section 1101) as a Special Exception. More detailed analysis will be required to outline the appropriate steps to pursue the Special Exception, and Dan Hanson’s experience and knowledge will be helpful in this regard. There have been a number of published South Dakota Supreme Court cases involving conditional uses and special exceptions involving county zoning ordinances due to large farming developments occurring in the last 10 years—hog operations and large dairy farms, which will provide helpful guidelines and pitfalls to avoid if a special exception is sought.

Appendix –Excerpts from South Dakota Supreme Court cases

A 1945 case recognized the City's right to acquire land for an airport:

It is contended that authority to acquire an airport can not constitutionally be conferred upon a city and that title to the property here involved was not rightfully acquired by the city of Yankton. Assuming that appellants have the right to challenge the title of the city on the ground that acquisition of the property was ultra vires, we think that such contention must be decided adversely to them. The Legislature, as we have indicated, has authorized the acquisition and maintenance of airports by municipalities. In Hesse v. Rath, 249 NY 436, 164 NE 342, it was contended that a statute authorizing towns to acquire and maintain airports was invalid. In an opinion by Mr. Justice Cardozo, the court said: "A city acts for city purposes when it builds a dock or a bridge or a street or a [70 SD 634] subway. Sun Printing & Pub. Ass'n v. City of New York, 152 NY 257, 46 NE 499, 37 LRA 788. Its purpose is not different when it builds an airport. [City of] Wichita v. Clapp, 125 Kan. 100, 263 P. 12 [63 ALR 478]. Aviation is today an established method of transportation. The future, even the near future will make it still more general." To the same effect, see Dysart v. City of St. Louis, 321 Mo. 514, 11 SW2d 1045, 62 ALR 762, and note; City of Spokane v. Williams, 157 Wash. 120, 288 P. 258; Krenwinkle v. City of Los Angeles, 4 Cal.2d 611, 51 P2d 1098.

Another helpful South Dakota decision held:

The City also argues that SDCL 50-7-4 is the "plan" which the condemnation resolutions are implementing. **This statute simply authorizes municipalities to build and maintain airports and authorizes the use of eminent domain to do so.** It does not create a "plan" of condemnation which would apprise the citizens of the municipality's decision to condemn. Moreover, City's argument would mean that citizens could never call for a referendum on the condemnation of land for a municipal airport because the time to call for a referendum of SDCL 50-7-4 has long since expired.

More recently, a dissenting opinion in a 1995 South Dakota Supreme Court decision provided:

Under SDCL ch 50-7,{fn3} the City is given the power to establish an airport. No specific procedures are delineated which would make the power administrative only. SDCL ch 50-7; Wang, 469 NW2d at 580. No statewide policy is established: only the authority to establish and maintain airports is granted to municipalities if they choose to exercise that discretion. Id; see 5 McQuillin, at §16.55. This is enabling legislation only, not mandatory legislation. City's actions under SDCL ch 50-7 are discretionary until they are specifically delineated in a City ordinance. The Council could enact an ordinance choosing not to exercise its discretionary power to establish an airport. Therefore, the municipality's citizens may also enact such an ordinance by the initiative process.

Finally, the "arbitrary and capricious" standard, cited above, applicable to municipal, county and township governing board decision making, provided

> While we said the trial court should determine the question anew, we did not mean the court should sit as a "one man Board of Adjustment" and determine if it would issue a conditional use permit in the first instance. As we also said in Coyote Flats, 1999 SD 87 at ¶42, 596 NW2d at 356-57, "[t]his Court [i.e., the Supreme Court] is not warranted in directing the manner in which the Commission should exercise its legal discretion." The trial court is instructed to determine anew all matters of fact without ascribing any presumption of correctness to the Board's findings on the evidence. Once the trial court finds the facts, **it is to determine if the actions of the Board were arbitrary or capricious, i.e., whether the actions of the Board were "based on personal, selfish, or fraudulent motives, or on false information, [or] ... characterized by a lack of relevant and competent evidence to support the action taken." Coyote Flats, 1999 SD 87 at ¶14, 596 NW2d at 351. If the court finds the decision was arbitrary or capricious, it should reverse the decision and remand to the Board for further proceedings.** Otherwise, it must affirm.

-----Original Message-----
From: Carrie.Jacobson@state.sd.us [mailto:Carrie.Jacobson@state.sd.us]
Sent: Thursday, April 03, 2008 10:16 AM
To: Ken Nimmer
Subject: RE: Brookings Regional Airport Dual Track Process

Ken -

Thanks for the additional information. Our records do not show that any hazardous waste generators are located within the area encompassed by the proposed Off-Airport site.

Thanks, and let us know if you have additional questions.

Carrie Jacobson
SDDENR-WM
605-773-3153

> -----Original Message-----
> **From:** Ken Nimmer [mailto:knimmer@HNTB.com]
> **Sent:** Thursday, April 03, 2008 9:32 AM
> **To:** Jacobson, Carrie
> **Subject:** Brookings Regional Airport Dual Track Process
>
> Carrie,
>
> Thanks for your note and prompt response for the Brookings Municipal Airport. Please find attached the USGS map info for both proposed sites. The second proposed"Off Airport" site is approximately five miles southeast of the City of Brookings; near the southeast intersection of Interstate Highway 29 and State numbered Highway 324. Please cross check this location with your databases.
>
> Many thanks,
>
> Ken
>
> Ken Nimmer
> Senior Planner
>
> HNTB Corporation
> 7900 International Drive, Suite 600
> Minneapolis, MN 55425
>
> Tel (952) 345-5975
> Fax (952) 920-0173
> Knimmer@HNTB.com
>
> This e-mail and any files transmitted with it are confidential and are intended solely for the use of the individual or entity to whom they are addressed. If you are NOT the intended recipient or the person responsible for delivering the e-mail to the intended recipient, be advised that you have received this e-mail in error and that any use, dissemination, forwarding, printing or copying this e-mail is strictly prohibited.

-----Original Message-----
From: Carrie.Jacobson@state.sd.us [mailto:Carrie.Jacobson@state.sd.us]
Sent: Wednesday, April 02, 2008 2:37 PM
To: Ken Nimmer
Subject: HW information for Brookings, SD

Dear Ken -

Currently, the only thing we have regarding the Brookings Municipal Airport is that TSA operates out of the airport and will periodically send small amounts of hazardous waste (mostly lighters confiscated from passengers) to a disposal facility. In and around the airport area are about six businesses that are considered hazardous waste generators. Of those six, only one is considered a large quantity generator (Star Circuits). Currently there are no cleanup activities nor unresolved hazardous waste-related enforcement actions at any of these sites.

Carrie Jacobson
SDDENR-Waste Management Pgm
605-773-3153

BKX EA Tribal Mailing List

Pamela Halverson
Tribal Historic Preservation Officer
Lower Sioux Indian Community of Minnesota
PO Box 308
Morton. MN 56270-9801

Lester Thompson, Chairman
Crow Creek Sioux Tribe
Post Office Box 50
Fort Thompson, South Dakota 57339

Emily Lucy De Leon
Repatriation and Cultural Preservation Office
Winnebago Tribe of Nebraska
Post Office Box 687
Winnebago, Nebraska 68071

Tim Mentz Sr.
Tribal Historic Preservation Officer
Standing Rock Sioux Tribe
Post Office Box D
Fort Yates, North Dakota 58538

Robert Coumoyer, Chairman
Yankton Sioux Tribe
Post Office Box 248
Marty, South Dakota 57361

Donna Rae Petersen
Tribal Historic Preservation Officer
Cheyenne River Sioux Tribe
Post Office Box 590
Eagle Butte, South Dakota 57625

Ambrose Little Ghost
Cultural Preservation Office
Spirit Lake Tribe
Post Office Box 309
Fort Totten, North Dakota 58335

Michael Jandreau, Chairman
Lower Brule Sioux Tribe
187 Oyate Circle
Lower Brule, South Dakota 57548

Brady Grant
Tribal Historic Preservation Officer
Turtle Mountain Band of Chippewa Indians
Post Office Box 900
Belcourt, North Dakota 58316

Gary Robinette
Cultural Department
Ponca Tribe of Nebraska
Post Office Box 288
Niobrara. Nebraska 68760

Joshua Weston, President
Flandreau Santee Sioux Tribe
Post Office Box 283
Flandreau, South Dakota 57028

Perry No Tears Brady
Three Affiliated Tribes Historic
Preservation Officer
c/o Parshall Resource Center
Post Office Box 429
Parshall, North Dakota 58770

John Yellow Bird Steele, President
Oglala Sioux Tribe
Post Office Box 2070
Pine Ridge, South Dakota 57770

Russell Eagle Bear
Tribal Historic Preservation Officer
Rosebud Sioux Tribe
Post Office Box 658
Rosebud, South Dakota 57570

Diane Desrosiers
Tribal Historic Preservation Officer
Sisseton-Wahpeton Oyate
Old Agency Box 509
Agency Village, South Dakota 57262-0509

FSST
P.O. Box 283, Flandreau, SD 57028
Fax number: 605-997-5043
Office number: 605-997-3891
Email: Sam.Allen@fsst.org

FSST Economic Development Depart.

Fax

LMD/AJO

To: HNTB

From: Sam Allen-EDRC

Fax: 952-920-0173

Pages: 3

Phone:

Date: 10-2-07

Re:

CC:

☐ Urgent ☐ For Review ☐ Please Comment ☐ Please Reply ☐ Please Recycle

• Comments:

Flandreau Santee Sioux Tribe
Office of Cultural Preservation/Tribal NAGPRA Office
Sam Allen-Cultural Preservation Officer
Ray Redwing-Cultural Preservation Officer
Martin Bernard-Cultural Preservation Officer

Reference Number: City of Brookings SD airport Expansion
Project Number:

Date: 10-2 ,2007

____We have no interest in this area geographically

____We have no comment on the proposed undertaking

X No objections. However, if human skeletal remains and/or any objects falling under NAGPRA are uncovered during construction, please stop immediately and notify the appropriate persons (state & tribal NAGPRA representatives)

____We have an objection or require additional project information. Please send the following to Sam Allen, Cultural Preservation Officer, FSST, P.O. Box 283, Flandreau, SD, 57028

Signature: Sam Allen -by cgr

HNTB Corporation
THE HNTB COMPANIES
Engineers Architects Planners

7900 International Drive
Suite 600
Minneapolis, MN 55425-8910

Telephone (952) 920-4668
Facsimile (952) 920-0173
www.hntb.com

September 17, 2007

HNTB

Mr. Joshua Weston
President
Flandreau Santee Sioux Tribe
PO Box 283
Flandreau, SD 57028

Subject: Analysis of Alternatives for the Development of the Brookings Regional Airport in the City of Brookings, South Dakota

Dear Mr. Weston,

The HNTB Corporation is assisting the City of Brookings in the consideration of three alternatives concerning the provision of airport facilities and services – expansion of the existing airport, development of a new airport site and no expansion of the existing airport. An environmental assessment (EA) will be prepared in accordance with Federal Aviation Administration (FAA) policy. The EA will disclose the impacts on the environment of the three alternatives under consideration. The areas potentially affected by construction of the alternatives are shown on the attached maps. Your assistance is requested in identifying cultural resources that could be affected by development of these areas.

Your response by October 1, 2007 would be greatly appreciated. Please contact me at 952-920-4668 if there are questions.

Sincerely yours,

HNTB Corporation

Andy Olson
HNTB Project Coordinator

Attachments: Location Map
Map showing Existing Airport Alternative Site
Map showing New Airport Site

Preserving the Land, Cultural Heritage, Tradition for the Future Generation

Rosebud Sioux Tribe
Tribal Historic Preservation Office
P.O. Box 809
Rosebud, South Dakota
Telephone: (605) 747-4255
Fax: (605) 747-4211
Email: rstthpo@yahoo.com

Russell Eagle Bear
Officer

Kathy Arcoren
Administrative Assistant

OCT 01 2007

September 26, 2007

Andy Olson, HNTB Project Coordinator
NHTB Corporation
7900 International Drive
Suite 600
Minneapolis, MN. 55425-8910

Re: Brookings Regional Airport

Dear Mr. Olson,

We are responding to your letter dated September 17, 2007 in reference to the three alternatives concerning the provision of airport facilities and services in the City of Brookings, SD.

As the Tribal Historic Preservation Officer for the Rosebud Sioux Tribe I appreciate your notification of the undertaking and the awareness you are demonstrating for the archaeological sites and cultural heritage of Indigenous peoples.

At this time we have no concerns for this project to proceed as planned with the recommendation that if sites are affected by this undertaking the project will contact us for consultation.

Thank you for your time and consideration of this letter.

Sincerely,

Kathy Arcoren
on Mr. Russell Eagle Bear

Note: Arrivals and departures are split 50-50

FORECAST FLEET MIX

Aircraft Type	Total Operations		Daytime Operations		Nighttime Operations		Touch-n-Gos			
							Daytime Operations		Nighttime Operations	
	2007	2025	2007	2025	2007	2025	2007	2025	2007	2025
Single Engine Piston	26,969	29,616	8,630	9,477	2,158	5,212	12,945	14,216	3,236	711
Multi Engine Piston	1,476	1,400	1,181	1,120	295	280	0	0	0	0
Turboprop Jets	509	541	407	433	102	108	0	0	0	0
Cessna 560	119	285	95	228	24	57	0	0	0	0
Cessna 550	79	190	63	152	16	38	0	0	0	0
Cessna 525	57	139	46	111	11	28	0	0	0	0
Beechjet 400a	57	135	45	108	11	27	0	0	0	0
Falcon 50	50	121	40	97	10	24	0	0	0	0
Helicopter	25	28	20	22	5	6	0	0	0	0
Total	29,341	32,455	10,527	11,748	2,632	5,780	12,945	14,216	3,236	711

INTEROFFICE CORRESPONDENCE

HNTB

To
Tom Angus

From
Terry Huntrods, PE

Cc
Greg Albjerg

Subject
Brookings Airport
Six Mile Creek Relocation

Date
07/22/09

The proposal to relocate Six Mile Creek as it flows through the Brookings Airport requires an analysis of the hydrology and hydraulics of the Creek. The purpose of this memorandum is to present a preliminary analysis of the feasibility of relocating the Creek.

Flooding from Six Mile creek was studied in the Flood Insurance Study, City of Brookings, South Dakota, April 1978, prepared by the U.S. Department of Housing and Urban Development, Federal Insurance Administration. The projected flood flows and extent of flooding in the Six Mile Creek basin were presented in this report. These flows were taken, without change, from the report, Flood Plain Information, Volume II, Six Mile Creek, prepared by the Omaha District of the US Army Corps of Engineers in December of 1974. The flood flows presented in this report were taken from a USGS river gage (#06479910) located at the DM&E Railroad bridge over Six Mile Creek, and were based on 4 years of record. The river gage was abandoned in 1981. During that time, records were kept of daily flows and river stages. The data from this gage during the period of operation are presented in the USGS Web site at the following location.

http://nwis.waterdata.usgs.gov/nwis/peak?site_no=06479910&agency_cd=USGS&format=html

The records for the peak flow from each of the 10 years of record are presented in Attachment A.

The peak flows were then analyzed using the Log-Pearson III methodology to determine the projected major flood flows. The Log-Pearson III methodology is the accepted methodology by both FEMA and the USACOE for conducting Flood Insurance Studies. An online version of the Log-Pearson III analysis (http://ponce.sdsu.edu/onlinepearson.php) was used to determine the

updated flood flows for significant events. The results from this analysis are compared in Table 1 to the predicted flood events presented in the FIS.

TABLE 1
COMPARISON OF REPORTED PEAK DISCHARGES
Six Mile Creek, Brookings, SD

Return Interval (years)	Q (cfs)	
	1978 FIS (1)	USGS Data (2)
2		330
5		652
10	1430	1242
50	4650	1509
100	7660	1782

Notes
1) Based on 4 years of record
2) Based on 10 years of record

These differ from the flows presented in the 1978 Flood Insurance Study (FIS) due to the inclusion of the additional years of record that were unavailable when the USACOE did their original analysis in 1974.

We recommend that these newer flood flows for Six Mile Creek be used for preliminary design and review.

ATTACHMENT A

USGS Surface Water for USA: Peak Streamflow - Microsoft Internet Explorer provided by HNTB Corporation

File Edit View Favorites Tools Help

Address http://nwis.waterdata.usgs.gov/nwis/peak?site_no=06479910&agency_cd=USGS&format=html

USGS science for a changing world

USGS Home
Contact USGS
Search USGS

National Water Information System: Web Interface

USGS Water Resources

Data Category: Surface Water | Geographic Area: United States | GO

News New Mapper ! - updated July 2009

Peak Streamflow for the Nation

USGS 06479910 SIXMILE CR NR BROOKINGS SD

Available data for this site | Surface-water: Peak streamflow | GO

Brookings County, South Dakota
Hydrologic Unit Code 10170202
Latitude 44°20'46", Longitude 96°44'51" NAD27
Drainage area 54 square miles
Contributing drainage area 54 square miles
Gage datum 1,618.57 feet above sea level NGVD29

Output formats

- Table
- Graph
- Tab-separated file
- peakfq (watstore) format
- Reselect output format

Water Year	Date	Gage Height (feet)	Stream-flow (cfs)	Water Year	Date	Gage Height (feet)	Stream-flow (cfs)
1971	Mar. 12, 1971	9.26[1]	125	1976	Mar. 20, 1976	9.17[1]	300
1972	May 29, 1972	8.71	405	1977	Jun. 16, 1977	9.14[2]	423
1973	Mar. 06, 1973	7.96[1]	325	1978	Mar. 28, 1978	9.45[2]	936
1974	Mar. 07, 1974	[1,2]	95	1979	Apr. 12, 1979	9.50[1]	700
1975	Apr. 24, 1975	4.91[2]	85.0	1980	Jun. 25, 1980	9.84	760

Peak Gage-Height Qualification Codes.

- 1 -- Gage height affected by backwater
- 2 -- Gage height not the maximum for the year

Questions about sites/data?
Feedback on this web site
Automated retrievals

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ATTACHMENT B

Flood frequency by the Log Pearson III method

Stream: Six-Mile Creek

n = 10

Q(1) = 85; Q(2) = 95; Q(3) = 125; Q(4) = 300; Q(5) = 325; Q(6) = 405; Q(7) = 423; Q(8) = 700; Q(9) = 760; Q(10) = 936.

skew coefficient [of the logarithms] C_s = -0.42

OUTPUT:

i	Return period T (yr)	Probability P (percent)	Frequency factor K	y = log (Q)	Flood discharge Q (cfs)
1	1.05	95.2	-1.754	1.832	68
2	1.11	90.1	-1.318	1.996	99
3	1.25	80	-0.815	2.186	153
4	2	50	0.069	2.518	330
5	5	20	0.855	2.814	652
6	10	10	1.228	2.955	901
7	25	4	1.599	3.094	1242
8	50	2	1.824	3.179	1509
9	100	1	2.016	3.251	1782
10	200	0.5	2.184	3.314	2063

Your request was processed at 09:37:29 am on July 22nd, 2009 [090722 09:37:29].

Reach 1R: (new Reach)

Inflow = 1,782.00 cfs @ 5.00 hrs, Volume= 2,216.455 af, Incl. 1,782.00 cfs Base Flow
Outflow = 1,782.00 cfs @ 13.15 hrs, Volume= 2,116.304 af, Atten= 0%, Lag= 489.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.2 fps, Min. Travel Time= 19.7 min
Avg. Velocity = 3.2 fps, Avg. Travel Time= 19.8 min

Peak Depth= 5.03' @ 12.10 hrs
Capacity at bank full= 2,431.97 cfs
Inlet Invert= 1,592.00', Outlet Invert= 1,590.50'
90.00' x 6.00' deep channel, n= 0.024 Length= 3,790.0' Slope= 0.0004 '/'
Side Slope Z-value= 4.0 '/'

BROOKINGS REGIONAL AIRPORT - BROOKINGS, SD
BKX NO ACTION ALTERNATIVE
ENGINEER'S ESTIMATE
FEBRUARY, 2010
A-3951

RUNWAY 12/30 RE-CONSTRUCTION (5,231' X 100') W/12' PAVED SHOULDERS

ITEM #	SPEC #	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
1	M-100	MOBILIZATION	1.0	L.S	$550,000.00	$550,000.00
2	S-100	CONSTRUCTION SAFETY PLAN	1.0	L.S.	$45,000.00	$45,000.00
3	P-152	UNCLASSIFIED EXCAVATION	60,000.0	C.Y.	$2.00	$120,000.00
4	P-152	DISPOSAL OF EXCESS MATERIAL	60,000.0	C.Y.	$4.00	$240,000.00
5	P-153	WATERING	300.0	MGAL	$12.00	$3,600.00
6	P-208	AGGREGATE BASE COURSE (14" DEPTH)	57,700.0	TON	$18.00	$1,038,600.00
7	P-209	CRUSHED AGGREGATE BASE COURSE (9" DEPTH)	37,100.0	TON	$20.00	$742,000.00
8	P-401	BITUMINOUS SURFACE COURSE (5-1/2" DEPTH)	23,040.0	TON	$45.00	$1,036,800.00
9	P-401	BITUMINOUS MATERIAL (PG 64-34)	1,730.0	TON	$750.00	$1,297,500.00
10	P-401	SAW CUT GROOVING	46,500.0	S.Y.	$2.00	$93,000.00
11	P-602	BITUMINOUS PRIME COAT	93.0	TON	$900.00	$83,700.00
12	P-603	BITUMINOUS TACK COAT	31.0	TON	$700.00	$21,700.00
13	P-620	INITIAL RUNWAY MARKING	1.0	L.S.	$15,000.00	$15,000.00
14	P-620	FINAL RUNWAY MARKING	1.0	L.S.	$25,000.00	$25,000.00
15	D-705	4" PERFORATED UNDERDRAIN PIPING	10,500.0	L.F.	$9.00	$94,500.00
16	D-705	4" SOLID UNDERDRAIN PIPING	1,200.0	L.F.	$9.00	$10,800.00
17	D-705	UNDERDRAIN CLEANOUT W/FRAME AND LID	10.0	EACH	$450.00	$4,500.00
18	D-705	TIE UNDERDRAIN TO EXISTING INLET	4.0	EACH	$500.00	$2,000.00
19	D-705	60" UNDERDRAIN MANHOLE	4.0	EACH	$5,000.00	$20,000.00
20	D-705	48" UNDERDRAIN MANHOLE	28.0	EACH	$3,000.00	$84,000.00
21	T-901	SEEDING AND FERTILIZING (GRASS)	11.0	ACRE	$750.00	$8,250.00
22	T-905	TOPSOILING FROM STOCKPILE	8,900.0	C.Y.	$3.00	$26,700.00
23	TL-100	FIELD LABORATORY, TYPE I	1.0	L.S.	$5,000.00	$5,000.00
24	SP-1	MILL AND SALVAGE ASPHALT PAVEMENT (14" NOMINAL DEPTH)	58,123.0	S.Y.	$3.50	$203,430.50
25	SP-1	MIX, PLACE, AND COMPACT SALVAGED PAVEMENT (10" NOMINAL DEPTH)	72,072.0	S.Y.	$2.00	$144,144.00
26	SP-2	GEOTEXTILE SEPARATOR FABRIC	72,072.0	S.Y.	$2.00	$144,144.00
27	PLANS	SILT FENCE	5,231.0	L.F.	$4.00	$20,924.00
28	PLANS	EROSION CONTROL MAT	26,155.0	S.Y.	$2.00	$52,310.00
29	PLANS	RUNWAY LIGHTING SYSTEM W/PAPI-4 & REILS	1.0	L.S.	$690,000.00	$690,000.00
		CONSTRUCTION SUBTOTAL				**$6,822,602.50**

TAXIWAY "A" AND CONNECTORS (APPROX. 7,900' X 35')

ITEM #	SPEC #	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
1	M-100	MOBILIZATION	1.0	L.S	$270,000.00	$270,000.00
2	S-100	CONSTRUCTION SAFETY PLAN	1.0	L.S.	$20,000.00	$20,000.00
3	P-152	UNCLASSIFIED EXCAVATION	24,600.0	C.Y.	$2.00	$49,200.00
4	P-152	DISPOSAL OF EXCESS MATERIAL	20,000.0	C.Y.	$4.00	$80,000.00
5	P-153	WATERING	125.0	MGAL	$12.00	$1,500.00
6	P-208	AGGREGATE BASE COURSE (17" DEPTH)	33,300.0	TON	$18.00	$599,400.00
7	P-209	CRUSHED AGGREGATE BASE COURSE (9" DEPTH)	17,600.0	TON	$20.00	$352,000.00
8	P-401	BITUMINOUS SURFACE COURSE (5-1/2" DEPTH)	9,820.0	TON	$45.00	$441,900.00
9	P-401	BITUMINOUS MATERIAL (PG 64-34)	736.0	TON	$750.00	$552,000.00
10	P-602	BITUMINOUS PRIME COAT	45.0	TON	$900.00	$40,500.00
11	P-603	BITUMINOUS TACK COAT	15.0	TON	$700.00	$10,500.00
12	P-620	INITIAL TAXIWAY MARKING	1.0	L.S.	$5,000.00	$5,000.00
13	P-620	FINAL TAXIWAY MARKING	1.0	L.S.	$10,000.00	$10,000.00
14	D-705	4" PERFORATED UNDERDRAIN PIPING	15,800.0	L.F.	$9.00	$142,200.00
15	D-705	4" SOLID UNDERDRAIN PIPING	1,100.0	L.F.	$9.00	$9,900.00
16	D-705	UNDERDRAIN CLEANOUT W/FRAME AND LID	6.0	EACH	$450.00	$2,700.00
17	D-705	TIE UNDERDRAIN TO EXISTING INLET	4.0	EACH	$500.00	$2,000.00
18	D-705	60" UNDERDRAIN MANHOLE	2.0	EACH	$5,000.00	$10,000.00
19	D-705	48" UNDERDRAIN MANHOLE	34.0	EACH	$3,000.00	$102,000.00
20	T-901	SEEDING AND FERTILIZING (GRASS)	10.0	ACRE	$750.00	$7,500.00
21	T-905	TOPSOILING FROM STOCKPILE	4,000.0	C.Y.	$3.00	$12,000.00
22	TL-100	FIELD LABORATORY, TYPE I	1.0	L.S.	$5,000.00	$5,000.00
23	SP-1	MILL AND SALVAGE ASPHALT PAVEMENT (14" NOMINAL DEPTH)	43,900.0	S.Y.	$3.50	$153,650.00
24	SP-1	MIX, PLACE, AND COMPACT SALVAGED PAVEMENT (17" NOMINAL DEPTH)	35,111.0	S.Y.	$3.40	$119,377.40
25	SP-2	GEOTEXTILE SEPARATOR FABRIC	35,111.0	S.Y.	$2.00	$70,222.00
26	PLANS	SILT FENCE	4,000.0	L.F.	$4.00	$16,000.00
27	PLANS	EROSION CONTROL MAT	8,800.0	S.Y.	$2.00	$17,600.00
28	PLANS	MEDIUM INTENSITY TAXIWAY LIGHTING (MITL) SYSTEM	1.0	L.S.	$290,000.00	$290,000.00
		CONSTRUCTION SUBTOTAL				**$3,392,149.40**

CONSTRUCTION TOTAL	**$10,214,751.90**
DESIGN ENGINEERING	**$350,000.00**
BID AND NEGOTIATIONS	**$25,000.00**
CONSTRUCTION ENGINEERING	**$550,000.00**
OUTSIDE TESTING (ASPHALT)	**$20,000.00**
ADMINISTRATION	**$20,248.10**
ESTIMATED PROJECT COST	**$11,180,000.00**

BROOKINGS REGIONAL AIRPORT - BROOKINGS, SD
BKX EXPANSION ALTERNATIVE
ENGINEER'S ESTIMATE
JULY, 2009
A-3951

RUNWAY 11/29 CONSTRUCTION (6,000' X 100') W/12' PAVED SHOULDERS & RUNWAY 17/35 MODIFICATION (333' X 60')						
ITEM #	**SPEC #**	**DESCRIPTION**	**QUANTITY**	**UNIT**	**UNIT PRICE**	**TOTAL PRICE**
1	M-100	MOBILIZATION	1.0	L.S	$750,000.00	$750,000.00
2	S-100	CONSTRUCTION SAFETY PLAN	1.0	L.S.	$50,000.00	$50,000.00
3	P-152	UNCLASSIFIED EXCAVATION	128,000.0	C.Y.	$2.00	$256,000.00
4	P-152	DISPOSAL OF EXCESS MATERIAL	30,000.0	C.Y.	$4.00	$120,000.00
5	P-153	WATERING	500.0	MGAL	$12.00	$6,000.00
6	P-208	AGGREGATE BASE COURSE (14" DEPTH)	71,600.0	TON	$18.00	$1,288,800.00
7	P-209	CRUSHED AGGREGATE BASE COURSE (9" DEPTH)	44,000.0	TON	$20.00	$880,000.00
8	P-401	BITUMINOUS SURFACE COURSE (5-1/2" DEPTH)	27,140.0	TON	$45.00	$1,221,300.00
9	P-401	BITUMINOUS MATERIAL (PG 64-34)	2,035.0	TON	$750.00	$1,526,250.00
10	P-401	SAW CUT GROOVING	66,670.0	S.Y.	$2.00	$133,340.00
11	P-602	BITUMINOUS PRIME COAT	109.0	TON	$900.00	$98,100.00
12	P-603	BITUMINOUS TACK COAT	36.3	TON	$700.00	$25,410.00
13	P-620	INITIAL RUNWAY MARKING	1.0	L.S.	$15,000.00	$15,000.00
14	P-620	FINAL RUNWAY MARKING	1.0	L.S.	$25,000.00	$25,000.00
15	D-705	4" PERFORATED UNDERDRAIN PIPING	13,100.0	L.F.	$9.00	$117,900.00
16	D-705	4" SOLID UNDERDRAIN PIPING	1,200.0	L.F.	$9.00	$10,800.00
17	D-705	UNDERDRAIN CLEANOUT W/FRAME AND LID	10.0	EACH	$450.00	$4,500.00
18	D-705	TIE UNDERDRAIN TO EXISTING INLET	4.0	EACH	$500.00	$2,000.00
19	D-705	60" UNDERDRAIN MANHOLE	4.0	EACH	$5,000.00	$20,000.00
20	D-705	48" UNDERDRAIN MANHOLE	32.0	EACH	$3,000.00	$96,000.00
21	F-162	10' CHAIN LINK FENCE	2,100.0	L.F.	$30.00	$63,000.00
22	F-162	20' ELECTRIC CANTILEVER GATE	3.0	EACH	$20,000.00	$60,000.00
23	F-162	4' WALK GATE W/KEYPAD ENTRY	4.0	EACH	$2,500.00	$10,000.00
24	F-161	8' WILDLIFE FENCE W/4-STRANDS HIGH TENSILE WIRE	20,000.0	L.F.	$10.00	$200,000.00
25	F-161	20' MANUAL CANTILEVER GATE	7.0	EACH	$6,000.00	$42,000.00
26	F-161	PERIMETER SIGN	55.0	EACH	$100.00	$5,500.00
27	F-161	REMOVE & DISPOSE OF EXISTING FENCE	20,700.0	L.F.	$2.00	$41,400.00
28	T-901	SEEDING AND FERTILIZING (GRASS)	66.0	ACRE	$750.00	$49,500.00
29	T-905	TOPSOILING FROM STOCKPILE	52,500.0	C.Y.	$3.00	$157,500.00
30	TL-100	FIELD LABORATORY, TYPE I	1.0	L.S.	$5,000.00	$5,000.00
31	SP-1	MILL AND SALVAGE ASPHALT PAVEMENT (14" NOMINAL DEPTH)	60,331.0	S.Y.	$3.50	$211,158.50
32	SP-1	MIX, PLACE, AND COMPACT SALVAGED PAVEMENT (10" NOMINAL DEPTH)	87,923.0	S.Y.	$2.00	$175,846.00
33	SP-2	GEOTEXTILE SEPARATOR FABRIC	87,923.0	S.Y.	$2.00	$175,846.00
34	PLANS	SILT FENCE	6,000.0	L.F.	$4.00	$24,000.00
35	PLANS	EROSION CONTROL MAT	30,000.0	S.Y.	$2.00	$60,000.00
36	PLANS	WETLAND MITIGATION (APPROX. 23 ACRES)	1.0	L.S.	$69,000.00	$69,000.00
37	PLANS	RE-ROUTE 6-MILE CREEK	96,000.0	C.Y.	$8.00	$768,000.00
38	PLANS	WOOD BRIDGE FOR EMERGENCY VEHICLES OVER 6-MILE CREEK	1.0	L.S.	$240,000.00	$240,000.00
39	PLANS	RIP RAP FOR CHANNEL BANK EROSION CONTROL	17,500.0	TON	$25.00	$437,500.00
40	PLANS	RUNWAY LIGHTING SYSTEM W/PAPI-4 & REILS	1.0	L.S.	$700,000.00	$700,000.00
41	PLANS	RELOCATION OF INSTRUMENT LANDING SYSTEM (ILS) & VOR	1.0	L.S.	$1,300,000.00	$1,300,000.00
42	PLANS	CITY STORM DETENTION BASIN RELOCATION	110,000.0	C.Y.	$2.00	$220,000.00
CONSTRUCTION SUBTOTAL						**$11,661,650.50**

TAXIWAYS (APPROX. 8,600' X 35')

ITEM #	SPEC #	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
1	M-100	MOBILIZATION	1.0	L.S	$350,000.00	$350,000.00
2	S-100	CONSTRUCTION SAFETY PLAN	1.0	L.S.	$20,000.00	$20,000.00
3	P-152	UNCLASSIFIED EXCAVATION	57,400.0	C.Y.	$2.00	$114,800.00
4	P-152	DISPOSAL OF EXCESS MATERIAL	36,000.0	C.Y.	$4.00	$144,000.00
5	P-153	WATERING	250.0	MGAL	$12.00	$3,000.00
6	P-208	AGGREGATE BASE COURSE (24" DEPTH)	57,400.0	TON	$18.00	$1,033,200.00
7	P-209	CRUSHED AGGREGATE BASE COURSE (9" DEPTH)	21,500.0	TON	$20.00	$430,000.00
8	P-401	BITUMINOUS SURFACE COURSE (5-1/2" DEPTH)	10,700.0	TON	$45.00	$481,500.00
9	P-401	BITUMINOUS MATERIAL (PG 64-34)	802.0	TON	$750.00	$601,500.00
10	P-602	BITUMINOUS PRIME COAT	144.0	TON	$900.00	$129,600.00
11	P-603	BITUMINOUS TACK COAT	14.4	TON	$700.00	$10,080.00
12	P-620	INITIAL TAXIWAY MARKING	1.0	L.S.	$5,000.00	$5,000.00
13	P-620	FINAL TAXIWAY MARKING	1.0	L.S.	$10,000.00	$10,000.00
14	D-701	18" RCP CULVERT	750.0	L.F.	$30.00	$22,500.00
15	D-705	4" PERFORATED UNDERDRAIN PIPING	17,200.0	L.F.	$9.00	$154,800.00
16	D-705	4" SOLID UNDERDRAIN PIPING	1,100.0	L.F.	$9.00	$9,900.00
17	D-705	UNDERDRAIN CLEANOUT W/FRAME AND LID	6.0	EACH	$450.00	$2,700.00
18	D-705	TIE UNDERDRAIN TO EXISTING INLET	4.0	EACH	$500.00	$2,000.00
19	D-705	60" UNDERDRAIN MANHOLE	2.0	EACH	$5,000.00	$10,000.00
20	D-705	48" UNDERDRAIN MANHOLE	38.0	EACH	$3,000.00	$114,000.00
21	T-901	SEEDING AND FERTILIZING (GRASS)	30.0	ACRE	$750.00	$22,500.00
22	T-905	TOPSOILING FROM STOCKPILE	24,000.0	C.Y.	$3.00	$72,000.00
23	TL-100	FIELD LABORATORY, TYPE I	1.0	L.S.	$5,000.00	$5,000.00
24	SP-2	GEOTEXTILE SEPARATOR FABRIC	43,000.0	S.Y.	$2.00	$86,000.00
25	PLANS	SILT FENCE	3,000.0	L.F.	$4.00	$12,000.00
26	PLANS	EROSION CONTROL MAT	10,000.0	S.Y.	$2.00	$20,000.00
27	PLANS	MEDIUM INTENSITY TAXIWAY LIGHTING (MITL) SYSTEM	1.0	L.S.	$300,000.00	$300,000.00
		CONSTRUCTION SUBTOTAL				**$4,166,080.00**

CONSTRUCTION TOTAL	**$15,827,730.50**
LAND ACQUISITION (APPROX. 122 ACRES & 1 HOME)	**$640,000.00**
DESIGN ENGINEERING	**$600,000.00**
BID AND NEGOTIATIONS	**$25,000.00**
CONSTRUCTION ENGINEERING	**$750,000.00**
OUTSIDE TESTING (ASPHALT)	**$25,000.00**
ADMINISTRATION	**$22,269.50**
ESTIMATED PROJECT COST	**$17,890,000.00**

BROOKINGS REGIONAL AIRPORT - BROOKINGS, SD
NEW AIRPORT ALTERNATIVE
ENGINEER'S ESTIMATE
JULY, 2009
A-3951

ACCESS ROAD (APPROX. 4600' X 28') & AUTO PARKING LOT (360' X 64')

ITEM #	SPEC #	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
1	M-100	MOBILIZATION	1.0	L.S	$70,000.00	$70,000.00
2	PLANS	TRAFFIC CONTROL	1.0	L.S.	$10,000.00	$10,000.00
3	P-152	UNCLASSIFIED EXCAVATION	5,000.0	C.Y.	$5.00	$25,000.00
4	P-153	WATERING	100.0	MGAL	$12.00	$1,200.00
5	SD-DOT	AGGREGATE BASE COURSE (9" DEPTH)	9,100.0	TON	$16.00	$145,600.00
6	SD-DOT	BIT. SURFACE COURSE COMPOSITE, CLASS E, TYPE I (4" DEPTH)	4,000.0	TON	$90.00	$360,000.00
7	P-602	BITUMINOUS PRIME COAT	22.0	TON	$900.00	$19,800.00
8	P-603	BITUMINOUS TACK COAT	4.0	TON	$700.00	$2,800.00
9	SD-DOT	CONCRETE CURB & GUTTER	5,000.0	L.F.	$20.00	$100,000.00
10	SD-DOT	CONCRETE VALLEY GUTTER	240.0	S.F.	$8.00	$1,920.00
11	SD-DOT	PAVEMENT MARKING	1.0	L.S.	$7,500.00	$7,500.00
12	SD-DOT	4" CONCRETE SIDEWALK W/4" GRANULAR FILL	11,500.0	S.F.	$5.00	$57,500.00
13	D-701	18" RCP CULVERT	200.0	L.F.	$30.00	$6,000.00
14	T-901	SEEDING AND FERTILIZING (GRASS)	5.0	ACRE	$750.00	$3,750.00
15	T-905	TOPSOILING FROM STOCKPILE	3,200.0	C.Y.	$3.00	$9,600.00
16	PLANS	SILT FENCE	4,200.0	L.F.	$4.00	$16,800.00
17	PLANS	EROSION CONTROL MAT	1,400.0	S.Y.	$2.00	$2,800.00
18	PLANS	ROADWAY & PARKING LOT SECURITY LIGHTING	1.0	L.S.	$100,000.00	$100,000.00
		CONSTRUCTION SUBTOTAL				**$940,270.00**

APRON (APPROX. 33,333 S.Y.) & HANGAR TAXIWAYS (APPROX. 6,000' X 25')

ITEM #	SPEC #	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
1	M-100	MOBILIZATION	1.0	L.S	$350,000.00	$350,000.00
2	P-152	UNCLASSIFIED EXCAVATION	75,000.0	C.Y.	$2.00	$150,000.00
3	P-152	DISPOSAL OF EXCESS MATERIAL	45,000.0	C.Y.	$4.00	$180,000.00
4	P-153	WATERING	300.0	MGAL	$12.00	$3,600.00
5	P-208	AGGREGATE BASE COURSE (24" DEPTH)	75,000.0	TON	$18.00	$1,350,000.00
6	P-209	CRUSHED AGGREGATE BASE COURSE (9" DEPTH)	26,700.0	TON	$20.00	$534,000.00
7	P-401	BITUMINOUS SURFACE COURSE (5-1/2" DEPTH)	5,300.0	TON	$45.00	$238,500.00
8	P-401	BITUMINOUS MATERIAL (PG 64-34)	397.0	TON	$750.00	$297,750.00
9	P-501	6" PORTLAND CEMENT CONCRETE (PCC) PAVEMENT	33,333.0	S.Y.	$40.00	$1,333,320.00
10	P-602	BITUMINOUS PRIME COAT	21.5	TON	$900.00	$19,350.00
11	P-603	BITUMINOUS TACK COAT	7.2	TON	$700.00	$5,040.00
12	P-605	SILICONE JOINT SEALING FILLER	58,200.0	L.F.	$2.50	$145,500.00
13	P-605	HOT POUR JOINT SEALING FILLER	280.0	L.F.	$3.00	$840.00
14	P-605	JOINT FILLING SEALER W/EXPANSION BOARD	600.0	L.F.	$3.50	$2,100.00
15	P-620	APRON & HANGAR TAXIWAY MARKING	1.0	L.S.	$10,000.00	$10,000.00
16	D-701	24" RCP STORM SEWER	2,000.0	L.F.	$40.00	$80,000.00
17	D-701	18" RCP CULVERT	500.0	L.F.	$30.00	$15,000.00
18	D-705	4" PERFORATED UNDERDRAIN PIPING	18,750.0	L.F.	$9.00	$168,750.00
19	D-705	4" SOLID UNDERDRAIN PIPING	1,200.0	L.F.	$9.00	$10,800.00
20	D-705	UNDERDRAIN CLEANOUT W/FRAME AND LID	4.0	EACH	$450.00	$1,800.00
21	D-705	60" STORM MANHOLE	3.0	EACH	$5,000.00	$15,000.00
22	D-705	60" UNDERDRAIN MANHOLE	2.0	EACH	$5,000.00	$10,000.00
23	D-705	48" UNDERDRAIN MANHOLE	32.0	EACH	$3,000.00	$96,000.00
24	T-901	SEEDING AND FERTILIZING (GRASS)	10.0	ACRE	$750.00	$7,500.00
25	T-905	TOPSOILING FROM STOCKPILE	8,000.0	C.Y.	$3.00	$24,000.00
26	TL-100	FIELD LABORATORY, TYPE I	1.0	L.S.	$5,000.00	$5,000.00
27	SP-2	GEOTEXTILE SEPARATOR FABRIC	53,333.0	S.Y.	$2.00	$106,666.00
28	PLANS	AIRCRAFT TIE-DOWNS	15.0	SET	$900.00	$13,500.00
29	PLANS	SILT FENCE	2,400.0	L.F.	$4.00	$9,600.00
30	PLANS	EROSION CONTROL MAT	3,200.0	S.Y.	$2.00	$6,400.00
31	PLANS	APRON & HANGAR AREA SECURITY LIGHTING	1.0	L.S.	$50,000.00	$50,000.00
		CONSTRUCTION SUBTOTAL				**$5,240,016.00**

RUNWAY 12/30 CONSTRUCTION (6,000' X 100') W/12' PAVED SHOULDERS & RUNWAY 04/22 CONSTRUCTION (3,600' X 60')

ITEM #	SPEC #	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
1	M-100	MOBILIZATION	1.0	L.S	$1,000,000.00	$1,000,000.00
2	S-100	CONSTRUCTION SAFETY PLAN	1.0	L.S.	$25,000.00	$25,000.00
3	P-152	UNCLASSIFIED EXCAVATION	280,000.0	C.Y.	$2.00	$560,000.00
4	P-152	DISPOSAL OF EXCESS MATERIAL	170,000.0	C.Y.	$4.00	$680,000.00
5	P-153	WATERING	1,200.0	MGAL	$12.00	$14,400.00
6	P-208	AGGREGATE BASE COURSE (24" DEPTH)	151,200.0	TON	$18.00	$2,721,600.00
7	P-209	CRUSHED AGGREGATE BASE COURSE (9" DEPTH)	56,700.0	TON	$20.00	$1,134,000.00
8	P-401	BITUMINOUS SURFACE COURSE (5-1/2" DEPTH)	34,100.0	TON	$45.00	$1,534,500.00
9	P-401	BITUMINOUS MATERIAL (PG 64-34)	2,557.0	TON	$750.00	$1,917,750.00
10	P-401	SAW CUT GROOVING	66,670.0	S.Y.	$2.00	$133,340.00
11	P-602	BITUMINOUS PRIME COAT	137.6	TON	$900.00	$123,840.00
12	P-603	BITUMINOUS TACK COAT	45.9	TON	$700.00	$32,130.00
13	P-620	INITIAL RUNWAY MARKING	1.0	L.S.	$25,000.00	$25,000.00
14	P-620	FINAL RUNWAY MARKING	1.0	L.S.	$40,000.00	$40,000.00
15	D-701	30" RCP STORM SEWER	2,500.0	L.F.	$50.00	$125,000.00
16	D-701	24" RCP STORM SEWER	1,600.0	L.F.	$40.00	$64,000.00
17	D-701	18" RCP STORM SEWER	1,600.0	L.F.	$30.00	$48,000.00
18	D-701	18" RCP CULVERT	600.0	L.F.	$30.00	$18,000.00
19	D-705	4" PERFORATED UNDERDRAIN PIPING	20,580.0	L.F.	$9.00	$185,220.00
20	D-705	4" SOLID UNDERDRAIN PIPING	1,800.0	L.F.	$9.00	$16,200.00
21	D-705	UNDERDRAIN CLEANOUT W/FRAME AND LID	14.0	EACH	$450.00	$6,300.00
22	D-705	60" STORM SEWER MANHOLE	14.0	EACH	$5,000.00	$70,000.00
23	D-705	60" UNDERDRAIN MANHOLE	4.0	EACH	$5,000.00	$20,000.00
24	D-705	48" UNDERDRAIN MANHOLE	52.0	EACH	$3,000.00	$156,000.00
25	F-162	10' CHAIN LINK FENCE	2,100.0	L.F.	$30.00	$63,000.00
26	F-162	20' ELECTRIC CANTILEVER GATE	4.0	EACH	$20,000.00	$80,000.00
27	F-162	4' WALK GATE W/KEYPAD ENTRY	8.0	EACH	$2,500.00	$20,000.00
28	F-161	8' WILDLIFE FENCE W/4-STRANDS HIGH TENSILE WIRE	36,700.0	L.F.	$10.00	$367,000.00
29	F-161	20' MANUAL CANTILEVER GATE	8.0	EACH	$6,000.00	$48,000.00
30	F-161	PERIMETER SIGN	75.0	EACH	$100.00	$7,500.00
31	F-161	REMOVE & DISPOSE OF EXISTING FENCE	40,000.0	L.F.	$2.00	$80,000.00
32	T-901	SEEDING AND FERTILIZING (GRASS)	151.0	ACRE	$750.00	$113,250.00
33	T-905	TOPSOILING FROM STOCKPILE	81,500.0	C.Y.	$3.00	$244,500.00
34	TL-100	FIELD LABORATORY, TYPE I	1.0	L.S.	$5,000.00	$5,000.00
35	SP-2	GEOTEXTILE SEPARATOR FABRIC	117,333.0	S.Y.	$2.00	$234,666.00
36	PLANS	SILT FENCE	10,000.0	L.F.	$4.00	$40,000.00
37	PLANS	EROSION CONTROL MAT	45,000.0	S.Y.	$2.00	$90,000.00
38	PLANS	RUNWAY LIGHTING SYSTEM W/PAPI-4 & REILS & NEW VAULT	1.0	L.S.	$1,000,000.00	$1,000,000.00
39	PLANS	RELOCATION OF INSTRUMENT LANDING SYSTEM (ILS) & VOR	1.0	L.S.	$1,300,000.00	$1,300,000.00
		CONSTRUCTION SUBTOTAL				**$14,343,196.00**

TAXIWAYS (APPROX. 7,500' X 35')

ITEM #	SPEC #	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
1	M-100	MOBILIZATION	1.0	L.S	$250,000.00	$250,000.00
2	S-100	CONSTRUCTION SAFETY PLAN	1.0	L.S.	$20,000.00	$20,000.00
3	P-152	UNCLASSIFIED EXCAVATION	50,100.0	C.Y.	$2.00	$100,200.00
4	P-152	DISPOSAL OF EXCESS MATERIAL	31,400.0	C.Y.	$4.00	$125,600.00
5	P-153	WATERING	220.0	MGAL	$12.00	$2,640.00
6	P-208	AGGREGATE BASE COURSE (24" DEPTH)	50,100.0	TON	$18.00	$901,800.00
7	P-209	CRUSHED AGGREGATE BASE COURSE (9" DEPTH)	18,750.0	TON	$20.00	$375,000.00
8	P-401	BITUMINOUS SURFACE COURSE (5-1/2" DEPTH)	9,330.0	TON	$45.00	$419,850.00
9	P-401	BITUMINOUS MATERIAL (PG 64-34)	699.0	TON	$750.00	$524,250.00
10	P-602	BITUMINOUS PRIME COAT	126.0	TON	$900.00	$113,400.00
11	P-603	BITUMINOUS TACK COAT	41.9	TON	$700.00	$29,330.00
12	P-620	INITIAL TAXIWAY MARKING	1.0	L.S.	$5,000.00	$5,000.00
13	P-620	FINAL TAXIWAY MARKING	1.0	L.S.	$10,000.00	$10,000.00
14	D-701	18" RCP CULVERT	750.0	L.F.	$30.00	$22,500.00
15	D-705	4" PERFORATED UNDERDRAIN PIPING	17,200.0	L.F.	$9.00	$154,800.00
16	D-705	4" SOLID UNDERDRAIN PIPING	1,100.0	L.F.	$9.00	$9,900.00
17	D-705	UNDERDRAIN CLEANOUT W/FRAME AND LID	6.0	EACH	$450.00	$2,700.00
18	D-705	TIE UNDERDRAIN TO EXISTING INLET	4.0	EACH	$500.00	$2,000.00
19	D-705	60" UNDERDRAIN MANHOLE	2.0	EACH	$5,000.00	$10,000.00
20	D-705	48" UNDERDRAIN MANHOLE	38.0	EACH	$3,000.00	$114,000.00
21	T-901	SEEDING AND FERTILIZING (GRASS)	30.0	ACRE	$750.00	$22,500.00
22	T-905	TOPSOILING FROM STOCKPILE	24,000.0	C.Y.	$3.00	$72,000.00
23	TL-100	FIELD LABORATORY, TYPE I	1.0	L.S.	$5,000.00	$5,000.00
24	SP-2	GEOTEXTILE SEPARATOR FABRIC	37,500.0	S.Y.	$2.00	$75,000.00
25	PLANS	SILT FENCE	3,000.0	L.F.	$4.00	$12,000.00
26	PLANS	EROSION CONTROL MAT	10,000.0	S.Y.	$2.00	$20,000.00
27	PLANS	MEDIUM INTENSITY TAXIWAY LIGHTING (MITL) SYSTEM	1.0	L.S.	$300,000.00	$300,000.00
		CONSTRUCTION SUBTOTAL				**$3,699,470.00**

CONSTRUCTION TOTAL	**$24,222,952.00**
LAND ACQUISITION (APPROX. 865 ACRES)	**$3,320,000.00**
RELOCATION OF EXISTING HANGARS AND BUILDINGS TO NEW AIRPORT (INCLUDING MOVING COST; CONCRETE FLOORS; CONCRETE FOUNDATIONS; & UTILITIES)	**$1,450,000.00**
NEW TERMINAL BUILDING (INCLUDING UTILITIES)	**$1,250,000.00**
RELOCATION OF FUEL SYSTEM & TANKS TO NEW AIRPORT	**$75,000.00**
DESIGN ENGINEERING	**$950,000.00**
BID AND NEGOTIATIONS	**$45,000.00**
CONSTRUCTION ENGINEERING	**$1,250,000.00**
OUTSIDE TESTING (ASPHALT)	**$25,000.00**
ADMINISTRATION	**$42,048.00**
ESTIMATED PROJECT COST	**$32,630,000.00**

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
420 South Garfield Avenue, Suite 400
Pierre, South Dakota 57501-5408

RECEIVED
OCT 18 2007

October 16, 2007

Mr. Andy Olson, Project Coordinator
HNTB Corporation
7900 International Drive, Suite 600
Minneapolis, Minnesota 55425-8910

Re: Brookings Regional Airport
Alternatives, Brookings County,
South Dakota

Dear Mr. Olson:

This letter is in response to your request dated September 13, 2007, for environmental comments regarding the above referenced project which currently involves consideration of three alternatives: no expansion of the existing airport, expansion of the existing airport, and construction of a new airport in an alternate location outside the City of Brookings. As per maps provided with your letter, the existing airport and expansion includes portions of Sections 22, 26, 27, and 28 in Township 110 North, Range 50 West, Brookings County, South Dakota. The proposed new airport site includes portions of Sections 20, 21, 22, 27, 28, and 33 in Township 109 North, Range 49 West, Brookings County, South Dakota.

According to National Wetlands Inventory maps (copies enclosed, also available online at http://wetlands.fws.gov/), wetlands exist within each of the proposed project areas, with substantially greater wetland acreage found within the proposed expansion area of the existing Brookings airport than the proposed new airport site. If a project may impact wetlands or other important fish and wildlife habitats, the U.S. Fish and Wildlife Service (Service), in accordance with the National Environmental Policy Act of 1969 (42 U.S.C. 4321-4347) and other environmental laws and rules, recommends complete avoidance of these areas, if possible; then minimization of any adverse impacts; and finally, replacement of any lost acres; in that order. Alternatives should be examined and the least damaging practical alternative selected. If wetland impacts are unavoidable, a mitigation plan addressing the number and types of wetland acres to be impacted and the methods of replacement should be prepared and submitted to the resource agencies for review.

In accordance with section 7(c) of the Endangered Species Act, as amended, 16 U.S.C. 1531 et seq., we have determined that the following federally listed species may occur in the project area (this list is considered valid for 90 days):

Species	Status	Expected Occurrence
Western prairie fringed orchid (Platanthera praeclara)	Threatened	Possible Habitat, No Recent Specimens.
American burying beetle (Nicrophorus americanus)	Endangered	Possible Resident, No Recent Specimens.
Topeka shiner (Notropis topeka)	Endangered	Known Resident.

The Western prairie fringed orchid has not recently been documented in South Dakota. However, the life cycle of the plant often makes it difficult to detect. Additionally, populations currently exist in the neighboring states of Nebraska, Iowa, Minnesota, and North Dakota, and potential habitat may still be found in South Dakota. Although the plant is typically associated with intact native prairie, the Western prairie fringed orchid has also been found on disturbed sites. Potential habitats generally include mesic upland prairies, wet prairies, sedge meadows, subirrigated prairies, and swales in sand dune complexes. If these habitats exist within the proposed project area, surveys for the Western prairie fringed orchid should be considered prior to construction and any results reported to this office.

American burying beetles were historically documented in Brookings County but recently have only been found in Todd, Tripp, Bennett, and Gregory Counties. The American burying beetle was formerly known to occupy a broad geographic range and habitat was not thought to be limiting. However, recent studies have shown some preference by this species for sandy or sandy-loam grasslands with interspersed stands of low-meadow cottonwoods. If this type of habitat exists at either of the proposed new airport sites, surveys for the American burying beetle should be considered and any results reported to this office.

Topeka shiners are known to occupy numerous small streams within eastern South Dakota and are concentrated within the Big Sioux, Vermillion, and James River watersheds. Both the proposed expansion area of the existing airport and the proposed construction site of the new airport overlap with known or potential Topeka shiner streams. The existing airport expansion potentially could impact Six Mile Creek - a waterway known to harbor the species. The proposed new airport site may impact tributaries of Medary Creek, a known occupied stream; thus, the Medary tributaries have the potential to harbor Topeka shiners as well. Any actions that affect these waterways, including but not limited to factors such as instream habitats, water quality, water supply, groundwater input, and use of (or access to) habitat by aquatic life, have the potential to affect the Topeka shiner.

In addition to Topeka shiner considerations, both Six Mile Creek and Medary Creek have been classified by the Service as a Type IV, Limited Fisheries Resources. Riverine and riparian areas are among the highest resource priorities in this region of the Service. We recommend minimization of impacts to these resources and mitigation of all unavoidable habitat losses. The following methods should be implemented to minimize environmental impacts:

1. Instream work should not be undertaken during fish spawning periods. Most spawning occurs in April, May, June, and July.

2. Stream bottoms and wetlands impacted by construction activities should be restored to pre-project elevations.

3. Removal of vegetation and soil should be accomplished in a manner to reduce soil erosion and to disturb as little vegetation as possible.

4. Grading operations and reseeding of native species should begin immediately following construction.

5. If trees or brush will be impacted by the project, a ratio of at least 2:1 acres planted versus acres impacted should be incorporated into mitigation plans for the project.

If the Federal Aviation Administration or their designated representative determines that the project "may adversely affect" listed species in South Dakota, it should request formal consultation from this office. If a "may affect - not likely to adversely affect" determination is made for this project, it should be submitted to this office for concurrence. If a "no effect" determination is made, further consultation may not be necessary. However, a copy of the determination should be sent to this office.

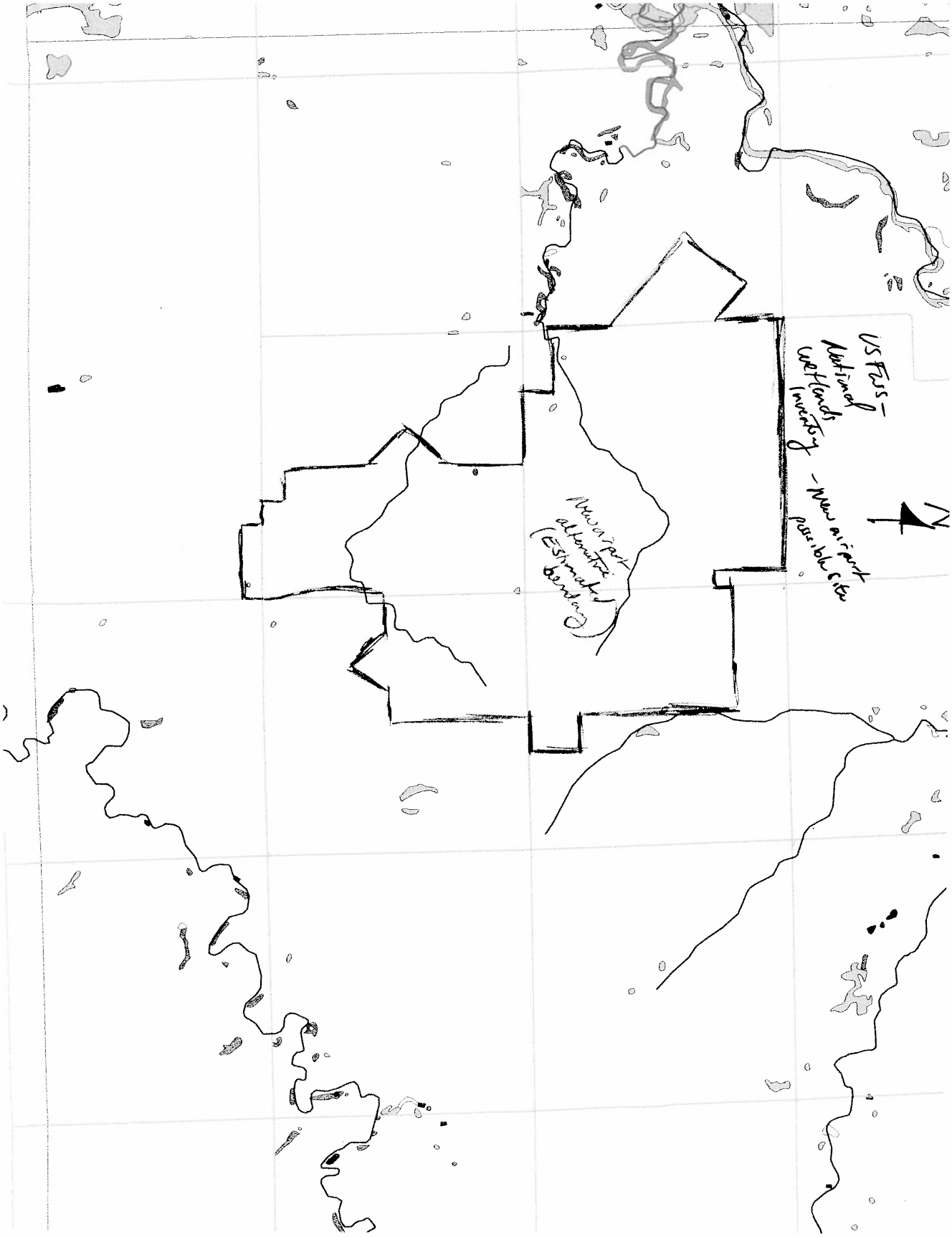
If changes are made in the project plans or operating criteria, or if additional information becomes available, the Service should be informed so that the above determinations can be reconsidered.

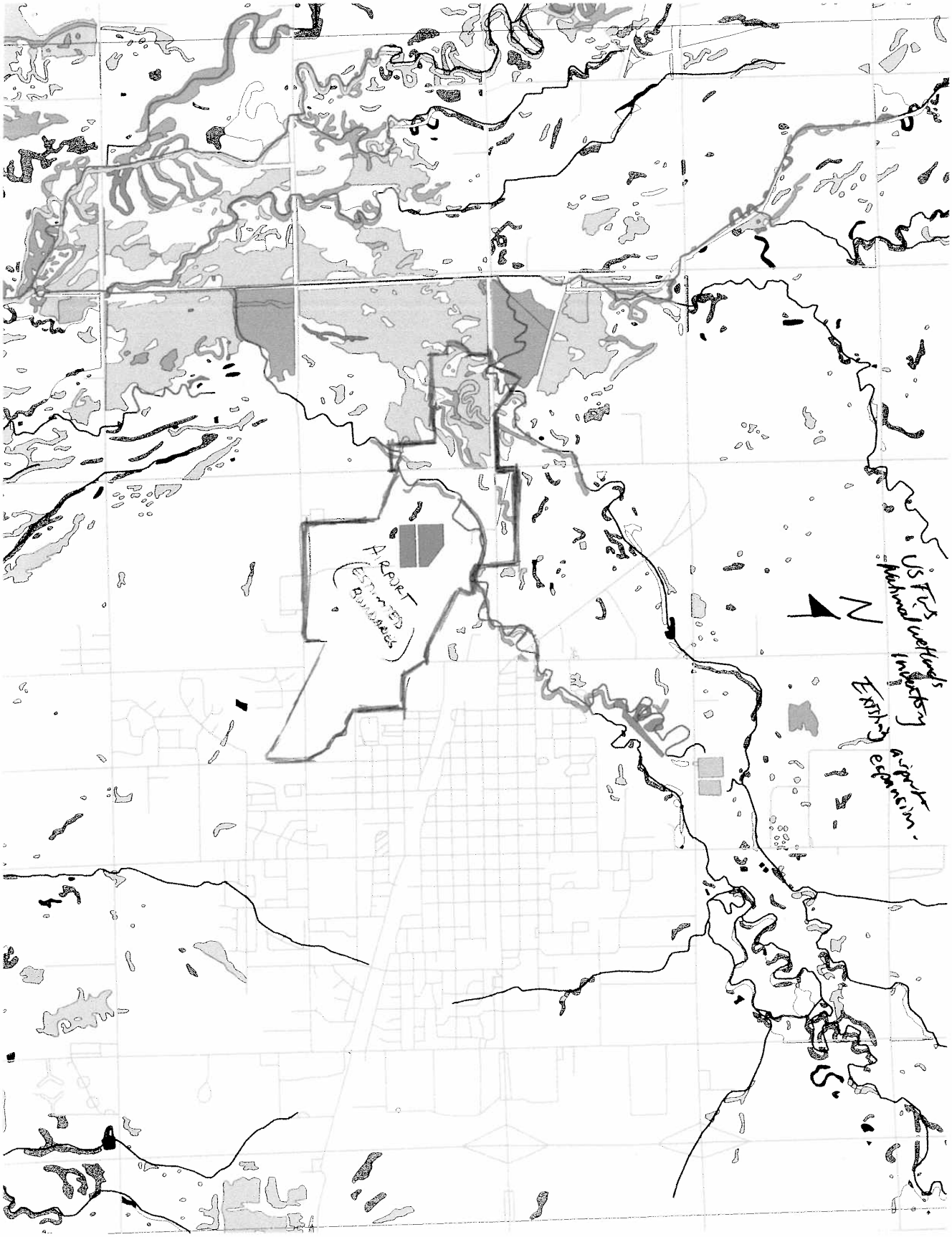
The Service appreciates the opportunity to provide comments. If you have any questions regarding these comments, please contact Natalie Gates of this office at (605) 224-8693, Extension 234.

Sincerely,

Pete Gober
Field Supervisor
South Dakota Field Office

Enclosures


US Fish & Wildlife National Wetlands Inventory
New airport alternative (estimated boundary)
- New airport possible site
N


AIRPORT
(ESTIMATED
BOUNDARIES)
N
US F&WS
Mapped wetlands
Inventory
Existing airport
expansion.

DEPARTMENT OF GAME, FISH AND PARKS
Foss Building
523 East Capitol
Pierre, South Dakota 57501-3182

GREAT FACES. GREAT PLACES.

RECEIVED
OCT 19 2007

October 16, 2007

Mr. Andy Olson, Project Coordinator
HNTB Corporation
7900 International Drive
Suite 600
Minneapolis, MN 55425-8910

RE: Analysis of Alternatives for the Development of the Brookings Regional Airport, Brookings, South Dakota

Dear Mr. Olson:

This letter is in response to your request dated September 13th, 2007, for environmental comments regarding the above referenced project involving alternatives analysis for the development of the Brookings Regional Airport.

According to the National Wetland Inventory maps, wetlands exist within the proposed alternative area. If a project may impact wetlands or other important fish and wildlife habitats, this Department recommends complete avoidance of these areas, if possible, followed by minimization of any adverse impacts, and finally replacement or mitigation of any lost acres. Alternatives should be examined and the least damaging practical alternative selected.

Please also be advised that work requiring the alteration or disturbance of wetlands or streams may require a permit from the U.S. Army Corps of Engineers according to regulations set forth in Section 404 of the Clean Water Act. You may wish to contact the South Dakota Regulatory Office at 28563 Powerhouse Road, Room 118, Pierre, South Dakota 57501, phone (605) 224-8531.

Thank you for the opportunity to provide comments on this project. If changes are made to the project plans or if I may be of further assistance, please contact me at (605) 773-6208.

Sincerely,

Leslie Petersen

Leslie Petersen
Aquatic Resource Coordinator

Wildlife Division: 605/773-3381 Parks and Recreation Division: 605/773-3391 FAX: 605/773-6245 TTY: 605/773-3381

From: Ingram, Troy J NWO [mailto:Troy.J.Ingram@usace.army.mil]
Sent: Monday, December 01, 2008 8:51 AM
To: Mat Knutson
Subject: RE: Brookings Airport Floodway Questions

Mat,

The City of Brookings, South Dakota participates in the National Flood Insurance Program (NFIP). According to the Flood Insurance Rate Map (FIRM) panel 46011C 0440C dated July 16, 2008 the proposed runway project extends into the floodway.

According to the NFIP, for a project to be constructed in the regulatory floodway, a "no rise" analysis must be conducted. This analysis is used to determine the impacts of the proposed project. The analysis must ensure that there is zero increase in the floodway water surface elevation. To accomplish this analysis the effective hydraulic model for Sixmile Creek should be obtained from the Federal Emergency Management Agency (FEMA). See Title 44 CFR 60.3(d) for additional NFIP requirements.

It should be ensured that the proposed project is in compliance with floodplain management criteria of the City of Brookings, Brookings County, and the State of South Dakota. A floodplain permit may be required for the proposed activity. It appears that construction activities involve work in waters of the United States, and a Section 404 permit may be required. For a detailed review of the Section 404 permit requirements, final project plans should be sent to:

Mr. Steve Naylor
U.S. Army Corps of Engineers
Pierre Regulatory Office
28563 Powerhouse Road, Room 120
Pierre, South Dakota 57501

Thanks,

Troy Ingram

-----Original Message-----
From: Mat Knutson [mailto:mat.knutson@liesch.com]
Sent: Wednesday, November 26, 2008 12:10 PM
To: Ingram, Troy J NWO
Subject: Brookings Airport Floodway Questions

Troy -

Attached is the figure indicating the proposed project at Brookings Airport (S.D.) overlain on the FEMA floodplain map.

Please note:

* Blue is the new taxiways/runways

* Yellow is the existing

* Green dashed line represents the extent of construction and grading activities required to support the runways/taxiways (this includes ultimate runway safety areas, approach lighting, etc).

As mentioned on the phone, the primary question is regarding the small portion of this construction that appears to intrude on the designated floodway (indicated on the FEMA map with the diagonal hatching). Assuming appropriate mitigative efforts can be constructed to maintain the existing flow capacity of the floodway (large culverts, etc.) such that upstream floodplain extents are not exacerbated, can construction within this floodway occur?

Any comments from your office would be appreciated on this matter. If you have any questions or need additional information, please let me know.

Sincerely,

Mat Knutson

Liesch Associates, Inc.

13400 15th Ave North

Minneapolis, MN 55441

763-489-3102

mat.knutson@liesch.com <mailto:mat.knutson@liesch.com>

The information transmitted is intended only for the person or entity to which it is addressed and may contain confidential and/or privileged material. Any review, retransmission, dissemination or other use of, or taking of any action in reliance upon, this information by persons or entities other than the intended recipient is prohibited. If you received this in error, please contact the sender and delete the material from any computer.

EMAIL FROM Bob Babcock to USACE Re: The proposed Brookings Airport (expansion alternative) Six Mile Creek Relocation

---Original Message-----
From: Bob Babcock [mailto:bobb@helmsengineering.com
<mailto:bobb@helmsengineering.com>]
Sent: Wednesday, November 18, 2009 11:32 AM
To: Lowin, Thomas A NWO
Cc: Greg Albjerg; Larry Dallam; Mark Salzman
Subject: FW: BKX Expansion Alternative- Six Mile Creek Relocation

Tom,

Per our telephone conversation, please review the attached proposed reroute of 6-mile Creek, at the Brookings Regional Airport, and comment with regards to your assessment as to the viability of this option based on the data attached. We understand that a detailed permit would be required, if this option is selected, as part of the design phase and that a no-rise certificate would also be required.

If you have any questions feel free to call any time.

Thanks Tom!

Bob J. Babcock, P.E.

HelmsCMYK300dpi

221 Brown County Highway 19
PO Box 111
Aberdeen, South Dakota 57401
Phone: 605.225.1212
Fax: 605.225.3189
Email: bobb@helmsengineering.com <mailto:craigh@helmsengineering.com
<mailto:craigh@helmsengineering.com> >

From: Mark Salzman
Sent: Monday, November 16, 2009 5:00 PM
To: 'bobb@helmsengineering.com'
Cc: Greg Albjerg; Larry Dallam; Terry Huntrods
Subject: BKX Expansion Alternative- Six Mile Creek Relocation

Bob,

Please forward attached memo regarding the proposed Brookings Airport (expansion alternative) Six Mile Creek Relocation to the Corps of Engineers for their review and comment. I have attached a more detailed Figure 14a that illustrates the proposed re-route and floodplain impacts. Please let me know if you need additional information.

Thank you,

Mark L. Salzman, ASLA
Principal Landscape Architect
HNTB Infrastructure
7900 International Drive
Suite 600
Minneapolis, MN 55425-8910

Tel (952) 345-5968

Fax (952) 920-0173

www.hntb.com <file:///\\www.hntb.com> <http://www.hntb.com/
<http://www.hntb.com/> >

INTEROFFICE
CORRESPONDENCE

To
Tom Angus

From
Terry Huntrods

Cc
Greg Albjerg

Subject
Brookings Airport
Six Mile Creek Relocation

Date
11/16/2009

The proposal to relocate Six Mile Creek as it flows through the Brookings Airport requires an analysis of the hydrology and hydraulics of the Creek. The purpose of this memorandum is to present a preliminary analysis of the feasibility of relocating the Creek.

HYDROLOGY

Flooding from Six Mile creek was studied in the Flood Insurance Study, City of Brookings, South Dakota, April 1978, prepared by the U.S. Department of Housing and Urban Development, Federal Insurance Administration. The projected flood flows and extent of flooding in the Six Mile Creek basin were presented in this report. These flows were taken, without change, from the report, Flood Plain Information, Volume II, Six Mile Creek, prepared by the Omaha District of the US Army Corps of Engineers in December of 1974. The flood flows presented in this report were taken from a USGS river gage (#06479910) located at the DM&E Railroad bridge over Six Mile Creek, and were based on 4 years of record. The river gage was abandoned in 1981. During that time, records were kept of daily flows and river stages. The data from this gage during the period of operation are presented in the USGS Web site at the following location.

http://nwis.waterdata.usgs.gov/nwis/peak?site_no=06479910&agency_cd=USGS&format=html

The records for the peak flow from each of the 10 years of record are presented in Attachment A.

The peak flows were then analyzed using the Log-Pearson III methodology to determine the projected major flood flows. The Log-Pearson III methodology is the accepted methodology by

accomplished by a combination of proper channel design and by compensatory excavation in the flood plain. Based on the currently available topography, this excavation would not require any additional land acquisition, but could be done entirely on the current airport property. It appears that the re-routing would not cause a significant change in channel gradient, and that a smoother flow line and a more efficient channel cross-section can be used to prevent an increase in flood stage.

ATTACHMENT A

USGS Surface Water for USA: Peak Streamflow - Microsoft Internet Explorer provided by HNTB Corporation

http://nwis.waterdata.usgs.gov/nwis/peak?site_no=06479910&agency_cd=USGS&format=html

USGS science for a changing world

USGS Home
Contact USGS
Search USGS

National Water Information System: Web Interface

USGS Water Resources

Data Category: Surface Water | Geographic Area: United States | GO

News New Mapper ! - updated July 2009

Peak Streamflow for the Nation

USGS 06479910 SIXMILE CR NR BROOKINGS SD

Available data for this site: Surface-water: Peak streamflow | GO

Brookings County, South Dakota
Hydrologic Unit Code 10170202
Latitude 44°20'46", Longitude 96°44'51" NAD27
Drainage area 54 square miles
Contributing drainage area 54 square miles
Gage datum 1,618.57 feet above sea level NGVD29

Output formats

- Table
- Graph
- Tab-separated file
- peakfq (watstore) format
- Reselect output format

Water Year	Date	Gage Height (feet)	Stream-flow (cfs)
1971	Mar. 12, 1971	9.26[1]	125
1972	May 29, 1972	8.71	405
1973	Mar. 06, 1973	7.96[1]	325
1974	Mar. 07, 1974	[1,2]	95
1975	Apr. 24, 1975	4.91[2]	85.0
1976	Mar. 20, 1976	9.17[1]	300
1977	Jun. 16, 1977	9.14[2]	423
1978	Mar. 28, 1978	9.45[2]	936
1979	Apr. 12, 1979	9.50[1]	700
1980	Jun. 25, 1980	9.84	760

Peak Gage-Height Qualification Codes.

- 1 -- Gage height affected by backwater
- 2 -- Gage height not the maximum for the year

Questions about sites/data?
Feedback on this web site
Automated retrievals

Top
Explanation of terms
Subscribe for system changes
News

Internet

Flood frequency by the Log Pearson III method

Stream: Six-Mile Creek

n = 10

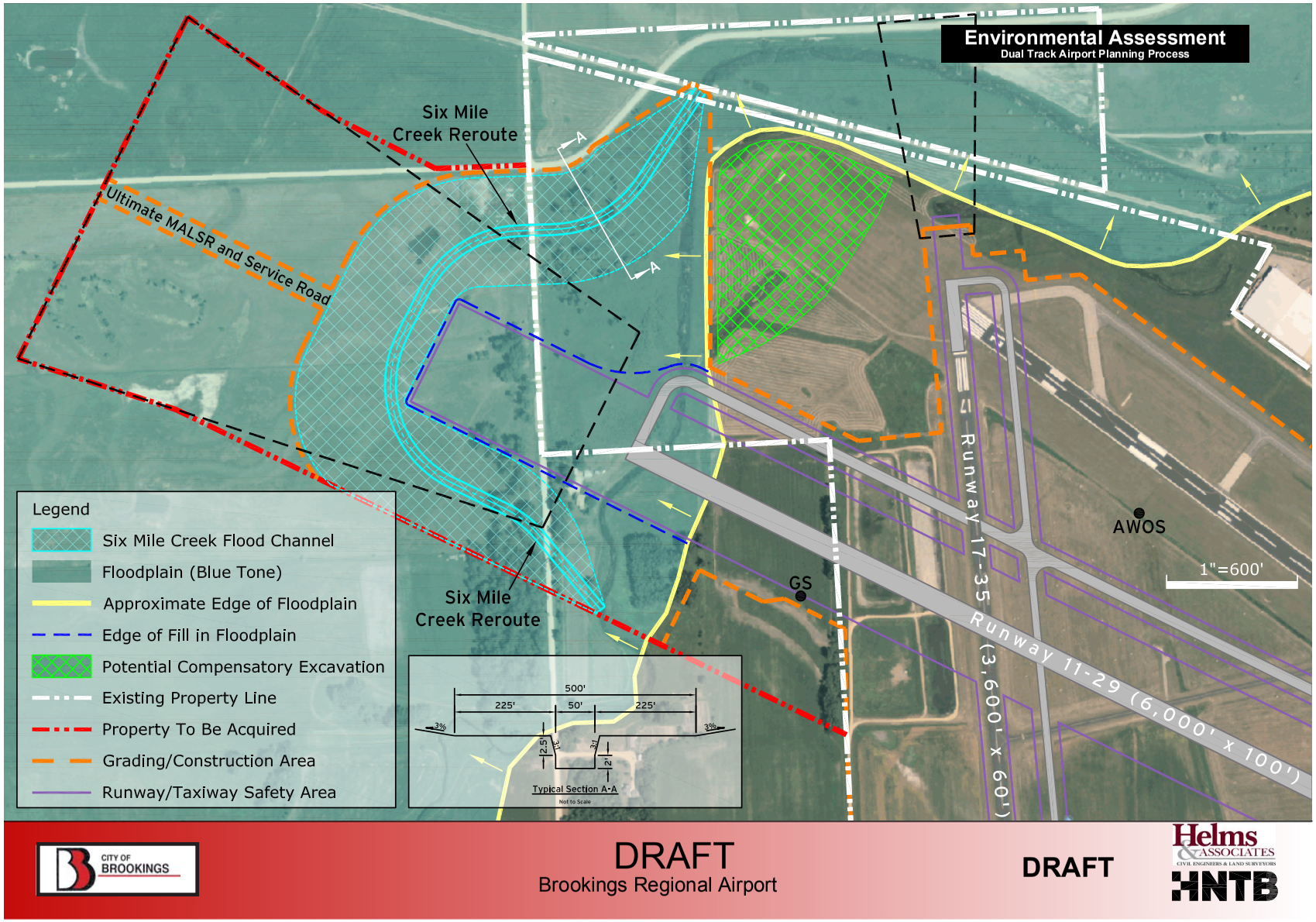
Q(1) = 85; Q(2) = 95; Q(3) = 125; Q(4) = 300; Q(5) = 325; Q(6) = 405; Q(7) = 423; Q(8) = 700; Q(9) = 760; Q(10) = 936.

skew coefficient [of the logarithms] C_s = -0.42

OUTPUT:

i	Return period T (yr)	Probability P (percent)	Frequency factor K	y = log (Q)	Flood discharge Q (cfs)
1	1.05	95.2	-1.754	1.832	68
2	1.11	90.1	-1.318	1.996	99
3	1.25	80	-0.815	2.186	153
4	2	50	0.069	2.518	330
5	5	20	0.855	2.814	652
6	10	10	1.228	2.955	901
7	25	4	1.599	3.094	1242
8	50	2	1.824	3.179	1509
9	100	1	2.016	3.251	1782
10	200	0.5	2.184	3.314	2063

Your request was processed at 09:37:29 am on July 22nd, 2009 [090722 09:37:29].



CITY OF BROOKINGS

DRAFT
Brookings Regional Airport

DRAFT

Helms & Associates
CIVIL ENGINEERS & LAND SURVEYORS
HNTB

EMAIL Response from Thomas Lowin USACE Re: The proposed Brookings Airport (expansion alternative) Six Mile Creek Relocation

-----Original Message-----
From: Lowin, Thomas A NWO [mailto:Thomas.A.Lowin@usace.army.mil]
Sent: Friday, November 20, 2009 2:18 PM
To: bobb@helmsengineering.com
Cc: Oehlerking, M J NWO; Greg Albjerg; Mike Wilson; Jackie Lanning
Subject: RE: BKX Expansion Alternative- Six Mile Creek Relocation

Right Bob, I agree. Just thought I would mention, as a reminder.

TL

-----Original Message-----
From: Bob Babcock [mailto:bobb@helmsengineering.com]
Sent: Friday, November 20, 2009 1:58 PM
To: Lowin, Thomas A NWO
Cc: Oehlerking, M J NWO; Greg Albjerg; Mike Wilson; Jackie Lanning
Subject: RE: BKX Expansion Alternative- Six Mile Creek Relocation

Thanks for the prompt response Tom!

I am assuming that the functional assessment would be completed with the actual permit and mitigation plan, as part of the final design, as is usually the case for projects such as this. Would you agree?

Bob J. Babcock, P.E.

HelmsCMYK300dpi

221 Brown County Highway 19
PO Box 111
Aberdeen, South Dakota 57401
Phone: 605.225.1212
Fax: 605.225.3189
Email: bobb@helmsengineering.com <mailto:craigh@helmsengineering.com>

From: Lowin, Thomas A NWO [mailto:Thomas.A.Lowin@usace.army.mil]
Sent: Thursday, November 19, 2009 10:34 AM
To: bobb@helmsengineering.com
Cc: Oehlerking, M J NWO
Subject: BKX Expansion Alternative- Six Mile Creek Relocation

Bob,

Since he was initial contact on this project, I conferred with Jim Oehlerking. We concur that this alternative is a viable option for Section
404 of the Clean Water Act permit review. We would recommend that a functional assessment of the existing stream system be completed to use as a baseline in the preparation of a mitigation plan.

Would be glad to provide any additional assistance, if needed.

Tom Lowin
Corps of Engineers
SD Regulatory Office
605-224-8531

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

REPLY TO
ATTENTION OF

11 December 2009

Hydrologic Engineering Branch

HNTB Infrastructure
7900 International Drive
Suite 600
Minneapolis, MN 55425-8910

Dear Mr.Salzman:

The Flood Risk and Floodplain Management Section of the U.S. Army Corps of Engineers, Omaha District, has reviewed your letter dated 16-November, 2009 regarding the expansion of the Brookings Regional Airport and rerouting of Six Mile Creek in Brooking, South Dakota and provides the following comments:

The Federal flood plain management criterion basically states that construction which could be damaged by floodwaters or which could obstruct floodflows should not be located in the 100-year flood plain. If this is not practicable, any nonresidential construction that could be damaged by floodwater must be placed above or flood proofed to above the 100-year floodwater surface elevation. All construction should be designed to minimize potential harm to or within the flood plain. Higher levels of protection are encouraged to provide added safety. If the operation of the constructed facilities is considered critical during flood periods, the facilities should be protected from at least the 500-year flood.

This project requires that the channel of Six Mile Creek be rerouted. To do this a Letter of Map Revision (LOMR) must be completed because the proposed project modifies the existing regulatory floodway and effective Base Flood Elevations. The LOMR process officially revises the Flood Insurance Rate Map to show changes made to the regulatory floodway.

Your plans should be coordinated with the U.S. Environmental Protection Agency, which is currently involved in a program to protect groundwater resources. If you have not already done so, it is recommended you consult with the U.S. Fish and Wildlife Service and the South Dakota Department of Game, Fish, and Parks, regarding fish and wildlife resources. In addition, the South Dakota State Historic Preservation Office should be contacted for information and recommendations on potential cultural resources in the project area.

If construction activities involve any work in waters of the United States, a Section 404 permit may be required. For a detailed review of permit requirements, preliminary and final project plans should be sent to:

Printed on Recycled Paper

U.S. Army Corps of Engineers
Pierre Regulatory Office
Attention: CENWO-OD-R-SD/Naylor
28563 Powerhouse Road, Room 120
Pierre, South Dakota 57501

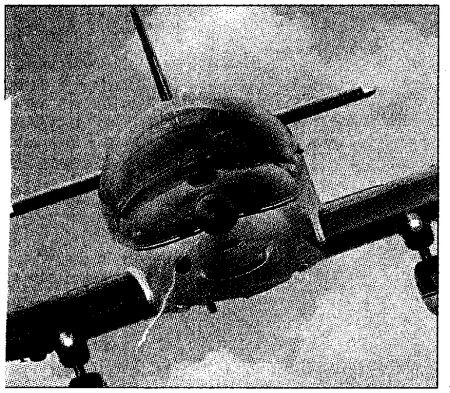
In addition, please update your records with our current mailing address:

U.S. Army Corps of Engineers, Omaha District
Planning Branch
Attention: CENWO-PM-AE
1616 Capitol Ave.
Omaha, Nebraska 68102-4901

If you have any questions, please contact Mr. Troy Ingram of my staff at (402) 995-2325.

Sincerely,

for Randall L. Behm, P.E., CFM
Chief, Flood Risk and Floodplain Management
Hydrologic Engineering Branch
Engineering Division



Taking aim at Trenton Township?

Township says 'no' to airport relocation

■ 'We shouldn't be penalized for Brookings' mistakes'

By John Kubal
The Brookings Register

In dealing with violations of Federal Aviation Administration zoning regulations by the Brookings Regional Airport, city councilors are looking at three potential courses of action – and one of them does not sit well with residents of Trenton Township in Brookings County.

So on June 28, at a special meeting and following about two hours of discussion, about 30 to 35 township residents voted "that they do not want the Brookings Municipal Airport relocated in Trenton Township."

Ronald Sckerl, one of three township board members, told the *Register* on Monday, "There was not one comment in favor of the relocation, and lots of comments against it. There was a unanimous vote to oppose it."

To that end, officers took the extraordinary step of placing legal notices in the *Register* notifying the public that Trenton Township residents had turned thumbs down on an airport in their backyards.

Relocation would in effect mean construction of a completely new airport to the southeast between Brookings and Elkton. Sckerl called that "disturbing," adding that 12 township residents live

See **AIRPORT**, page A2

Brookings Register 10 Jul 2007 page 1

Brookings McDonald's Restaurant was robbed of more than $100.

The theft was reported to the Brookings Police Department at 11:24 a.m. on Monday. The matter remains under investigation.

the damage being done to vents, a door, and blinds inside the vehicle. No dollar amount for the damages has been determined.

Some juvenile suspects have been identified.

– From staff reports

AIRPORT: Would lose prime farmland

Continued from page A1

in that area and the township "could lose 1,000 prime acres of farmland. We'd lose the tax base. That bothers us. We shouldn't be penalized for their mistakes."

The other two courses of action, which would not impact the township residents, are to do nothing and face the loss of federal funding, or to keep the airport at its present location and realign a runway on land to the west.

Sckerl said, "We're aware they have problems, and some of them are of their own making."

He added that he was following guidance in his "township officer's manual," which advises that part of his job "is to protect the safety and property of our citizens."

Sckerl said, "We have to move now and officially oppose this before it's too late."

Contact John Kubal at jkubal@brookingsregister.com.

Low: 55

Legal 295, 2x, 7/11,12,13,16,17,18
TRENTON TOWNSHIP
A special meeting for the citizens of Trenton Township was held on June 28, 2007.
The citizens voted that they do not want toe Brookings Municipal Airport relocated in Trenton Township.
Clerk
Tanya G. Clark

established all-time record highs
Middle Atlantic Coast Region. (T

REC

Brookings County:	Today Hi	Lo	W
Aurora	75	52	w
Bruce	73	50	w
Bushnell	75	51	w
Elkton	73	53	w
Oakwood SP	74	50	w
Sinai	76	52	w
Volga	74	52	w
White	72	52	w

TOMORRO

RECRE T

Comfortably
stormy late in
Brisk and gusty winds may become an issue for those with plans to be outdoors, but minus the wind, conditions will be rather excellent for most outdoor activities and projects. Overall

ARTICLE VII. CONSTRUCTION OR ALTERATION OF OBJECTS THAT MAY AFFECT NAVIGABLE AIRSPACE

Sec. 22-500. South Dakota Aeronautics Commission Application for Location of Aeronautical Hazard.
(a) Before any person or entity may begin construction or alteration of any structure within two miles from the nearest boundary of any public airport, the height of which is over ten feet above the elevation of an airport, for each 500 feet of distance from the nearest boundary of the airport (50:1 slope), they shall first file an application with and obtain the approval of the South Dakota Aeronautics Commission to enter upon and complete such construction or alteration. However, no application is needed if the construction or alteration is within the corporate limits of a municipality and is adjacent to other structures of a permanent character which are an equal or greater height than the construction or alteration proposed.
(b) The application referred to in subsection (a) may be obtained from the South Dakota Aeronautics Commission.
(Ord. No. 26-07, § I, 9-11-2007)

Sec. 22-501. Application for construction approval--Sixty days' notice required.
A person shall submit the application provided in section 22-500 to the South Dakota Aeronautics Commission for approval, as required under SDCL 50-9-1 or 50-9-7, at least 60 days before the proposed date that construction is to begin. A copy of the application provided in section 22-500 shall be filed with the city engineer at the time of filing with the South Dakota Aeronautics Commission.
(Ord. No. 26-07, § I, 9-11-2007)

Sec. 22-502. Notice to Federal Aviation Administration ("FAA") and city.
Any person, or agent, who intends to sponsor construction, as described below, is required to submit to the Federal Aviation Administration, with a contemporaneous copy to the Brookings City Engineer, FAA Form 7460-1, Notice of Proposed Construction or Alteration to the Federal Aviation Administration, in accordance with Advisory Circular No. 70/7460-2K, if the proposed construction or alteration falls within any of the following categories:
(1) *Greater than 200 feet in height.* The proposed object would be more than 200 feet above ground level at its location.
(2) *Near a public use airport or heliport.*
a. *Airport.* The proposed object or alteration would be within 20,000 feet of the Brookings Regional Airport and the object would exceed a slope of 100:1 horizontally (100 feet horizontally for each one-foot vertically) from the nearest point of the nearest runway.
b. *Heliport.* The proposed object would be within 5,000 feet of a heliport and would exceed a 25:1 horizontal slope (25 feet horizontally for each one-foot vertically) from the nearest landing and takeoff area of that heliport.
(3) *Highways and railroads.* The proposed object is a traverse way which would exceed the standards listed in subsection 22-500(2)(a) and (b) above, after the height of the object is adjusted upward as follows:
a. *Private road:* Ten feet or the height of the highest mobile object that would traverse the roadway, whichever is greater.
b. Other public roadways: 15 feet.

c. Interstate Highways: 17 feet.
d. Railroad: 23 feet.
e. Waterway or any other thoroughfare not previously mentioned: an amount equal to the highest mobile object that would traverse the waterway or thoroughfare.
(4) *Objects on a public use airport or heliport.* The proposed construction or alteration would be located upon an airport or heliport, regardless of height or location.
(5) *When requested by the FAA.* The FAA may request Form 7460-1 if available information indicates the proposed construction or alteration may exceed an obstruction standard or the proposed construction or alteration may cause electromagnetic interference to aircraft, particularly construction associated with an AM, FM, or TV station including a change in authorized frequency or transmitting power, may cause transmitted signals to be reflected upon ground-based or airborne air navigation communications equipment, or affect instrument procedures. In addition, notice may be requested when the proposal may affect an air traffic control procedure, may obstruct air traffic controllers' line of sight capability, or may affect air traffic control radar.
(Ord. No. 26-07, § I, 9-11-2007)

Sec. 22-503. Types of structures which require faa notification.
Construction or alteration of all structures located within the areas described in this article are subject to reporting. The following are examples of structures requiring Form 7460-1 Notice to the FAA.
(1) *Proposed construction or alteration of structures such as:*
a. Buildings.
b. Antenna towers.
c. Roadways.
d. Overhead communications and transmission lines as well as the height of the supporting structures.
e. Water towers and the supporting structure.
(2) *Construction equipment or other temporary structures such as:*
a. Cranes.
b. Derricks.
c. Stockpiles of equipment.
d. Earth moving equipment.
(Ord. No. 26-07, § I, 9-11-2007)

Sec. 22-504. When FAA Form 7460-1 must be filed.
FAA Form 7460-1 must be submitted to the FAA:
(1) At least 30 days before the earlier of the following:
a. The date the proposed construction or alteration is to begin, or
b. The date the application for a building permit will be filed.
(2) On or before the date the application for construction is filed with the Federal Communications Commission (FCC), if the proposed structure is subject to FCC licensing requirements.
(3) Immediately by telephone or other expeditious means to the nearest FSS, with written notification submitted within five days thereafter, if immediate construction or alteration is required as in cases involving public services, health or safety.

(4) As early as possible in the planning stage but not less than 30 days before construction will begin.
(Ord. No. 26-07, § I, 9-11-2007)

Sec. 22-505. Where to file FAA Form 7460-1.
(a) Notification of the proposed construction or alteration shall be made on FAA Form 7460-1, Notice of Proposed Construction or Alteration. Additional information such as charts and/or drawings that accurately depict the proposed construction or alteration shall be included to facilitate the FAA's analysis of the project.
(b) The completed form shall be mailed to the manager, air traffic division, of the regional FAA office having jurisdiction over the area within which the construction or alteration will occur, and a copy shall be contemporaneously filed with the Brookings City Engineer.
(Ord. No. 26-07, § I, 9-11-2007)

LND ALW MW
Brookings EA File

U.S. Department
of Transportation
**Federal Aviation
Administration**

Federal Aviation Administration
Bismarck Airports District Office
2301 University Drive, Building 23B
Bismarck, ND 58504

December 18, 2009

Ms. Amy Rubingh
Review & Compliance
South Dakota State Historical Society
900 Governors Drive
Pierre, SD 57501-2217

Dear Ms. Rubingh:

Re: Brookings Regional Airport
Dual Track Airport Planning Process
Environmental Assessment
Brookings County, Brookings, South Dakota
Request for Concurrence – BKX (Brookings) Expansion Alternative
Request for Concurrence – New Airport Alternative

The Brookings Regional Airport (BKX) is a general aviation airport located in the City of Brookings, South Dakota. BKX has a 5,231-foot by 100-foot primary Runway 12/30 (with the Instrument Landing System (ILS) with approach lights on the Runway 30 end), a full length parallel taxiway, and a 3,600-foot by 60-foot crosswind Runway 17/35. The airport facility includes an access road, a terminal, a fence along the property boundary, aprons, hangar areas, and connecting taxiways. The Existing Airport and No Action Alternative for the Brookings Regional Airport "Figure 2" is Enclosure 1.

Based on the findings of the BKX Master Plan in 2006, the City initiated a process that examined alternatives that would expand BXK and alternatives for a new replacement airport known as the Dual Track Airport Planning Process. The city is conducting an Environmental Assessment (EA) to assess and compare the potential environmental consequences of the selected BXK expansion Alternative and the selected New Airport Alternative.

The information required for Section 106 Review of the Dial Track Airport Planning Process EA is in Enclosure 2. The City of Brookings will choose the preferred alternative <u>after</u> the public hearing and comment period for the EA.

The BKX Expansion Alternative involves the construction of a new 6,000-foot by 100-foot Runway 11/29 (ILS with approach lights on the Runway 11 end), a new full length parallel taxiway for Runway 11/29, and removal of Runway 12/30 and it's associated parallel taxiway. The existing 3,600-foot by 60-foot crosswind Runway 17/35 will be shifted 333-feet to the north (with 333-feet of asphalt removed from the south). The BKX Expansion Alternative would include acquisition of approximately 122 acres of property including one residence. A 10-foot wildlife fence would be erected along the property boundary. No change in utilities would be required. Construction staging and borrow areas would be on site. Floodplains and wetlands (wildlife hazard attractants) within the grading/construction areas will be impacted by this alternative. Six-mile creek is proposed to be rerouted around the Runway 11 end through coordination with the United States Fish and Wildlife Service

and the United States Army Corps of Engineers. The City of Brookings equalization beds will be relocated on airport and the drying beds will be removed. Please refer to Enclosure 2 for the Section Dual Track Airport Planning Process Request for Project Review of Alternatives.

Based on the information included in the enclosed Section 106 Review submittal, the undertaking will have no effect upon historic properties as defined in 36 Code of Federal Regulations (CFR) Section 800.16(i). The Federal Aviation Administration (FAA) has determined "No Historic Properties Affected" for the BKX Expansion Alternative

The New Airport Alternative involves the construction of a new general aviation airport for the City of Brookings southeast of the current airport in Brookings County. This alternative includes construction of a new 6000-foot by 100-foot main Runway 12/30 (with ILS on the Runway 12 end), a full length parallel taxiway, a 3,600-foot by 60-foot crosswind Runway 4/22 with parallel taxiway, associated navigational aids, an access road, a terminal, a 10-foot wildlife fence around the property boundary, and associated facilities (aprons, hangar areas, connecting taxiways). Once the new airport is operational, BKX will be removed from service and the property will be redeveloped by the City of Brookings. The New Airport Alternative would include approximately 885 acres of land acquisition. Construction staging and borrow areas would be on site. It is expected that the new gas/water/wastewater facilities will be contained on the new site. Please refer to Enclosure 2 for the Section Dual Track Airport Planning Process Request for Project Review of Alternatives.

Based on the information included in the enclosed Section 106 Review submittal, the undertaking will have no effect upon historic properties as defined in 36 CFR Section 800.16(i). The FAA has determined "No Historic Properties Affected" for the New Airport Alternative.

The Section Dual Track Airport Planning Process Request for Project Review of Alternatives (Enclosure 2) documentation refers to the noise contours in the discussion of the potential impacts but does not include the noise contours. The preliminary draft EA noise discussion and associated alternative noise contours for the 65 DNL (yearly day/night average sound level) using the FAA Integrated Noise Model version 7.0 "Figures 22, 23, and 24" are Enclosure 3 for your reference.

If you have any questions, please contact me (701) 323-7380.

Sincerely,

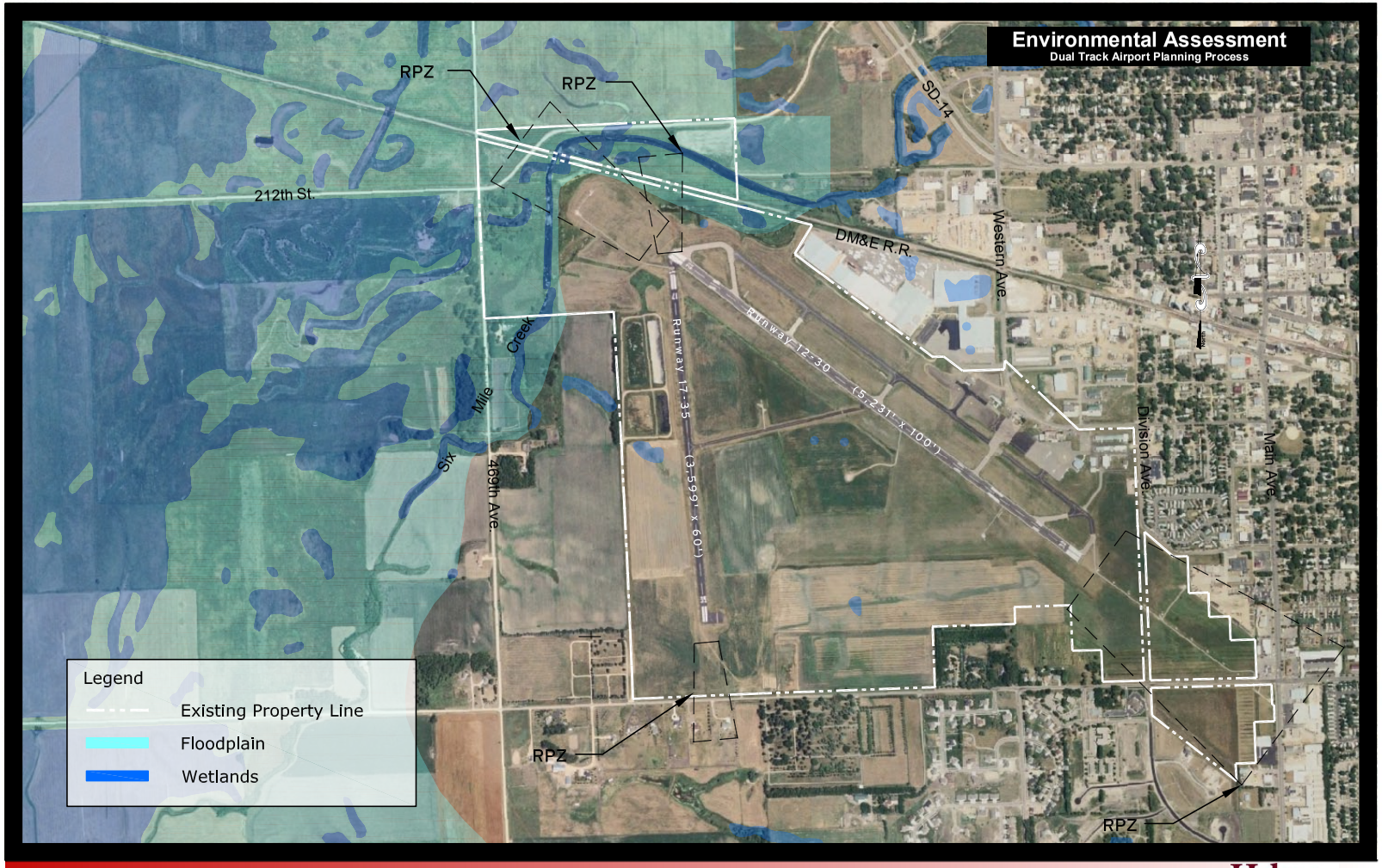
ORIGINAL SIGNED BY
PATRICIA L. DRESSLER

Patricia L. Dressler
Environmental Protection Specialist
Bismarck Airports District Office

cc w/o enclosures:
Jackie Lanning, City Engineer, City of Brookings
Mike Wilson, Manager, Brookings Regional Airport
Bob Babcock, Helms & Associates
Greg Alberg, HNTB Corporation

Enclosure 1

Existing Airport and No Action Alternative
Brookings Regional Airport
"Figure 2"



CITY OF BROOKINGS

Existing Airport and No Action Alternative

Brookings Regional Airport

Figure 2

Helms & Associates Civil Engineers & Land Surveyors

HNTB

Enclosure 2

Section 106 Project Review Submittal

Helms & ASSOCIATES
CIVIL ENGINEERS & LAND SURVEYORS

221 BROWN CO. HWY. #19
PO BOX 111
ABERDEEN, SD 57402-0111

PHONE (605) 225-1212
TOLL FREE 1-888-378-4394
FAX (605) 225-3189

December 2, 2009

Patricia Dressler, Environmental Protection Specialist
FAA, Great Lakes Region
Bismarck Airports District Office
2301 University Dr, Building 23B
Bismarck, ND 58504

Re: Brookings Airport EA
A-3951

Dear Ms. Dressler,

Enclosed is the information for the SHPO 106 submittal. Please contact Bob Babcock if you need any more information.

If you have any questions please feel free to contact our office any time.

Sincerely,
Helms and Associates

Samuel A. Muntean, P.E.

Enclosures

HNTB Corporation
The HNTB Companies
Engineers Architects Planners

7900 International Drive
Suite 600
Minneapolis, MN 55425

Telephone (952) 920-4668
Facsimile (952) 920-0173
www.hntb.com

HNTB

Letter of Transmittal

HNTB Job # 40005
VIA Overnight Delivery
Date 11-30-09

To Bob Babcock
Helms and Asssociates
221 Brown County Highway #19
PO Box 111
Aberdeen, SD 57402

Regarding Brookings Airport EA - SHPO Pkg for FAA

We are forwarding to you

	Estimates		Plans		Prints
x	Reports		Shop Drawings		Samples
	Change Order		Disk		Copy of Letter
	Book	x	Other		

RECEIVED
DEC - 1 2009
HELMS & ASSOCIATES

# of Copies	Drawing #	Last Dated	Code	Description
1		Nov. 2009		Request for Project Review of Alternatives
1		Dec. 2008		Historic Site Survey Forms with Photos
1		Nov. 2009		Figures 3, 4, 16, & 17
1		July 2009		Level III Archeological Investigation
1		Nov. 2009		BKX Expansion Alternative Project Location
1		Nov. 2009		New Airport Alternative Project Location

These are transmitted

	For approval		As requested		Copies for distribution
	For your use		Resubmit		For Review & comment
	Return		Copies for review		No exception taken
	Corrected prints	X	Submit		Amend and resubmit
					Make corrections noted

Please note Bob, Please review and forward to FAA to submit to South Dakota SHPO.

By Greg Albjerg

Copy to File

Enclosure 3

Noise Analysis and
Noise Contours
No Action – "Figure 22"
BKX Expansion Alternative – "Figure 23"
New Airport Alternative – "Figure 24"

4.13. NOISE

The analysis of noise considers the effects of aircraft noise on residential population and noise-sensitive activities at other places (schools, hospitals, nursing homes, churches, auditoriums, outdoor amphitheaters, and concert halls). FAA's most recent compatible land use noise guidelines are contained in Appendix A of Title 14 CFR Part 150.

For aviation noise analysis, the FAA has determined that the cumulative noise energy exposure of individuals resulting from aviation activities must be established in terms of annual average day/night sound level (DNL) as FAA's primary noise metric. According to FAA land use compatibility guidelines, noise exposure levels of less than DNL 65 dBA are compatible with residential and other noise-sensitive land uses.

The assessment of impacts in this section is based on the years 2020 and 2025 (representing the build-out date and five years after the build-out date, see Section 1.6). The stated impact of the proposed project alternative(s) represents the difference between the effect on the environment with the proposed project alternative(s) and the effect without it (i.e., No Action) in 2020 and 2025.

4.13.1. Significant Noise Impact Thresholds

According to FAA Order 1050.1E, a significant noise impact would occur if the analysis shows that the proposed project would cause noise sensitive areas to experience an increase in noise of DNL 1.5 dB or more resulting in a DNL of 65 dB or higher, when compared to the no action alternative for the same timeframe. For example, an increase from DNL 63.5 to 65 dB is considered a significant impact. The Federal Interagency Committee on Noise (FICON) recommends that if noise-sensitive areas would be at or above DNL 65 dB and would have an increase of DNL 1.5 dB or more, further analysis should be conducted, and mitigation options considered for noise-sensitive areas between DNL 60-65 dB having an increase of DNL 3 dB or more due to the proposed action.

4.13.2. Methodology and Assumptions

The FAA Integrated Noise Model (INM) version 7.0 was used to analyze potential noise impacts. The aircraft fleet used for the 2020 alternatives is identical to the existing 2007 fleet, except in the case of the Stage Two aircraft. Stage Two aircraft are generally older, noisier aircraft that are being gradually removed from service. Based on the assumption that the noisier Stage Two aircraft will be phased out by 2020 and 2025, the future scenarios were modeled without Stage Two aircraft. The fleet mix is presented on page A-95.

Standard aircraft types and profiles for INM version 7.0 were used in the noise model. For aircraft not included in INM, the FAA's pre-approved substitution list was used to identify appropriate substitution aircraft. The departure stage length for all aircraft was modeled as stage one. While the runway designations change in the future scenarios, the runway use is expected to remain the same. It was determined that helicopter operations will use the same runways and flight tracks as the single engine piston (SEP) aircraft. Flight tracks were designed and modeled as straight-in and straight-out arrival and departure tracks for all types of aircraft operations. The Touch and Go training operations conducted by the SEP aircraft were modeled on standard left pattern tracks on all runways. This applies to all of the alternatives.

4.13.3. No Action, BKX Expansion and New Airport Alternatives

The resulting DNL contours are shown in **Figures 22, 23** and **24**. In each alternative the DNL 65 contour lies entirely within the airport property. There are no residents or noise-sensitive land uses within the DNL 65 contours for any of the alternatives. Therefore, none of the alternatives would cause a noise sensitive area to experience an increase in noise of 1.5 DNL or more at or above the 65 DNL noise exposure level. Therefore, there is no adverse effect.

CITY OF BROOKINGS

Noise Contours - No Action Alternative

Brookings Regional Airport

Figure 22

Helms & Associates
Civil Engineers & Land Surveyors
HNTB

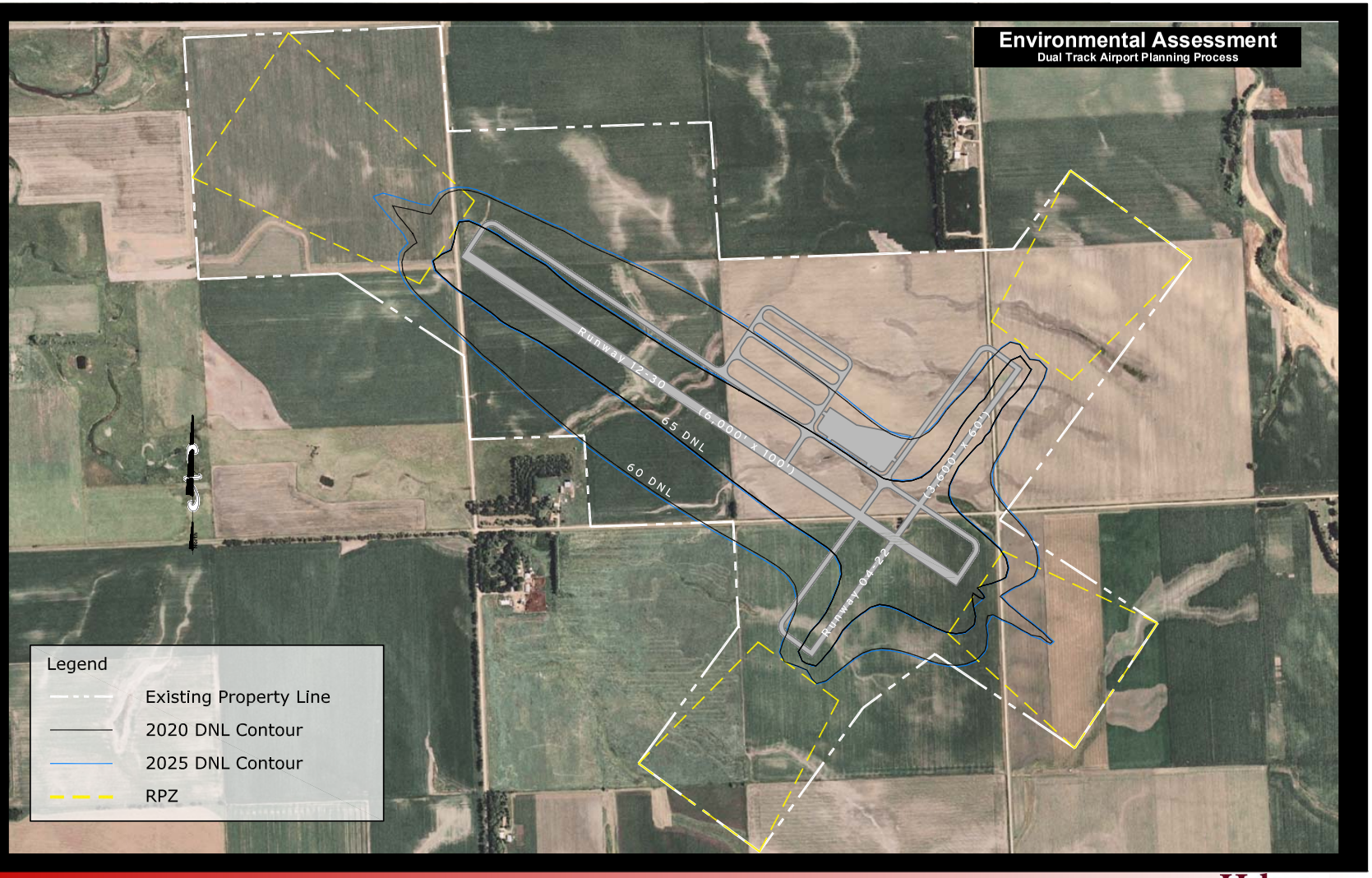
CITY OF BROOKINGS

Noise Contours - BKX Expansion Alternative

Brookings Regional Airport

Figure 23

Helms & Associates
Civil Engineers & Land Surveyors
HNTB



CITY OF BROOKINGS

Noise Contours - New Airport Alternative

Brookings Regional Airport

Figure 24

Helms & Associates
CIVIL ENGINEERS & LAND SURVEYORS
HNTB

U.S. Department
of Transportation
**Federal Aviation
Administration**

Federal Aviation Administration
Bismarck Airports District Office
2301 University Drive, Building 23B
Bismarck, ND 58504

March 28, 2010

Ms. Amy Rubingh
Review & Compliance
South Dakota State Historical Society
900 Governors Drive
Pierre, SD 57501-2217

Dear Ms. Rubingh:

Re: Brookings Regional Airport
Dual Track Airport Planning Process
Environmental Assessment
Brookings County, Brookings, South Dakota
Request for Concurrence – BKX (Brookings) Expansion Alternative
Request for Concurrence – New Airport Alternative
Data Clarification of the Structures for Section 106 Review

The Bismarck Airports District Office is providing supplemental information (structure data submittal tables) regarding eligibility for the projects identified above and data provided to your office in a submittal dated December 17, 2009 and for all properties that Hess Roise input into South Dakota State Historic Preservation Office "Historic Sites Survey Structure Forms" prior to December 17, 2009. A data table for each of the above alternative is attached that lists the structures, their eligibility, and the FAA determination of effect for each alternative.

The New Airport Alternative includes many of the same structures listed in the BKX Expansion Alternative as these will also be impacted (moved, relocated, sold, or disposed) with the New Airport Alternative. The New Airport Alternative includes removal of the current BXK Airport from operation as an airport. All of the runways, taxiways, aprons, navigational aids, and markings will be removed (at the opening of the new airport) if the New Airport Alternative is chosen.

Based on the information included in the enclosed tables and the previous submittal dated December 17, 2009, the FAA has determined the undertaking (BKX Expansion Alternative and New Airport Alternative) will have no effect upon historic properties as defined in 36 Code of Federal Regulations (CFR) Section 800.16(i). The Federal Aviation Administration (FAA) has determined "No Historic Properties Affected" for the BKX Expansion Alternative Dual Track Airport Planning Process Request for Project Review of Alternatives and the FAA has determined "No Historic Properties Affected" for the New Airport Alternative.

If you have any questions, please contact me (701) 323-7380 or by e-mail at Patricia.Dressler@faa.gov.

Sincerely,

ORIGINAL SIGNED BY
PATRICIA L. DRESSLER

Patricia L. Dressler
Environmental Protection Specialist
Bismarck Airports District Office

Enclosure

cc w/enclosures:
Jackie Lanning, City Engineer, City of Brookings
Mike Wilson, Manager, Brookings Regional Airport
Bob Babcock, Helms & Associates
Greg Alberg, HNTB Corporation

SUMMARY DATA TABLES

Brookings Regional Airport
Dual Track Airport Planning Process
Environmental Assessment
Brookings County, Brookings, South Dakota
Request for Concurrence – BKX (Brookings) Expansion Alternative
Request for Concurrence – New Airport Alternative
Additional Information for the Structures for Section 106 Review

4 Pages = Sorted on SHPO sequential identification – all structures input by Hess Roise.

BROOKINGS REGIONAL AIRPORT
BROOKINGS, SOUTH DAKOTA

NEW AIRPORT ALTERNATIVE - IN APE?	ON AIRPORT ALTERNATIVE - IN APE?	OUTSIDE ALL APE's?	STRUCTURES	SHPO ID	NRHP Eligibliity	Section 106 Historic Properties Affected?
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	121 8th St. S	BK00002211	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	105 8th St. S	BK00002212	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	310 8th St. S	BK00002213	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	326 8th St. S	BK00002214	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	332 8th St. S	BK00002215	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	131 8th St. S	BK00002216	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	328 Thunder Lane	BK00002217	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	807 Onaka Trail	BK00002218	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	314 8th St. S	BK00002219	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	322 8th St. S	BK00002220	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	812 Onaka Trail/306 Thunder Lane/305 8th St. S	BK00002221	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	504 8th St. S	BK00002222	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	528 8th St. S	BK00002223	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	1031 8th St. S	BK00002224	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	1115 8th St. S	BK00002225	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	1133 8th St. S	BK00002226	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	1215 8th St. S	BK00002227	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	1231 8th St. S	BK00002228	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	1317 8th St. S	BK00002229	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	1405 8th St. S	BK00002230	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	1433 8th St. S	BK00002231	Not Eligible	*
NO	YES	NO	Farm at 304 16th Avenue SW	BK00002232	** Not Evaluated	No
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	807 Regency Court	BK00002233	Not Eligible	*

BROOKINGS REGIONAL AIRPORT
BROOKINGS, SOUTH DAKOTA

NEW AIRPORT ALTERNATIVE - IN APE?	ON AIRPORT ALTERNATIVE - IN APE?	OUTSIDE ALL APE's?	STRUCTURES	SHPO ID	NRHP Eligibility	Section 106 Historic Properties Affected?
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	810 Regency Court	BK00002234	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	818 Regency Court	BK00002235	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	824 Regency Court	BK00002236	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	828 Regency Court	BK00002237	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	300 5th St. S	BK00002238	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	510 1/2 Main Ave. S	BK00002239	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	532 Main Ave. S	BK00002240	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	614 Main Ave. S	BK00002241	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	614A Main Ave. S	BK00002242	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	704 - 710 Main Ave. S	BK00002243	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	726 Main Ave. S	BK00002244	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	408 3rd Ave. S	BK00002245	Not Eligible	*
NO - Hess Roise Data Input Not Applicable to Alternative	N/A	YES	47456 219th St. S	BK00002246	Not Eligible	*
NO - Hess Roise Data Input Not Applicable to Alternative	N/A	YES	Farm at 21754 476th Ave.	BK00002247	Not Eligible	*
NO - Hess Roise Data Input Not Applicable to Alternative	N/A	YES	Farm at 47450 SD Hwy 324	BK00002248	Not Eligible	*
YES	YES	NO	Electrical Vault Bldg. on Airport	BK00002249	Not Eligible	No
YES	YES	NO	Airport Terminal	BK00002250	Not Eligible	No
YES	YES	NO	Aircraft Rescue & Firefighting Bldg. on Airport	BK00002251	Not Eligible	No
YES	YES	NO	Fixed Base Operator Bldg. on Airport	BK00002252	Not Eligible	No
YES	YES	NO	Hangar 10	BK00002253	Not Eligible	No
YES	YES	NO	Hangar 5	BK00002254	Not Eligible	No
YES	YES	NO	Hangar 4	BK00002255	Not Eligible	No
YES	YES	NO	Hangar 3	BK00002256	Not Eligible	No

BROOKINGS REGIONAL AIRPORT
BROOKINGS, SOUTH DAKOTA

NEW AIRPORT ALTERNATIVE - IN APE?	ON AIRPORT ALTERNATIVE - IN APE?	OUTSIDE ALL APE's?	STRUCTURES	SHPO ID	NRHP Eligibliity	Section 106 Historic Properties Affected?
YES	YES	NO	Hangar 9	BK00002257	Not Eligible	No
YES	YES	NO	Hangar 11	BK00002258	Not Eligible	No
YES	YES	NO	Hangar 8	BK00002259	Not Eligible	No
YES	YES	NO	Hangar 7	BK00002260	Not Eligible	No
YES	YES	NO	Hangar 6	BK00002261	Not Eligible	No
YES	YES	NO	Hangar 2	BK00002262	Not Eligible	No
YES	YES	NO	Hangar 1	BK00002263	Not Eligible	No
YES	YES	NO	Hangar B	BK00002264	Not Eligible	No
NO - Hess Roise Data Input Not Applicable to Alternative	N/A	YES	21858 474th Ave.	BK00002265	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	408 8th St. S	BK00002266	Not Evaluated	*
NO - Hess Roise Data Input Not Applicable to Alternative	N/A	YES	Farm at 47405 219th St. S	BK00002267	Not Evaluated	*
NO - Hess Roise Data Input Not Applicable to Alternative	N/A	YES	Farm at 47370 219th St. S	BK00002268	Not Evaluated	*
YES	NO	NO	Farm at 47569 218th Street South	BK00002269	** Not Evaluated	No
YES	YES	NO	Hangar A	BK00002270	Not Eligible	No
NO	YES	NO	Farm at 127 16th Avenue SW	BK00002271	Not Eligible	No
NO - Hess Roise Data Input Not Applicable to Alternative	N/A	YES	Farm at 47402 219th St. S (House)	BK00002272	Not Evaluated	*
NO - Hess Roise Data Input Not Applicable to Alternative	N/A	YES	Farm at 47402 219th St. S (Garage)	BK00002273	Not Evaluated	*
NO - Hess Roise Data Input Not Applicable to Alternative	N/A	YES	Farm at 47416 218th St. S	BK00002274	Not Evaluated	*
YES	NO	NO	Farm at 47407 218th Street South	BK00002275	** Not Evaluated	No
YES	NO	NO	Farm at 47346 SD Hwy. 324	BK00002276	** Not Evaluated	No
YES	NO	NO	Farm at 47358 SD Hwy. 324	BK00002277	** Not Evaluated	No

BROOKINGS REGIONAL AIRPORT
BROOKINGS, SOUTH DAKOTA

NEW AIRPORT ALTERNATIVE - IN APE?	ON AIRPORT ALTERNATIVE - IN APE?	OUTSIDE ALL APE's?	STRUCTURES	SHPO ID	NRHP Eligibility	Section 106 Historic Properties Affected?
YES	NO	NO	Farm at 21915 475th Avenue	BK00002278	** Not Evaluated	No
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	Lutheran Cemetery, 8th St. S	BK00002279	Not Evaluated	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	St. Thomas More Cemetery, 8th St. S	BK00002280	Not Evaluated	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	Greenwood Cemetery, 8th St. S	BK00002281	Not Evaluated	*

* Property/building is not located in the Area of Potential Effect for any of the proposed alternatives and should not have been included with this project.
** Structures on this property were determined to be potentially eligible; however, they were not evaluated because it was determined that there will be "No Section 106 Effect" from alternatives.

SUMMARY DATA TABLE

Brookings Regional Airport
Dual Track Airport Planning Process
Environmental Assessment
Brookings County, Brookings, South Dakota
Request for Concurrence – BKX (Brookings) Expansion Alternative
Request for Concurrence – New Airport Alternative
Additional Information for the Structures for Section 106 Review

1 Page – BKX EXPANSION ALTERNATIVE
(ON-AIRPORT ALTERNATIVE)

BROOKINGS REGIONAL AIRPORT
BROOKINGS, SOUTH DAKOTA

ON AIRPORT ALTERNATIVE - IN APE?	STRUCTURES	SHPO ID	NRHP Eligibliity	Section 106 Historic Properties Affected?
YES	Farm at 304 16th Avenue SW	BK00002232	** Not Evaluated	No
YES	Electrical Vault Bldg. on Airport	BK00002249	Not Eligible	No
YES	Airport Terminal	BK00002250	Not Eligible	No
YES	Aircraft Rescue & Firefighting Bldg. on Airport	BK00002251	Not Eligible	No
YES	Fixed Base Operator Bldg. on Airport	BK00002252	Not Eligible	No
YES	Hangar 10	BK00002253	Not Eligible	No
YES	Hangar 5	BK00002254	Not Eligible	No
YES	Hangar 4	BK00002255	Not Eligible	No
YES	Hangar 3	BK00002256	Not Eligible	No
YES	Hangar 9	BK00002257	Not Eligible	No
YES	Hangar 11	BK00002258	Not Eligible	No
YES	Hangar 8	BK00002259	Not Eligible	No
YES	Hangar 7	BK00002260	Not Eligible	No
YES	Hangar 6	BK00002261	Not Eligible	No
YES	Hangar 2	BK00002262	Not Eligible	No
YES	Hangar 1	BK00002263	Not Eligible	No
YES	Hangar B	BK00002264	Not Eligible	No
YES	Hangar A	BK00002270	Not Eligible	No
YES	Farm at 127 16th Avenue SW	BK00002271	Not Eligible	No

BKX EXPANSION ALTERNATIVE
ON AIRPORT ALTALTERNATIVE ONLY
PAGE 1 of 1

BROOKINGS REGIONAL AIRPORT
BROOKINGS, SOUTH DAKOTA

ON AIRPORT ALTERNATIVE - IN APE?	STRUCTURES	SHPO ID	NRHP Eligibliity	Section 106 Historic Properties Affected?

* Property/building is not located in the Area of Potential Effect for any of the proposed alternatives and should not have been included with

** Structures on this property were determined to be potentially eligible; however, they were not evaluated because it was determined that there will be "No Section 106 Effect" from alternatives.

SUMMARY DATA TABLE

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Dual Track Airport Planning Process
Environmental Assessment
Brookings County, Brookings, South Dakota
Request for Concurrence – BKX (Brookings) Expansion Alternative
Request for Concurrence – New Airport Alternative
Additional Information for the Structures for Section 106 Review

1 Page – NEW AIRPORT ALTERNATIVE
(Includes Structures from BKX Expansion Alternative because the structures will be either relocated, sold, demolished, or other)

BROOKINGS REGIONAL AIRPORT
BROOKINGS, SOUTH DAKOTA

NEW AIRPORT ALTERNATIVE - IN APE?	STRUCTURES	SHPO ID	NRHP Eligibliity	Section 106 Historic Properties Affected?
YES	Electrical Vault Bldg. on Airport	BK00002249	Not Eligible	No
YES	Airport Terminal	BK00002250	Not Eligible	No
YES	Aircraft Rescue & Firefighting Bldg. on Airport	BK00002251	Not Eligible	No
YES	Fixed Base Operator Bldg. on Airport	BK00002252	Not Eligible	No
YES	Hangar 10	BK00002253	Not Eligible	No
YES	Hangar 5	BK00002254	Not Eligible	No
YES	Hangar 4	BK00002255	Not Eligible	No
YES	Hangar 3	BK00002256	Not Eligible	No
YES	Hangar 9	BK00002257	Not Eligible	No
YES	Hangar 11	BK00002258	Not Eligible	No
YES	Hangar 8	BK00002259	Not Eligible	No
YES	Hangar 7	BK00002260	Not Eligible	No
YES	Hangar 6	BK00002261	Not Eligible	No
YES	Hangar 2	BK00002262	Not Eligible	No
YES	Hangar 1	BK00002263	Not Eligible	No
YES	Hangar B	BK00002264	Not Eligible	No
YES	Farm at 47569 218th Street South	BK00002269	** Not Evaluated	No
YES	Hangar A	BK00002270	Not Eligible	No
YES	Farm at 47407 218th Street South	BK00002275	** Not Evaluated	No
YES	Farm at 47346 SD Hwy. 324	BK00002276	** Not Evaluated	No
YES	Farm at 47358 SD Hwy. 324	BK00002277	** Not Evaluated	No
YES	Farm at 21915 475th Avenue	BK00002278	** Not Evaluated	No

NEW AIRPORT ALTALTERNATIVE ONLY
PAGE 1 of 1

NEW

BROOKINGS REGIONAL AIRPORT
BROOKINGS, SOUTH DAKOTA

~~ON~~ AIRPORT ALTERNATIVE - IN APE?	STRUCTURES	SHPO ID	NRHP Eligibliity	Section 106 Historic Properties Affected?

* Property/building is not located in the Area of Potential Effect for any of the proposed alternatives and should not have been included with

** Structures on this property were determined to be potentially eligible; however, they were not evaluated because it was determined that there will be "No Section 106 Effect" from alternatives.

SUMMARY DATA TABLE

Brookings Regional Airport
Dual Track Airport Planning Process
Environmental Assessment
Brookings County, Brookings, South Dakota
Request for Concurrence – BKX (Brookings) Expansion Alternative
Request for Concurrence – New Airport Alternative
Additional Information for the Structures for Section 106 Review

3 Pages - Sorted on Structures surveyed by Hess Roise, but NOT in either Alternative.

BROOKINGS REGIONAL AIRPORT
BROOKINGS, SOUTH DAKOTA

NEW AIRPORT ALTERNATIVE - IN APE?	ON AIRPORT ALTERNATIVE - IN APE?	OUTSIDE ALL APE's?	STRUCTURES	SHPO ID	NRHP Eligibliity	Section 106 Historic Properties Affected?
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	121 8th St. S	BK00002211	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	105 8th St. S	BK00002212	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	310 8th St. S	BK00002213	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	326 8th St. S	BK00002214	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	332 8th St. S	BK00002215	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	131 8th St. S	BK00002216	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	328 Thunder Lane	BK00002217	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	807 Onaka Trail	BK00002218	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	314 8th St. S	BK00002219	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	322 8th St. S	BK00002220	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	812 Onaka Trail/306 Thunder Lane/305 8th St. S	BK00002221	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	504 8th St. S	BK00002222	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	528 8th St. S	BK00002223	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	1031 8th St. S	BK00002224	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	1115 8th St. S	BK00002225	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	1133 8th St. S	BK00002226	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	1215 8th St. S	BK00002227	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	1231 8th St. S	BK00002228	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	1317 8th St. S	BK00002229	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	1405 8th St. S	BK00002230	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	1433 8th St. S	BK00002231	Not Eligible	*

SORTED ON - OUTSIDE APE

BROOKINGS REGIONAL AIRPORT
BROOKINGS, SOUTH DAKOTA

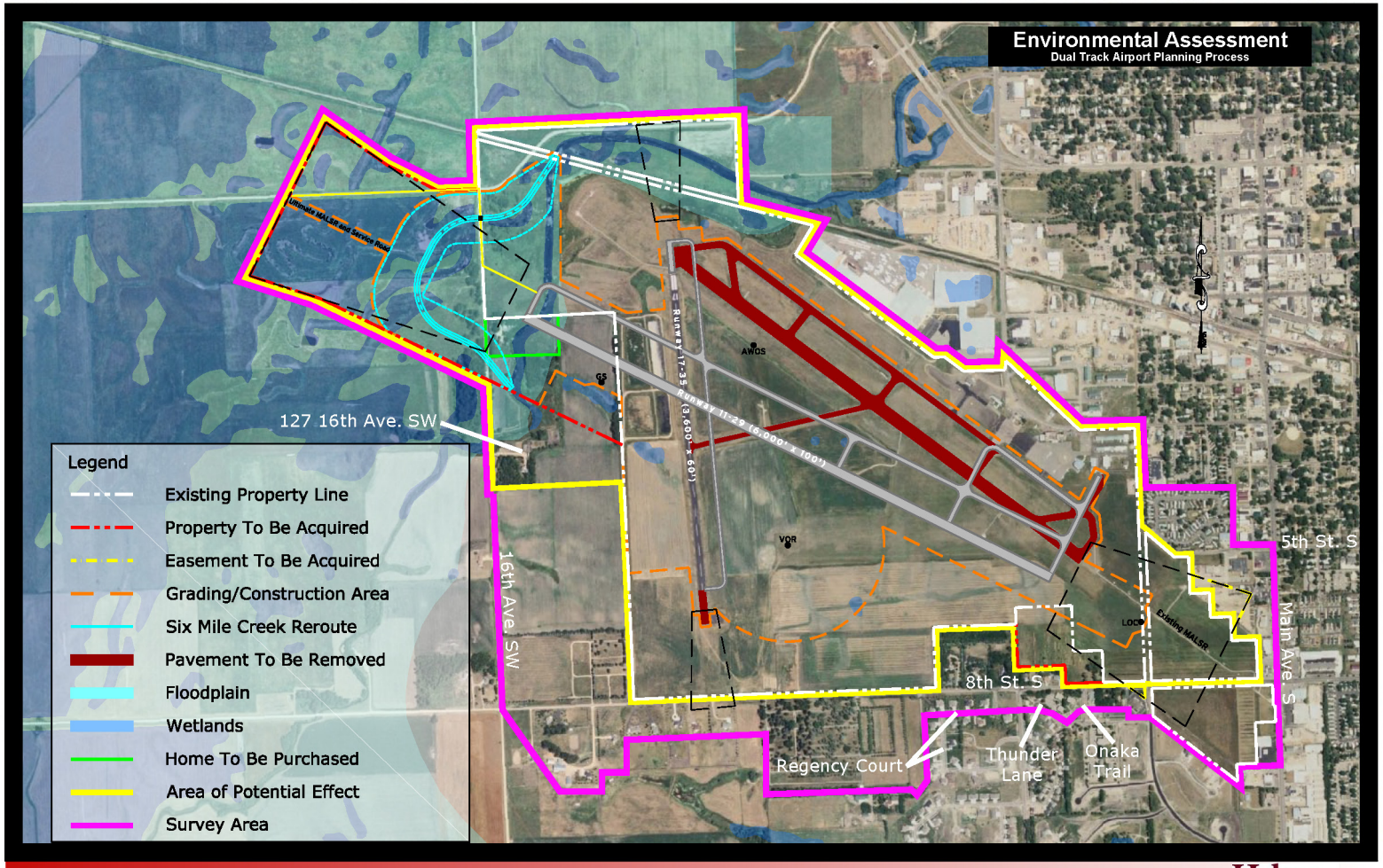
NEW AIRPORT ALTERNATIVE - IN APE?	ON AIRPORT ALTERNATIVE - IN APE?	OUTSIDE ALL APE's?	STRUCTURES	SHPO ID	NRHP Eligibliity	Section 106 Historic Properties Affected?
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	807 Regency Court	BK00002233	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	810 Regency Court	BK00002234	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	818 Regency Court	BK00002235	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	824 Regency Court	BK00002236	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	828 Regency Court	BK00002237	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	300 5th St. S	BK00002238	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	510 1/2 Main Ave. S	BK00002239	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	532 Main Ave. S	BK00002240	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	614 Main Ave. S	BK00002241	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	614A Main Ave. S	BK00002242	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	704 - 710 Main Ave. S	BK00002243	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	726 Main Ave. S	BK00002244	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	408 3rd Ave. S	BK00002245	Not Eligible	*
NO - Hess Roise Data Input Not Applicable to Alternative	N/A	YES	47456 219th St. S	BK00002246	Not Eligible	*
NO - Hess Roise Data Input Not Applicable to Alternative	N/A	YES	Farm at 21754 476th Ave.	BK00002247	Not Eligible	*
NO - Hess Roise Data Input Not Applicable to Alternative	N/A	YES	Farm at 47450 SD Hwy 324	BK00002248	Not Eligible	*
NO - Hess Roise Data Input Not Applicable to Alternative	N/A	YES	21858 474th Ave.	BK00002265	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	408 8th St. S	BK00002266	Not Evaluated	*
NO - Hess Roise Data Input Not Applicable to Alternative	N/A	YES	Farm at 47405 219th St. S	BK00002267	Not Evaluated	*
NO - Hess Roise Data Input Not Applicable to Alternative	N/A	YES	Farm at 47370 219th St. S	BK00002268	Not Evaluated	*

SORTED ON - OUTSIDE APE

BROOKINGS REGIONAL AIRPORT
BROOKINGS, SOUTH DAKOTA

NEW AIRPORT ALTERNATIVE - IN APE?	ON AIRPORT ALTERNATIVE - IN APE?	OUTSIDE ALL APE's?	STRUCTURES	SHPO ID	NRHP Eligiblity	Section 106 Historic Properties Affected?
NO - Hess Roise Data Input Not Applicable to Alternative	N/A	YES	Farm at 47402 219th St. S (House)	BK00002272	Not Evaluated	*
NO - Hess Roise Data Input Not Applicable to Alternative	N/A	YES	Farm at 47402 219th St. S (Garage)	BK00002273	Not Evaluated	*
NO - Hess Roise Data Input Not Applicable to Alternative	N/A	YES	Farm at 47416 218th St. S	BK00002274	Not Evaluated	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	Lutheran Cemetery, 8th St. S	BK00002279	Not Evaluated	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	St. Thomas More Cemetery, 8th St. S	BK00002280	Not Evaluated	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	Greenwood Cemetery, 8th St. S	BK00002281	Not Evaluated	*

* Property/building is not located in the Area of Potential Effect for any of the proposed alternatives and should not have been included with this project.
** Structures on this property were determined to be potentially eligible; however, they were not evaluated because it was determined that there will be "No Section 106 Effect" from alternatives.

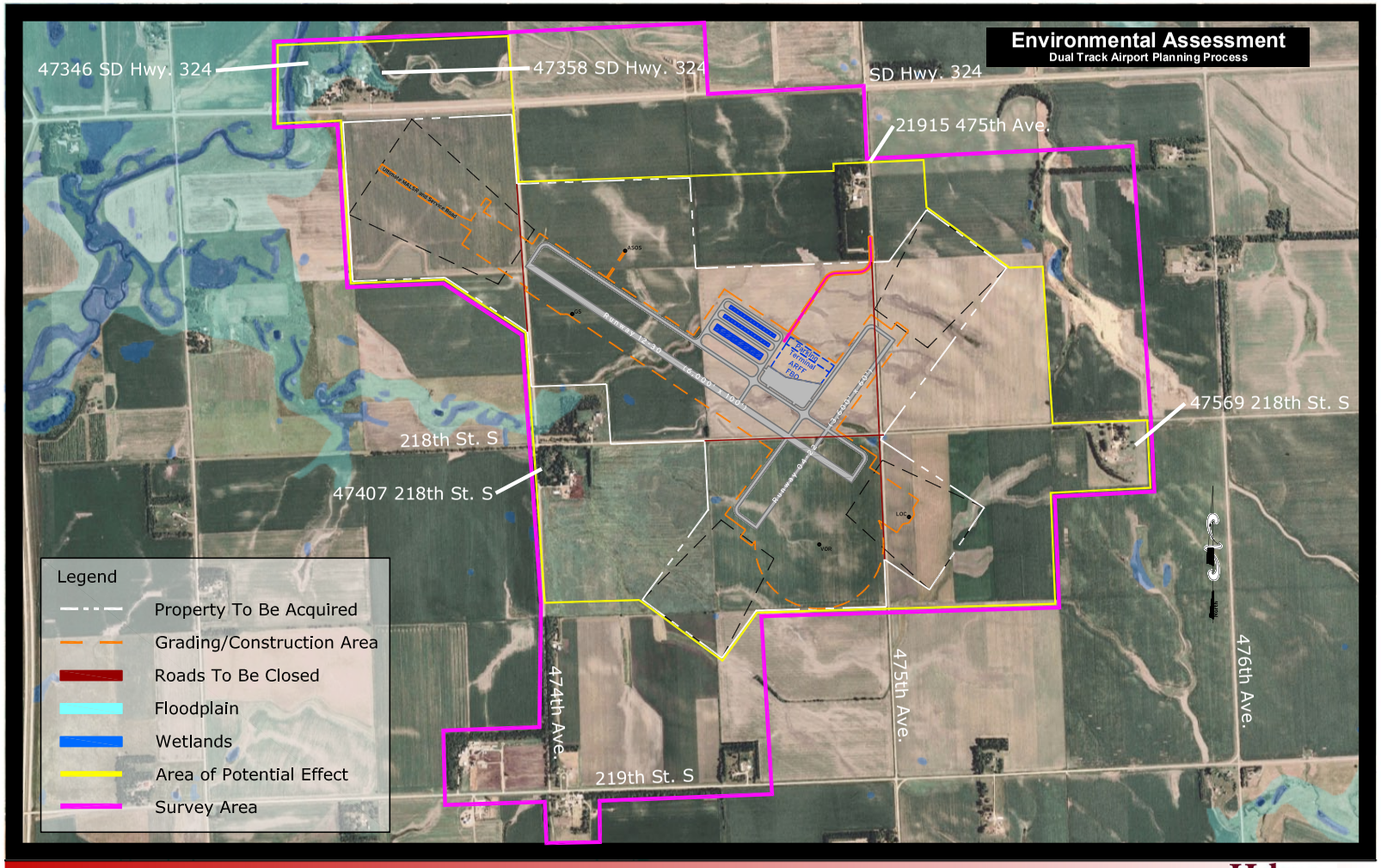


CITY OF BROOKINGS

Survey of Historic Properties - BKX Expansion Alternative

Brookings Regional Airport

Helms & Associates
Civil Engineers & Land Surveyors
HNTB



CITY OF BROOKINGS

Survey of Historic Properties - New Airport Alternative

Brookings Regional Airport

Helms & Associates
HNTB

SOUTH DAKOTA
STATE HISTORICAL SOCIETY
Department of Tourism and State Development

900 Governors Drive | Pierre, SD 57501-2217
Phone 605-773-3458 | Fax 605-773-6041 | **www.history.sd.gov**

April 16, 2010

Federal Aviation Administration
Patricia L. Dressler
Bismarck Airports District Office
2301 University Drive, Building 23B
Bismarck ND 58504

SECTION 106 PROJECT CONSULTATION – IDENTIFICATION/EVALUATION
Project: 070615003F – Brookings Regional Airport – Dual Track Airport Planning Process
Location: Brookings County
(FAA)

Dear Ms. Dressler:

Thank you for the opportunity to comment on the above referenced project pursuant to Section 106 of the National Historic Preservation Act of 1966 (as amended). The South Dakota Office of the State Historic Preservation Officer (SHPO) concurs with the following determination regarding the effect of the proposed undertaking on the non-renewable resources of South Dakota.

Based on the your correspondence and the reports "Report on Level III Archaeological Investigation Conducted for an Environmental Assessment of Proposed Brookings Regional Airport Improvements, Cit of Brookings and Trenton Township, Brookings County, South Dakota" by Christina Harrison and "Brookings Municipal Airport: Reconnaissance Survey Report" by Hess, Roise and Company, received on December 21, 2009 and the additional information from your office received on January 13, 2010 and March 31, 2010. We concur with the following determinations of eligibility.

Structures BK00002211, BK00002212, BK00002213, BK00002214, BK00002215, BK00002216, BK00002217, BK00002218, BK00002219, BK00002220, BK00002221, BK00002222, BK00002224, BK00002225, BK00002226, BK00002227, BK00002228, BK00002229, BK00002230, BK00002231, BK00002233, BK00002234, BK00002235, BK00002236, BK00002237, BK00002238, BK00002239, BK00002240, BK00002241, BK00002242, BK00002243, BK00002244, BK00002245, BK00002246, BK00002247, BK00002248, BK00002249, BK00002250, BK00002251, BK00002252, BK00002253, BK00002254, BK00002255, BK00002256, BK00002257, BK00002258, BK00002259, BK00002260, BK00002261, BK00002262, BK00002263, BK00002264, BK00002265, and

BK00002270 should be considered **Not Eligible** for listing on the National Register of Historic Places (NRHP). In addition, structures BK00002266, BK00002267, BK00002268, BK00002269, BK00002272, BK00002273, BK00002275, BK00002278, BK00002279, BK00002280, and BK00002281 which you have left unevaluated we recommend these sites be considered **Not Eligible** for the NRHP.

Structures BK00002232, BK00002274, BK00002276, and BK00002277 should remain **Unevaluated** for the NRHP until these structures can be further evaluated for eligibility. In addition, we feel that structures BK00002223 and BK00002271 should remain **Unevaluated** for the NRHP until further evaluation is conducted.

Based on the information provided, no archaeological resources were located during the Level III survey of the project areas. However, only a small percent of the New Airport Alternative has been surveyed.

Therefore, we concur with your determination of No Adverse Effect, but only for the BKX Expansion Alternative. At this time, we cannot concur with your determination of effect for the New Airport Alternative, and request additional survey is conducted in order for us to provide comment. Activities occurring in areas not identified in the request will require the submission of additional documentation pursuant to 36 CFR part 800.4.

If during the course of any ground disturbance related to this project, any bones, artifacts, foundations, or other indications of past human occupation of the area are uncovered, the project must be temporarily stopped until the SHPO has been notified and had chance to comment.

Concurrence of the SHPO does not relieve the Federal agency official from consulting with other appropriate parties, as described in 36CFR Part 800.2(c).

Should you require any additional information, please do not hesitate to contact Amy Rubingh, Review & Compliance Archaeologist, at (605) 773-8370. Your concern for the non-renewable cultural heritage of our state is appreciated.

Sincerely,

Jay D. Vogt
State Historic Preservation Officer

Amy Rubingh
Review and Compliance Archaeologist

Cc: Jeff Weldon, City of Brookings

U.S. Department
of Transportation
**Federal Aviation
Administration**

Federal Aviation Administration
Bismarck Airports District Office
2301 University Drive, Building 23B
Bismarck, ND 58504

October 27, 2011

Ms. Amy Rubingh
Review & Compliance
South Dakota State Historical Society
900 Governors Drive
Pierre, SD 57501-2217

Dear Ms. Rubingh:

Re: Brookings Regional Airport
Dual Track Airport Planning Process
Environmental Assessment
Brookings County, Brookings, South Dakota
Request for Concurrence
Change in Eligibility of BKX (Brookings) Expansion Alternative for Structure BKX00002232

The Bismarck Airports District Office is providing supplemental information regarding eligibility for the structure identified above. Data provided to your office in a submittal dated December 17, 2009 listed Structure BKX00002232 as "not evaluated". The FAA is correcting the structure data from "not evaluated" to "not eligible" per the enclosed 2 page parcel summary of the single family home (farm) located at 304 16th Avenue SW (built in 1981) and identified as Structure BKX00002232.

This structure will be impacted by the City of Brookings preferred alternative which is the BKX (Brookings) Expansion Alternative. The Federal Aviation Administration (FAA) has determined "No Historic Properties Affected" for Structure BXK00002232.

If you have any questions, please contact me (701) 323-7380 or by e-mail at Patricia.Dressler@faa.gov.

Sincerely,

Patricia L. Dressler

Patricia L. Dressler
Environmental Protection Specialist
Bismarck Airports District Office

Enclosures
SHPO letter to FAA dated 4-16-2010
Farm at 304 16th Avenue SW Parcel Summary (Structure BXK00002232)
Corrected APE Data Table page for Structure BKX 00002232

cc w/enclosures:
Jackie Lanning, City Engineer, City of Brookings
Manager, Brookings Regional Airport
Bob Babcock, Helms & Associates
Greg Alberg, HNTB Corporation

SOUTH DAKOTA
STATE HISTORICAL SOCIETY
Department of Tourism and State Development

900 Governors Drive | Pierre, SD 57501-2217
Phone 605-773-3458 | Fax 605-773-6041 | www.history.sd.gov

April 16, 2010

Federal Aviation Administration
Patricia L. Dressler
Bismarck Airports District Office
2301 University Drive, Building 23B
Bismarck ND 58504

SECTION 106 PROJECT CONSULTATION – IDENTIFICATION/EVALUATION
Project: 070615003F – Brookings Regional Airport – Dual Track Airport Planning Process
Location: Brookings County
(FAA)

Dear Ms. Dressler:

Thank you for the opportunity to comment on the above referenced project pursuant to Section 106 of the National Historic Preservation Act of 1966 (as amended). The South Dakota Office of the State Historic Preservation Officer (SHPO) concurs with the following determination regarding the effect of the proposed undertaking on the non-renewable resources of South Dakota.

Based on the your correspondence and the reports "Report on Level III Archaeological Investigation Conducted for an Environmental Assessment of Proposed Brookings Regional Airport Improvements, Cit of Brookings and Trenton Township, Brookings County, South Dakota" by Christina Harrison and "Brookings Municipal Airport: Reconnaissance Survey Report" by Hess, Roise and Company, received on December 21, 2009 and the additional information from your office received on January 13, 2010 and March 31, 2010. We concur with the following determinations of eligibility.

Structures BK00002211, BK00002212, BK00002213, BK00002214, BK00002215, BK00002216, BK00002217, BK00002218, BK00002219, BK00002220, BK00002221, BK00002222, BK00002224, BK00002225, BK00002226, BK00002227, BK00002228, BK00002229, BK00002230, BK00002231, BK00002233, BK00002234, BK00002235, BK00002236, BK00002237, BK00002238, BK00002239, BK00002240, BK00002241, BK00002242, BK00002243, BK00002244, BK00002245, BK00002246, BK00002247, BK00002248, BK00002249, BK00002250, BK00002251, BK00002252, BK00002253, BK00002254, BK00002255, BK00002256, BK00002257, BK00002258, BK00002259, BK00002260, BK00002261, BK00002262, BK00002263, BK00002264, BK00002265, and

BK00002270 should be considered **Not Eligible** for listing on the National Register of Historic Places (NRHP). In addition, structures BK00002266, BK00002267, BK00002268, BK00002269, BK00002272, BK00002273, BK00002275, BK00002278, BK00002279, BK00002280, and BK00002281 which you have left unevaluated we recommend these sites be considered **Not Eligible** for the NRHP.

Built in 1981
N/A

Structures BK00002232, BK00002274, BK00002276, and BK00002277 should remain **Unevaluated** for the NRHP until these structures can be further evaluated for eligibility. In addition, we feel that structures BK00002223 and BK00002271 should remain **Unevaluated** for the NRHP until further evaluation is conducted.

Based on the information provided, no archaeological resources were located during the Level III survey of the project areas. However, only a small percent of the New Airport Alternative has been surveyed.

Therefore, we concur with your determination of No Adverse Effect, but only for the BKX Expansion Alternative. At this time, we cannot concur with your determination of effect for the New Airport Alternative, and request additional survey is conducted in order for us to provide comment. Activities occurring in areas not identified in the request will require the submission of additional documentation pursuant to 36 CFR part 800.4.

If during the course of any ground disturbance related to this project, any bones, artifacts, foundations, or other indications of past human occupation of the area are uncovered, the project must be temporarily stopped until the SHPO has been notified and had chance to comment.

Concurrence of the SHPO does not relieve the Federal agency official from consulting with other appropriate parties, as described in 36CFR Part 800.2(c).

Should you require any additional information, please do not hesitate to contact Amy Rubingh, Review & Compliance Archaeologist, at (605) 773-8370. Your concern for the non-renewable cultural heritage of our state is appreciated.

Sincerely,

Jay D. Vogt
State Historic Preservation Officer

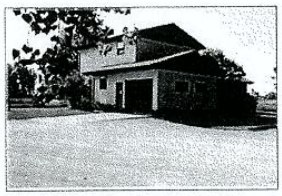
Amy Rubingh

Amy Rubingh
Review and Compliance Archaeologist

Cc: Jeff Weldon, City of Brookings

Summary

Parcel ID	069801105027200
Property Address	304 16TH AVE SW
Sec/Twp/Rng	27/110/50
Brief Tax Description	SUBLOT "A" OF OL 1 OF SW 1/4 NW 1/4 SEC. 27-110-50 7.06 AC (Note: Not to be used on legal documents)
Comments	
Class	G
Tax District	0601
Gross Acres	0.00
$/Acre	N/A



Click to Enlarge

Owners

Deed Holder
BROOKINGS CITY

PO BOX 270
BROOKINGS SD 57006

Land

Gross Acres	7.06
Lot Size	N/A

Building

Residential Dwelling	
Occupancy	Single family
Style	45 Newer 2 story
Year Built	1981
# of Stories	2.0
Above-Grade Living Area	2020 SF
Foundation	Full Crawl
Basement Area	
Basement Finished	
Recroom Finished	N/A
Total Number Rooms	8 (Does not include bathrooms)
Number Bedrooms	5
Number Full Bathrooms	2
Number Half Bathrooms	0
Heating & Cooling	Forced hot air and Central AC
Fireplace	None
Deck	419 SF
Garage	Attached: 280 SF; Detached: 576 SF;
Other Features	WDDK Residential Detached Garage

Sales

Date	Seller	Buyer	Book	Page	Type	Amount
12/31/2009	PITTS, RANDELL C ETUX	CITY OF BROOKINGS	D143	1092	W	$265,000.00
12/14/1999	PITTS, RANDELL C ETUX	PITTS, RANDELL C ETUX	00131	00309	W	$0.00
04/12/1989	PITTS, CAROL A.,	PITTS, RANDELL C.	00112	00821	Q	$0.00

Valuation

		2011	2010	2009	2008	2007
+	OO					$129,365
+	NACS			$25,300	$25,300	
+	NAC1S			$113,800	$113,800	
=	**Total Value**	**$0**	**$0**	**$139,100**	**$139,100**	**$129,365**

Taxation

2010	**1st Half**	**2nd Half**	**Full Year**
Due Date	April 30, 2011	October 31, 2011	
Tax Billed	0.00	0.00	0.00
Specials Etc.	0.00	0.00	0.00
Amount Paid	0.00	0.00	0.00
Amount Due	0.00	0.00	0.00
Payment Status	Paid	Paid	
Date Paid	01/01/2011	01/01/2011	

2009	**1st Half**	**2nd Half**	**Full Year**
Due Date	April 30, 2010	October 31, 2010	
Tax Billed	1,080.34	1,080.34	2,160.68
Specials Etc.	0.00	0.00	0.00
Amount Paid	1,080.34	1,080.34	2,160.68
Amount Due	0.00	0.00	0.00
Payment Status	Paid	Paid	
Date Paid	02/03/2010	02/03/2010	

2008	**1st Half**	**2nd Half**	**Full Year**
Due Date	April 30, 2009	October 31, 2009	
Tax Billed	1,091.77	1,091.77	2,183.54

Specials Etc.	0.00	0.00	0.00
Amount Paid	1,091.77	1,091.77	2,183.54
Amount Due	0.00	0.00	0.00
Payment Status	Paid	Paid	
Date Paid	04/30/2009	10/29/2009	

2007	**1st Half**	**2nd Half**	**Full Year**
Due Date	April 30, 2008	October 31, 2008	
Tax Billed	1,103.48	1,103.48	2,206.96
Specials Etc.	0.00	0.00	0.00
Amount Paid	1,103.48	1,103.48	2,206.96
Amount Due	0.00	0.00	0.00
Payment Status	Paid	Paid	
Date Paid	05/05/2008	10/29/2008	

Photos

Sketches

No data available for the following modules: Comments. Click here for help.

Disclaimer: *Brookings County digital cadastral data are a representation of recorded plats and surveys for use within the Geographic Information System for purposes of data access and analysis. These and other digital data do not replace or modify land surveys, deeds, and/or other legal instruments defining land ownership or use.*

Last Data Upload: 9/29/2011 11:09:31 PM

BROOKINGS REGIONAL AIRPORT
BROOKINGS, SOUTH DAKOTA

NEW AIRPORT ALTERNATIVE - IN APE?	ON AIRPORT ALTERNATIVE - IN APE?	OUTSIDE ALL APE's?	STRUCTURES	SHPO ID	NRHP Eligibliity	Section 106 Historic Properties Affected?
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	121 8th St. S	BK00002211	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	105 8th St. S	BK00002212	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	310 8th St. S	BK00002213	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	326 8th St. S	BK00002214	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	332 8th St. S	BK00002215	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	131 8th St. S	BK00002216	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	328 Thunder Lane	BK00002217	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	807 Onaka Trail	BK00002218	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	314 8th St. S	BK00002219	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	322 8th St. S	BK00002220	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	812 Onaka Trail/306 Thunder Lane/305 8th St. S	BK00002221	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	504 8th St. S	BK00002222	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	528 8th St. S	BK00002223	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	1031 8th St. S	BK00002224	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	1115 8th St. S	BK00002225	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	1133 8th St. S	BK00002226	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	1215 8th St. S	BK00002227	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	1231 8th St. S	BK00002228	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	1317 8th St. S	BK00002229	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	1405 8th St. S	BK00002230	Not Eligible	*
NO	NO - Hess Roise Data Input Not Applicable to Alternative	YES	1433 8th St. S	BK00002231	Not Eligible	*
NO	YES	NO	Farm at 304 16th Avenue SW	BK00002232	Not Eligible	Changed from Not Evaluated to Not Eligible see FAA letter dated 10-27-11

U.S. Department
of Transportation
**Federal Aviation
Administration**

Federal Aviation Administration
Bismarck Airports District Office
2301 University Drive, Building 23B
Bismarck, ND 58504

March 22, 2011

Ms. Natalie Gates
U.S. Fish and Wildlife Service
Ecological Services, South Dakota Field Office
420 South Garfield Avenue, Suite 400
Pierre, South Dakota 57501

Re: City of Brookings (Non-Federal Applicant)
Brookings County, Brookings, South Dakota
Brookings Municipal Airport – Brookings Expansion Alternative
Endangered Species Act Section 7 Initiation Package

Dear Ms. Gates:

The City of Brookings is the non-Federal applicant as defined in the Endangered Species Act of 1973 (Act) as amended. The non-Federal applicant shall commit to and follow commitments, compliance, and conservation measures required for the Brookings Municipal Airport (BKX) proposed project. The City of Brookings has chosen the BKX Expansion Alternative as the sponsor's preferred alternative to continue moving forward in the Final Environmental Assessment (EA) of the Dual Track Airport Planning Process (see enclosed letter dated February 24, 2011). As the non-Federal Applicant, the City of Brookings has prepared the Biological Assessment (BA) for the preferred alternative.

The Federal Aviation Administration (FAA) is the Federal nexus for the Dual Track Airport Planning Process as the FAA may provide a portion of the funding for the proposed project and approval of the Airport Layout Plan. The FAA is submitting this request to initiate formal consultation with the United States Fish and Wildlife Services (USFWS) under Section 7 of the Act.

Based on the enclosed BA, the proposed action "may affect, but is not likely to adversely affect" the American Burying Beetle and the Western Prairie Fringed Orchid (Plantanthera Praeclara).

Based on the enclosed BA, the proposed action "may affect and likely to adversely affect" the Topeka shiner.

The City of Brookings has assured FAA that the enclosed BA considers direct, indirect, and cumulative effects on endangered species for the Brookings Airport Project. The BA includes the following:

- A description of the action being considered,
- A description of the specific area that may be affected by the action,
- A description of any listed species or critical habitat that may be affected by the action, and
- A description of the manner in which the action may affect any listed species or critical habitat.

Enclosed are relevant reports or other analysis prepared on the proposal and include the City of Brookings' decision letter to FAA dated February 24, 2011, the 2008 Western Prairie Fringed Orchid Survey Report, and the September 2010 Draft EA for the Dual Track Airport Planning Process.

The FAA and the City of Brookings request advance copies of the draft biological opinion, incidental take statement, terms and conditions and reasonable and prudent measures for review prior to finalizing the Biological Opinion.

The FAA Bismarck Airports District Office and the City of Brookings personnel are available to answer questions, review the draft biological opinion, and assist you in any possible way. If you have questions, please contact Patricia Dressler at (701) 323-7380.

Sincerely,

ORIGINAL SIGNED BY
THOMAS T. SCHAUER
Thomas T. Schauer, Manager
Bismarck Airports District Office

Enclosures

cc: The Honorable Tim Reed, Mayor, City of Brookings

cc w/o enclosures:
Helms and Associates, Aberdeen, SD
HNTB, Minneapolis, MN

BRING YOUR DREAMS.

brookings
SOUTH DAKOTA

Tim Reed
Office of the Mayor
311 Third Avenue
Post Office Box 270
Brookings, South Dakota 57006
(605) 692-6281 phone
(605) 692-6907 fax

February 24, 2011

Ms. Patricia Dressler
Environmental Protection Specialist/Airspace Specialist
Federal Aviation Administration
Bismarck Airports District Office
2301 University Drive, Building 23B
Bismarck, ND 58504

Dear Ms. Dressler:

The City of Brookings has chosen the BKX Expansion Alternative as the sponsor's preferred alternative to continue moving forward in the Final Environmental Assessment of the Dual Track Airport Planning Process.

On behalf of the City of Brookings, I would like to thank the Federal Aviation Administration staff for their assistance in the Environmental Assessment process. Should you have any questions, comments, or concerns, please feel free to contact me at (605)692-6281.

Sincerely,

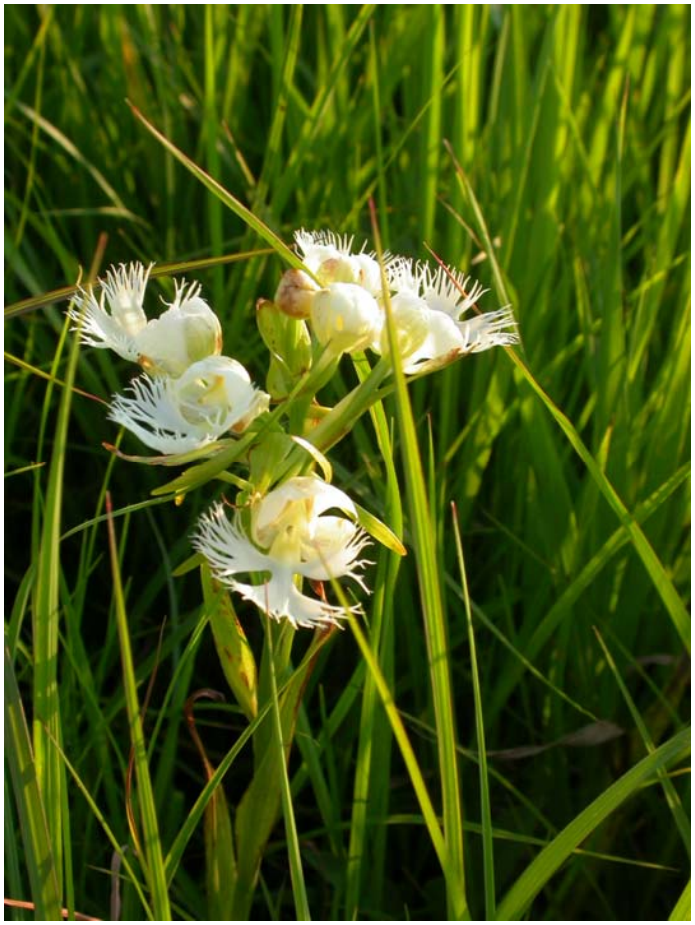
Tim Reed

Tim Reed
Mayor, City of Brookings

2008 Western Prairie Fringed Orchid Survey Report

Brookings Airport Project
Prepared for: HNTB Corporation

South Dakota



August 1, 2008

GES Project No. 2007.076

Brookings Airport Project
2008 Western Prairie Fringed Orchid Survey Report

Prepared for: HNTB Corporation

Brookings County, South Dakota

August 1, 2008

Summary

The City of Brookings proposes to expand facilities at the current Brookings airport site and is currently evaluating the environmental impacts to this and an alternative airport site in Brookings County, South Dakota. Graham Environmental Services, Inc. (GES) was retained by HNTB Corporation (HNTB) to conduct a search for federally listed western prairie fringed-orchid (*Platanthera praeclara*, Sheviak & Bowles) at the existing and alternate airport locations (**Figure 1**).

The survey was conducted on July 16, 2008 during the flowering period for the western prairie fringed orchid (July 1 – 29, Smith, 1993) to ensure the detection of this species if it occurs along the proposed route. This report provides the results of the July 16, 2008 surveys. No high quality prairie remnants occur within either airport location and no western prairie fringed orchids were observed at the sites during the survey.

Methodologies

GES evaluated locations within the proposed expansion footprints of the existing and alternate airport sites for the presence of plant aggregations indicative of remnant prairies that could harbor western prairie fringed orchid. Areas adjacent to the airport expansion such as pasture, wetlands, non-native grassland, and stream channels were evaluated at the existing airport and alternate airport site.

Meander searches were conducted to document western prairie fringed orchid presence/absence where plant assemblages met minimum habitat

characteristics. Those areas that were regularly plowed, mowed, or inundated were not searched for the western prairie fringed orchid.

GES also visited sites with known populations of western prairie fringed orchids in southern Minnesota to ascertain the orchid's phenology and to identify plant associates. A list of plant associates at these locations are highlighted in yellow in **Appendix A**. Seven western prairie fringed orchids were observed blooming at one southern Minnesota site even though none were observed in bloom at another nearby Minnesota site. The orchids' phenology at one of the known Minnesota locations during the survey indicate that if orchids were present at either project site, they would have been visible. Species observed at both sites are documented in Appendix B.

Surveys were conducted during a period when precipitation was within 90 percent of normal for the three months preceding the survey (Minnesota Climatological Working Group). Weather during the survey was partly cloudy and warm (85˚F) with light winds.

Survey Area Summaries

Three areas within the existing airport expansion areas were evaluated for the presence/absence of western prairie fringed orchid on July 16, 2008 by GES staff (**Figure 1**). The following summaries indicate the results of the evaluation.

<u>Area #1</u>
Area #1 is located in the extreme western portions of the expansion footprint at the existing airport site Section 28, T110 R50 and was pastured during the 2008 survey. This area did not show remnant prairie characteristics and vegetation was grazed to a length of 2 inches or less. Dominant species present on this site include Kentucky bluegrass (*Poa pratensis*), smooth brome (*Bromus inermis*), reed canary grass (*Phalaris arundinacea*), cottonwood (*Populus deltoids*), The only areas that exhibited prairie remnants were located on the bottom of historic stream channels. Both wetland and upland plant communities are dominated by non-native and pioneering species that are tolerant of repeated disturbance as a result of grazing, plowing, or increased nutrient input from agricultural practices. However, this area has identifiable patches of native plant assemblages. Wetland areas are dominated by *Typha latifolia*, *Carex atherodes*, *Solidago gigantea, Spartina pectinata, Cicuta maculate, Hordeum jubatum*, *Juncus dudleyi*, *Carex pellita*, and *Phalaris arundinacea*. The upland hillsides are dominated by *Poa pratensis*, *Bromus inermis*, and *Solidago rigida* with remnant areas being identified

by *Amorpha canescens*, *Dalea purpurea*, *Andropogon gerardii*, and *Soidago rigida*. No western prairie fringed orchids were observed at Area #1 within the project footprint during the July 16, 2008 survey.

Area #2

Area #2 is located in portions of the NW 1/4 Section 27, T110 R50 and is a grassland area that has abundant cottonwood saplings and patches of plant species that are found in grasslands, pasture, and native prairie remnants. These assemblages of prairie remnants are located north of the actual footprint of the airport expansionjust west of the Six Mile Creek. Upland plant communities within this grassland area are similar to those in Area #1 but are dominated by Poa pratensis, Bromus inermis, Fraxinus pennsylvanica, Populus tremuloides, Spartina pectinata, Andropogon gerardii, Melilotus alba, and *Symphoricarpos occidentalis*. No western prairie fringed orchids, were observed at Area #2 within the proposed expansion area during surveys conducted on the July 16, 2008 survey.

Area #3

Area #3 is located at the alternate airport site in portions of Section21, T109 R48 and is located outside of the alternate airport footprint. This site was fallow pasture at the time of our evaluation. A dry tributary to Medary Creek meanders through this pasture and no water was present during our review of this site. The tributary was dry at the time of our evaluation and no evidence of a bed and bank was visible within the pasture. Dominant species include invasive grasses such as Phalaris arundinacea, Phleum pratense, Poa pratensis, and Bromus inermis, and forbs such as Polygonum amphibium occur throughout the pasture. No western prairie fringed orchids, were observed at Area #3 along the project route during surveys conducted on the July 16, 2008 survey.

Summary of Results

A total of three (3) areas were reviewed at the existing aiport expansion areas and at the alternate airport site for the presence/absence of western prairie-fringed orchids, or its habitats. No western prairie-fringed orchids were observed at either site. Several associates of *Platanthera praeclara* from other southwestern Minnesota sites were present at sites evaluated during the survey.

Western prairie fringed orchids occur most often in remnant native prairies and meadows, but have also been observed at disturbed sites such as road ditches and degraded grasslands. Although no orchids were observed during the survey, orchids have been known to experience a reduction of flowering plants during years with below normal precipitation

or drought and then return with normal precipitation. Although it is unlikely, the propensity of this plant to occasionally be absent from a site during one year only to return after its absence precludes our ability to say definitively that this plant does not occur at sites reviewed at either airport site.

The information contained herein represents my findings during sensitive plant survey activities conducted on July 16, 2008 at the referenced sites.

Graham Environmental Services, Inc.

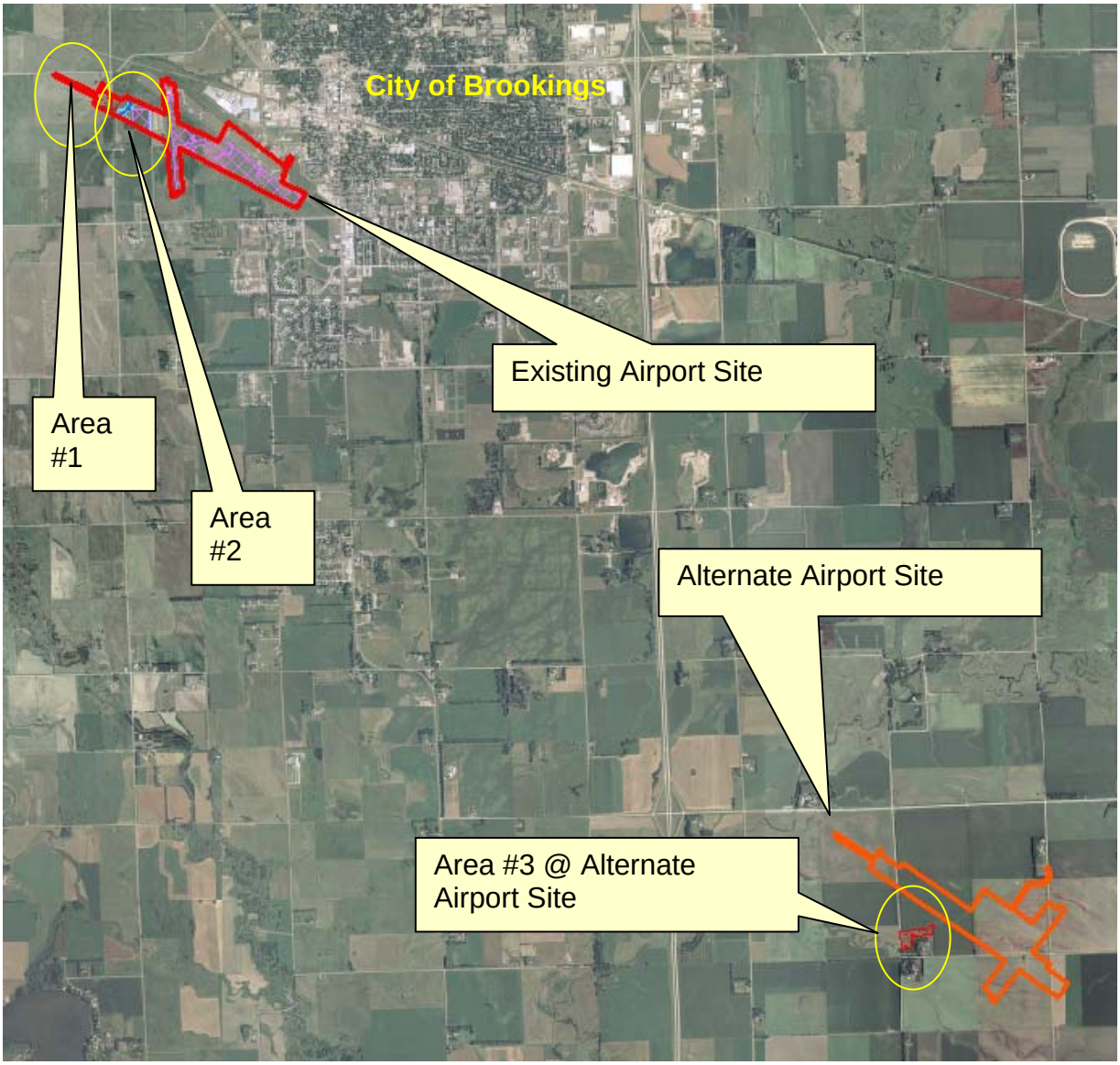
Scott Krych
Biologist/Professional Wetland Scientist No. 000303

References

Coffin B. and L. Pfannmuller. (eds). 1988. Minnesota's Endangered Flora and Fauna. University of Minnesota Press. Minneapolis, Minnesota. 473 pp.

Gleason, H.A. and A. Cronquist. 1991. Manual of Vascular Plants of Northern United States and Adjacent Canada. The New York Botanical Garden. Bronx, New York. 910 pp.

Smith, W.R. 1993. Orchids of Minnesota. University of Minnesota Press, Minneapolis, London, p.75



N

Not to Scale

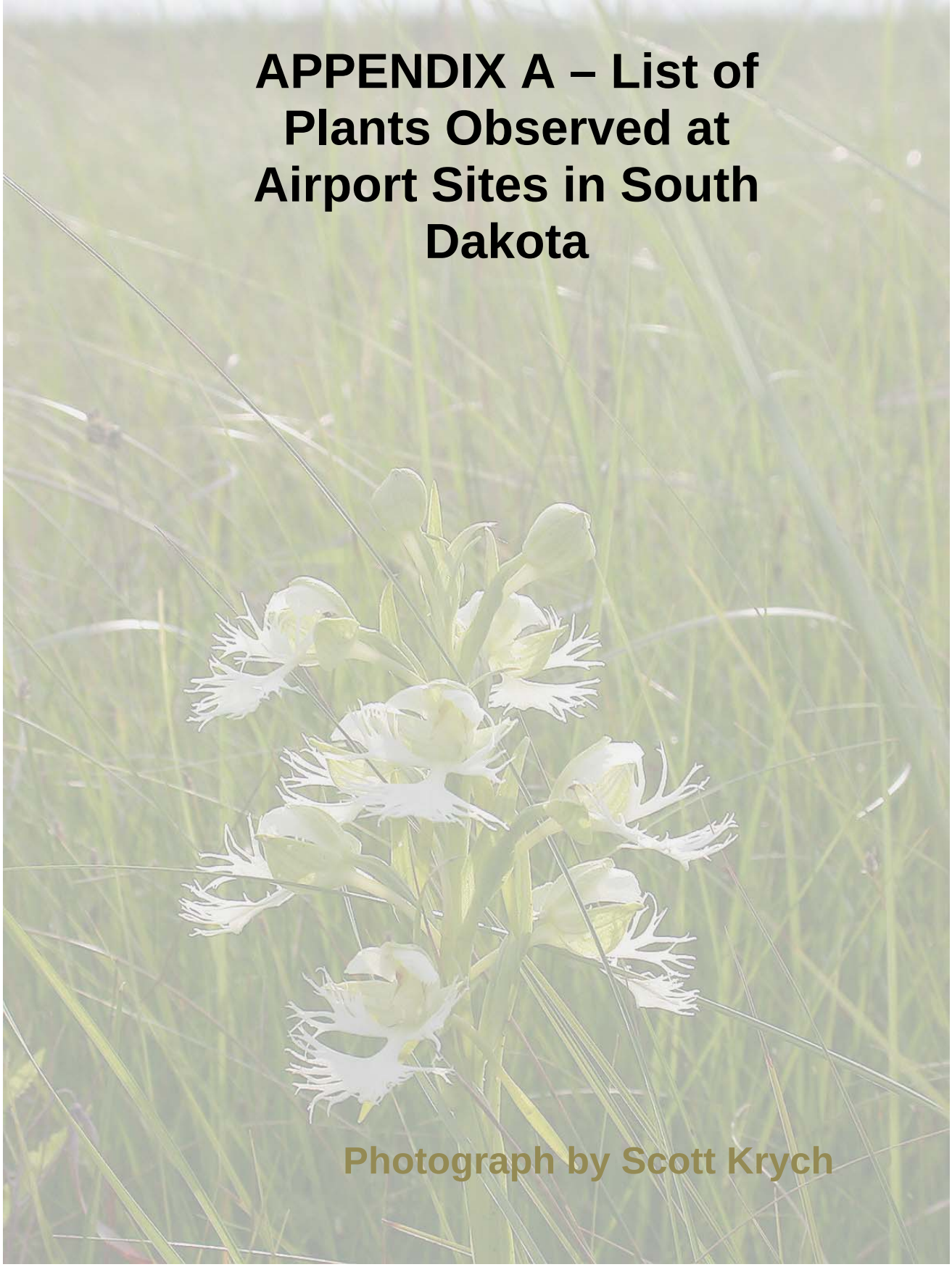
Figure 1. Site Location Map

Brookings Airport Sites
Brookings County, South Dakota

GES Project No. 2007.076

Graham Environmental Services, Inc.

APPENDIX A – List of Plants Observed at Airport Sites in South Dakota



Photograph by Scott Krych

Appendix A: Species Observed at Brookings Airport Sites Brookings County, South Dakota.

Genus	Species	Common Name	Area #1	Area #2	Area #3
Understory Trees					
Acer	*negundo*	Box elder	X		X
Fraxinus	*pennsylvanica*	Green ash	X	X	
Populus	*deltoides*	Eastern cottonwood	X	X	X
Salix	*nigra*	Black willow	X	X	
Shrubs					
Amorpha	*canescens*	Lead plant		X	
Cornus	*stolonifera*	Red-osier dogwood	X	X	
Parthenocissus	*quinquifolia*	Virginia creeper	X		
Rhus	*glabra*	Smooth sumac		X	
Forbs					
Achillea	*millefolium*	Yarrow	X	X	
Ambrosia	*artemissiifolia*	Common ragweed	X	X	
Ambrosia	*psilostachya*	Western ragweed	X	X	
Anemone	*cylindrica*	Long-headed thimbleweed	X	X	
Anemone	*canadense*	Meadow anemone	X		
Antennaria	*plantanginifolia*	Plantain pussytoes		X	
Apocynum	*sibericum*	Dogbane	X	X	
Artemisia	*dracunculus*	Wormwood	X	X	
Artemesia	*ludoviciana*	Prairie sage	X	X	
Asclepias	*incarnata*	Marsh milkweed	X	X	
Asclepias	*syriaca*	Common milkweed	X	X	
Asclepias	*verticillata*	Whorled milkweed	X	X	
Asparagus	*officinalis*	Asparagus		X	
Aster	*ericoides*	Aster	X	X	
Cicuta	*maculata*	Water hemlock	X		X
Cirsium	*arvense*	Canada thistle	X	X	X
Cirsium	*flodmanii*	Flodman's thistle	X	X	
Cirsium	*vulgare*	Bull thistle	X	X	X
Comandra	*umbellata*	Bastard toadflax	X	X	X
Convovulus	*sepium*	Hedge bindweed	X	X	
Dalea	*purpurea*	Purple prairie clover	X	X	
Echinocystis	*lobata*	Bur cucumber		X	
Equisetum	*arvense*	Horsetail		X	
Erigeron	*strigosus*	Daisy fleabane	X	X	
Fragaria	*virginiana*	Strawberry		X	
Galium	*boreale*	Northern bedstraw			
Helianthus	*maximiliani*	Maximilian's sunflower	X	X	
Helianthus	*pauciflora*	Sunflower		X	
Liatris	*aspera*	Rough blazing star	X		

Lycopus	*asper*	Bugleweed	X		
Medicago	*sativa*	Black medic	X	X	X
Melilotus	*alba*	White sweet clover	X	X	X
Melilotus	*officinalis*	Yellow sweet clover	X		
Monarda	*fistulosa*	Wild bergamot		X	
Oenothera	*biennis*	Evening primrose	X	X	
Pilea	*fontana*	Clearweed		X	
Physalis	*virginiana*	Virginia ground cherry		X	
Plox	*pilosus*	Downy phlox			
Plantago	*major*	Common plantain	X	X	X
Polygonum	*amphibium*	Water smartweed	X	X	X
Polygonum	*persicaria*	Lady's thumb	X	X	
Ratibida	*columnifera*	Prairie coneflower		X	
Rosa	*arkansana*	Prairie rose	X	X	
Rudbeckia	*hirta*	Black-eyed Susan		X	X
Rumex	*crispus*	Curly dock	X	X	X
Sisyrinchium	Spp.	Blue-eyed grass	X	X	
Solidago	*rigida*	Stiff goldenrod	X	X	
Solidago	*gigantea*	Giant goldenrod	X	X	X
Solidago	*canadensis*	Canada goldenrod	X		X
Sonchus	*arvensis*	Prickly lettuce	X	X	
Spirodela	*polyrhiza*	Great duckweed		X	
Taraxicum	*officinale*	Common dandelion	X	X	X
Thalictrum	*dasycarpum*	Purple meadow rue	X	X	X
Toxicodendron	*radicans*	Poison ivy		X	
Tragopogon	*pratensis*	Goat's beard		X	
Trifolium	*aureum*	Yellow hop clover	X	X	X
Trifolium	*hybridum*	Alsike clover		X	X
Trifolium	*pratense*	Red clover	X	X	X
Urtica	*dioica*	Stinging nettle	X	X	
Verbena	*stricta*	Hoary vervain	X	X	
Vitis	*riparia*	Riverbank grape	X	X	
Xanthium	*strumarium*	Rough cocklebur	X		
Grasses, Rushes and Sedges					
Agropyron	*repens*	Quackgrass	X	X	X
Andropogon	*gerardii*	Big bluestem		X	
Bromus	*inermis*	Smooth brome	X	X	X
Bromus	*tectorum*	Cheet		X	
Carex	*atherodes*	Hairy-leaved sedge	X	X	X
Carex	*granularis*	Pale sedge		X	
Carex	*interior*	Interior sedge		X	
Carex	*pellita*	Wooly sedge	X	X	
Carex	*sartwellii*	Sartwell's sedge	X	X	
Carex	*vulpinoidea*	Fox sedge	X		
Dactylis	*glomerata*	Orchard grass		X	

Eleocharis	*palustrisi*	Marsh spike rush	X	X	X
Elymus	*canadensis*	Canada rye	X	X	
Hordeum	*jubatum*	Squirrel-tail	X	X	X
Juncus	*dudleyi*	Dudley's rush	X		X
Juncus	*nodosus*	Jointed rush		X	X
Panicum	*virgatum*	Panic grass		X	
Phalaris	*arundinacea*	Reed canary grass	X	X	X
Phleum	*pratense*	Timothy	X	X	X
Poa	*pratensis*	Kentucky bluegrass	X	X	X
Schoenoplectus	***tabernaemontani***	Soft-stemmed bulrush		X	
Setaria	*glauca*	Yellow foxtail	X	X	X
Spartina	*pectinata*	Cord grass	X	X	
Stipa	*spartea*	Porcupine grass	X	X	
Typha	*latifolia*	Cattail	X	X	X

Yellow highlights indicate species also observed near a known occurrence of western prairie fringed-orchid.

ENDANGERED SPECIES ACT SECTION 7 BIOLOGICAL ASSESSMENT

BROOKINGS AIRPORT PROJECT

Prepared by

Graham Environmental Services, Inc.
GES

March 2011

This Biological Evaluation was prepared pursuant to the National Environmental Policy Act and other applicable laws and regulations. For additional information, please contact the team leader for the BKX project:

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1.0 INTRODUCTION

1.1 PURPOSE AND DECISION

A wide variety of federal legislative actions, including Section 7 of the Endangered Species Act (ESA)(16 U.S.C. 1536), and the National Environmental Policy Act (NEPA) define national policy to preserve and protect federally listed threatened and endangered species on "major construction activities" and public projects. To meet the intent of such legislation, biological assessments are required as part of the environmental analysis for all planned, funded, or permitted federal activities. Under the Endangered Species Act: Section 7 (a)(2) states that each Federal agency shall, in consultation with the Secretary, insure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat. Biological evaluations are the means used by the United States Fish and Wildlife Service to review projects and document findings in order to:

- ensure that Federal actions do not contribute to loss of viability or contribute to a trend toward federal listing of any species;
- comply with the requirements of the ESA that actions of federal agencies not jeopardize or adversely modify habitat or federally listed species; and
- provide a process and standard by which to ensure that federally listed threatened, endangered, proposed, and sensitive species receive full consideration in the decision-making process.

Specifically, the ESA requires a determination be made as to whether a federal action may affect a federally listed species. Whenever a situation arises where a federal activity may affect a federally listed species (regardless of whether the effect is adverse, discountable, insignificant or beneficial), consultation with the U.S. Fish and Wildlife Service (FWS) is required.

Biological Assessments are expressly required to document effects on federal threatened, endangered and sensitive (TES) species. The purpose of this analysis is to examine the probable environmental consequences of the Proposed Action, and other appropriate project related affects on the following species.

- Topeka shiner (*Notropis Topeka*) - Endangered
- American burying beetle (*Nicrophorus americanus*) - Endangered
- Western prairie fringed orchid (*Platanthera praeclara*) - Threatened

This Biological Assessment (BA) is a supplement to the Dual Track Airport Planning Process Brookings, South Dakota Environmental Assessment (EA). This BA provides the Deciding Official information necessary to make an informed decision regarding the potential risks and benefits posed by the project on federal plants and animals and their habitat. If a decision is made that proceeding with the Proposed Action activities is the best means for addressing resource needs in Brookings, South Dakota, the decision will identify what activities are appropriate, where and how they will occur, and why other options were not selected.

1.2 PROJECT DESCRIPTION

The Brookings Regional Airport (BKX) is located in the city of Brookings (City) in Brookings County, South Dakota as shown in attached EA Figure 1**.** BKX has two runways – a primary Runway 12/30 5,231 feet long and 100 feet wide, and a crosswind Runway 17/35 3,599 feet long and 60 feet wide. The existing airport layout is shown in attached EA Figure 2.

Based on the findings of the BKX Master Plan Update in 2006, the City initiated a process that examined alternatives that would expand BKX and would develop a new replacement airport – which became known as the Dual Track Airport Planning Process. The City sponsored a Draft Environmental Assessment (EA) to assess and compare the potential environmental consequences of the BKX Expansion Alternative with the New Airport Alternative. Following the comment period and public hearing on the Draft EA, the City evaluated the alternatives and selected the BKX Expansion Alternative as the preferred alternative, which is the proposed action (Project). The BKX Expansion Alternative is shown in attached EA Figure 3.

The city of Brookings is the owner of BKX and will implement the action. The city of Brookings is located at 311 Third Avenue, P.O. Box 270, Brookings, SD 57006.

Currently, the layout of BKX is non-compliant with FAA standards. Specifically:

- There are incompatible land uses in two of the four Runway Protection Zones (RPZs).
- There is a non-standard intersection of the existing two runways.
- The primary runway length is too short to accommodate the current and anticipated future fleet mix at the airport.

Taken together, the City assumes these three issues threaten the airport's ability to maintain its status as a federally funded airport as well as its ability to continue providing the Brookings region with a safe and reliable access point to the nation's air traffic system.

The FAA also requires the airport renovation to reduce hazardous wildlife attractants near the existing airport. Currently, the presence of Six Mile Creek and its associated wetlands provide a significant attractant to birds and other wildlife near the airport.

The BKX Expansion Alternative is specifically designed to address the issues listed above and to manage wildlife attractants within the current airport limits. This alternative constructs a new approximately 6,000-foot Runway 11-29 with a taxiway on the north side and approach lights at the Runway 11 end. An approximately 3,790-foot reroute of Six Mile Creek at an estimated cost of $1.45 million was selected to allow for a FAA standard safety area beyond the new Runway 11 end. The reroute is shown in attached EA Figure 14a.

The proposed action would be constructed with construction equipment including bull dozers, graders, back hoes and scrapers.

<u>Other Alternatives Considered</u>

The City considered the No Action Alternative shown in attached EA Figure 2 and the New Airport Alternative shown in attached EA Figure 4 as alternatives that may achieve the purpose and need for the project.

The City also considered an on-site alternative to the reroute of Six Mile Creek. This alternative would *direct the creek into a single straight culvert near the runway end.* It would require seven approximately 720-foot long culverts and approximately 0.4 acres of creek realignment. In order to accommodate 100-year flood requirements, six 8-foot high by 10-foot wide box culverts and one 8-foot high by 12-foot wide box culvert 720 feet long placed side by side would be required at an estimated cost of $3.19 million. The reroute of Six Mile Creek in the proposed action was selected for the following reasons:

- It is much more cost effective than the culvert alternative of installing seven 720-foot long box culverts side by side to accommodate 100-year flood requirements.

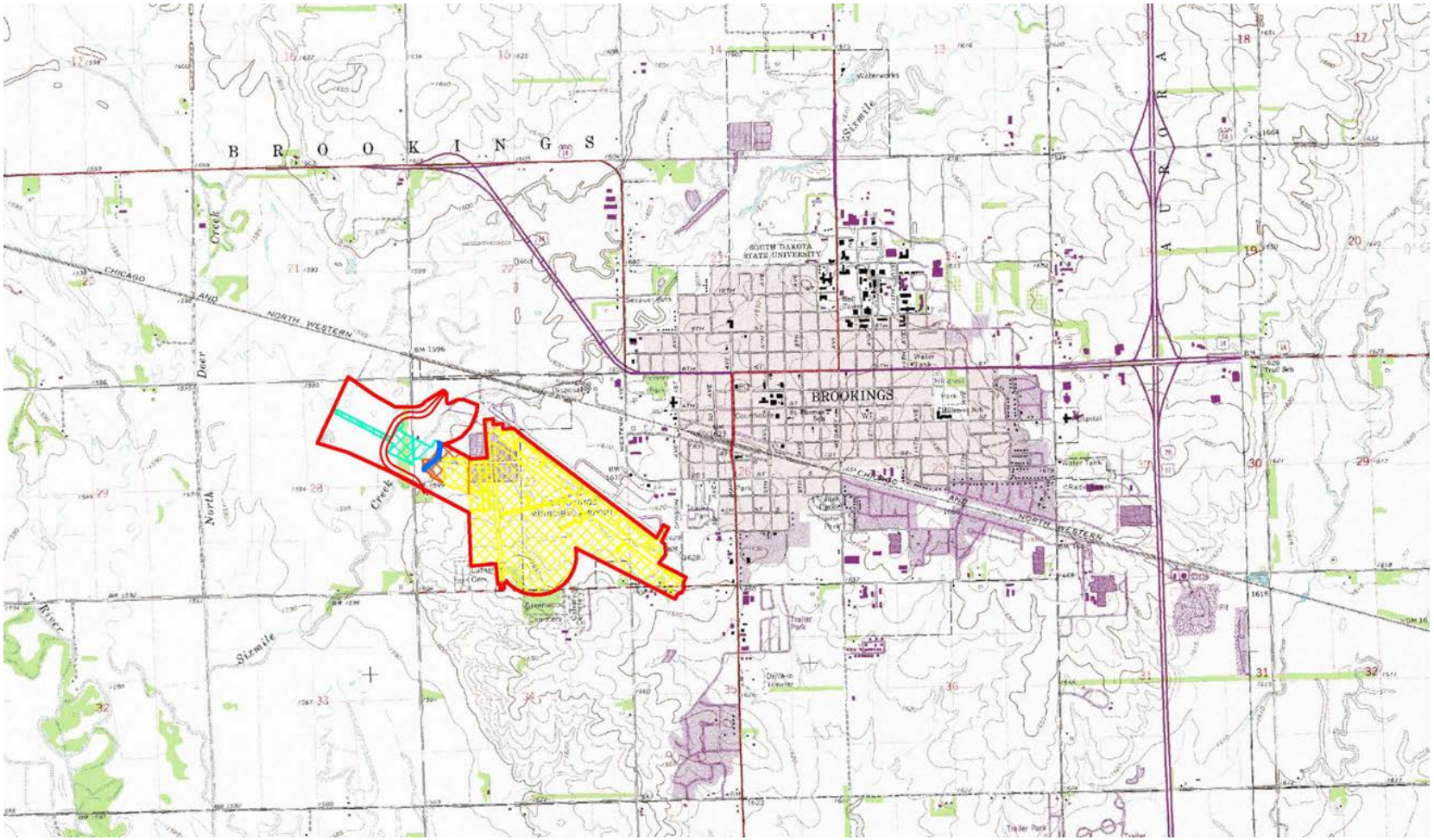
- It avoids critical airport design surfaces by rerouting the creek. The critical surfaces are the Runway Safety Area and Runway Object Free Area.

- It will provide a much more attractive habitat for the Topeka shiner than the culvert alternative.

The proposed action will require the acquisition of approximately 122 acres of property. Included within the acquisition is one residence, which was acquired by the City in 2009 when it was put up for sale. The majority of the acquisition area (110 acres) is west of the current airport. Approximately 12 of these acres are already owned by the City and would need to be incorporated into the Airport property. An additional 10 acres in the southwest corner of the airport and a half acre off the north end of the crosswind runway would need to be purchased. Less than four acres of easement would also need to be acquired – 3.6 acres of which is over the National Guard facility to the north of the existing runway and 0.2 acres near the funeral home to the south.

Portions of two Brookings Township roads (212th Street and 469th Avenue) are within the land that would be acquired by the City. Once the land is acquired, these roads may be closed by the City. 212th street does not directly serve any residences and alternate routes exist within one mile in either direction. Access from the north on 469th Avenue to one residence would be lost when the road is closed. Access from the south would still be provided.

Figure 1.2-1 BKX Project Location



1.3 SITE LOCATION

The proposed action is located within the city limits of Brookings Township in the southwest portion of the city of Brookings (encompassing portions of Sections 22, 26, 27 and 28 in Township 110N, Range 50W). The project occupies lands that are pastured, developed as single family residences, or as existing runway and manicured grasses. A total of approximately 576 acres outside of the existing airport will be affected by permanent construction improvements planned within the project area.

1.4 HABITATS PRESENT

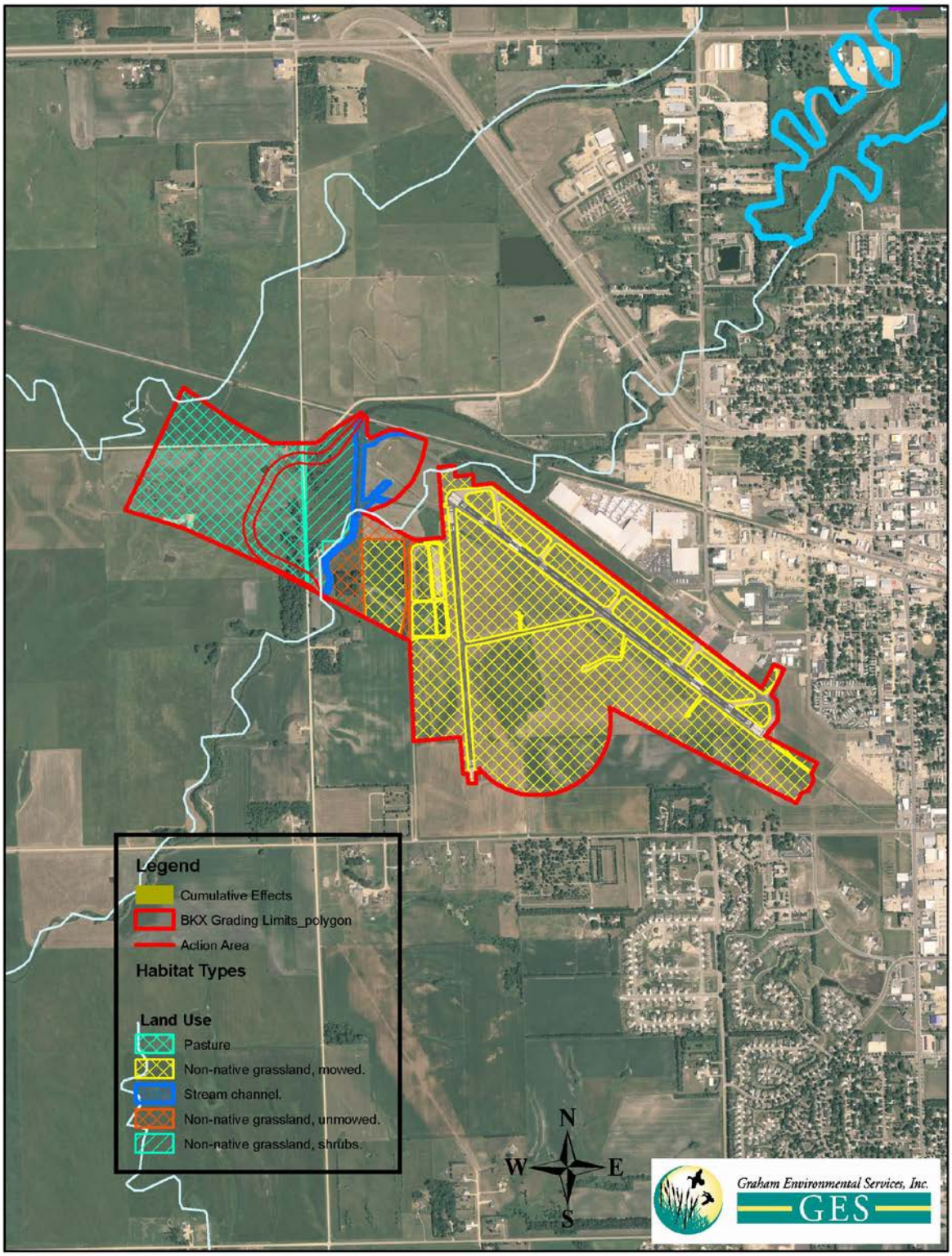
This analysis pertains to habitats present within the surveyed project area (surveys were conducted on lands adjacent to the existing BKX airport), immediately adjacent to the project area, and in down-slope wetland and stream floodplains that may be affected by project activities. The project area consists of 6 land use types within the proposed action footprint (Figure 1.4-1). Land use types are ecological areas derived from a combination of individual or groupings of native plant communities, ecological systems, and human use areas at the BKX airport and on adjacent lands. Each land use type is characterized by its dominant vegetation communities and patterns. Land use types were identified by dominant vegetation or land use patterns observed at BKX. Land uses present in the project area are listed in Table 1.4-1.

TABLE 1.4-1

Acreage of Land Use Types Affected by Proposed Action

Land Use Type	Proposed Action (acres)
Pasture (P)	21
Non-native Grassland - mowed (M)	252.3
Stream Channel (S)	1.1
Non-native Grassland - unmowed (U)	9.8
Non-native Grassland - shrubs (Sh)	5.2
Developed (i.e., roads, runway, homes, etc.) (D)	287
Total	576

Figure 1.4-1 Land Use Types Identified at the BKX Site.



1.5 PURPOSE OF THIS DOCUMENT

The purpose of this document is to document the Biological Assessment for the American burying beetle, western prairie fringed orchid and Topeka shiner, all federally threatened or endangered species under the Endangered Species Act.

As a Biological Assessment, this document assesses the effects of the proposed action on federally listed species that occur within the Action Area of the proposed action in South Dakota (50 CFR §402.12(f)).

Information regarding species reviewed in this document was obtained through the cooperation of the U.S. Fish and Wildlife Service (FWS).

Table 1.6-1 provides a summary of environmental features at the proposed action site.

TABLE 1.6-1

Environmental Features at the Proposed Action Site

Environmental Features	Unit	Airport footprint
NWI-mapped Wetland Estimated Impacts	acres	11.1
Prime Farmland Soils	acres	1674
Forest Land Affected	acres	0
Agricultural Land Affected	acres	21.0
Herbaceous Land Affected	acres	288.3
Open Water Crossed	linear feet	39-150
Intermittent Waterbodies Crossed	no.	0
Perennial Waterbodies Crossed	no.	1
Railroad Crossings	no.	0
Interstate and Highway Crossings	no.	0

2.0 THREATENED, ENDANGERED AND SENSITIVE SPECIES EVALUATION PROCESS

Species protected by the Endangered Species Act evaluated in this BA are those species that:

- are documented within the Action Area;
- have suitable habitat within the Action Area; or
- may be affected by project activities.

Species presence in or near the Action Area was determined based on the following information:

- United States Department of the Interior correspondence dated October 18, 2007.
- Consultation with individuals in the private and public sector who are knowledgeable about the area and its flora and/or fauna.
- Review of available publications and materials (See references in Literature Cited).

Presence/absence data were also collected using site specific surveys and field inspection of the project area as follows:

- 2008 Western Prairie Fringed Orchid Survey Report, site specific surveys conducted on July 16, 2008 by Graham Environmental Services, Inc. (previously submitted to FWS).

2.1 SURVEY RESULTS

Although patches of suitable habitat were identified, no western prairie fringed-orchids were observed in the areas surveyed. A negative survey does not preclude a species from being evaluated if there is suitable habitat present. In addition, for most species it is difficult to conclude they are not present based on a one-time survey of the area. The BA must address the impacts of the project on a species' habitat, whether or not it is currently occupied. Survey data are most useful for designing a project to mitigate the negative effects on individuals, such as a nest site or plant population that has a distinct boundary.

2.2 ACTION AREA

The "Action Area" for purposes of the analyses in this BA includes all areas that would be physically affected by construction of the proposed action (e.g., clearing and construction, extra workspaces). The term "project area" is used to include those areas in the Action Area, as well as activities associated with airport construction that may not have a physical impact on habitat (e.g., access roads, travel or hauling routes).

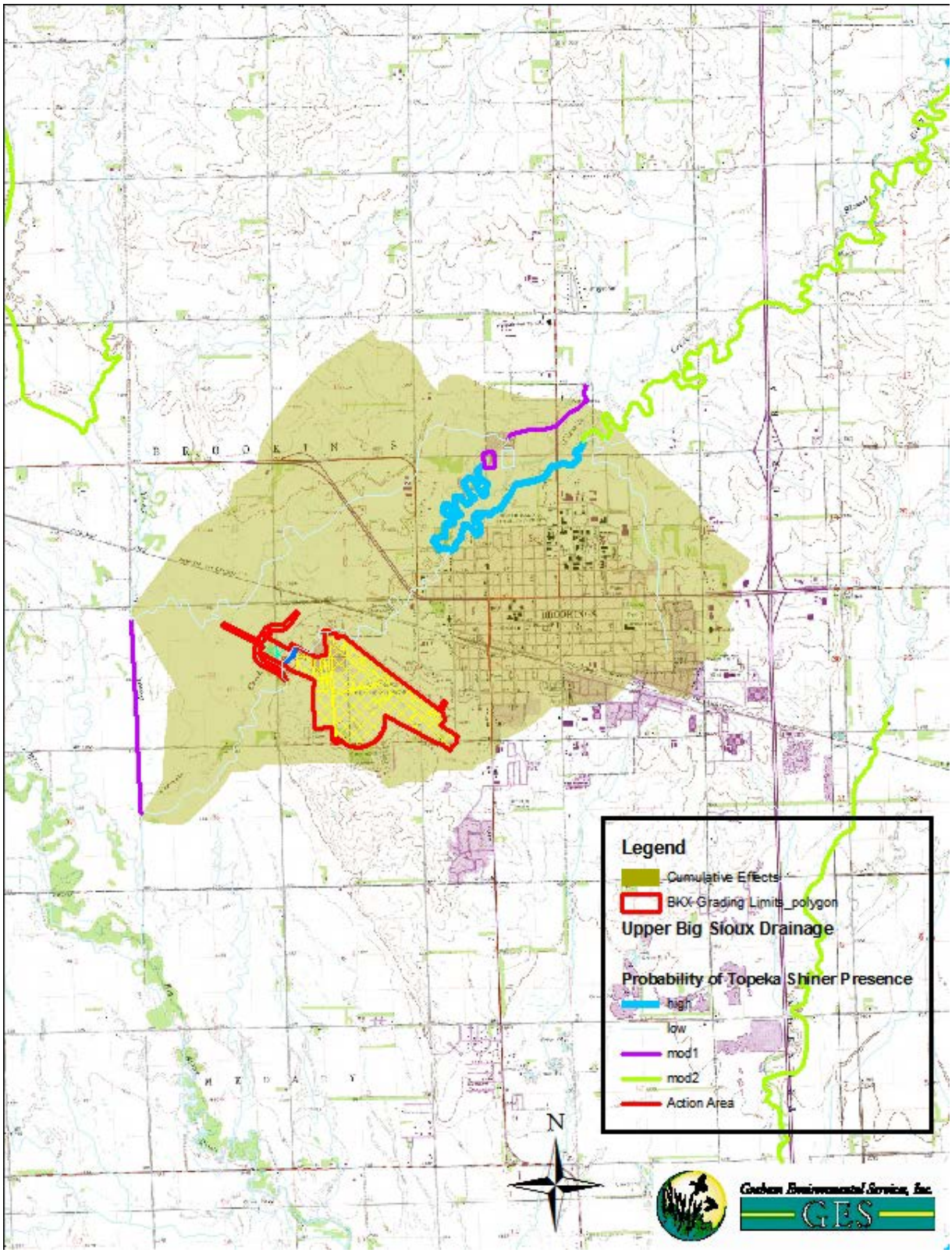
2.3 SPECIES EVALUATION PROCESS

The "Analysis Area" is defined as the area in which activities associated with the proposed project could potentially have a direct, indirect, or foreseeable cumulative effect upon the species or habitat in which the species may occur.

The "cumulative effects boundary" is the area where analysis for a particular species is attenuated to the point that no effect can be measured and defines the limits of the "analysis area." Cumulative effects for the Topeka shiner, western prairie fringed orchid, and American burying beetle outside of the project area is based on "those effects of future state or private activities, not involving federal actions, which are reasonably certain to occur within the action area…" (50 CFR 402.02). Animal species are evaluated based upon home ranges that fall within a given Landscape Ecosystem intersecting the project area and are depicted in Figure 2.3-1.

Based on the previously described desktop research and field surveys, species not known to occur and without suitable habitat were removed from further analysis and not addressed further. Species were analyzed according to agency's policies as follows.

Figure 2.3-1 Project Map Showing Cumulative Effects Boundary



2.3.1 Federal Threatened and Endangered Species

Section 3 of the Endangered Species Act of 1973 defines endangered species as "any species that is in danger of extinction throughout all or a significant portion of its range" and a threatened species as "any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." The Threatened, Endangered and Sensitive Species considered for evaluation in this BA are listed in Table 2.3.1-1.

Relative to species listed under the Endangered Species Act of 1973 (ESA), as amended, Biological Assessments must arrive at 1 of 3 possible determinations: 1) "no effect", 2) "may affect, but not likely to adversely affect" (which includes beneficial, insignificant, and discountable effects), or 3) "may affect and likely to adversely affect." If a "likely to adversely affect" determination is made relative to a listed species, formal consultation must be initiated with the U.S. Fish and Wildlife Service under Section 7 of the ESA. An adverse effect is one in which an individual of a listed species is likely to be exposed to the action or its environmental consequences and will respond in a negative manner to the exposure. Effects determination for federal Threatened and Endangered Species were made within the project's action area; the action area is the geographic extent of environmental changes (i.e., the physical, chemical and biotic effects) that will result directly and indirectly from the action.

TABLE 2.3.1-1

Threatened, Endangered and Sensitive Species Considered for Evaluation in this BA

Scientific Name / Common Name	USFW Status	Habitat Summary	Potential Habitat Present	Known Species Presence	Evaluated Species in BA
Federally Threatened and Endangered Species					
Notropis topeka Topeka Shiner	E	Variety of habitats, adequate prey, low human disturbance.	Yes	Yes	Yes
Nicrophorus americanus American Burying beetles	E	No strong habitat affinities observed. Species is more closely associated with abundant carrion between 100-200 grams.	Yes	No	Yes
Platanthera praeclara Western prairie fringed orchid	T	Mesic to wet prairie and meadows	Yes	No	Yes

2.4 SPECIES DESCRIPTIONS, BASELINE DATA, AND EFFECTS ANALYSIS

The section below includes descriptions of species for analysis and habitat requirements, direct and indirect effects of the proposed project, cumulative effects, and risk assessment determinations. Separate determinations of effects are made for the USFWS that provides the species statutory protection, as described above. Risk assessments consider two factors: the consequences of adverse or beneficial effects on the population or habitat, and the likelihood or probability that these effects would occur. These factors are used to arrive at determinations, which are given in the sections below and summarized in Table 2.4.3.1-1.

2.4.1 Fish

2.4.1.1 Topeka Shiner (*Neotropis topeka*)

ESA Status: In 1999, the Topeka shiner was listed under the ESA as "Endangered" in the contiguous United States. It is also listed as endangered in Missouri, threatened in Iowa and Kansas, and as a species of concern by the South Dakota Department of Game, Fish, and Parks (SDGF&P). Declines of up to 90 percent of the population were noted in a 1998 USFWS report. More recent studies have found that the Topeka shiner occupies up to 80 percent of its original habitat in the northern part of its range (Shearer 2003, Dahle 2001). Protection under the ESA was initiated by the USFWS to stem declines in Topeka shiner populations by establishing critical habitat in 83 stream segments in the states of Iowa, Minnesota, and Nebraska (*Federal Register* 69[143]:44736-70). South Dakota, Kansas, and Missouri were excluded from critical habitat designation in part due to the SDGF&P developing the Topeka Shiner Management Plan for the State of South Dakota (TSMP). The TSMP was developed to maintain habitat integrity in Topeka shiner streams located in South Dakota.

Implementation of the TSMP requires the promotion of Topeka shiner conservation measures by: (1) developing management actions that address stream hydrology, geomorphology, and water quality, (2) ESA Section 7 consultation and coordination with U.S. Fish and Wildlife Service, (3) establishing a monitoring and assessment protocol to evaluate South Dakota's management goal, (4) implementing public outreach that educates all entities about the maintenance of Topeka shiner habitat. The public outreach is intended to avoid the need to designate critical habitat in South Dakota by enacting management plan conservation strategies.

Range-wide Distribution/Status, General Habitat Requirements, and Species Biology: Historically, Topeka shiners occupied drainages of the central prairie region such as the Missouri, Mississippi, and Arkansas Rivers. States where this species occurred included Iowa, South Dakota, southwestern Minnesota, Missouri, Nebraska, and Kansas (Bailey and Allum 1962). In 1998 the USFWS noted that the species occupied 10 percent of its historic habitat range-wide. In South Dakota and Minnesota, however, the Topeka shiner still occupies a high percentage of historic tributary streams and has been documented throughout numerous small prairie streams that are tributaries to the Missouri River (Cunningham and Hickey 1997, Cunningham 1999, Dahle 2001, Blausey 2001, Wall et al. 2001, Cunningham 2002). Recent presence/absence surveys conducted in eastern South Dakota including the James, Vermillion, and Big Sioux drainages, have documented the Topeka shiner in 80 percent of historically known streams and in many streams where they were not previously reported (Schearer 2003).

Topeka shiner streams are generally characterized by high water quality, low gradient, low velocities, groundwater input, and sand or gravel substrates (Pflieger 1997). Despite its association with streams exhibiting high water quality, Blausey (2001) found that "water quality parameters were not associated with Topeka shiner presence". Blausey (2001) noted that the presence of Topeka shiners was correlated to low bank height, low bank incision, streambed substrate materials of fine gravel to cobble, submerged macrophyte growth, and riparian zones characterized by grass or pasture with low livestock use, overhanging streambank vegetation, no trees along the stream bank, and the presence of pool habitat. Wall et al. (2004) indicate that Topeka shiner presence is associated with increases in stream size, groundwater potential, and stream network position and that the shiner presence decreased as streams moved from perennial to temporary, and as channel

slope values increased. Other studies have found that Topeka shiners occupy degraded streams with silt substrates, off-channel backwater areas, borrow pits, and sloughs connected to occupied streams (Dahle 2001, Wall et al. 2001 and Cunningham 2002). Other conditions where Topeka shiners have been found in streams exhibiting degraded conditions include: incised channels, high bank erosion, intensive grazing, and deteriorating conditions located within the riparian zone of occupied streams. Perhaps one of the most important variables predicting Topeka shiner presence is groundwater flow (Wall et al. 2001). This factor may be essential regardless of substrate composition or channel and margin condition. Factors that may be negatively correlated to the presence of Topeka shiners include: stream channelization, tributary impoundment, water withdrawals, and the presence of predatory species such as largemouth bass (*Micropterus salmoides*).

In South Dakota, Topeka shiners inhabit streams with unique hydrologic characteristics that influence the biology of the species. Hydrology of these streams is typical of most grassland waterways due to seasonal water level fluctuations exhibited (Dodds et al. 2004). Drought and flooding are common and limit fish communities to those species that tolerate large fluctuations in water temperatures, frequent disturbance, and wet/dry cycles. The current understanding of species occupying these harsh environments would predict that species present would have life history traits such as variable population size, extended reproductive periods, multiple clutch spawning, expansive dispersal mechanisms, high annual mortality, and short life spans (Sousa 1984, Dahle 2001, Green 2003). Topeka shiners are known to spawn from mid-May to August over the gravel nests of green or orange spotted sunfish (*Lepomis cyanellus, L.humilis*) and are known to migrate upstream and downstream as part of their spawning behavior (Stark et Al. 1999, Barber 1986, Kerns 1983). Migration has also been noted during periods of increased flows outside of the spawning season (Wall and Berry, 2002). Clutch sizes appear to depend on size of adult females more than age (Dahle 2001) and this species is a multiple-clutch associate of orange spotted sunfish. Both instream and off-channel sites are utilized by Topeka shiners for spawning. Topeka shiners are sexually mature by the second summer and are a short-lived species with a maximum life expectancy of three years (Pflieger 1997, Dahle 2001). Topeka shiners are considered generalized omnivores. Horowitz (1978) and Dahle (2001) found that 83 percent of their diet consists of *Daphnia*, Diptera, *Bosmina*, and Copepoda but numerous other food groups were documented in gut samples. Other fish associated with the Topeka shiner in eastern South Dakota include: red shiner (*Cyprinella lutrensis*), bigmouth shiner (*Notropis dorsalis*), creek chub (*Semolitus atromaculatus*), tadpole madtom (*Noturus gyrinus*), black bullhead (*Ameiurus melas*), and orange spotted sunfish.

Distribution within Big Sioux Drainage – Six Mile Creek: Topeka shiners have been documented in 27 waterways of the Big Sioux River (Wall 2007). Several studies have documented the presence of Topeka shiners in Six Mile Creek (Blausey 2001, Wall 2007) some populations have been reported within one mile of BKX on the South Dakota State University property.

Distribution/Status in Action Area: Topeka shiners have been documented in Six Mile Creek on the South Dakota State University campus (Gates, Berry and Morey pers. comm.). The SDSU campus lies within 1.0 mile of the portion of the Six Mile Creek that is within the Action Area. The portion of the stream within the Action Area was previously straightened and engineered to allow for a monotypic stream profile without naturally occurring stream features consistent with Topeka shiner use such as cut banks, meanders, pools, and riffles. This portion of the creek is unlikely to provide many of the basic biological requirements for the Topeka shiner (Berry pers. comm.) but could be used as a conduit to other portions of the creek that lie downstream that may provide such characteristics. Portions of the Six Mile Creek that lie immediately downstream are likely to harbor Topeka shiners (Morey pers. comm.) and exhibit habitat characteristics consistent with Topeka shiner use such as low bank height, low bank incision, areas where the streambed substrate materials are comprised of fine gravel to cobble, submerged macrophyte growth, riparian zones characterized by grass or pasture with low livestock use, overhanging streambank vegetation, and the presence of pool habitat.

Risk Factors: ESA lists altered stream morphology (channelization), reduced water quality, altered stream hydrology, and nonnative piscivorous fish. Recent research includes tributary impoundment, nonnative piscivorous fish, and altered stream hydrology. Chemical factors are excluded.

Indirect Effects: (those effects that area caused by or will result from the proposed action and are later in time, but are still reasonably certain to occur.) The expected result of the proposed reroute configuration of Six Mile Creek is an increase in habitat availability compared to the existing engineered creek configuration.

Direct Effects: (the direct or immediate effects of the action on the species or its habitat and include interrelated actions and interdependent actions.) For purposes of this analysis, unsuitable habitat is that which is incapable of being utilized by Topeka shiners during any portion of its life cycle. Six Mile Creek and associated off-channel habitat should be considered suitable habitat due to surveys documenting their presence within this stretch of the creek. Although no formal studies have documented the Topeka shiner within the portion of the Six Mile Creek proposed to be impacted, the fish could still occur within the Action Area (Morey pers. comm.). Effects on habitat are related to alterations in vegetation structure and stream topology and geomorphology. Based upon the current stream topology within the Action Area, Topeka shiner presence and usage is unlikely to be present other than as a travel corridor (Berry pers. comm.).

Only Topeka shiner populations that occur within the permanent grading limits or immediately adjacent to these limits are likely to be affected due to the sedentary nature of the species. The direct effects of construction across Six Mile Creek may result in the release of sediment, cause temporary barriers to fish passage, and remove vegetation adjacent to the existing creek channel. Most of these direct effects will be mitigated or avoided by constructing in the stream outside of the spawning season (i.e., May 15 through July 31). Pre-construction relocations of Topeka shiners to upstream suitable habitat will occur to avoid a "taking" of individuals within the construction footprint. Placement of erosion control devices in-stream and bank stabilization would also be implemented to limit sediment discharge into Six Mile Creek. Other means of maintaining a flow regime in Six Mile Creek and construction monitoring would be implemented to preserve the integrity of downstream habitats and avoid any intake of shiners during flow preservation. Stream design will implement a more natural stream configuration that will benefit the Topeka shiner and will take into account the existing creek profile so as to eliminate the possibility of increasing flow rates in Six Mile Creek. The proposed configuration will be constructed with Topeka shiner habitat components in mind and will include characteristics such as low bank height, low bank incision, areas where the streambed substrate materials are comprised of fine gravel to cobble, and the presence of stream riffles, runs, and especially pools. The proposed configuration will result in an increase in habitat availability compared to the existing engineered creek configuration.

Noise and air traffic are not known to limit Topeka shiner movement or use.

South Dakota Department of Transportation information indicates that silt from construction activities can be displaced as much as 500 meters downstream of the area of disturbance. When BMP's are utilized, that distance can be diminished or limited to the immediate impact area. Proposed alterations to BKX will utilize erosion and sediment control BMPs during construction and limit construction activities to May 15 through July 31 so as to avoid impacts to the Topeka shiner.

Cumulative Effects: (those effects of future state or private activities, not involving federal activities, that are reasonably certain to occur within the action area of the federal action subject to consultation.) Foreseeable future effects are likely to include cropping, road construction, additional human development (i.e., wind power, utility corridors, etc.) upstream of BKX. Two culverts are scheduled for replacement along a portion of Six Mile Creek over 15 miles upstream of BKX in Brookings County (Wall and Berry, 2002).

Determination of Effects: Despite the implementation of precautionary techniques, construction impacts to the Topeka shiner may include mortality of individual fish, temporary disturbance of individuals and habitat modification. The proposed design will likely create additional suitable habitat

and several construction and design techniques will be implemented to minimize impacts to the Topeka shiner, which include:

- removing and relocating fish to upstream habitat prior to any dewatering;
- limiting sedimentation of downstream portions of Six Mile Creek by implementing comprehensive sediment and erosion control measures;
- designing the stream bottom to equal the deepest portion of Six Mile Creek within 1,000 feet in each direction (upstream and downstream) of the stream reconfiguration;
- avoiding construction in the stream during the spawning season, May 15 through July 31

In sum, the project effects will alter an existing 900-foot portion of Six Mile Creek that may harbor the Topeka shiner. Although much of this reach of the stream has been altered by past activities, the minnow should continue to utilize the rerouted stretch of Six Mile Creek as a conduit to reach adjacent portions of the creek, especially since the new channel may improve those characteristics necessary for the Topeka shiner to reproduce, feed, or perform other necessary biological functions. Based on these reasons and other reasons outlined in the above discussion on direct, indirect, and cumulative effects, we have made the following determinations of effects.

The proposed action May affect and is likely to adversely affect the Topeka shiner. Although these effects are difficult to assess, consideration of impacts to the Topeka shiner by the reconfiguration of the creek around the runway is likely to affect the population of Topeka shiners within Six Mile Creek. Due to the sedentary nature of the Topeka shiner, the numerous known populations of this fish are from upstream locations that would not be affected by a properly designed streambed at BKX. Only downstream portions may be affected by potential erosion or sedimentation that could affect adults, eggs, and larvae temporarily. The reaches of Six Mile Creek beyond 1.5 miles downstream have been channelized or are main stem rivers that are not Topeka shiner habitat. Altering the stream channel may result in the “take” of individuals where the stream is altered but should not jeopardize the Six-mile Creek populations of Topeka shiners.

2.4.2 Insects

2.4.2.1 American Burying Beetle (*Nicrophorus americanus*)

ESA Status: The American burying beetle was listed under the ESA as an endangered species on August 14, 1989 (*Federal Register* 54[133]:29652-55). The SDGF&P currently does not have a protected status assigned to the beetle.

The USFWS issued a recovery plan for the American burying beetle in 1991 that established recovery objectives such as:

- Establishing or discovery of three populations of *N. americanus* within each of four broad geographical areas of its historical range: New England, the southeastern states, the Midwestern states, and the Great Lakes states.
- Populations must contain a minimum of 500 adults as estimated by capture rates per trap night and blacklight effort.
- Establishing populations that are demonstrably self-sustaining for at least five consecutive years
- Primary populations should contain several satellite populations to which beetles disperse and from which new habitats are colonized.

Since the 1991 American burying beetle recovery plan was issued, research conducted by Szalanski et al. (2000) has established that there is little genetic variation between populations cited in the plan. These findings may render the establishment of populations in four geographical areas unnecessary since there is no genetic divergence among existing populations.

Additional survey efforts by Peyton (2003) and SDGF&P have also found large populations of American burying beetles in Nebraska and South Dakota. Other survey efforts have also established new large populations in Arkansas and Oklahoma. The populations within Nebraska and South Dakota are likely part of the same population extending across the sandhill country of Nebraska into Gregory, Tripp and Todd counties.

General Habitat Requirements/Biology/Life History: Historically, the American burying beetle was documented in thirty-five states and the District of Columbia (Lomolino et al., 1995). Studies conducted prior to its listing as an endangered species found that it had disappeared from over 90 percent of its historic range. Since its listing numerous studies have been conducted to ascertain its presence in additional states. To date, several additional relatively large populations of American burying beetles have been documented and studied in Arkansas, Nebraska, Oklahoma, and South Dakota. Historic records of the American burying beetle list a wide variety of habitats with different vegetation types including forest habitats (including riparian forests). Recent studies by Bedick et al. (1999) and Peyton (2003), have noted that habitats utilized by the largest populations of American burying beetles are comprised of "Loess, or Dissected, Hills that are the eroded remnants of an ancient plain." Vegetation is described as grazed grasslands and edge habitat where there are few trees. Soils are noted as being comprised of loams, loess and loess/sand mixtures. Numerous authors cite that given the broad geographic range and habitats formerly occupied, it is unlikely that habitats or soils were limiting to American burying beetle populations. Additional studies by Bishop et al. (2002) suggest that unlike other members of the genus *Nicrophorus*, no strong correlation with soil type or land use exists.

The American burying beetle is the largest member of the genus *Nicrophorus* that utilize carrion in order to carry out their life cycle. This beetle is most active at night with the highest activity levels occurring between the third and fourth hours after sunset (Bedick, 1999). Adult beetles search for suitably sized carrion on which to rear their broods. Peak emergence of adult beetles occurs in June and July (Bedick et al. 1999). The USFWS (1991) suggests that habitat fragmentation may have decreased carrion of a size preferred by the American burying beetle by decreasing avian diversity and abundance and increasing competing scavenger densities. The passenger pigeon and greater prairie chicken are species listed by the USFWS as possible sources of carrion that were extirpated from eastern North American. Recent agricultural and development of native habitats have increased the amount of edge habitat that is utilized by competing scavengers such as raccoons, skunk, and opossum. Once a carcass is located, competition between other carrion feeders ensues with the largest species usually winning control.

American burying beetles produce one brood of offspring in their one year life cycle. Adults stay with and provide care for their young. Once the young have consumed the carrion on which they have spent their larval stage they pupate in nearby soil and emerge as adults about one month later. The emergent adults overwinter and begin a search for mates and suitable carrion carcasses the following year.

Distribution within South Dakota: The American burying beetle had been thought to be extirpated from South Dakota with the last records being collected in 1946 in Brookings, Haakon, and Union counties. However, studies conducted by the SDGF&P have discovered a population in Gregory, Tripp and Todd counties that may be as high as 1,177 individuals (including teneral and adult beetles) (Backlund et al. 2008).

Occurrence within Project Area: There are no current records of American burying beetles within the project area.

Risk Factors: Risk factors include increased competition for scarce and ephemeral resources by other Nicrophorus beetles have been thought to be a factor in *N. americanus* decline (Kozol et al., 1988). However, this same study found that *N. americanus* was always successful in competing for carrion against smaller

Nicrophorus beetles. Competition from increasing populations of scavengers associated with edge habitat may also contribute. Recent studies have shown that American burying beetles occur in highly fragmented habitats but that the disturbance and fragmentation are likely associated with the beetle's decline (Lomolino et al., 1995, and Bedick et al., 1999). Potential risk factors include isolation of extant populations, habitat loss due to agricultural practices, road construction, utility rights-of-ways, and mining. Inter specific competition may also affect populations at the local level.

Rangewide Distribution/Status, General Habitat Requirements, and Species Biology: The current American burying beetle range presently known in South Dakota includes portions of Bennett, Gregory, Tripp, and Todd counties. However, a comprehensive status survey has never been conducted in South Dakota so the beetle could and may occur in other counties with suitable habitat. Suitable habitat is considered to be any site with topsoil that allows for burying carrion and accessible carrion of appropriate size (USFWS 1991). Once widely distributed throughout eastern North America, this species has disappeared from most of its historic range. Historical records are located in 35 states, the District of Columbia, and 3 Canadian provinces. This range covers most of the eastern United States and southeastern Canada (USFWS 1991). Presently isolated American burying beetle populations are known to exist in Rhode Island, Oklahoma, Kansas, Arkansas, South Dakota, and Nebraska (Backlund and Marone 1997; Bedick et al. 1999).

Distribution within the Area of Affect: American burying beetles have not been documented in the areas of affect.

Indirect Effects: This species or its designated critical habitat is not known to occur in the Action Area or vicinity. No indirect effects are expected as a result of the construction of the proposed action .

Direct Effects: No direct effects on the American burying beetle would result from the proposed action.

Cumulative Effects: No future federal, state, or local actions that are reasonably certain to occur in the project area have been identified for the project.

Determination of Effects: No critical habitat or observations of the American burying beetle have been identified since 1946 in eastern South Dakota. Although no direct impacts on the American burying beetle would result from the expansion of BKX, suitable habitat does occur within the Action Area. Therefore, the project May affect, but is not likely to adversely affect the American burying beetle or its critical habitat.

2.4.3 Plants

2.4.3.1 Western Prairie Fringed Orchid (*Platanthera praeclara*) Sheviak & Bowles

ESA Status: The Western prairie fringed orchid was listed under the ESA as a threatened species on September 28, 1989 (*Federal Register* 54[133]:39857-89862). The SDGF&P currently does not have a protected status assigned to the orchid.

The USFWS issued a recovery plan for the western prairie fringed orchid in 1996 that established recovery objectives to delist the species with the protection of 90 percent of existing populations through public ownership and to manage populations according to U.S. Fish and Wildlife Service-approved management plan or guidelines. This objective will be carried out through the following recovery strategy:

- Maintain habitat of known populations as native prairie.
- Provide the highest level of state legal protection appropriate for all populations.
- Develop and implement habitat management plans that sustain and enhance *P. praeclara* populations.

- Conduct appropriate research and monitoring.
- Identify and search for potential habitat.
- Disseminate information about the species to a variety of audiences.

General Habitat Requirements/Biology/Life History: Historically, *Platanthera praeclara* occurred in tallgrass prairie habitat from the Red River valley of Manitoba, Minnesota, and North Dakota, extending southeastward to Missouri and westward through Oklahoma, Nebraska, and South Dakota. It is presently known to occur at 55 sites in seven states and Manitoba. It has been lost from Wyoming, South Dakota, and Oklahoma. Declines in the populations of *Platanthera praeclara* occurred due to widespread conversion of suitable habitats to crops. These losses have resulted in a loss of over 95 percent of its original habitat. *Platanthera praeclara* was subsequently listed as endangered under the Species at Risk Act in Canada in 2003 and added to the IUCN Redlist in 2008.

The vegetative portions of *Platanthera praeclara* appear above ground between late April and early May in southwestern Minnesota and from early May to mid-June in the northern portions of the state. This orchid typically senesces in September or earlier if soil moisture is low. During the later part of the growing season a bud is produced that will lie dormant until the following season. In the event that the bud is damaged, rhizomes are capable of developing a bud that may form a flower the following year. However, this plant is susceptible to die-off when the bud is damaged and the plant does not produce a replacement bud.

Some studies have documented that when *P. praeclara* produces aboveground vegetative parts, it may lie dormant for one or more years in subsequent years (USFWS 1996). Studies conducted on the Sheyenne National Grassland found that flowers rarely bloom for 2 consecutive years and once plants failed to produce flowers they were unlikely to reappear (Sieg and King 1995). In Minnesota, plants have been observed above ground for up to 15 years and teh plant has reappeared after years of absence. Although bud formation is necessary for the plant's persistence, seed establishment is required for recruitment of new individuals (Bowles 1983). To date, documented pollinators are all members of the hawkmoth family (*Sphingidae*) whose proboscis length must match the length of the nectar spur on the flower. Hawkmoths that are known pollinators of *P. praeclara* include achemon sphinx (*Eumorpha achemon*), wild cherry sphinx (*Sphinx drupiferarum*) (Cuthrell and Rider 1993), while others have observed the white-lined sphinx (*Hyles lineate*), laurel sphinx (*Sphinx kalmiae*), *Catacola spp.*, waved sphinx moth (*Ceratomia undulosa*), bedstraw hawkmoth (*H. gallii*) and the nonnative spurge hawkmoth (*H. euphorbiae*).

Soil moisture appears to have a determinative affect on the presence of *P. praeclara* flowering. Sieg and Ring (1995) noted that there is a positive correlation with flowering and surface soil moisture. In their study, years with the lowest precipitation also had the lowest numbers of flowering *P. praeclara*. Other studies also found that soil moisture is one of the most significant factors in the survival of individual orchids (USFWS 2007, Phillips 2003).

Frequent fires and grazing occurred throughout the historic range of *P. praeclara*. This type of disturbance regime selected for non-woody species of the grass family although the more northerly populations occur with several species of willow shrubs. *P. praeclara* are most commonly associated with diverse plant communities indicative of undisturbed native prairies, sedge meadows, calcareous meadows or wet-mesic swales but always in direct sunlight (USFWS 2006, Phillips 2003, Sieg 1997, Smith 1993). Despite these associations, this orchid has also been found in swales and ditches where non-native grasses or invasive species such as *Phalaris arundinacea* and *Poa pratensis* occur.

Distribution within the Area of Affect: *Platanthera praeclara* has not been documented in the areas of affect.

Occurrence within Project Area: Surveys of all lands within the project footprint were surveyed for *P. praeclara* in 2008 and none were observed. No known occurrences have been documented within the project area.

Risk Factors: Conversion of suitable occupied habitat to agricultural or development uses.

Indirect Effects: This species or its designated critical habitat is not known to occur in the Action Area or vicinity. No indirect effects are expected as a result of the construction at BKX.

Direct Effects: No direct effects on the Western prairie fringed orchid would result from the proposed action.

Cumulative Effects: No future federal, state, or local actions that are reasonably certain to occur in the project area have been identified for the project.

Determination of Effects: No critical habitat or observations of this plant have been identified in eastern South Dakota. Although no direct impacts on *P. praeclara* would result from the expansion of BKX, suitable habitat does occur within the Action Area. Therefore, the project May affect, but is not likely to adversely affect *Platanthera praeclara* or its critical habitat.

Summary of Effects Determinations

A summary of the determination of effects on the affected species is given in Table 2.4.3.1-1.

TABLE 2.4.3.1-1 Summary of Effects Determinations

Species	Species Present in Action Area?	Suitable Habitat Present in Action Area?	Habitat Affected by Project?	FWS Determination
Topeka Shiner *Notropis topeka*	Yes; Sightings documented near Action Area	Yes; Six Mile Creek is known to be occupied	Yes	May affect - likely to adversely affect.
American Burying Beetle *Nicrophorus americanus*	No known occurrences	Yes	Yes	May affect - not likely to adversely affect.
Western Prairie Fringed Orchid *Platanthera praeclara*	No known occurrences	Yes	Yes	May affect - not likely to adversely affect.

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ATTACHMENTS

EA Figures 1, 2, 3, 4 & 14a

City of Brookings Letter to FAA

2008 Western Prairie Fringed Orchid Survey Report

Dual Track Airport Planning Process Draft Environmental Assessment

BIOLOGICAL OPINION

Brookings Regional Airport Expansion, Brookings County, South Dakota

September 27, 2011

Written For:
Federal Aviation Administration; Bismarck, North Dakota
(Applicant: City of Brookings, South Dakota)

By:
U.S. Fish and Wildlife Service; Pierre, South Dakota

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
420 South Garfield Avenue, Suite 400
Pierre, South Dakota 57501-5408

September 27, 2011

Thomas T. Schauer, Manager
Federal Aviation Administration
Bismarck Airports District Office
2301 University Drive, Building 23B
Bismarck, North Dakota 58504

Re: Biological Opinion for the Brookings Regional Airport Expansion, Brookings County, South Dakota

Dear Mr. Schauer:

This document transmits the U.S. Fish and Wildlife Service's (Service) Biological Opinion (BO) based on our review of the proposed expansion of the Brookings Regional Airport located within the City of Brookings, Brookings County, South Dakota, and its effects on the endangered Topeka shiner (*Notropis topeka*) in accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.). Your agency, the Federal Aviation Administration (FAA), has determined that the project may adversely affect the Topeka shiner. We concur with that determination as well as your determination that the proposed project is not likely to adversely affect the American burying beetle (*Nicrophorus americanus*) or the Western prairie fringed orchid (*Platanthera praeclara*). The latter two species are not considered further herein. Your March 22, 2011, request for formal consultation was received on March 25, 2011.

This BO is based on information provided in the March 2011 Biological Assessment (BA) for the Brookings Airport Project; the Draft Environmental Assessment (EA) for this project (Dual Track Airport Planning Process, Brookings, South Dakota, dated September 2010); and various telephone conversations, meetings, and other sources of information. A complete administrative record of this consultation is on file at this office.

Consultation History

On September 17, 2007, we received notice of the proposed project with three alternatives to address the issue of provision of local airport facilities and services by the City of Brookings. Those alternatives included expansion of the existing airport, development of a new airport site, and no expansion of the existing airport. Our October 16, 2007, response to that notice included

information regarding wetlands, federally listed species, and fisheries within the proposed project areas. The three alternatives were put forth to the public before the expansion of the existing airport was chosen per a February 23, 2011, letter from the Mayor of Brookings to your FAA office.

Discussions with your agency, the City of Brookings, and several of the City's consultants, primarily via electronic mail and telephone calls in 2008 and 2009, focused on the potential for adverse impacts to the Topeka shiner by directing a portion of Six Mile Creek through a culvert beneath an extended runway at the existing airport site. However, the September 29, 2010, Draft EA indicated a preference under the expansion alternative for routing Six Mile Creek around the end of the extended runway, eliminating the need for an approximately 700-900 foot culvert. A November 12, 2010, comment letter was submitted by this office after our review of the Draft EA with additional information on listed species, the section 7 process, and specific content within the Draft EA.

This office received your request for initiation of formal consultation on March 25, 2011, which included the aforementioned letter indicating the chosen expansion alternative, a 2008 Western Prairie Fringed Orchid Survey Report, and the BA for the expansion alternative. We provided an April 25, 2011, response acknowledging receipt of that request and confirming initiation of formal consultation.

On May 16, 2011, this office sent a request for additional project details via electronic mail to the FAA. We were informed that this information was forwarded by the FAA to the City of Brookings and their consultants to facilitate completion of the BO. On July 22, 2011, the FAA informed this office of an impending furlough of employees in the Bismarck office. The FAA directed the City of Brookings and one consultant (Helms and Associates) to continue the consultation directly with this office in the FAA's absence and also indicated the FAA's agreement with an extension of the formal consultation timeframes should that be necessary. FAA employees were furloughed July 23-August 5, 2011. On July 26, 2011, this office submitted an electronic mail message to the FAA, the City of Brookings, and Helms and Associates stating that an extension of this consultation is needed, proposing a 60-day limit on that extension. The same day, a response was received from Helms and Associates to our initial May 16, 2011, request for additional project details. After the FAA furlough was over, on August 8, 2011, the FAA and Helms and Associates indicated agreement with a 60-day extension of this consultation to be completed by October 6, 2011.

A draft of this BO was forwarded to the FAA on September 2, 2011, for review and comment. A September 9, 2011, conference call was held to discuss the draft, and comments were incorporated into this final document.

BIOLOGICAL OPINION

INTRODUCTION

Section 7(a)(2) of the Endangered Species Act (ESA) requires that:

> "*Each Federal agency shall, in consultation with and with the assistance of the Secretary, insure that any action authorized, funded, or carried out . . . is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined by the Secretary, after consultation as appropriate with affected States, to be critical . . . . In fulfilling the requirement of this paragraph, each agency shall use the best scientific and commercial data available.*" (16 U.S.C. § 1536(a)(2)).

To meet this standard, when a Federal agency determines that its proposed action may affect a listed species or critical habitat, it enters into consultation with the Service. If the effects are determined to be insignificant, discountable, or entirely beneficial, the consultation ends with a concurrence letter from the Service. If the effects are not insignificant, discountable, or entirely beneficial or are likely to be adverse, a formal consultation is completed, and the Service issues a BO.

> Section 7(b)(3)(A) "*. . . the Secretary shall provide to the Federal agency and the applicant, if any, a written statement setting forth the Secretary's opinion, and a summary of the information on which the opinion is based, detailing how the agency action affects the species or its critical habitat*." (16 U.S.C. § 1536(b)(3)(A)).

This BO reflects the Service's formal analysis as to whether the effects of the proposed Brookings Airport Project, when viewed against the status of the Topeka shiner, the environmental baseline, and cumulative effects are likely to jeopardize the continued existence of the species.

DESCRIPTION OF THE PROPOSED ACTION

The Brookings Regional Airport is located within the city limits of Brookings, along its west side, in portions of Sections 22, 26, 27, and 28, Township 110 North, Range 50 West, Brookings County, South Dakota (Figure 1). The airport is owned by the City of Brookings and is currently noncompliant with FAA standards relative to incompatible land uses within runway protection zones, a nonstandard runway intersection, and a runway of inadequate length. Compliance is required to maintain FAA financial assistance and to provide safe/reliable facilities for the public; thus, the proposed project will address the above items by acquiring control over runway protection zones, developing a standard runway intersection, and constructing a new and longer runway with taxiway and lights.

The existing northwest/southeast runway (Runway 11-29) is the primary structure to be modified at the airport. This runway will be relocated further to the south so that it intersects the existing north/south runway (Runway 17-35) in a manner to meet FAA standards. Runway 11-29 will also be extended by approximately 6,000 feet to the northwest where it will impact Six Mile Creek. The project will include rerouting approximately 3,790 feet of Six Mile Creek around the end of the new Runway 11-29. Six Mile Creek is a known Topeka shiner occupied waterway; thus, this reroute is the focus of this BO.

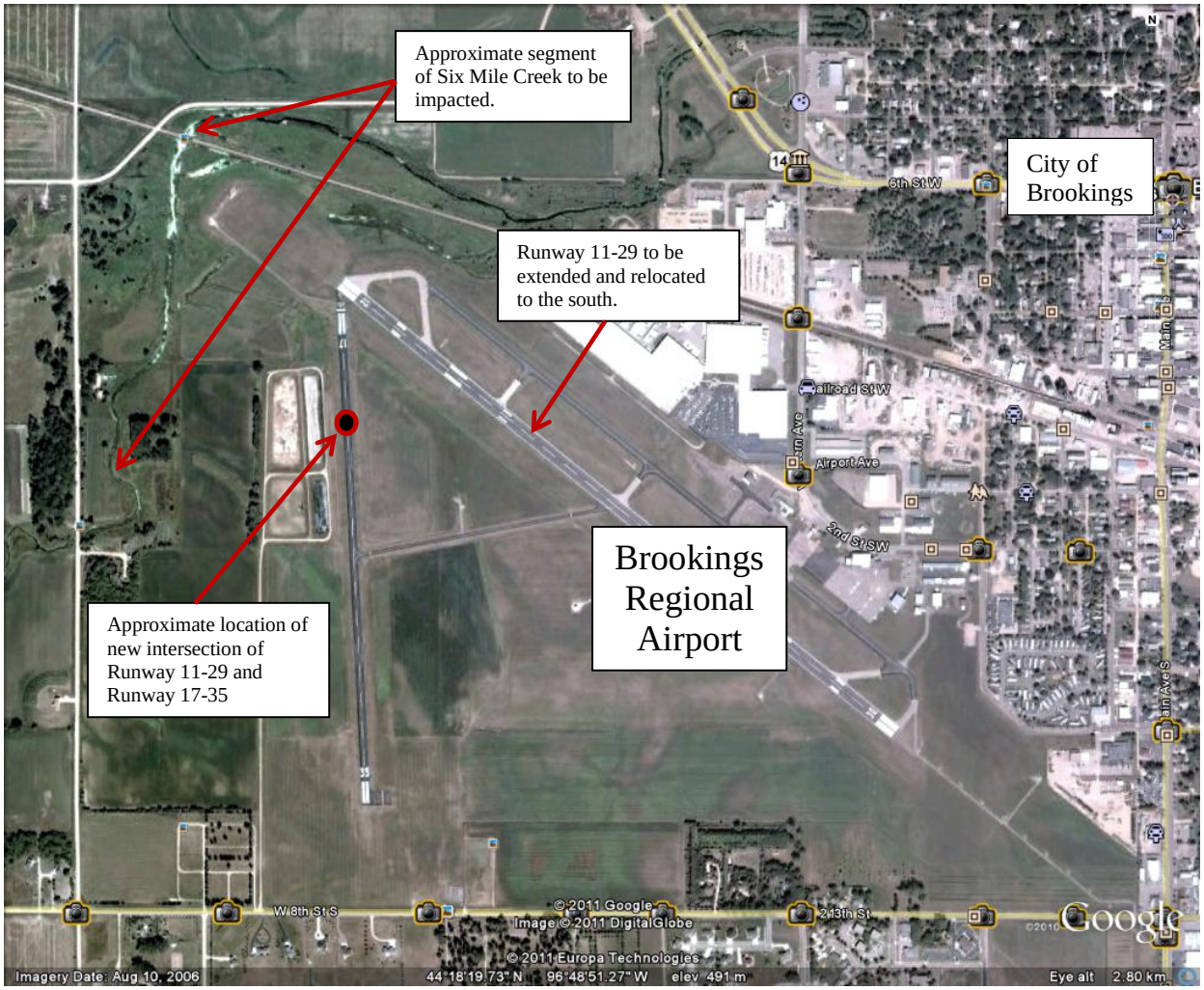

Figure 1. Overview of existing Brookings Regional Airport, City of Brookings, and impacted portion of Six Mile Creek (a Google Earth image, 2011).

The March 2011 BA indicated that pre-construction relocations of Topeka shiners to upstream sites would be conducted. However, supplemental July 26, 2011, information from the City of Brookings' consultant, Helms and Associates, revised that position, stating that, due to the modified nature of the existing segment of Six Mile Creek, the unlikely presence of breeding habitat there, and proposed construction methods/timing aimed at minimizing Topeka shiner impacts, this action was deemed unnecessary.

Also within the original BA, the rerouted portion of Six Mile Creek is described as resulting in a more natural stream configuration that will benefit the Topeka shiner as it would be constructed with Topeka shiner components in mind. The stream was to be more conducive to Topeka shiner occupancy than the existing segment, with features such as fine gravel/cobble and instream pools. The July 26, 2011, supplemental information, however, explains that the rerouted stream portion will not contain pools, will be constructed as "run" habitat through which Topeka shiners might travel but are unlikely to reside long-term, affirms it will not contain meanders associated with natural stream channels, and explains that geotextile fabric will be laid along its length and topped with rip-rap. The reroute is currently deemed to represent little change over existing conditions in Six Mile Creek at the airport. The primary reason submitted for this design is that, since the proposed location of this portion of Six Mile Creek is at the end of the newly constructed runway, the type of ecological restoration needed to improve the potential for Topeka shiner use and occupancy is not possible; it would require features (e.g., streamside vegetation) that could draw other forms of wildlife (particularly birds) and could pose a collision risk to planes, compromising airport safety.

Per the July 26, 2011, supplemental information, "silt fences; silt curtains; bio-rolls or straw bales," is proposed measures of instream erosion control devices to protect water quality. These instream measures are slated to be checked weekly and after storm events greater than one inch throughout construction. The geotextile fabric and rip-rap is submitted as an additional means of sediment/erosion control. Areas of the existing channel downstream of construction will be monitored for one year post-construction for evidence of scour, erosion, or flow regime impacts of the project.

The stream will be rerouted via the following process with erosion control measures maintained throughout; the project is proposed to occur in the fall timeframe (September through November):

- Excavate majority of the new channel to take place from streambanks/adjacent uplands with no heavy equipment in the stream;
- Breach banks to connect with existing stream;
- Place a temporary water barrier (e.g., silt curtain or sheet pile) at upstream end of existing channel;
- Fill existing channel, beginning on upstream side, working downstream in an attempt to "push" fish downstream out of the construction area;
- Remove temporary water barrier;
- Construct runway atop filled channel;
- Seed and revegetate all disturbed areas around new runway and new stream reach; and
- Remove temporary erosion control measures after vegetation is reestablished.

SPECIES DESCRIPTION

The Topeka shiner is a small (≤3 inches in length), short-lived (usually <3 years) species of minnow found in prairie streams of six Midwestern states, including South Dakota, Minnesota, Iowa, Nebraska, Kansas, and Missouri. Individuals are olive-colored with a distinct dark stripe preceding the dorsal fin and a chevron-like spot at the base of the tail. Breeding males exhibit reddish-orange fins. In the northern portions of its range (South Dakota and Minnesota), the species occupies the majority of its historical range, while significant range reduction has been documented in the remaining four states where the species occurs. Gravelly pools within perennial to intermittent prairie streams are the primary habitat type occupied by the species, although they have been documented in larger rivers and relatively degraded habitats such as channelized stream segments and sediment-filled livestock dugouts. Groundwater input to occupied streams has been found to be an important component of Topeka shiner habitat. The species generally exhibits r-selected life history traits characterized by high reproductive rates, small size, fast maturity rates, and short generation time. It spawns multiple clutches May-August, typically in pool habitats and associated with green sunfish (*Lepomis cyanellus*) or orangespotted sunfish (*Lepomis humilis*) nests. Additional information regarding the Topeka shiner's biology and life history can be found in documents included within the "Literature Cited" section at the end of this BO.

Although the historic range of the species has contracted, the number of known occupied waterways in South Dakota has increased significantly since the Topeka shiner was listed in 1998, due primarily to increased sampling. Monitoring efforts have been initiated in several states, including South Dakota. Continuation of these efforts is needed to determine long-term stability of existing populations. Some effects to Topeka shiners and/or their habitats are universal across the species' range. For example, agricultural activities and highway construction occurs in each of the six states, impacting habitats occupied by the Topeka shiner. Alternatively, some effects to the species occur in a more localized or regional manner such as instream gravel mining and widespread impoundment of streams (with associated stocking of predatory fish) which appear to be more prevalent in southern areas of the Topeka shiner range. Habitat alteration is a primary limiting factor for this species. Many prairie streams that were formerly sinuous, free-flowing, cool, gravel-bottomed waterways with pools, runs, riffles, and groundwater input are currently subjected to degradations resulting from such actions as channelization, impoundments, pollution by sediments and contaminants, water diversion, and introduction of predatory fish species. Efforts toward restoring/conserving the historic characteristics of prairie streams (e.g., sustaining/restoring the natural hydrology, morphology, chemical characteristics, and native biological components typical of prairie streams) would improve the status of the species in each of the six states where it occurs.

STATUS OF THE SPECIES

Federal Status

The Topeka shiner was listed as an endangered species under the ESA on December 15, 1998 (USFWS 1998), effective January 14, 1999. In 2004, critical habitat was formally designated for this species (USFWS 2004); however, the state of South Dakota was excluded from that designation due in part to the formulation of the "*Topeka Shiner (Notropis Topeka) Management Plan for the State of South Dakota"* by the South Dakota Department of Game, Fish and Parks (SDDGFP 2003). A Topeka Shiner Recovery Team has worked to develop a draft recovery plan; however, it has not been widely distributed for comment and has not been finalized. Significant information regarding the species has been obtained since listing, and the Service completed a five-year review to evaluate the status of the Topeka shiner in December 2009 (USFWS 2009). That review recommends downlisting of the species range-wide and analysis of the potential for Distinct Population Segments via a final recovery plan; to date those actions have not been initiated.

State Status

The Topeka shiner is monitored by the SDDGFP's Natural Heritage Program but is not listed as a South Dakota threatened or endangered species (SDDGFP 2011). The species has recently (post-1990) been found within 62 waterways within the Vermillion, Big Sioux, and James River watersheds (Appendix A). This total may increase with future sampling.

ACTION AREA

The action area herein must include all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action. The BA for this project defines the action area as all areas that would be physically affected by construction of the proposed action (i.e., the project footprint). However, as is typically the case when streams are altered, effects are seldom limited to within project boundaries. The proposed stream relocation project has the potential to impact the Topeka shiner in Six Mile Creek at the construction site but also upstream and downstream of the project as well.

Determining the distance from the project at which effects to Topeka shiners may be realized, however, is difficult. Any mobile instream sediment originating at the project site has the potential to negatively affect downstream habitat and Topeka shiners, but numerous factors (e.g., precipitation events, flow rates, time of year) could affect the extent of that impact. Since prairie streams generally have a low grade, it is reasonable to surmise that the distance is not likely to be great and, in this case, the downstream segment of Six Mile Creek is short, limited to approximately 2.5 miles to its junction with the Big Sioux River. The Big Sioux River is known to be a dispersal corridor and likely serves as refugia for fish during drought, but the river does not typically harbor the Topeka shiner. Thus, any downstream impacts to the Topeka shiner would likely be limited to within the approximately 2.5 miles (or less) downstream of the project site.

Barber (1986) studied movements of Topeka shiners and found that, while the species was generally sedentary, juveniles were discovered as much as 2.5 kilometers (1.55 miles) from their original location. Thus, it is reasonable to surmise that Topeka shiners inhabiting Six Mile Creek within 1.5 miles of the project could potentially encounter the project during construction and be affected by construction actions and resulting channel modifications. Records of Topeka shiners have occurred within this distance from the project site; the species has been documented on the campus of the South Dakota State University, approximately one mile upstream.

Thus, for the purposes of this consultation, the action area is defined as the portion of Six Mile Creek and its floodplain to be impacted directly by construction actions associated with the 3,790 feet of stream relocation, as well as 1.5 miles upstream and 2.5 miles downstream, for a total of approximately 4.7 stream miles of Six Mile Creek.

ENVIRONMENTAL BASELINE

The environmental baseline is an analysis of the collective effects of past and ongoing human and natural factors leading to the current status of the species or its habitat and ecosystem, the effects of the proposed action, and the cumulative effects in the action area. This analysis describes the status of the species and factors affecting the environment of the species in the proposed action area during the consultation. The baseline includes State, local, and private actions already affecting the species. Unrelated Federal actions that have completed formal or informal consultations also are part of the environmental baseline as are Federal and other actions within the action area that may benefit listed species.

Status Of The Species Within The Action Area

Six Mile Creek is a known Topeka shiner occupied tributary of the Big Sioux River with recent collection records in numerous locations along its length. Per the BA for this project, the portion of Six Mile Creek that occurs at the airport has been modified during past construction activities; the segment has been "previously straightened and engineered to allow for a monotypic stream profile without naturally occurring stream features consistent with Topeka shiner use such as cut banks, meanders, pools and riffles." While this segment may not be typical habitat for the Topeka shiner, it affords a conduit between sites upstream and downstream of the airport that are more suitable for the species' occupancy. As stated above, the species has been collected from Six Mile Creek within approximately one mile from the Brookings County Airport on South Dakota State University property. Please note that in the recent past, the species has been collected from channelized stream segments near the City of Brookings as well. Thus, it is presumed that the species can and does occur at the Brookings Regional Airport.

Factors Affecting The Species Within The Action Area

Intense agricultural land use since the 1800-era settlement of the prairie has adversely impacted the quality and quantity of water in many South Dakota watersheds, including that of Six Mile Creek. Croplands exist adjacent to Six Mile Creek within the action area, and these agricultural activities have resulted in such consequences as loss of native prairie adjacent to the creek,

increased instream sedimentation, the drainage of wetlands, water withdrawals, direct and indirect alteration of stream hydrology/geomorphology, and point and nonpoint sources of discharge.

The BA for the Brookings Airport Project indicates that some pasture exists in the area of the project; thus, while these areas contain intact grassland, livestock grazing has likely had additional impacts to the creek via domestic animal access to the waterway. Intensive grazing within riparian areas on or near streams is known to impact prairie fishes due to organic input and subsequent stream eutrophication (Cross and Braasch 1968). Dugouts have been excavated directly within Six Mile Creek and its floodplain within the action area. Topeka shiners have been known to occupy dugouts along other portions of Six Mile Creek (U.S. Department of Agriculture, Natural Resources Conservation Service - USDA NRCS 2010).

Tiling of agricultural fields is an emerging activity in South Dakota that is likely to have detrimental effects on the Topeka shiner. This practice removes water from wetlands, linear drainages, and high water table areas in order to increase crop production. The water is then delivered via drain pipe to streams and rivers. We do not currently have data regarding the amount of tiling that currently exists in South Dakota, the Six Mile Creek watershed, nor the action area for this consultation. Monitoring of Topeka shiner populations by the SDDGFP (2003) is ongoing and, while it is not apparent that tiling activities are causing extirpation of Topeka shiner populations, this monitoring is not tailored to detect tiling impacts. The practice is occurring without regulatory oversight as of this writing. Anecdotal information indicates that tiling activities are increasing in South Dakota; adverse impacts such as increased pollutants in waterways and changes to hydrology and morphology of Topeka shiner occupied streams are possible within the species' entire South Dakota range, including the action area for this project.

The urban development of the City of Brookings has had some of the same effects to the action area as agriculture, with the addition of such factors as increased impermeable surface area and associated increased surface runoff (storm water containing pollutants) and point source pollutants. Obvious infrastructure impacts include numerous road crossings of Six Mile Creek within the action area and developments immediately adjacent to the floodplain. As mentioned above, channelization of the existing segment of Six Mile Creek at the airport has occurred. Additionally, several other segments of Six Mile Creek within the action area have also been channelized to accommodate other forms of development, infrastructure, and agriculture in the action area. The extent to which these factors have negatively impacted Topeka shiner populations in Six Mile Creek is unknown as data regarding historic populations and studies to document population trends are both lacking.

EFFECTS OF THE ACTION

Six Mile Creek is a known occupied Topeka shiner stream, and the potential exists for the species to occur throughout the action area. The project will occur outside the species' spawning season (generally mid-May and into August), thereby avoiding direct impacts to Topeka shiner eggs and small larvae. The type of impacts from this project could include disturbance and mortality of individuals as well as changes to habitat, although the post-construction channel is

not expected to be substantially different from the existing modified channel at the end of the existing runway. Construction activities will be temporary, but exposed soils resulting from construction may persist until the following growing season. Airline activities that could cause behavioral changes to any Topeka shiners occurring at/near the airport will be ongoing; it is unknown how/whether this disturbance affects the species, but this condition is not a new one. These affects may be direct, occurring at the project site as a result of construction activities, or indirect and occurring off-site, but within the action area after the project is completed.

Construction Impacts

Direct impacts may be incurred to any individual Topeka shiner utilizing the construction zone. The phased means of accomplishing the tasks of excavating the new channel and filling the existing channel (see "Description of the Proposed Action") may reduce the risk of direct mortality as adults may be able to swim downstream away from the disturbance. Direct impacts to Topeka shiner eggs are not likely during construction; the timing of the project is proposed for September through November.

Despite proposed sediment/erosion controls, some release of sediment into the stream is inevitable during activities such as temporary water barrier installation/removals and breaching of the barrier between the new and existing channels. These releases are anticipated to be relatively minor and of short duration. If sediment/erosion controls fail entirely, resulting silt transport may immediately affect downstream fish but, unless the degraded conditions are severe and prolonged, this disturbance is not likely to adversely affect adult Topeka shiners. Based on a summary of studies on sediment impacts on other fish, it appears that suspended sediment levels downstream of a project area would need to exceed 2981 mg/L for at least a 24-hour period to cause mortality of adult fish (Newcombe and Jensen 1996); however, the majority of fish species included in that review were significantly larger than Topeka shiners, and no *Notropis* species were evaluated, making extrapolation to this species difficult.

If Topeka shiner habitat exists adjacent to the construction site, individuals that occur there, both upstream and downstream of the airport, may potentially be deterred from the area by such activities as heavy equipment use which would likely temporarily affect feeding/sheltering habits. While we have no information relative to Topeka shiner reactions to these types of disturbances, it is possible that the species could exhibit behavioral changes such as alarm responses to vibrations, movements, and/or noise. Additionally, fish passage through the project may be temporarily precluded. However, the effects of heavy equipment and obstructed passage are anticipated to be primarily limited to construction timeframes and temporary in nature.

Post-Construction Impacts

A rip-rap lined channel is proposed for the relocated segment of Six Mile Creek. The new channel is proposed to be designed to match the stream grade upstream and downstream of the new segment. While this channel may not differ substantially from the existing modified channel at the end of the current runway, the lack of natural features within and adjacent to the new alignment can result in numerous effects similar to channelization, including:

- Altered composition of the streambed;
- Reduced stream connection with its floodplain, removal of filtering mechanisms, floodwater holding capacity, and beneficial structural and nutrient inputs;
- Reduced habitat diversity and niche potential of aquatic organisms;
- Lowered groundwater tables as infiltration is reduced and the stream is incised;
- Reduced water quality, increased silt loads, nutrients, altered water temperatures, dissolved oxygen changes, and increased contaminants attached to soil particles.

Additionally, with a proposed fall construction, full revegetation is not anticipated until the spring/summer months following construction. If instream and/or floodplain instability within the disturbed area exists into the subsequent spring season, failure of sediment/erosion controls (perhaps associated with significant weather events that exceed the functional capacity of such measures) could allow mobilization of exposed soils and result in and/or contribute to significant downstream sedimentation that may impact Topeka shiners. Sediment deposition can reduce the carrying capacity of downstream reaches, smother eggs, cover food producing areas, and clog larval gills.

Fish sensitivity to suspended sediment varies by species and life stage. Larvae and eggs of freshwater fish are more susceptible to suspended sediment than adults. Newcombe and Jensen's 1996 literature summary indicated that lethal effects to eggs and larvae may occur at 148 mg of suspended solids per liter over a 24-hour period, but again, their models did not include the genus *Notropis* and were biased toward larger species. While the extent of actual extent of effects to individuals downstream would be very difficult to determine, it could conceivably include mortality. Currently, such effects are not anticipated as commitments to monitoring and maintaining best management practices are incorporated into the proposed project. Additionally, some studies suggest that the Topeka shiner is at least somewhat tolerant of suspended sediment. Recent research has documented high density reproducing Topeka shiner populations in floodplain dugouts regularly disturbed by livestock (USDA NRCS 2010). Also, many Topeka shiner populations have been documented from watersheds in South Dakota and Minnesota that are impacted by increased sediment loading due to changes in land use (Hatch 2001; Wall et al. 2001). However, they are not immune to mortality due to high sediment loads as has been documented by this office at a South Dakota dugout in which bottom sediments had been disturbed causing a sediment slurry.

Upon completion of the project, aircraft flying low over the creek and taxiing on the runway near the creek could also affect behavior of Topeka shiners in the project vicinity. As stated above, for activities occurring during construction, we have no information relative to Topeka shiner responses to disturbances such as noise, movements, vibrations, and (in the case of planes) overhead shadows but submit that it is likely that individuals would exhibit alarm responses, affecting their breeding, feeding, and sheltering behavior. This factor has been present as long as the airport has been in operation, thus is not considered to be a new potential impact to the species as a result of this project. The alarm response may work in concert with the highly

modified and unsuitable habitat within the newly excavated segment of Six Mile Creek and may limit Topeka shiner use of the area.

CUMULATIVE EFFECTS

At least nine road crossings of Six Mile Creek occur in the action area, and the South Dakota Department of Transportation is currently planning work on several of these structures near the airport. Ongoing maintenance of such structures and replacement (in time) is expected as the structures age, although Federal Highway Administration funding may result in separate consultations. Potential exists for the addition of new stream-crossings as the City of Brookings is a thriving South Dakota community that continues to grow. Additional and ongoing impacts from private development activities impacting the creek and its floodplain may be anticipated.

As stated in the "Environmental Baseline" section above, agricultural tiling is an emerging activity in South Dakota that may have detrimental effects on the Topeka shiner. It appears, anecdotally, that tile installation is on the rise. If this practice becomes more prevalent within the Topeka shiner's range in South Dakota, it potentially could impact Topeka shiner streams in several ways including, but not limited to: alteration of the flow regime; lowering of groundwater tables; direct transport of fertilizers, pesticides, and herbicides to the stream; and scour of the streambed. However, we currently do not have data on tiling projects, if any, within the action area or the larger Six Mile Creek watershed.

Continued agricultural and grazing activities occurring in and adjacent to the action area are anticipated to continue for some time, although a change of property owners could result in changed land use that could include development, further impacting the stream. Such development could result in such changes as increased channelization, loss of vegetative cover in adjacent uplands, reduction in permeable surfaces that currently contribute to Six Mile Creek flows, and other impacts associated with development disturbances that typically contribute to degradation of waterways.

CONCLUSION

After reviewing the current status of the Topeka shiner, the environmental baseline for the action area, the potential effects of relocating this portion of Six Mile Creek, and the anticipated cumulative effects, it is the Service's biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the Topeka shiner. No critical habitat has been designated for this species in South Dakota; therefore, none will be affected.

This conclusion was reached primarily because sufficient habitats currently exist in South Dakota and the other five states in the species' range to ensure continued persistence of the Topeka shiner. While South Dakota is a stronghold for the species, the Topeka shiner is distributed across five other states with perhaps 146 other occupied waterways and 1,423 miles of known/potential habitat in those states (USFWS 2002). Annual documentation of Topeka shiners in new tributaries has occurred in recent years as a result of surveys in South Dakota, and

additional occupied waterways may be located with future surveys. Six Mile Creek is one of 62 Topeka shiner known and presumed occupied streams in South Dakota's James, Vermillion, and Big Sioux River watersheds (Appendix A). Any reduction in Six Mile Creek Topeka shiner populations as a result of the proposed channel fill and realignment is not expected to push the species toward extinction. The scale of this project is small; thus, impacts to Topeka shiners in the action area are anticipated to be relatively minor, not incurring population-scale impacts. The action area represents a small portion of known occupied habitat in Six Mile Creek and the Big Sioux River watershed and is an insignificant portion of habitat when viewed within the broader scope of the species' range in South Dakota.

INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and Federal regulation pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such as extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be a prohibited taking under the ESA, provided that such taking is in compliance with the terms and conditions of an Incidental Take Statement.

The measures described below are nondiscretionary and must be undertaken by the FAA so that they become binding conditions of any grant or permit issued to the City of Brookings, as appropriate, for the exemption in section 7(o)(2) to apply. The FAA has a continuing duty to regulate the activity covered by this Incidental Take Statement. If the FAA (1) fails to assume and implement the terms and conditions, or (2) fails to require the City of Brookings to adhere to the terms and conditions of the Incidental Take Statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of the incidental take, the FAA or the City of Brookings must report the progress of the action and its impacts on the species to the Service as specified in the Incidental Take Statement. [50 CFR § 402.14(i)(3)]

AMOUNT OR EXTENT OF TAKE ANTICIPATED

The potential exists for take of Topeka shiners occurring in the action area in the form of mortality, injury, disturbance, and habitat alterations as a result of construction work and associated instream activities. While we can predict the forms of take that this project will incur upon individual Topeka shiners, quantifying that take is highly difficult. The number of fish in the action area is unknown and could change at any time as Topeka shiners in Six Mile Creek

can currently move freely in and out of the area. While described as generally sedentary in pool habitats, mobility in the species has been documented, and presence of individuals at a location one week does not guarantee their presence the following week. Few, if any, Topeka shiners are presumed to exist within the existing portion of the stream that will be filled as a result of this project due to lack of preferred habitat within that modified segment, but no surveys have been conducted to confirm/refute that assumption. Dead/injured individuals would likely be difficult to detect. The species can be difficult to identify, particularly at the larval stage. Efforts to document behavioral changes in Topeka shiners as a result of construction activities and/or to obtain data on downstream effects as a result of construction-related activities would likely yield some useful information, but determining the actual impact that these factors may have in terms of the number of Topeka shiner adults, eggs, and larvae impacted is likely not practically feasible.

While we cannot accurately quantify the amount or extent of take to individual Topeka shiners, the action area can serve as a measure of take. The action area is defined as those portions of Six Mile Creek and its floodplain within the construction zone (approximately 3,790 feet or 0.72 miles), as well as distances upstream and downstream (1.5 miles and 2.5 miles respectively) where Topeka shiners may occur, for a total length of approximately 4.7 miles. The amount of preferred Topeka shiner habitat within that 4.7 miles is unknown but, if flows persist within this segment of Six Mile Creek, it is presumed that the species may exist, at least temporarily, in any part of it.

Individuals at the construction site are those most likely to be directly affected by construction activities - take will be incurred to all of the individuals that may occur within the existing stream segment as this segment of stream will be destroyed.

To a lesser extent, take may occur via impacts to an unknown number of individuals existing in the 1.5 miles of the action area upstream that attempt to move downstream and encounter the project - these individuals may exhibit behavioral changes as a result of the disturbance.

Those individuals most likely to suffer effects of any instream sedimentation that may occur during and after construction are located downstream of the airport. The degree of impact is dependent upon the effectiveness of sediment/erosion control measures during construction activities, precipitation events, and during runoff. Mortality of many or all of these downstream individuals is the worst case scenario. With the use of erosion/sedimentation controls, however, this is not anticipated.

EFFECTS OF THE TAKE

In the accompanying BO, the Service determined that the level of anticipated take is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat. The immediate effect of take in the form of mortality that may occur during the construction phase is a reduction in the number of individual Topeka shiners present in Six Mile Creek. However, loss of individuals and habitat within the construction zone is expected to be a temporary effect. Any fish occurring there will be killed or pushed out of this reach of stream, but the new segment is

anticipated to be similar in nature to the existing segment (stabilized, channelized, without riparian habitat, and subject to air traffic activity) and, with known occurrences of Topeka shiners in other parts of the action area, recolonization to former (likely low) levels is anticipated to occur post-construction.

Take of individuals upstream of the construction zone is expected to be minimal and, while the project may affect breeding/feeding/sheltering of individuals in this area, these effects are anticipated to be short-term and not likely to cause mortality. Individuals are expected to return to pre-construction locations and in previous numbers once the project is completed.

Take of individuals downstream of the construction zone may be more problematic if sedimentation/erosion is not well controlled. If suitable habitat for Topeka shiners exists in this reach and if severe/prolonged instream sedimentation occurs, it could significantly alter this habitat and cause fish mortality. Recolonization of the reach may not occur immediately if habitat is lacking. This scenario may be avoided if sedimentation/erosion is minimal, disturbed soils are stabilized appropriately and quickly, and such conditions are monitored and maintained until revegetation occurs. As mentioned above, severe mortality is not anticipated.

It is unlikely that loss of individual Topeka shiners in the action area will result in any appreciable reduction in Six Mile Creek populations due to the relatively small project size and presence of Topeka shiners in other portions of Six Mile Creek that will likely lend to recolonization to former levels. Rapid fish community recovery after disturbance is well documented in warmwater streams (Larimore et al. 1959; Brandt and Schreck 1975; Peterson and Bayley 1993; Sheldon and Meffe 1994; Matthews and Marsh-Matthews 2003). The Topeka shiner is an r-selected species with a life history characterized by high reproductive rates, small size, fast maturity rates, and short generation time. When expanded in terms of the larger range of the Topeka shiner in Six Mile Creek and in South Dakota, the above levels of take are deemed minimal impacts to the species.

REASONABLE AND PRUDENT MEASURES

Reasonable and Prudent Measures (RPM) have been developed based on information in the project BA, the Topeka shiner's life history information, and anticipated effects of construction activities. The Service believes that the following RPMs are necessary and appropriate to minimize impacts of incidental take of Topeka shiners:

1. The **project footprint** will be minimized to the greatest extent possible; construction practices will minimally impact habitat.

2. **Sedimentation/erosion** will be minimized at the construction site during and after construction until complete revegetation of disturbed ground occurs.

3. The **rip-rapped channel** shall not facilitate erosion and instream sedimentation of Six Mile Creek and shall allow continued fish passage through the project area.

4. **Monitoring and reporting** on the completed project, pertinent results, and post-construction conditions/actions/monitoring will be completed and submitted to this office for review of activities conducted under this BO.

TERMS AND CONDITIONS

In order to be exempt from the prohibitions of section 9 of the ESA, the FAA must comply with the following terms and conditions which implement the RPMs described above and outline required reporting/monitoring requirements. The following terms and conditions are nondiscretionary:

1. **Project Footprint:** Instream, riparian, and upland habitats will be avoided to the greatest extent possible, with the exception of activities critical to the construction process and which are specified in the project plans. The level of impact to the stream and amount of disturbed uplands that may contribute sediments to the waterway shall be minimized.

2. **Sedimentation/Erosion:** Comprehensive and effective instream and upland sediment/erosion control measures shall be implemented, monitored, and maintained during all phases of construction, including post-construction, until the site is permanently stabilized with appropriate native plant species. Since construction is proposed to occur in the fall/winter outside the Topeka shiner spawning period (known to begin approximately mid-May extending into August), exposed soils may be present through spring runoff; thus, sedimentation/erosion control devices/measures must be designed to accommodate potentially high overland flows. The use of silt fences, silt curtains, bio-rolls, or straw bales is specifically mentioned for sediment/erosion control use at the proposed project site; utilization of alternate, potentially more effective materials, such as erosion control blankets, shall be utilized as necessary to ensure minimal soil erosion and instream sedimentation - particularly in the interim between the end of construction and full revegetation of disturbed sites. Efforts to revegetate and restore disturbed areas will occur as soon as possible post-construction.

   Comprehensive and effective measures to prevent contaminants such as fuels, chemicals, cement sweepings, washings, and any other associated by-products of stream-crossing projects from entering waterways will also be utilized at all times during all phases of the project.

   Per the BA, monitoring of sediment/erosion control devices is proposed to be performed weekly and after storm events with greater than one inch of precipitation. Such monitoring shall be considered a minimum effort with more frequent inspections conducted on an opportunistic basis. This increased vigilance will further ensure that these devices are operating as intended to preclude downstream water quality impacts and that maintenance actions may be addressed in a timelier manner. Inspections shall occur

until vegetation is completely reestablished and sediment/erosion control devices may be removed as appropriate. Additionally, monitoring of the progress of revegetation shall occur and immediate remedial efforts made, if necessary, to ensure complete revegetation as soon as possible.

3. **The Rip-Rapped Channel:** The relocated segment of Six Mile Creek will be designed, constructed, and monitored to ensure that stream connectivity is not impacted and fish movement is allowed (whenever flows permit) through the project area between upstream and downstream segments (e.g., rip-rap shall not be placed in a manner that blocks the stream and rip-rap placed on the banks shall not be allowed to slump into the stream and block passage).

4. **Monitoring and Reporting:** Monitoring and reporting is required to ensure that project activities and anticipated effects were appropriately analyzed. As concerns exist regarding the rip-rapped channel's effects on other portions of the stream, long-term monitoring to detect instability related to the application of rip-rap in the newly excavated channel shall occur. Immediate remedial actions are required if the new stabilized stream segment is determined to cause instability in adjacent areas and sedimentation downstream, as this may further impact Topeka shiners in Six Mile Creek well beyond project completion. The applicant has proposed a "one year warranty period upon completion of the construction" for monitoring; however, such effects may occur much later in time, particularly after significant precipitation events or during wet cycles when flows are above those anticipated or observed in the past. Therefore, inspections after such events as well as on a regular periodic basis (at a minimum, quarterly, but if observations of instability become evident, more frequent evaluations would be warranted) shall occur to ensure that the rip-rapped/rerouted portion of Six Mile Creek does not contribute additional long-term impacts to Topeka shiners beyond those addressed herein.

   Additionally, within one year after project completion, the FAA and/or the applicant shall submit a report to the Service describing project details pertinent to impacts to the Topeka shiner, including (but not limited to):

   a. Timing of construction, general construction activities, and measures implemented to minimize the project footprint;

   b. Monitoring, maintenance, and performance of erosion/sediment control devices, including details of any precipitation events or other factors that may have resulted in failure of such devices with a description of remedial actions taken;

   c. Photographs of the site - before, during, and after construction;

   d. Revegetation activities - timing, success, and any remedial actions, if required; and

e. The plan for long-term monitoring of the rip-rapped channel impacts to the stream.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs Federal agencies to use their existing authorities to further the purposes of the ESA by carrying out programs or activities to conserve endangered or threatened species. Conservation recommendations are discretionary activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop biological information. The Service suggests the following conservation recommendations:

- Provide funding as opportunity arises for Topeka shiner research/monitoring activities. The South Dakota State University has conducted Topeka shiner research in the past and has expressed interest in additional work. Water development districts in the state (e.g., East Dakota Water Development District in Brookings and James River Water Development District in Huron), the SDDGFP, and the South Dakota Department of Environment and Natural Resources have conducted surveys as well. Funds directed toward these entities may assist in future Topeka shiner research activities.

- Encourage alternatives to instream work and/or measures to minimize impacts to Topeka shiner streams at other airport facilities. In situations where facilities are already impacting known or potential Topeka shiner streams (e.g., runoff from an airport is entering a stream or airport culverts in a stream inhibit fish passage), provide funding and/or other incentives to remedy these situations.

- Encourage use of bioengineering techniques as an alternative to hard bank stabilization whenever possible/appropriate at airport facilities to promote natural streambank vegetation and to promote/conduct/fund habitat enhancement projects to improve riparian and instream habitat for the Topeka shiner in areas already degraded. The overall goal would be to improve water quality, create pool/spawning habitats (cross vanes, for example), restore pool-riffle-run sequences, and protect riparian habitat (e.g., exclude livestock). Six Mile Creek flows through the City of Brookings; habitat enhancement opportunities undoubtedly exist in this urban setting.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION NOTICE

As provided in 50 CFR § 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new

information reveals effects of the agency action that may impact listed species or critical habitat in a manner or extent not considered in this BO; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this BO; or (4) a new species is listed or critical habitat is designated that may be affected by the action. In instances where the amount or extent of incidental take in exceeded, any operations causing such take must cease pending reinitiation.

The Service believes that relatively few individual Topeka shiners occur in the construction zone and upstream/downstream of the site and only a few of those will be incidentally taken as a result of the proposed action. The RPMs, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. If, during the course of the action, it becomes apparent that the sediment/erosion control devices implemented for this project are inadequate to protect water quality within Six Mile Creek (i.e., resulting in mortality, potentially extirpation, of downstream Topeka shiners and/or adverse modifications to downstream habitat) or the rip-rapped channel results in significant modifications to adjacent segments of Six Mile Creek, such new information requires reinitiation of consultation and review of the RPMs provided. The Federal agency must immediately provide an explanation of the causes of any take that may have occurred and review with the Service the need for possible modification of the RPMs.

This concludes formal consultation on the actions outlined in the FAA's March 2011 BA regarding the Brookings Regional Airport - Expansion Alternative Project in Brookings County, South Dakota.

Any questions regarding this BO should be directed to Natalie Gates of the Service's South Dakota Ecological Field Office, 420 South Garfield Avenue, Suite 400, Pierre, South Dakota 57501-5408, Telephone No. (605) 224-8693, Extension 227.

Sincerely,

Scott V. Larson
Field Supervisor
South Dakota Field Office

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Appendix A

1997-2008 Known/Presumed Occupied Topeka Shiner Streams within the James, Vermillion, and Big Sioux River Watersheds, South Dakota.

James River Watershed (21)	**Vermillion River Watershed (12)**	**Big Sioux Watershed (28)**
Dawson Creek - 2006	Blind Creek - 2000	Beaver Creek - 2001
Dry Creek - 2000	Camp Creek - 2000	Beaver Creek, unnamed tributary - 1999
Dry Run Creek - 2006	East Fork Vermillion - 2006	Big Sioux River[1] - 2004
Elm River - 2003	Frog Creek - 2005	Brookfield Creek - 1999
Enemy Creek - 2000	Haram Creek - 2003	Deer Creek - 2007
Firesteel Creek - 2000	Long Creek - 2000	Deer Creek, unnamed tributary - 2000
Lonetree Creek - 2007	Saddle Creek - 2000	Flandreau Creek[2] - 1970 in SD, recent MN recent record
Middle Pearl Creek - 2000	Silver Lake Outlet - 2000	Four-mile Creek - 1999
North Branch Dry Creek- 2000	Turkey Ridge Creek - 2000	Hidewood Creek - 1999
Pearl Creek - 2000	Vermillion River - 1999	Medary Creek - 2000
Pierre Creek- 2006	West Fork Vermillion - 2000	North Deer Creek - 2000
Pony Creek - 2004	West Fork Vermillion, unnamed tributary - 2006	Peg Munky Run - 2001
Redstone Creek - 2007		Pipestone Creek - 2000
Sand Creek - 2008		Pipestone Creek, unnamed tributary[3] - MN record
Rock Creek - 2000		Six Mile Creek - 2000
Shue Creek - 2000		Six Mile Creek, unnamed tributary[4] - 2000
South Branch Lonetree Creek - 2000		Skunk Creek[5] - 1999 hybrid
South Fork Twelvemile Creek - 2006		Slipup Creek - 1999
Twelve-mile Creek – 2000		South Fork North Deer Creek - 1998
Twelve-mile Creek, unnamed tributary - 2002		Split Rock Creek - 2000
West Branch Firesteel Creek -1998		Split Rock Creek, unnamed tributary[6] - MN record
Wolf Creek - 1997		Spring Creek - 2000
		Springwater Creek - 1999
		Stray Horse Creek - 2002
		Stray Horse Creek, unnamed tributary - 2004
		West Pipestone Creek - 2000
		West Pipestone Creek, unnamed tributary - 2004
		Willow Creek (Codington) - 2005

[1]Big Sioux River - Viewed not as primary habitat but important as refugia/dispersal corridor. A 2004 record exists.

[2]Flandreau Creek - Known to be occupied on the Minnesota side, presume South Dakota is occupied as well. Last known South Dakota record was in 1970.

[3]Pipestone Creek, unnamed tributary - Known to be occupied on Minnesota side, presume South Dakota is occupied as well.

[4]Six Mile Creek, unnamed tributary - The Topeka shiner collection site on this tributary is very close to the main stem of Six Mile Creek - researcher (Steve Wall) did not distinguish it from Six Mile but the Service did in the proposed critical habitat rule of 2002.

[5]Skunk Creek - George Cunninham, Ecocentrics, reported Topeka shiner/sand shiner hybrids, not full Topekas. Status of shiner presence is currently uncertain, but habitat may exist.

[6]Split Rock Creek, unnamed tributary - This waterway is not named on U.S. Geological Survey maps but is called Devils Gulch Creek in the South Dakota Gazetteer. It is located approximately one-half mile north of Garretson and presumed occupied in South Dakota because of recent records on Minnesota side and its connection to Split Rock.

SOUTH DAKOTA
STATE HISTORICAL SOCIETY
DEPARTMENT OF TOURISM

November 1, 2011

Federal Aviation Administration
Patricia L. Dressler
Bismarck Airports District Office
2301 University Drive, Building 23B
Bismarck ND 58504

SECTION 106 PROJECT CONSULTATION – IDENTIFICATION/EVALUATION
Project: 070615003F – Brookings Regional Airport – Dual Track Airport Planning Process
Location: Brookings County
(FAA)

Dear Ms. Dressler:

Thank you for the opportunity to comment on the above referenced project pursuant to Section 106 of the National Historic Preservation Act of 1966 (as amended). The South Dakota Office of the State Historic Preservation Officer (SHPO) has the following comments regarding the effect of the proposed undertaking on the non-renewable resources of South Dakota.

Based on the your correspondence and the reports "Report on Level III Archaeological Investigation Conducted for an Environmental Assessment of Proposed Brookings Regional Airport Improvements, Cit of Brookings and Trenton Township, Brookings County, South Dakota" by Christina Harrison and "Brookings Municipal Airport: Reconnaissance Survey Report" by Hess, Roise and Company, received on December 21, 2009 and the additional information from your office received on January 13, 2010, March 31, 2010and the new determination received on October 31, 2011. We concur with the your determination the structure BKX00002232 should be considered NOT ELIGIBLE for the National Register of Historic Places. Therefore, we maintain your original determination of No Adverse Effect, for the BKX Expansion Alternative. Activities occurring in areas not identified in the request will require the submission of additional documentation pursuant to 36 CFR part 800.4.

If during the course of any ground disturbance related to this project, any bones, artifacts, foundations, or other indications of past human occupation of the area are uncovered, the project must be temporarily stopped until the SHPO has been notified and had chance to comment.

Concurrence of the SHPO does not relieve the Federal agency official from consulting with other appropriate parties, as described in 36CFR Part 800.2(c).

900 GOVERNORS DR • PIERRE • SD 57501 • P {605 • 773 • 3458} F {605 • 773 • 6041} • HISTORY.SD.GOV
DEPARTMENT OF TOURISM {TOURISM.SD.GOV}

Should you require any additional information, please do not hesitate to contact Amy Rubingh, Review & Compliance Archaeologist, at (605) 773-8370. Your concern for the non-renewable cultural heritage of our state is appreciated.

Sincerely,

Jay D. Vogt
State Historic Preservation Officer

Amy Rubingh

Amy Rubingh
Review and Compliance Archaeologist

Appendix B
Summary of Written Comments on Draft EA and Responses

APPENDIX B

SUMMARY OF COMMENTS ON DRAFT EA AND RESPONSES

Appendix B contains responses to substantive oral and written comments on the Draft EA. Comments were received at the November 8, 2010 public hearing and by mail and email during the comment period. A transcript of the public hearing is available at the City of Brookings City Hall. Following the close of the Draft EA comment period on November 15, 2010, the City Council held additional public hearings on November 23 and December 14, 2010 to gather further public comment prior to the selection of the preferred alternative. The City selected the BKX Alternative as the preferred alternative at the city council meeting on December 14, 2010. See letter from the City to FAA at Appendix A-153.

SUMMARY OF ORAL COMMENTS AT PUBLIC HEARING AND RESPONSES

Summary of Oral Comments	Response
Ron Sckerl – Opposed to new airport. Loss of farmland would be huge impact – carves up farmland into triangles, which would be difficult to farm. Storm water runoff from airport would affect farming. Residents would be exposed to airport noise and lighting. Acquiring family farms that have been farmed for generations would be a social impact.	Comments noted. The BKX Alternative is selected as the preferred alternative. See discussion in Section 2.3.1.
Marsha Skon – How long before we get a final EA? When would the city council select the preferred alternative? Developing a new airport in Trenton is not consistent with the County Comprehensive Plan. Removal of 746 acres of prime or unique farmland is a huge impact and is not an effective expenditure. Where would the cropland be replaced? Moving the airport would be incompatible and have a huge impact on our area.	The Final EA will be distributed in January 2012. The City selected the BKX Expansion Alternative on January 14, 2011. The displaced cropland could not have been replaced.
Lyle Johnson – I live on 212th St. and am on the township board. 212th is a main road for farmers at harvest time and closing it would push traffic another mile west onto a minimum maintenance road, which would add a burden to the township. It would require the heavy farm machinery to use Hwy. 14, which would be a safety concern. Has anybody done a traffic count on 212th St. checked where all this traffic would go? The previous reroute of Six Mile Creek didn't work and the proposed reroute won't work; there will be more flooding.	Comments noted. The City has decided that 212th St. should not be closed. The reroute will be designed and constructed to maintain the rerouted channel.

Summary of Oral Comments	Response
Terry Pritchard – The EA includes a vote by Trenton Township on the relocation of the airport at its annual meeting (June 28, 2007). That was brought up and voted on officially every year and the last one was March 31, 2010. If one is in the EA, shouldn't all be there? The citizens have voted each year that they do not want an airport in the township. On page 60 the EA says that all 5 property owners refused access to their properties. I have talked to some of the other owners and that is not true. No one asked me to come out on my property. I didn't get a phone call or a letter. And the historical society in their letter to FAA said that they concur with the finding of no adverse effect. I find that hard to believe. We request additional surveys to be done in order for us to provide comment. So, more needs to be done on the EA.	Section 4.11.3 of the Final EA has been revised to acknowledge these votes. Additional surveys will not be needed because the New Airport Alternative was not selected for implementation.
Igor Sergeev – Should safety aspect of the airport be considered in the EA? For example, human and economic impact of plane crash in the vicinity of airport sites. That should be the single most important factor in the selection of airport sites. Regarding noise and light pollution, you selected very small areas, basically around the runways. Is that how it should be done or should larger areas be considered?	It is for safety reasons that the FAA strongly recommends that the airport RPZs be clear of structures where people reside or congregate. The area containing noise-sensitive land uses is defined by the DNL 65 contour. See Section 4.11 for discussion of light emissions.
Bob Fourney – This Draft EA is incomplete and inadequate. It's based on old data. There is data saying there is a quarry here and it better not get bigger, and it got bigger in the last couple of years. The initial study looked at the map and picked 7 or more places and said this one is good because it is far away from the landfill. The last landfill is now a nice park; it isn't a landfill anymore, not the one you made a decision on, but the previous one before that. So you have moved all your numbers back. You've had a decline in takeoffs and landings the last couple of years and now it's not until 2021 that we need a new airport. So is this study still going to be of use 10 years from now? If the decision is to move the airport, it's going to go to a referendum and that takes time. You're going to need a special exemption from the county to take all that (land) and to take century farms	Thank you for the update. The BKX Alternative is selected as the preferred alternative. See discussion in Section 2.3.1. The revised numbers reflect the current recession. Typically, aviation forecasts go out 20 years. The EA analysis will still be of use because none of the environmental impacts are dependent on the forecast of operations except noise. The

Summary of Oral Comments	Response
out of production. You're going to have litigation on eminent domain. By the time all this is done will the study still be any good in 2015 or 2020 when it is to be built? We were at a meeting where at the last minute after spending a half million $, the consultant said we can change this NAVAID and everything would be perfectly legal and qualify for FAA funding but you would lose 6 hours of takeoffs and landings, and the Council said don't look at that; let's go with the two we have. Why wasn't that looked at anymore? There were a lot of rumors on the need – Daktronics and 3M want a bigger airport or we need the commercial or we need it for SDSU. The rumors don't turn out to be true. Well, we just need a bigger airport because sometime we'll have 747s coming to Brookings. The trend around the country is smaller, short pops, not flying from Amsterdam to Brookings. The EA was supposed to look at increased vehicle traffic. Moving the airport 15 minutes out of town, you'll have all the people working there driving from somewhere. Roads will be closed and the traffic will be on different roads. I was told the road between the airport and the hospital needs to be plowed 24/7 for emergency vehicles. Who is going to do that and he said whoever is doing it now. The interstate was closed at least 3 days at a time the last 2 winters. It's really hard to keep a rural road plowed for very long because of the wind, and this will affect the ambulances. This should be in the EA. I would like to know the total cost – how much federal funds and how much local taxes.	2025 forecast is worse case and no significant noise impacts were found. The main reason is that this alternative would not increase the runway length and therefore would not achieve the purpose and need for the project. The need for additional runway length is discussed in Section 1.2.2. Comments noted. There are very few employees at the airport (the City has 2). Based on the forecast number of average daily takeoffs in 2025 (and allowing for the touch-and-go training flights), City employees, FBO activity, deliveries, etc., it is estimated that the number that will go to the airport on an average day in 2025 is less than 40 vehicles. The estimated project costs are given in Sections 2.1.2 and 2.1.3. The amount of federal funds will depend on their availability for use at BKX.
Kevin Telkamp – I farm in Trenton Township. The EA understates the issues and impacts of moving the airport. There is a gravel pit less than 1 mile off the end of the main runway. The wildlife evaluation was back in 2008, which said it is a small pit and is not attracting hazardous birds. Well, I live directly across from the pit and in geese season there has been so many geese there that I have a steady stream of hunters	Comments noted. The BKX Alternative is selected as the preferred alternative. See discussion in Section 2.3.1.

Summary of Oral Comments	Response
asking me to let them hunt on my farm. Two years ago I had to take my phone off the hook because of the number of calls to hunt on my land. Recently almost 2400 acres of farmland were tiled. The new airport site is right in the middle of this tile project that has tens of thousands of feet of tile. What is the plan for the tile that would remain? What is the cost estimate? The land acquisition cost in the EA works out to $3838 per acre. This cost is not realistic considering this is some of the best farm ground in the county that has been completely tiled out. Building an airport in the middle of a farm could impact the economic viability of the farming operation.	 If the New Airport Alternative was selected, the remaining tile would be connected and continue to function. The land acquisition cost would be revised based on market conditions at that time.
Bob Lacher – These runway protection zones mystify me. I've flown in and out of major airports that have housing development and skyscrapers off the ends of the runways. I don't understand why a few cottonwood trees and a cornfield can be in the RPZ and skyscrapers are not. It just doesn't make sense to me.	RPZs are to be free of above ground structures including trees, buildings and uses that would add/interfere with or attract wildlife hazardous to aircraft operations.
Ronald Peterson – Part of my orchard is about ½ mile west of the proposed airport. This is a major flyway for migrating geese, which is not a very healthy thing for airplanes.	Comments noted. The BKX Alternative is selected as the preferred alternative. See discussion in Section 2.3.1.
Tanya Clark – Closing roads in Trenton Township will have a great impact on the farming community.	Comments noted. The BKX Alternative is selected as the preferred alternative. See discussion in Section 2.3.1.

WRITTEN COMMENTS AND RESPONSES

The following submitted written comments on the Draft EA during the comment period and are listed in the order that they are presented in this appendix. Responses to the numbered comments in each submittal follow the submittal.

- Fish and Wildlife Service, United States Department of the Interior
- National Resource Conservation Service, United States Department of Agriculture
- Corps of Engineers, Omaha District, South Dakota Regulatory Office, Department of the Army
- Corps of Engineers, Omaha District, Department of the Army
- South Dakota Department of Environment and Natural Resources
- Brookings Township Board of Supervisors
- Robbi H. Pritchard
- Barbara & Robert Fourney
- Major L. Boddicker
- Darrell Nelson
- Igor Sergeev
- George Skon
- George & Marsha Skon
- Kevin Telkamp
- George Skon

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
420 South Garfield Avenue, Suite 400
Pierre, South Dakota 57501-5408

November 12, 2010

Bob Babcock, P.E.
Helms and Associates
P.O. Box 111
Aberdeen, South Dakota 57402

Re: Draft Environmental Assessment for Dual Track Airport Planning Process, Brookings, South Dakota

Dear Mr. Babcock:

We have reviewed the September, 2010, draft Environmental Assessment (EA) for the above referenced project and herein provide comments for your consideration. The draft EA describes two alternatives (in addition to a No Action option) to alleviate concerns relative to Federal Aviation Administration requirements at the existing Brookings Regional Airport: 1) expansion of the existing airport within the City of Brookings, and 2) construction of a new airport southeast of the City of Brookings, in Trenton Township, Brookings County, South Dakota.

The draft EA describes potential impacts to species protected by the Endangered Species Act (ESA), with particular emphasis on the endangered Topeka shiner. If the existing airport is upgraded, Six Mile Creek (a known occupied Topeka shiner stream) will be rerouted around the end of an extended runway, potentially adversely affecting individuals of this species. Per the draft EA and prior informal consultation actions to date, we anticipate a biological assessment will be submitted to this office in the event this alternative is chosen. 1

However, while the draft EA acknowledges expansion of the existing airport may affect the Topeka shiner in Six Mile Creek, the alternative to construct a new airport adjacent to Medary Creek is described as having no impact to the Topeka shiner due to lack of habitat at the new airport location. As indicated in our October 16, 2007, letter (Appendix A, page A-89-A93 of the draft EA) the Topeka shiner is known to reside in Medary Creek. The draft EA states that storm water discharges would be received by Medary Creek, the local groundwater table could be lowered, and runoff during construction could affect surface water quality. Based on review of maps of the new airport site, the project would occur within tributaries of Medary Creek. While these waterways may/may not be occupied by the species, they currently direct surface flows to Medary Creek. The new airport location is close to the mainstem of Medary Creek, and wetlands recharging groundwater in the Medary Creek watershed would be filled if the new airport is constructed. Although not described in the draft EA, the establishment of a new airport 2

in a primarily agricultural area would result in increased impermeable surfaces, perhaps reducing groundwater recharge and increasing surface runoff to Medary Creek. Potential contaminants at the new airport are described, and although best management practices to minimize the potential for adverse effects are mentioned in the draft EA, it is not clear that comprehensive and effective sediment, erosion, and contaminants control measures will be implemented and maintained during construction, operation, and maintenance of the new airport. While direct affects to Topeka shiners occupying Medary Creek may not be realized if the new airport is constructed, we submit that there is potential for indirect impacts to the species, thus further analysis of the potential affects to Topeka shiners is warranted, and further consultation with this office is appropriate if the new airport alternative is chosen. 2 CONT.

We note that surveys for the Western prairie fringed orchid were conducted for each airport alternative. In our above referenced October 16, 2007, letter, we requested copies of results of any surveys for this plant conducted in association with this project; please provide this information to our office. 3

Regarding the American burying beetle in Brookings County, the draft EA is accurate in its depiction of the status of the beetle in Brookings County; no recent records of the species exist in the area and the historic records for Brookings County are relatively old. However, page 44 of the draft EA states, when referring to the beetle, that "The South Dakota records are from 1945 near Brookings and Elk Point but no recent occurrences have been documented." The draft EA indicates there are no recent records of this species at all in South Dakota, which is erroneous. We refer again to our October 16, 2007, letter, in which the American burying beetle was identified as a known resident of this state. Numerous collection records exist in Tripp County, and additional records of the species have been obtained from Todd, Bennett, and Gregory Counties (all located in south-central South Dakota, not in the vicinity of the proposed alternatives for the Brookings Regional Airport). We recommend correction of American burying beetle information within the draft EA to clarify its status in the state. 4

Page 42 of the draft EA cites section 7(a)(4) of the ESA as requiring Federal agencies to consult with our agency regarding endangered species. Note that this section applies to species that are *proposed* for listing, and critical habitats that are *proposed* for designation, not to species/habitats that are already protected under ESA. The appropriate section to cite in the draft EA is section 7(a)(2) of the ESA. 5

The draft EA mentions potential impacts to migratory birds via habitat changes as well as purposeful control to mitigate the potential for bird strikes with aircraft utilizing the airport. We recommend expansion of these topics in the draft EA as they pertain to the Migratory Bird Treaty Act, which prohibits take of migratory birds. Avoidance of construction during the breeding season should be considered, as well as compensatory mitigation to offset migratory bird habitat impacts that may occur as a result of either airport alterative. 6

We recommend reevaluation of the numerous Cumulative Effects sections within the draft EA. Land activities have, are, and/or will occur within the vicinity of the project area(s) that should be considered as cumulative impacts. Relative to natural resources, activities such as conversion of grasslands to cropland, draining of wetlands, tiling of uplands, stream channelization, 7

groundwater extraction, urban/industrial development, utility structures, roads, and more could all be considered in cumulative effects analysis. It is not accurate to state "There are no known past, present, or foreseeable future actions that would result in effects to...." when describing cumulative effects to plants, listed species, waterbodies, or other natural resources. We recommend expansion of cumulative effects analysis throughout the draft EA. 7 CONT.

If changes are made in the project plans or operating criteria, or if additional information becomes available, the Service should be informed so that the above determinations can be reconsidered. 8

The Service appreciates the opportunity to provide comments on this project. If you have any questions on these comments, please contact Natalie Gates of this office at (605) 224-8693, Extension 227.

Sincerely,

Natalie Gates

For Scott Larson
Field Supervisor
South Dakota Field Office

Cc: FAA; Bismarck, ND
(Attention: Patricia Dressler)

Responses to U.S. Fish and Wildlife Service Comments

1. A biological assessment was submitted to FWS on March 22, 2011 and FWS issued a biological opinion on September 27, 2011.

2. Section 4.7.1.3 of the Draft EA has been revised in the Final EA in accordance with your comment.

3. The 2008 Western Prairie Fringed Orchid Survey Report, August 1, 2008 has been provided to FWS.

4. The burying beetle information has been corrected in Section 4.7.1 of the Final EA.

5. The citation has been corrected in the 1st paragraph of Section 4.7 of the Final EA in accordance with your comment.

6. The Brookings Regional Airport currently has a Depredation Permit from the USFWS and a Take Permit from the South Dakota Game Fish & Parks Department, for migratory birds. In addition, the airport has a hazardous wildlife assessment that has been completed by Bill Antonides, Gander Island Consulting Services, Inc., recommending harassment and take of migratory birds, as necessary, to prevent against potential aircraft/bird strikes. A copy of the assessment is available on the City's web site at http://cityofbrookings.org/index.aspx?NID=225. The airport currently employs each of these tactics on airport property, as necessary, and must continue to do so in the future, for the continued safety of the flying public. However, with that being said, any wetland disturbance will be mitigated off-site through the 404 permitting process in accordance with FAA AC 150/5200-33B, which will likely afford some migratory bird benefits in the form of habitat offsets.

   With regards to the new construction, additional land will be purchased and more areas will be disturbed, primarily for the approach lighting system and access road for maintenance of this system. The airport personnel will begin harassment of migratory birds in these new areas early in the spring, to the extent as reasonably practicable in accordance with the 2011 USFWS Depredation Permit, so as to not allow nesting prior to construction activities, therefore avoiding unnecessary take of nests and young during construction.

   As a side note, upon completion of the entire project, the old runway and taxiway will be removed, topsoiled and reseeded, in essence nearly replacing the area disturbed for the

new runway and taxiway. In addition, one house will be removed therefore creating additional grassland area as well.

7. The Cumulative Effects sections within the Draft EA have been reevaluated and revised in the Final EA, where appropriate, in accordance with your comment. See discussion in Section 4.19.

8. The Service will be informed if substantive changes are made to the selected project plans or operating criteria, or if additional relevant information becomes available.

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
200 Fourth Street SW
Huron, South Dakota 57350

Phone: (605) 352-1200
Fax: (605) 352-1270

November 4, 2010

Mr. Bob Babcock, P.E.
Helms and Associates
P.O. Box 111
Aberdeen, South Dakota 57402

RE: Draft Environmental Assessment of the Dual Track Airport Planning Process – City of Brookings, South Dakota (SD)

Dear Mr. Babcock:

The Dual Track Airport Project in Brookings, SD, may require a Farmland Conversion Impact Rating Form (AD-1006). The AD-1006 form needs to be completed if there is any prime farmland or farmland of statewide importance that will be converted because of the project. Please send me a map of the location of the selected site 1

The status and impact of wetlands was not part of this review. Please refer these questions to the Corp of Engineers or the US Fish and Wildlife Service.

The Natural Resources Conservation Service (NRCS) would advise the applicant to consult with the local NRCS and Farm Service Agency (FSA) offices regarding any USDA easements or contracts in the project area that may be affected. 2

If you have any questions, please contact Rick Bednarek, Assistant State Soil Scientist, at (605) 352-1258.

Sincerely,

Deanna M Peterson

DEANNA M. PETERSON
State Soil Scientist

cc: Ryan Forbes, DC, NRCS, Brookings FO

RECEIVED
NOV - 8 2010
HELMS & ASSOCIATES

Responses to NRCS Comments

1. As stated in the Draft EA, an AD-1006 form was completed and provided in Appendix A at A-61.
2. The local NRCS and register of deeds were contacted in October 2011 and there are no USDA easements in the project area that may be affected.

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
SOUTH DAKOTA REGULATORY OFFICE
28563 POWERHOUSE ROAD, ROOM 118
PIERRE SD 57501-6174

REPLY TO
ATTENTION OF:

November 2, 2010

South Dakota Regulatory Office
28563 Powerhouse Road, Room 118
Pierre, South Dakota 57501

NOV 9 2010

Bob Babcock, P.E.
Helms and Associates
P.O. Box 11
Aberdeen, South Dakota 57402

Dear Mr. Babcock:

This office has reviewed the Draft Environmental Assessment titled Dual Track Airport Planning Process, Brookings, South Dakota, dated September 2010. Currently, the project involves two proposed alternatives – BKX Expansion Alternative and New Airport Alternative (upgrade or relocate the Brookings Regional Airport). The project has been previously assigned Corps Regulatory action No. NWO-2009-0149.

Relative to our permit review process under Section 404 of the Clean Water Act for proposed activities involving the discharge of dredged or fill material in waters of the U.S., this office must determine compliance with the Environmental Protection Agency Section 404(b)(1) Guidelines. The Guidelines require that the project meet the following four (4) basic criteria (40 CFR 230.10) to be permittable:

(i) There must be no other practicable alternatives which are less damaging to the aquatic environment;

(ii) The project must comply with state water quality standards, the Endangered Species Act (ESA), and other pertinent statutory provisions;

(iii) The project must not cause or contribute to significant degradation of US waters; and

(iv) Appropriate and practicable measures for minimizing potential adverse impacts of the discharge on the aquatic ecosystem must be taken.

The 404(b)(1) criteria of avoiding and minimizing adverse impacts to the aquatic ecosystem must be met before compensatory mitigation for any unavoidable adverse impacts to waters of the U.S. is considered. For the purposes of Section 404, "practicable" is defined as "available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purpose".

Based upon this offices review of the described alternatives, the relocation alternative appears to be the least environmentally damaging practicable alternative. 2

If you have any questions or if we can be of further assistance, please contact this office at the above Regulatory Office address, or telephone Thomas A Lowin, of my staff, at (605) 224-8531.

Sincerely,

Steven E. Naylor

Steven E. Naylor
Regulatory Program Manager,
South Dakota

Responses to Department of the Army Comments

November 2, 2010

1. Comment noted. As discussed in Section 2.3.1, the New Airport Alternative is not a practicable alternative.
2. Comment noted. It is the least damaging to the natural environment but is the most damaging to the social and economic environment. See discussion in Section 2.3.1.

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
1616 CAPITOL AVENUE
OMAHA NE 68102-4901

REPLY TO
ATTENTION OF

November 8, 2010

Planning, Programs, and Project Management Division

NOV 18 2010

Mr. Bob J. Babcock, P.E.
Helms & Associates
PO Box 111
Aberdeen, South Dakota 57402

Dear Mr. Babcock:

The U.S. Army Corps of Engineers, Omaha District (Corps) has reviewed your letter dated September 29, 2010 regarding the draft environmental assessment of the Dual Track Airport Planning Process and offer the following comments:

If the BKX Expansion Alternative is chosen as the preferred alternative, please coordinate with the local floodplain administrator and the Federal Emergency Management Agency (FEMA) regarding construction in a floodplain/floodway and obtaining a floodplain development permit. 1

The proposed changes in Six Mile Creek channel due to the BKX Expansion Alternative will require a Letter of Map Revision (LOMR). The LOMR process officially revises the Flood Insurance Rate Map and Flood Insurance Study to reflect the changes. 2

If the New Airport Alternative is selected, then we have no floodplain comments as this project is located outside the designated floodplain. 3

Regarding the proposed activity of the BKX Expansion alternative, which would involve work in waters of the United States, please continue communication with the Pierre Regulatory Office to coordinate the potential need for a Department of the Army authorization under Section 404 of the Clean Water Act. 4

If you have any questions, please contact Mr. Scott Flash of my staff at (402) 995-2748.

Sincerely,

Brad Thompson

Brad Thompson
Chief, Environmental Resources and Missouri Recovery
Program and Plan Formulation, Planning Branch
Planning, Programs and Project Management Division

Responses to Department of the Army Comments

November 8, 2010

1. Coordination will occur with these agencies in the floodplain development permit process.
2. As stated in Table 2, a LOMR will be prepared and submitted to the Omaha office.
3. The BKX Alternative is selected as the preferred alternative. See discussion in Section 2.3.1.
4. Coordination with the Pierre Regulatory Office will continue on the need for Department of the Army authorization for work in waters of the U.S. as stated in Section 404 of the Clean Water Act. The City met with the Corps on September 22, 2011 to initiate coordination.

DEPARTMENT of ENVIRONMENT and NATURAL RESOURCES
PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

October 27, 2010

Bob J. Babcock, P.E.
Helms & Associates
P.O. Box 111
Aberdeen, SD 57402

RECEIVED
NOV - 3 2010
HELMS & ASSOCIATES

Dear Mr. Babcock:

The South Dakota Department of Environment and Natural Resources (DENR) reviewed the project proposed by Helms and Associates for the Brookings Regional Airport Expansion Alternative and the construction of a New Brookings Regional Airport Alternative. The DENR finds that this construction, using conventional construction techniques, should not cause violation of any statutes or regulations administered by the DENR based on the following recommendations:

Brookings Regional Airport Expansion Alternative

1. At a minimum and regardless of project size, appropriate erosion and sediment control measures must be installed to control the discharge of pollutants from the construction site. Any construction activity that disturbs an area of one or more acres of land must have authorization under the General Permit for Storm Water Discharges Associated with Construction Activities. Contact the Department of Environment and Natural Resources for additional information or guidance at 1-800-SDSTORM (737-8676) or www.state.sd.us/denr/des/surfacewater/stormwater.htm. /

2. The department does not anticipate any adverse impacts to the air quality of the state. The Air Quality Program has no objections to these projects.

3. The department does not anticipate any adverse impacts to drinking waters of the state. 2

4. The Waste Management Program does not anticipate any adverse impacts. Any construction debris needs to be disposed of at a permitted solid waste facility. Please contact the Waste Management Program if you have any questions on solid waste disposal at (605) 773-3153.

5. Based on the information provided, the Ground Water Quality Program does not anticipate adverse impacts to ground water quality by this project.

   There have been numerous petroleum and other chemical releases throughout the state. Of the releases reported to the Department, we have identified a number of release cases potentially in the vicinity of your project. Attached is a list of these releases. However, the locational information provided to us regarding releases is sometimes inaccurate or incomplete. If you would like to do more research regarding releases, information on releases reported in South Dakota may be obtained at the following website: www.sddenr.net/env_events/. If contamination is encountered during the activities, or caused by the activities, the Municipality of Brookings, or its designated representative, must report the contamination to Department at (605) 773-3296. Any contaminated soil encountered must be temporarily stockpiled and sampled to determine disposal requirements, and the materials of construction through the contaminated area should be evaluated for chemical compatibility and adjusted accordingly. To aid in preventing accidental release, best management practices should be employed for the handling and storage of petroleum and other chemicals at this site. 3

6. A Surface Water Discharge (SWD) permit may be required if any construction dewatering should occur as a result of this project. Please contact this office for more information. 4

7. Plans and specifications for wastewater treatment and storage for this project must be submitted to Kelli Buscher with the South Dakota Department of Environment and Natural Resources. 5

8. Wetlands and tributaries may be impacted by this project. The discharge of pollutants from any source, including indiscriminate use of fill material, may not cause destruction or impairment except where authorized under Section 404 of the Federal Water Pollution Control Act. The U.S. Army Corps of Engineers must be contacted concerning this permit. 6

9. This segment of Six Mile Creek is classified by the South Dakota Surface Water Quality Standards and Uses Assigned to Streams for the following beneficial uses:

   (6) Warmwater marginal fish life propagation waters;
   (8) Limited contact recreation waters;
   (9) Fish and wildlife propagation, recreation, and stock watering waters; and
   (10) Irrigation waters. 7

   Because of these beneficial uses, special construction measures may have to be taken to ensure that the total suspended solids standard of 150 mg/L is not violated.

New Brookings Regional Airport Alternative

1. At a minimum and regardless of project size, appropriate erosion and sediment control measures must be installed to control the discharge of pollutants from the construction site. Any construction activity that disturbs an area of one or more acres of land must have authorization under the General Permit for Storm Water Discharges Associated with Construction Activities. Contact the Department of Environment and Natural Resources for additional information or guidance at 1-800-SDSTORM (737-8676) or www.state.sd.us/denr/des/surfacewater/stormwater.htm. 8

2. The department does not anticipate any adverse impacts to the air quality of the state. The Air Quality Program has no objections to these projects.

3. The department does not anticipate any adverse impacts to drinking waters of the state. 9

4. The Waste Management Program does not anticipate any adverse impacts. Any construction debris needs to be disposed of at a permitted solid waste facility. Please contact the Waste Management Program if you have any questions on solid waste disposal at (605) 773-3153.

5. Based on the information provided, the Ground Water Quality Program does not anticipate adverse impacts to ground water quality by this project.

   There have been numerous petroleum and other chemical releases throughout the state. Of the releases reported to the Department, we have identified one release case potentially in the vicinity of your project area and is identified as DENR ID# 2001681 on the attached list. However, the locational information provided to us regarding releases is sometimes inaccurate or incomplete. If you would like to do more research regarding releases, information on releases reported in South Dakota may be obtained at the following website: www.sddenr.net/env_events/. If contamination is encountered during the activities, or caused by the activities, the Municipality of Brookings, or its designated representative, must report the contamination to Department at (605) 773-3296. Any contaminated soil encountered must be temporarily stockpiled and sampled to determine disposal requirements, and the materials of construction through the contaminated area should be evaluated for chemical compatibility and adjusted accordingly. To aid in preventing accidental release, best management practices should be employed for the handling and storage of petroleum and other chemicals at this site. 10

6. A Surface Water Discharge (SWD) permit may be required if any construction dewatering should occur as a result of this project. Please contact this office for more information. 11

7. Plans and specifications for wastewater treatment and storage for this project must be submitted to Kelli Buscher with the South Dakota Department of Environment and Natural Resources. 12

8. Wetlands and tributaries may be impacted by this project. The discharge of pollutants from any source, including indiscriminate use of fill material, may not cause destruction or impairment except where authorized under Section 404 of the Federal Water Pollution Control Act. The U.S. Army Corps of Engineers must be contacted concerning this permit. 13

9. Also these wetlands and tributaries drain to Medary Creek and may potentially impact this segment of creek which is classified by the South Dakota Surface Water Quality Standards and Uses Assigned to Streams for the following beneficial uses:

   (6) Warmwater marginal fish life propagation waters; 14
   (8) Limited contact recreation waters;
   (9) Fish and wildlife propagation, recreation, and stock watering waters; and
   (10) Irrigation waters.

   Because of these beneficial uses, special construction measures may have to be taken to ensure that the total suspended solids standard of 150 mg/L is not violated.

When looking at the two airport alternatives impact on the environment from a surface water quality standpoint the New Brookings Regional Airport Alternative will have less impact to waters of the State of South Dakota than the Brookings Regional Airport Expansion Alternative. For this reason the preferred alternative is for the New Brookings Regional Airport Alternative project. 15

If you have any questions concerning these comments, please contact me at (605) 773-3351.

Sincerely,

Aaron Leingang

Aaron Leingang
Environmental Scientist
Surface Water Quality Program

cc: Brad Schultz, Air Quality Program
Mark Mayer, Drinking Water Program
Vonni Kallemeyn, Waste Management Program
Matt Hicks, Ground Water Quality Program
Kelli Buscher, Surface Water Quality Program

DENR id	site_name	city	street	material	status	Reviewer
90.54	Army National Guard	Brookings	300 5th St. South (OMS #8 near airport)	Gasoline Diesel	C	MV
91.645	Supreme Lines Incorporated Transport Event	Brookings	914 Main Avenue	Ethylene Glycol	C	PK
93.06	SDSU Maintenance Hanger	Brookings	Maintenance Hanger @ Airport	Waste oil	C	JA
93.223	SDSU Hanger @ Airport	Brookings	Airport-S. Side	Gasoline	C	KH
95.167	Snyder Drug Southtown	Brookings	803 Main Avenue S.	Gasoline	NFA	TS
96.022	Brookings Farmers Co-op Fertilizer Ast Failure	Brookings	At Fertilizer Plant - 245 Railroad Street	28 % Fertilizer	C	KM
92059	Star Circuits, Inc.	Brookings	405 Railroad Street		C	
97028	Star Circuits	Brookings	405 Railroad Street		C	TS
2001143	Abandoned Tank Project - Former Paul's Apco	Brookings	726 Main Avenue (Main & 8th St S)		C	KM
2001681	Abandoned Tank Project - Pritchard Farm	Aurora	47569 218th Street		C	KM
2002264	Abandoned Tank Project - Star Circuits	Brookings	405 Railroad Street		C	KM
2008.105	Brookings Airport Aviation Fuel Spill	Brookings	Brookings Airport - SE Corner of terminal b	aviation fuel	NFA	SB
2009.147	Fire Event @ Star Circuits	Brookings	405 Railroad Street	Wastewater	NFA	TK
2009.156	Contaminated Soils - Brookings Airport	Brookings	413 2nd Avenue SW	Aviation Fuel	NFA	SB

Responses to DENR Comments

1. Application for a General Storm Water Permit for Construction Activities will be submitted to the DENR. Appropriate erosion and sediment control measures will be installed. See Section 4.4.

2. Comments noted.

3. These procedures have been included in Section 4.9.2 of this Final EA.

4. Comment noted. See Section 4.4.

5. Plans and specifications for wastewater treatment and storage will be submitted to the DENR.

6. The U.S. Army Corps of Engineers will be contacted about this permit.

7. Comments noted. Measures will be taken to ensure that total suspended solids do not exceed 1.50 mg/L during construction. See Section 4.16.2.

8 – 14. If the New Airport Alternative had been selected as the preferred alternative, then these responses would be the same as Responses 1 – 7.

15. The New Airport Alternative is not a practicable alternative. The reasons for the selection of the BKX Expansion Alternative as the preferred alternative are given in Section 2.3.1.

November 13, 2010

To: Brookings City Commission
311 Third Avenue
PO Box 270
Brookings, SD 57006

From: Brookings Township Board of Supervisors
1304 Sunnyview Drive
Brookings, SD 57006

Re: Comments Dual Track Airport Planning Draft EA
Brookings, SD

The Brookings Township Board of Supervisors have reviewed the draft Environmental Assessment Report; noting particularly the environmental factors having potential impacts with the Brookings Expansion Alternative proposal.

The proposal for this site impacts specific Brookings Township roadways as sections of 212th St and 469th Ave would be closed. These roads impact people beyond only those requiring direct access; they carry daily commuters to the City and are important routes for local farmers. These roads are currently maintained by Brookings Township to provide moving machinery from field to field, direct farm to market transportation for grain and movement of forage for livestock. Some impacts on these roads and possible impact on alternate roads potentially affected by resulting changes in traffic patterns are offered for consideration.

- **Some potential alternate routes currently are designated "Minimum Maintenance". Necessary upgrades and additional maintenance and snow removal will require additional expenses for the Township.**
- **If SD Hwy 14 becomes the more convenient alternative, it will add more traffic to an already high traffic roadway.**
- **Adding larger, slower moving farm equipment as part of the increased traffic on the Hwy 14 may increase the hazards.**
- **Restricted hour for moving farm equipment on State ROW does not mesh with extended field hours at planting and harvest.**

The Board encourages consideration of the concerns regarding the roads directly and potentially impacted by resulting changes and to consider possible mitigation options. The Board appreciates the opportunity to review the draft and to offer comments.

CC: Bob Babcock, PE
Helms and Associated
PO Box 111
Aberdeen, SD 57402

Respectfully submitted.
Brookings Township Board of Supervisors
Troy Johnson, Supervisor, Chr: Troy Johnson
Dan Miller, Supervisor Dan Miller
Lyle Johnson, Supervisor Lyle D Johnson

Responses to Brookings Township Board of Supervisors Comments

1. Comments noted. It has been determined that 212th St. should not be closed. See Section 2.1.2.

ROBBI H. PRITCHARD, Ph.D.
47569 218th Street
Aurora, South Dakota 57002
605/688-5457 (O) 605/693-4994 (H)

Nov 12, 2010

Re: Draft Environmental Assessment – Brookings Airport

The draft Environmental Assessment (dEA) indicates that relocating the airport to rural Trenton Township would have no significant impact on farmland. The New Airport Alternative (NAA) plan calls for acquiring 885 acres of highly productive land. That is land that would be lost to agriculture. There is a social bias in this assessment of no significant environmental impact. Farmland needed to feed the human population is a finite resource. It is critical that it be conserved and that it be protected from urban sprawl. The loss of the farmland is indeed a direct environmental issue. It leads to a secondary issue of Indirect Land Use Change. ILUC is an issue frequently debated when strategizing about biofuels production. The basic ILUC argument is that growing population demands for food mean that farmland lost to urban sprawl will exacerbate breaking up more fragile lands elsewhere for tillage and crop production. 1

The dEA basically suggests little or no economic impact to the area represented in the NAA. That would be a short sighted assessment. Trenton Township does not have a strong revenue stream. There will be a property tax loss brought about by removing 885 acres from the tax rolls. Breaking up tracts of land will devalue remaining tillable land and the presence of the airport will cause a devaluation of several farmsteads. It may not seem like a lot of money to a city planning to spend millions of dollars on a new airport, but it will impact a small budget government entity like Trenton Township in a very big way. 2

The assessment greatly understates the potential impact on farmers owning land under consideration. Some of those farmers would lose enough land to cause their operation to drop below a critical size needed to be profitable. Somebody will be forced to quit in order to leave enough land available for someone else to have a sustainable operation. 3

There are some credibility issues in the section regarding historical significance. One matter is a statement that 5 farmstead owners denied the opportunity for inspection of their property for assessing historical significance. More accurately, not all of those property owners were contacted. The dEA statement is not true. 4

Another historical value issue is that part of the land base planned in the New Airport Alternative is part of a Centennial Farm. That is a gubernatorial designation in SD. It means that a tract of land has been farmed by the same family for over 100 years. Considering that to be an insignificant historical characteristic once again reflects a social bias. 4 CONT.

There was a general oversight regarding impact of airport alternatives on traffic at either sight. Specific to the NAA, the plan to close some roads is a significant matter. Snow removal on rural township roads may not occur for several days after a winter snow storm or following one of our ever present wind events. Residents rely on having alternate routes out from their homes. They hope to find a way to get out that can be opened using farm tractors. The road closings will leave several farmsteads with only one way in/out. That substantially increases the likelihood of being stranded on the farmstead for days at a time. In all of these cases the remaining "way out" increases the distance that must be traveled to get to town. In some cases it will significantly increase emergency vehicle response times. That will lead to greater risks and higher insurance costs for the property owners. The road closings will also increase the amount of farm implement traffic on SD Highway 324. Large, slow moving farm implements are a traffic safety issue on highways. 5

Noise and lights nuisances were deemed to be irrelevant on the NAA site. That assessment completely ignored how the airport activities would affect livestock on the adjacent farmsteads. Airport activities would make it infeasible to bring feeder cattle into those farmsteads. Yes cattle can adapt, but before that adjustment is completed new cattle will certainly become spooked by the lights and noises. In the resulting melee you can expect that some cattle will be injured, they will knock down fences, and they will escape from pens. 6

Understandably there are trade-offs when addressing these matters. One huge trade-off is not on the table. The current airport RPZ are zoned for, and suited to maintaining the airport at the original site. Those RPZ do not require expanding into farmlands, changing farming practices and traffic patterns, and do not involve historical issues. The non-compliance issues present are to a very large extent self-inflicted problems for the city. The city has deemed it better to pursue the forced acquisition of rural properties than to face difficult issues with city residents. It is frequently stated that "there is nothing out there; it is just farmland". Inherent in this same logic is the bias that an airport would have no more impact on farmsteads than it has on city homes. It is another reflection of the social and cultural bias that exists in this situation. If farmers were an acknowledged minority, the entire tone of this situation would be remarkably different than it is now. 7

Robbi N. Pritchard
11/12/10

Responses to Robbi H. Pritchard Comments

1. Comments noted. The threshold of significant impact on farmland was established by the U.S. Department of Agriculture.
2. Comments noted. The BKX Alternative is selected as the preferred alternative. See discussion in Section 2.3.1.
3. Comment noted. The BKX Alternative is selected as the preferred alternative. See discussion in Section 2.3.1.
4. Letters were sent to all affected property owners. The Draft EA assessment of effect assumed all 5 farmsteads to have historical significance.
5. Comments noted. The potential road closures are based on the FAA strong recommendation that no roads be allowed in the central portion of the RPZ of a new runway.
6. Comments noted.
7. Comments noted. The BKX Alternative is selected as the preferred alternative. See discussion in Section 2.3.1.

November 15, 2010

City of Brookings
Jackie Lanning, City Engineer
311 Third Ave
PO Box 270
Brookings, SD 57006
692-6907
jlanning@cityofbrookings.org

Cc: Airport Manager, Michael Wilson
509 W. 2nd St. S.
PO Box 270
Brookings, SD 57006
697-8664
mwilson@cityofbrookings.org

Cc: Bob Babcock, Helms and Associates/HNTB
bobb@helmsengineering.com

Please incorporate these questions into the Dual Track Draft EA.

Dual Track – Draft EA comments/questions:

1. The need for increasing the current airport's capacity is "based on the 20-year out needs". Who determined what those needs are and how were they determined when there are not even any currently scheduled carrier flights? 1
2. Much time and money was spent doing this comprehensive Environmental Assessment. Will there be a comprehensive financial and ongoing maintenance costs assessment done before a decision is made? If not, then why not? Are on-going maintenance costs and financial costs not as critical of an issue? 2
3. Have environmental conditions outside of town during operational conditions been considered for the Trenton Township option? For example, fog, snow, wind, drifing, etc. are much worse and more frequent of a problem in the Trenton Township location than in town at the current location. 3

   In addition, it has been stated by Helms/HNTB that the road between the airport and the hospital must be kept open at all times. The cost of doing this from Trenton Township would be significantly higher, require a lot of chemicals that may affect what farmland is left, and would require more maintenance on gravel roads that would need to be plowed. It is not abnormal for the wind/drifting to be so severe at that location that plowing just cannot be done until the wind/drifting has stopped. 4

   The increased traffic of the people working at the airport as well as private users (SDSU students, etc.) would create increased wear and tear on the roads, requiring increased maintenance, as well as contribute to air pollution and agricultural pollution.

4. There is a quarry being dug at the intersection of HW324 and Rt 29. Has the effect of this quarry with respect to flying wildlife when it is completed been considered in the assessment of the Trenton Township site? 5
5. It has been stated by Helms/HNTB that water will be provided by either digging wells or running city water to the Trenton Township site. The ethanol plant coming on line as well as its expansion has had a NOTICIBLE effect on the quantity and quality of potable subsurface water and has dried up MANY resident's wells in Aurora and the surrounding area. Our family depends on a well as our sole source of drinking water. Putting additional stress or destroying the aquifer is a more significant and IRREVERSIBLE environmental issue than the Dakota Shiner Minnow needing to be relocated. 6
   Effects of the construction needed to build the airport in Trenton Township on drainage and well pollution have not been studied in this assessment.
   Nor has the effect and cost of construction needed to run city water to the Trenton Township site been studied.
6. There is a large non-flying wildlife presence (deer, etc.) in Trenton Township. Has the effect on displacing the deer population and their habitat in Trenton Township been studied? 7
7. If the comments to the draft EA are taken now and sent to the FAA before a final EA is issued in a few months, how can the City make a decision in December? 8
8. If there are buildings in the Runway Protection Zone for the in-town option, would it not be easier and more cost effective to just move the buildings instead of moving the airport? 9

Barbara & Robert Fourney
21723 476th Ave
Aurora, SD 57002

Responses to Barbara & Robert Fourney Comments

1. The determination is based on the forecast of jet operations at BKX and the FAA Runway Length Requirements for Airport Design, as described in Section 1.2.2.
2. Comment noted. The BKX Alternative is selected as the preferred alternative. See discussion in Section 2.3.1.
3. Comment noted. The BKX Alternative is selected as the preferred alternative. See discussion in Section 2.3.1.
4. Comment noted. The BKX Alternative is selected as the preferred alternative. See discussion in Section 2.3.1.
5. Comment noted. The BKX Alternative is selected as the preferred alternative. See discussion in Section 2.3.1.
6. Comment noted. The BKX Alternative is selected as the preferred alternative. See discussion in Section 2.3.1.
7. Comment noted. The BKX Alternative is selected as the preferred alternative. See discussion in Section 2.3.1.
8. The Final EA must contain the proposed action/selected alternative, which is the City's decision. The Draft EA and comments thereto provide the City with the information needed to make the decision.
9. Comment noted. The BKX Alternative is selected as the preferred alternative. See discussion in Section 2.3.1.

ROCKY MOUNTAIN WILDLIFE SERVICES Inc.

Pest Control Services
Coyote control
Prairie dog, vole, & pocket gopher control
Rattlesnake control

Major L. Boddicker, Ph.D.
PO Box 999
LaPorte, Colorado 80535
Phone: 970-484-2768
877-484-2768 (toll-free)
Fax: 970-484-0807
E-mail: critrcall@larinet.net

Wildlife Management Consulting
Trapper training programs
Animal damage control workshops
Predator calling programs
Wildlife management planning

October 11, 2010

Mike Wilson
Airport Manager
311 3rd Avenue
Brookings, SD 57006

Dear Mr. Wilson:

I am the managing partner of Boddicker-Thibodeau Farms. Our property lies directly adjacent to and under the flight path of the Brookings Regional Airport as it currently operates and will operate under the BKX Expansion Alternative.

I have made a cursory review of the draft airport management plan on the web. My sympathies go out to you and the Brookings folks who have had to wade through and develop this EIS. This country is so weighed down by federal red tape it is no wonder we are in a slump. 1

Please send us a map of the Six-Mile Creek re-routing, which will be required if the current runway is expanded and extended. We would also like to know the width and depth of the proposed re-route channel of Six-Mile creek. Will it swing out onto the old Nichols place then back into the John Moriarity place? 2

Our concern is that the re-routing of Six-Mile Creek, if not done adequately, will significantly add to the frequent flooding that occurs as a result of past re-routing and impeding Six-Mile Creek. In our opinion, the paving and expansion of Brookings, including the new paving at the airport, will add to the flooding issue. We would appreciate a direct reply from the airport planning folks to our concern about the plans for the route and physical directions and size of the re-routing of Six-Mile Creek. 3

The extension of the runway and the cut and fill required will necessitate moving Six-Mile Creek to the north and west. That could increase the floodwater volume and velocity coming onto our property. How is the airport expansion going to

mitigate that? By extending the runway, it will serve as a partial dam, which will back up water and increase the floodwater velocity, and therefore damage the entire Big Sioux floodplain below the projected Six-Mile re-routing. It could significantly increase road repair and maintenance on all roads south to the Big Sioux. It could make farming even more difficult below the runway extension. 3 CONT.

I could not find specific comments on mitigation for bird strikes and collisions with deer and coyotes in the extension area. 4

If there is a charge for the draft hard copy of requested materials, please send a billing or call 970-484-2768 for a credit card number or inform us of the cost so we can send a check.

For the record, Boddicker-Thibodeau Farms would vote for choosing the alternate new airport site east of I-29. We are not opposed to the expansion of the existing airport if the floodwater control and mitigation situation is adequately handled. 5

Thank you for your consideration.

Best wishes,

Major L. Boddicker

Major L. Boddicker

Responses to Major L. Boddicker Comments

1. Comment noted.
2. See Figure 3 in the EA for the proposed relocation. The width and depth of the channel will be the same as the existing channel, as shown on Figure 14a. The reroute would be on the Moriarty and William Mix properties.
3. The reroute will be constructed in accordance with the permitting requirements of the US Army Corps of Engineers. Mitigation will include the provision of compensatory flood storage shown in Figure 14a.
4. The mitigation plan is presented in Section 4.3.2 of the EA.
5. Comment noted. The BKX Alternative is selected as the preferred alternative. See discussion in Section 2.3.1.

Darrell Nelson
47405 219th St.
Brookings, SD 57006

RECEIVED
NOV 15 2010
HELMS & ASSOCIATES

Bob Babcock, P.E.
Helms and Associates
PO Box 111
Aberdeen, SD 57402

Dear Mr. Babcock,

I was unable to attend the public comment portion of the Brookings Airport Environmental Assessment meeting Monday evening November 8.

I have two comments to make concerning the proposed airport alternative site in Trenton Township.

First, I was told by someone who did attend the meeting that it was stated that there were no wetlands involved in the proposed airport alternative. If this is truly a part of the EA I believe it to be false for I, along with the owner of the SW1/4 of Section 21, recently appealed a wetland determination on the property. The determination was upheld by NRCS after an onsite investigation and analysis of samples taken. This piece of real estate certainly does contain a wetland as defined by NRCS. 1

Secondly, my family uses 474th Ave. from 219th St. to 216th St. to convey on the hoof beef cattle from summer pasture to winter confines. The closing of 474th Ave. would have serious consequences for my family. This is the preferred route from home to Brookings via SD 324. It serves as our means to land adjacent to SD 324 for farming operations. Closing 474th Ave. would require that we transport farm machinery along the busier and higher speed limit of SD 324 from 473rd Ave. and/or 476th Ave. The dangers involved with this are obvious. 2

I thank you for the opportunity to comment. May you and your associates have great wisdom as you apply these comments to your study.

Sincerely,
Darrell Nelson
Darrell Nelson

Responses to Darrell Nelson Comments

1. The wetlands were identified on the National Wetland Inventory map, which shows 4 small wetlands at the new airport site (see EA Figure 22) . If the New Airport Alternative had been selected, then a detailed survey and analysis would have been performed of other possible wetlands.

2. Comments noted. The BKX Alternative is selected as the preferred alternative. See discussion in Section 2.3.1.

Igor Sergeev
1115 W 8th St S
Brookings, SD 57006
sergeev@brookings.net

RECEIVED
NOV 15 2010
HELMS & ASSOCIATES

November 11th, 2010

Bob Babcock, P.E.
Helms and Associates
PO Box 111
Aberdeen, SD 57402

Dear Mr. Babcock

RE: Comments on the Draft Environmental Assessment for the Brookings Regional Airport

The EA draft does not address a critical issue of public safety at the airport sites. The human and economic impact of plane crashes in airport vicinity can be extremely significant, and there are methodologies to estimate probability of a plane crash and its impact. The consequences of such an event would be devastated. Improving safety of people must be the single most important factor in selecting the airport site. 1

The slight reorientation of the crosswind runway in the SE or SW direction would greatly improve safety of people on the ground and allow removing the southern RPZ from private property. It also appears that the proposed southern RPZ won't be completely within the setbacks on private property. The shifting and reorientation of the crosswind runway is feasible and it is not more costly than the proposed in the EA shifting of the runway. I have raised this question several times and have not received an answer. 2

FAA considers airport safety a top priority. The FAA rule "Safety Management System for Certificated Airports" (AC 150/5200-37, 10/07/2010) will require: "...to establish a safety management system (SMS) for its entire airfield environment (including movement and non-movement areas) to improve safety at airports...An SMS is a formalized approach to managing safety by developing an organization-wide safety policy, developing formal methods of identifying hazards, analyzing and mitigating risk, developing methods for ensuring continuous safety improvement, and creating organization-wide safety promotion strategies." It requires "...to submit an implementation plan and implement an SMS within timeframes commensurate with its class of Airport Operating Certificate (AOC)." 3

It appears that the EA draft significantly underestimates the wildlife hazard migration at the existing airport site. I observed and documented migration of Canada geese (about two-two and a half thousand birds) directly above this airport site and geese nesting near the airport every year since I moved here. 4

It appears that the EA draft underestimates the noise and light pollution at the airport sites because the areas selected for evaluation (just around runways) are very small. 5

It appears that the EA draft significantly underestimates the difficulties and does not demonstrate technical feasibility of rerouting the Six Mile creek at the existing site. 6

Thank you for your consideration.

Sincerely,

Igor Sergeev

Igor Sergeev

cc:
Gregory Albjerg, Vice President, HNTB Corporation
Jackie Lanning, City Engineer, City of Brookings
Patricia L. Dressler, Environmental Protection Specialist, Bismarck Airports District Office

Responses to Igor Sergeev Comments

1. See response to your oral comment on safety on page B-2.
2. The slight reorientation of the crosswind runway would require reconstruction of the entire runway compared to the proposed shift of 333 feet, which will meet setback standards.
3. An SMS is to be required for airports holding an Airport Operating Certificate issued under 14 CFR Part 139. BKX is not a holder of a Part 139 certificate; therefore an SMS is not required.
4. The BKX Alternative is selected as the preferred alternative. See discussion in Section 2.3.1.The wildlife mitigation plans focused on minimizing hazards located within 5 miles of each site, including features that could potentially attract or influence hazardous migratory birds. See Appendix A-39.
5. The area containing noise-sensitive land uses is defined by the DNL 65 contour, which is around the runway ends and confined to the airport property, as shown in Figures 18, 19 and 20. See Section 4.11 for discussion of light emissions.
6. It is unclear as to the technical feasibility you are referring to. See Appendix A-99 for the preliminary feasibility analysis. The reroute will require approval by the U.S. Army Corps of Engineers.

(some of my emails bounced last night to the Brookings City addresses)
Anyway you guys could add some disk space over there?

---- Original Message ----
From: George & Marsha Skon
To: tsreed@brookings.net ; mbartley@mac.com ; tbezdichek@yahoo.com ; mjmac@brookings.net ; kubal3@mchsi.com ; jael@jael.com ; keithcorbett52@gmail.com ; Shari Thornes ; JWeldon@cityofbrookings.org ; MWilson@cityofbrookings.org ; JLanning@cityofbrookings.org
Cc: George Skon
Sent: Sunday, October 10, 2010 10:48 PM
Subject: Airport Ea questions

I should introduce myself, I'm George Skon from Trenton Township (where the new airport may go). What else would a guy do on a Sunday night but read through the Environmental Assessment?

So, I've started going through the Ea draft. What am I missing here? For the last 10 years all I've heard about is this Rpz and how the city is not complying with it. In the new plan whether it is on the existing airport or offsite, they change the aproach/ILS around to the west. My question, why didn't they just do that to begin with? Or change it now and that will fix 90% of the Rpz issues? I have attached 2 Scans showing this.

1) how it is now (added because of file size email limitations
http://cityofbrookings.org/documents/EA_Pages263_267.pdf fig 18 1
2) the ILS reversed (pasting in white the same size on different ends)(note this alone would have save the city 2 lawsuites and it paying 479k for a 80k lot) see Brookings city minutes Feb 14, 2006
3) new plan with ILS reversed (notice they didn't hardly change the start of the runway on the east side because of my point on item 2)((I couldn't fit on email, please go to link
http://www.cityofbrookings.org/documents/EA_Pages268_270.pdf, figure 21))

The Faa sums up the issues in 3 areas:

1) Rpz not in compliance (see above, bad dream or what?)
2) The two runways intersecting and confusing the pilots (I'm guessing this was funded and ok'd by the Faa at one time in the 1st place. Now they are saying it is not right. honestly, can't the runways be labeled so no pilot error can happen) 2
3) Runway length (according to their own statement in the Ea draft, section 1.2.2, paragraph 5, "it must be shown that the aircraft family has or will soon have at least 500 operations a year at that airport". I can only call that "creative" at best the way they are calculating it. Tthey are going out to 2021 and barely reaching the 500. In addition they are assuming the economy will remain strong the next decade, and are totally disregarding the trend to tele/video conference. either way, 2021 is not soon by any standard. (see http://www.cityofbrookings.org/documents/EA_Pages1_100.pdf page 5). keep in mind the Ea was originally supposed to be finished in 2008, it is very close to 2011, I don't trust their estimates at all, do you? 3

I realize in the back of your minds, one of the thoughts you most likely have had is "why is he even bringing this up now" we're just about ready to make a final decision. I'm sorry, I don't look at it this way, your final decision will affect the rest of my life. I WILL be adversly affected by an airport moving next to my house, so the end of your decision is just the start of my problems. If you don't open anything else, please open this (from master plan 7-3). Another obvious answer is trust, the Faa has been, and are presently all over the map on this. According to the master plan 7-3 we are already 3 years behind and havent even started, they are making statements and cost estimates that are out 2 decades before the airport is even completed. They have consistantly blamed the City for things that could have been worked around in the past. Please just look at the attachements. Thank you for taking the time. 4

George Skon
47456 219th st
Brookings, Sd 57006
605 693 7566

Responses to George & Marsha Skon October 10, 2010 Comments

1. The need is to fix all of the incompatibility issues in the RPZs-.
2. The runways are labeled; that does not eliminate the confusion for all pilots
3. The planning horizon for the EA is 2025.
4. Comments noted. The BKX Alternative is selected as the preferred alternative. See discussion in Section 2.3.1.

From: George & Marsha Skon [mailto:geomar@itctel.com]
Sent: Thursday, October 28, 2010 8:18 PM
To: Michael Wilson
Subject: airport questions

Mike,

Could I get a rough estimate of how many vehicles go to the airport a day on average?
plane owners, students, fuel deliverys, snow removal, construction, other deliverys, CAP, employees, any other things I'm probably not aware of.

thank you

Responses to George & Marsha Skon October 29, 2010 Comments

1. There are very few employees at the airport (the City has 2). Based on the forecast number of average daily takeoffs in 2025 (and allowing for the touch-and-go training flights), City employees, FBO activity, deliveries, etc., it is estimated that the number that will go to the airport on an average day in 2025 is less than 40 vehicles.

Bob J. Babcock, P.E.
Helms & Associates
221 Brown County Hwy. #19
P.O. Box 111
Aberdeen, SD. 57402

Dear Mr. Babcock,

Enclosed are the maps showing the tile lines on the proposed New Airport Alternative that I had mentioned at the Brookings Airport meeting on 11-8-10. In the one map I have outlined the property lines for the New Airport Alternative based on the latest information I have. It should be noted that there is additional tiling on the NE ¼ of section 20, additional tiling on the NW ¼ of 27, and also the NW ¼ and the SW ¼ of section 28 are now also tiled. This tiling was done by a different Company and at a later date so I don't have that information on my maps. It would be very damaging and costly to the surrounding tile lines if an airport was built in the middle of this drainage project. I believe that I have already told you that this project involved 15 quarters of land and at least eight land owners.

If you have any questions on this issue, or others, please feel free to contact me.

Thank you,

Kevin Telkamp
21670 473rd Ave.
Brookings, SD 57006

(605) 693-4102

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NOV 15 2010
HELMS & ASSOCIATES

Responses to Kevin Telkamp Comments

1. Thank you for this information. The BKX Alternative is selected as the preferred alternative. See discussion in Section 2.3.1.

EA Draft comments 11/15/2010

I first want to thank Patricia L. Dressler and the FAA for putting together this one source document on the Ea draft. Much time and attention to detail went into this the EA Draft.

Purpose & Need of comments

I am adamantly opposed to an airport in Trenton Township. Trenton Township residents in an unanimous vote, also voted against the relocation of the Brookings City Airport to the Rural Trenton Township area (see A-108 in the EA Draft). This will change the whole purpose of why we purchased our acreage by changing the setting for which we moved here.

I strongly believe it would be a bad decision to place a new airport in Trenton Township, not only for my own selfish reasons but it is wrong for Trenton Township, Brookings County, Brookings City, the State of South Dakota, and the United States of America. As a country we are 14 trillion dollars in debt. Our country cannot continue to fund projects like this, with federal and state deficits continuing to grow at an unprecedented rate. 1

High-level points on why an airport shouldn't be relocated to Trenton Township

-(For additional points, See table 1 below)
-Cost 32 million (Trenton), versus 17 million (expand existing BKX)
-Unstable/Unpredictable economy
-Troubled history at existing airport
-14 Trillion dollar National Debt, 100 Million South Dakota shortfall
-FAA states "competing for funding", 19 years of competing, affected by many variables
-More financial competition for Brookings City funds for Utilities, drainage, multiplex, schools, recreation, railroad, etc.
-19 years before completed (Trenton), versus 10 (expand existing BKX) 2
-Deviates from Brookings County comprehensive plan (agriculture)
-Unanimously opposed by Trenton Township, and additional neighbors
-Will take/adversely affect several farmer's land
-Will adversely affect gravel pits, feedlot, local residents with zoning, noise, lights
-Prime farmland will be taken out of production
-Adversely affects wildlife in the area
-An Airport will not fit in with current Rural setting environment
-Fire and Police Department will have a much longer response time
-Airport security will be more challenging and may introduce risks to the airport system
-Close proximity to Sioux Falls regional airport will not be justifiable (45 minutes)

Our History

We were residents of the City of Brookings from 1988 to 2005, moving out to Trenton Township in 2005. In picking an area to raise our family, many factors went into consideration, the most important being a good distance from noise. We are approximately 8 miles away from the Railroad, 2 miles from the interstate, 15 miles from the airport (and not in the flight path), not located in a flood plain, of an adequate height to avoid any future flooding, and far from any major power lines. Of course cost and availability was a factor, but having a "south" location enabled avoiding many of the issues with traffic from the North part of Brookings (Interstate 29, SDSU, Hiway 14, and the railroad). We have fantastic neighbors, and are busy with gardening, and raising many different animals. 3

This whole process has frustrated me and I wish it had never affected us. Yet, at the same time (more on the local level) I appreciate the dedication, effort, patience, among many other qualities of the Mayor, City manager, councilors and staff at Brookings City. In fact, since we have been forced into this situation, more than half of the elected officials have changed.

(Comments are stated per paragraph and section) 4
(Note: Corn is used as an example, I realize that generally soybeans are rotated with corn, please allow for that in the following statements)
(The questions are "rhetorical", it would be better if there were more information at times, but there is a lot of information that is not correct, at this point though another 3 years of waiting is not what I'm after)

-1st paragraph section 1.1

"As a result, the FAA notified the City that it is in noncompliance with its contractual obligations in the receipt of federal funds for improvements to BKX (see correspondence between the FAA and the City beginning at Appendix A-1"

Comment: I think an airport will be better served and managed having it in Brookings City. There is an extensive and very confusing history that I would rather not get into in this document. But the question is, "Will Brookings City be able to properly manage (according to FAA standards/guidelines/agreements) a remote airport when considering the issues existing at the current "local" airport.? Adding more government entities, distance, financial strain, people, and more "unknowns", will only add to the complicated problems that exist with managing an airport. 5

-2nd paragraph, section 1.1

"The first standards-related problem is that the primary runway length does not accommodate the current and anticipated near future fleet mix at the airport." 6

Comment: I don't agree with this as a need for expanding an airport that is within 50 miles of the Sioux Falls Regional Airport.

-4th paragraph, section 1.1

"continue providing the Brookings region with a safe and reliable access point to the nation's air traffic system" 7

Comment: If a new airport is built in Trenton Township there are far more unknowns that will introduce more public safety concerns. At this point the safety record at the existing Brookings airport is very good.

-2nd paragraph, 1.2.2

"These are the best minimums provided by the type of system Brookings uses and therefore allow the airport to stay open during the widest range of weather conditions" 8

Comment: If the airport is built in Trenton, it will most likely be open less due to weather. Getting equipment and personnel out during inclement weather (I-29 closed) will be more difficult than in Brookings City.

-5th paragraph, section 1.2.2

"In order to base runway lengths on an aircraft family at a given airport, it must be shown that the aircraft family has or will soon have at least 500 operations a year at that airport"

Comment: I strongly disagree with the calculations and projections presented here.
It is projected out to 2021 (11 years) when we are basing it off of 9 years of data but throwing out the last 3 years because of a recession that no one can predict the length of. 9

-6th paragraph, section 1.2.2

"difference in runway end elevations is similar to the 21 feet existing today (the FAA requires adding 10 feet of runway length for every 1 foot difference in runway end elevation change). Therefore, the project should provide room for a 6,000 foot runway."

Comment: Elevation at BKX airport is 1601 at NW, and 1626 at SE (difference of 25 feet). Trenton Township will be 1618 at NW and 1652 at SE (difference of 34 feet). This could add an additional 340 feet of runway to the cost. Also the land that the airport will not own (at the end of runway) will be at a higher elevation than the runway, (up to 1670). (Google Earth). We are less than 20 miles from Buffalo ridge (wind generation), there will be higher winds in this area. 10

-see A-39, referred to in section 1.2.4

Comment: The feedlot could be shut down (Trenton). This is their lively hoods we're talking about, and it has been in operation for many years. The gravel pit owner needs to change how they operate, no sandbars? How will that be monitored and enforced? A local property owner has stated that the geese have greatly increased in that area since the pits have been expanded.
I respectfully disagree with the rural bird assessment. I believe the study was done correctly the year they did it, but the previous year in the fields and river south of the proposed Trenton airport there were many 1,000's of birds in flocks of different types moving through the area. (see below an excerpt that was sent to Mr. Pugh, with USDA-APHIS-Wildlife Services) 11

"There was a minimum of 1000 birds and up to 10-20,000 birds that often would look like a giant swarm of bees from a distance. On many occasions south of our property we would see Snow Geese, Canadian Geese, Ducks, Pelicans, and many other species. We lived in the City of Brookings (20 years) and although did see some flocks, but never, ever to the extent of these out here"

This will be a serious safety concern, liability and hazard. If one looks at Brookings City and the amount of activity, noise & movement, concrete/and asphalt, there is far less of a risk compared to farmland. They also bring up the trees next to the BKX airport as an attractant hazard. We bought this place because of the trees surrounding our house, and do not want to lose them.

-paragraph 5, section 1.6

"The proposed action will include the issuance of environmental approval to establish eligibility of the Airport to compete for Federal funding of the development"

Comment: "to compete for Federal funding". While deciding this one needs to ask; will the federal funds be available to support a new airport into the future? If a new airport is started, and the existing airport needs to be maintained and funding is stopped or delayed due to other governmental priorities, disagreements, laws, lawsuits, political changes, etc,
how will two airports be maintained? Note the word competing, Sioux Falls is competing for lower air fares. Wouldn't this money be better spent there? Additionally the projected completion for the Trenton township airport was 2026 and that was 3 years ago. (Reference Airport master plan, page 7-3, see below) 12

-line item 7, section 1.6.2

"Formal release of existing airport property"

Comment: This will be an extended amount of time to have 2 airports and tying up the land, tax base, and resources. 13

See below

-1st parargraph, section 2.1.1

"Because this alternative would not address these issues, the City assumes that it may lose eligibility for future FAA funding and may be required to repay some or all of the grants that it has received in the last 20 years. The City also assumes some or all of the currently published aircraft approaches to BKX may be decommissioned."

Comment: This sounds more like Brookings City is being held hostage to me. It seems like we are not hearing the full story. What would the City owe? Shouldn't this be a lawsuit? If the city didn't fulfill its obligations shouldn't they be held accountable for this? Why would you then give them up to 10 million dollars for a new airport? 14
Can you see why I don't want to be a neighbor to this? I've been listening to this "saga" for the last 10 years!

-2nd paragraph, section 2.1.2

"This alternative would require the acquisition of approximately 122 acres of property. Included within the acquisition is one residence."

Comment: There is a statement that this has been completed already. 15
"This residence was put up for sale in 2009 and was acquired by the City. (section 2.1.2, note 2)"

-4th paragraph, section 2.1.2 : appendix 1-101 (US Corps of Engineers)

"Based on the currently available topography, this excavation would not require any additional land acquisition, but could be done entirely on the current airport property. It appears that the re-routing would not cause a significant change in channel gradient, and that a smoother flow line and a more efficient channel cross-section can be used to prevent an increase in flood stage." 16

Comment: This could be a major advantage to people along this flood zone. (Rosewood Trailer Park for instance that was flooded so severely in 2010 that it is closing).

Table 1

Item	BKX Expansion	Trenton Township (new)	Notes
Cost	17.9 million	32 million. See side note.	Estimate of sale of existing airport land (3.7-8.9m) not included because land preparation, including utility costs, removing existing runway and taxi-ways, cost (interest) of owning two separate parcels, for the airport for 15+ years while construction, were not included with this figure. The land values are under-estimated and will cost more.
Cost Variables	Many features (fences, hangers, buildings etc) will remain or be added to, saving costs. Some new variables with expansion are possible.	More landowners, more possible hidden costs with a brand new site. Re-use of existing equipment and buildings could add additional unexpected costs (ILS, moving hangers, or even new hangers could be needed, etc)	
Lost Revenue	Approximately 122 acres of grazing land	746 prime agriculture acres of Corn/soybean production, Additional affects on Ethanol, gasoline, water, and air. (Approximate losses per yr. include) Corn production > $600,000 lost Add Economy benefit> unknown Ethanol > 344,000 gallons lost Gasoline> 17,642 barrels oil needed Flooding> 350m gallons more water Oxygen> 46,000 people for a year (see below for figures)	2nd paragraph,section 4.6.2
Date of completion	2020 2017+(3 year delay) (Master plan page 7-20)	2029 2026+(3 year delay) (Master Plan, page 7-3)	See table 3
Variables (Delay completion)	See Cost variables	See Cost variables . Purchase of land, archeological study, historical study, (4.10.2.2)(4.10.3)(A-143), votes or lawsuits.	
Land Acquisition	122 Acre, 1 owner (mostly wetlands), some right-a-ways needed	834+ acres. 15 separate parcels, 10 land owners and 1 trust. Local land owners within 2-5 miles will be affected. See side note.	Sections 4.15.1.2, 4.15.1.3
Land Variables	Adjoins existing Brookings City airport.	There would be a gap between Brookings City and the "Annexed" Trenton Township Airport. Neighboring people will be affected causing limits to existing businesses, Gravel pits, Feedlots, Family farms, future wind power and other land uses. In addition archeology finds, Indian finds, springs, multiple entities, city, Brookings/Moody county, Trenton township could all bring variables that would change the cost and price of the land.	
Commuting	1-2 miles	15 miles (see side note)	Ea draft, A-61, distance from Urban area. My estimate is 600-1000 site

			visits per month to existing airport.
Road closures	2 roads, Approximately 6,820 feet total. Will affect farmers.	3 roads, Approximately 7,400 feet total. NRCS states "prime land", with amount of crops, this could cause traffic/safety issues. Will affect farmers.	4.15.1.2
Safety	16 bird strikes. See side note	Many unknowns from an airplane safety perspective. Additionally fire department & ambulance service will be delayed or impossible with weather conditions. Airport security at remote location will be a potential issue.	16 strikes out of 248,515 aircraft operations, for 9 years (2001-2009). 4th paragraph (and table), section 4.3.1
Drainage	May help with 6 mile creek drainage	More research needed. Replacing crops may add an additional 350,000,000 gallons of water that will cause possible flooding and issues to neighbors.	
Government	Existing County/City relationship	Additional County issues could crop up (The Trenton Airport deviates from the Brookings County Comprehensive plan. See side note. Additionally Trenton Township will be involved, as well as Brookings and Moody county will be within the 10k/5 mile Wildlife attractant zone. From a landowner standpoint there would be an additional 3 entities of government to work with.	4.3.3 states "The land is designated as "Areas of Development Stability" in the Brookings County Comprehensive Plan. The majority of land in the County falling under this designation is agricultural and the Plan states that the primary focus of this designation should remain agricultural
Utilities	Same as now, no change required. As Airport grows and expands, utilities are available and local.	Less dependable, more costly, less control. As Airport grows and expands, utilities will not be as available and accessible, dependable, and will be more costly at Trenton. Future costs may have to include delivering Brookings City utilities to Trenton Township.	
Wildlife Attractants	Biosolids drying beds are being moved. New fence has been installed around perimeter of airport.) Eq basin changes will improve existing hazards. Less crops in area, 107 crops, 167 for hay (these are being eliminated because it is on airport property).	Although studies have been done, actual wildlife attractant issues remain unknown. Since 746 prime crop producing acres will be taken out of production, the remaining area will be in production causing potential issues with wildlife attractants.	section 4.6.1.
Attractants (10k ft or 5 miles)	Less issues, BKX has less attractants within 10k feet, Hiway 14, railroad, Volga, and less productive cropland in the surrounding area	Agriculture (corn and beans), growing gravel pits. Additional zoning requirements will be imposed on local land owners.	
Noise	Background noise includes, interstates, state hiways, trains, general traffic, grain elevators, sporting events, neighborhood chatter (dogs, music, etc). This means the existing area has a	Very little ambient "background" noise. Generally controlled by the owner. Unusual exceptions include, some local traffic, tractors and farm equipment (6-10 hours a year). And guineas. See ambient noise chart below.	

	much higher ambient noise where a airplane will be less noticeable.		
Visual issues	Will improve because the ILs will change from the SE to the NW, which means the lights and approach will be over less population.	Will introduce issues with adjoining neighbors. See side note.	4th paragraph, section 4.11.3 states "introducing design elements" which are not addressed in the final cost of the project
Historic sites	1 in close proximity	5 in close proximity	
Archeological sites	Completed	Surveys needed, not complete (4.10.2.2)	
Farmland (NRCS section 4.6, A-61)	83	181	Impact on farmland Less than 160, no impact More than 160, possible impact
Land Value (NRCS section 4.6, A-61))	44	86	Out of 100 possible
Construction (Dirt work)	200-300k cu yards 200-250k tons asphalt	450-550k cu yards 400-500k tons asphalt	
Airport Security	I have not heard of any issues. Local police patrol as well as many citizens are in the area. Since it is next to a population center that will deter possible security issues	Brookings City law enforcement will have to drive 15 miles one way to check the Trenton Airport. They could contract to the Brookings County Sherriff at an extra expense. Being in a remote rural setting could introduce elements that would make the nations airports less secure.	
Logic	By having the ability to grow, Brookings City leverages itself to use FAA (Federal and State) funding prudently. At any stage during the process, the airport has many local options available if funding were delayed, or stopped. It is also conveniently located by the population center. Additionally, there will be less concern from the general population about being closer to Sioux Falls regional airport, and therefore the argument for an airport not being needed at all, is less likely.	Although many studies have been done during the last 3 years, a new airport to some degree is "re-inventing the wheel". There will be many unknown environmental, wildlife, safety, construction, financial, zoning, archeological and historical, and land acquisition issues that could crop up and delay the project. The general public does not support putting a new airport within a 45 minute drive of a regional airport, while moving the local airport 15 minutes away from the people who use it the most. At any time during the building process, if funds are stopped due to any number of reasons, Brookings City will have 2 airports to maintain, manage, and construct for many years, while taking out of production twice as much land as it originally had in place.	

-1st paragraph, section 2.1.3

"The northwest portion of Area #5 was chosen because the needed facilities could be sited without requiring the relocation of any homes"

Comment: The Airport at Trenton will be too close to many of the farms and homes. With the 10,000 ft or 5 mile Hazardous wildlife attractant rules (5th paragraph, section 4.3) I believe they are cutting corners and not purchasing enough land. The burden of the airport will be shifted to local landowners. If one looks at the proposed layout, it seems to zigzag around surrounding neighbors. 17

-paragraph 1, section 2.1.3

"It is approximately 9 miles and a 14-minute drive from the City center."

Comment: I don't agree, either does the Farmland conversion impact rating (A-61). It states "Distance From Urban Built-up Area" is 15 miles, which would work out to about 18-20 minutes one way. 18

-6th paragraph, section 2.1.3

"The resale value of the airport land is estimated between $3.7 to $8.9 million, according to the City planner. This does not include the cost of land preparation. This would offset a portion of the cost of the new airport site". There is a note that says "(site prep not included)"

Comment: Site prep, decommissioning of airport (removal of runways and taxi-ways, installation of utilities, roads, DRAINAGE, must be considered in these figures. If Brookings City is going to be in the real estate business and use income figures, they must also show EXPENSES. Note during a Brookings City building meeting (6/2008) it was brought up that because of the way things were staged for selling the land at the existing airport, it would have to be completely decommissioned before land could be sold and the utilities could be installed. This means that both pieces of land would be tied up until that occurred. 19

-9th paragraph, section 2.1.3

"The primary runway would be constructed to a length of approximately 6,000 feet (assuming the same gradient as the existing runway). Sufficient land would be acquired to allow for airport control of all RPZs."

Comment: The elevations and gradients will not be the same at Trenton. Elevation at BKX airport is 1601 at NW, and 1626 at SE (difference of 25 feet). Trenton Township will be 1618 at NW and 1652 at SE (difference of 34 feet). Land that the airport will not own will be at a higher elevation past the end of the runway. (up to 1670). 20

-2nd paragraph, section 2.2.2

"a desire to maintain reasonable separation from the Watertown Airport to the north"

Comment: Although placing the airport in Trenton will fix the Watertown Airport proximity concern, it introduces a much larger concern with how close it will be located to the Sioux Falls Regional Airport. 21

50 miles (Watertown Airport to Brookings Airport)
56 miles (Existing Brookings Airport to Sioux Falls Regional)
50 miles (Proposed Trenton Airport to Sioux Falls Regional)

(MapQuest)
-3rd paragraph, section 2.2.2

"Once the overall search area was defined, individual areas capable of accommodating an airport were identified based on their location within approximately a 10-minute drive time and their ability to accommodate a full airfield (approximately 1,000 acres) while limiting impact on wetlands and floodplains."

Comments: It will be more than 10 minutes. According to the Farmland conversion impact rating (A-61), it states "Distance From Urban Built-up Area" is 15 miles, which would work out to about 18-20 minutes. The local farmers are bearing the cost of not buying the extra acres (1000-834=166). It is being designed to "encroach" on next door landowners to save money. 22

- 22nd paragraph (area 6), section 2.2.2

"either aircraft approaches or aircraft circling patters would be over the city. Current development trends in the area indicate development encroachment into the site." (referring to air traffic over Volga)

Comment: This is exactly my point. We don't want low flying aircraft over our house either; it is noisy and a safety risk. The higher number of airplanes, mean we are at a higher risk. Please give us the same respect that was given to Volga. Note, if the aircraft are at 65db near the airfield won't it be that high if they fly over houses and farms? 23

-1st paragraph, section 3.1.2

"The existing Airport is entirely within City limits."

Comment: the BKX expansion will adjoin Brookings City. The BKX offsite alternative will leave a "gap". This will cause issues with utilities and jurisdiction. (Law enforcement, zoning) 24

-1st paragraph, section 3.2.3

"There are no known past, present and reasonably foreseeable future actions that would have cumulative effects with the effects of the New Airport Alternative."

Comment: 4.3.3 states "The land is designated as "Areas of Development Stability" in the Brookings County Comprehensive Plan. The majority of land in the county falling under this designation is agricultural and the Plan states that the primary focus of this designation should remain agricultural. In the wildlife assessment they suggest closing the gravel pit next to it, and working with the feedlot owners. There will be future possible issues with pheasants, private wind towers, and definitely agriculture. With the proximity of Valero (Ethanol plant) and low cost of transporting corn to them, is a very good economical incentive for being "pro" agriculture. To say that the airport is needed to allow Brookings city to develop and then say nothing will happen near the airport is a false statement. 25

-7th paragraph, section 4.3

"recommends a separation distance of 10,000 feet between the airport's Air Operations Area (AOA) and land uses that attract wildlife hazardous to airport operations (landfills, wastewater treatment facilities, wetlands, floodplains, etc.)."

Comment: cropland (corn, soybeans, hay) is an attractant. If attractants are a concern, Brookings City needs to allow for that in the planning and purchase for the airport. Without doing that, the burden will shift to the adjoining landowners. 26

-7th paragraph, section 4.3

"land uses that attract wildlife hazardous to airport operations (landfills, wastewater treatment facilities, wetlands, floodplains, etc.)."

Comments: Farmland (crops) attract seagulls. Yet, it is proposed the owners of the gravel pit (which the city doesn't own) take measures to prevent the seagulls. This in turn will end up being the farmer's responsibility with crops as well. It is also mentioned that the feedlot may need to change their procedures. If the Brookings area has large numbers of wildlife traveling through it at different times of the season, wouldn't it make sense to keep them away from food sources like the crop land that surrounds the airport? 27

-4th paragraph (and table), section 4.3.1

"BKX had 1.0 or greater strikes for every 10,000 flights (operations) and an average of 0.64 strikes per 10,000 operations"

Paraphrasing "Brookings had 16 bird strikes out of 248,515 aircraft operations, from the 9 years of the time period from 2001-2009.

Comment: Another great point here. We know the data from the past: 16 (non-fatal) strikes in just under a decade. My point is, Brookings city has an excellent safety record as it stands, with a known setup that with the suggestions of the FAA will only improve the existing conditions. Compare these statistics to the unknowns of Trenton Township. One can study this for years, but there are variables that are out there that a study won't catch. Just by design, with the amount of activity around Brookings City, wildlife will generally not be attracted to it, or at least we would understand the risks. The existing site has big city, railroad, state highways, less crops, all of which cause a disturbance/detractant for wildlife. 28

-5th paragraph, section 4.3.1

"The DNL 65 contour lies entirely within the airport property"

Comment: I disagree. According to the map the DNL 65 is approximately 200-400 feet wide from the runway, and up to 600-700 at the end of the runway. To say that the DNL 65 lies entirely on airport property is wrong, that would mean there would NEVER be a plane that flew within that distance over a house or person? What about the comment about stage two aircraft not being used in the analysis (paragraph 3, section 4.13)? This will definitely adversely affect the sound quality in our rural area. 29

1st paragraph, section 4.3.3

"Land purchased to allow the expansion would be annexed into the City limits and would be included in future land use plans and zoning ordinances and would adhere to the City's current Code of Ordinances Buildings and Building Regulations regarding the construction of structures within two miles from the airport boundary (included at Appendix A-109)." 30

Comments: This means the versatility and value of my property just went down. I protest this. This is wrong. It limits tower size for amateur radio, wind power and income from live stock.

-point G, paragraph 6, section 4.3.3

"Several gravel pits are located north of the New Airport Alternative Site. The City would take practical steps to work with the gravel pit owners to minimize the creation of sandbars and shallow areas in these pits" 31

Comment: This doesn't seem practical. The gravel pit next to the potential Trenton Township airport all the way up to State Hiway 14 will be an ongoing "becoming a lake" process. We talk about development; this is an industrial/recreation use in progress. The gravel pits are building roads and infrastructure for buildings, and will some day be a recreational draw to Brookings. To introduce laws and ordinances on an ongoing excavation process that will continue and hopefully continue for many years to come is unrealistic. Again, the existing airport has had no known impact from these gravel pits, but the new airport would be within a half of mile, directly off the main runway approach, and growth could continue south past highway 324. 31 CONT.

-2nd paragraph, section 4.4

"Construction impacts are short-term, occurring only during the period when construction personnel and equipment are operating at the BKX expansion or the new Airport alternative.

Comment: I strongly disagree with this statement. Short term? According to the master plan section 7-3 the construction of the airport will go till 2029 (with the delay of the last 3 years included, but this does not including any additional future delays). Also construction of airport will be ongoing (fence just put in at existing airport). 32

-2nd paragraph, section 4.4

"Since the alternative sites are already either farmed, used for aircraft operations or both, the noise of construction equipment will be very similar to the large farm tractors and maintenance equipment currently used to work the ground in the area"

Comment: I disagree, farming in the fields (directly adjacent to our house) takes place for a very limited/short time period in spring and fall. This airport project will be a major ongoing (2 decade long) experience that would be in addition to farming. Farmers don't typically haul 550k cu yards of dirt, or 500 tons of asphalt to their fields over a two decade period. This will adversely affect us and the local farmers in the area. 33

-3rd paragraph, section 4.4

"potential congestion in the vicinity of construction sites"

Comment: With traffic congestion will come alternate routes. I have serious concerns about construction traffic with safety, noise, dust, safety of wildlife/farm life, etc that WILL happen with congestion and reroutes. Farmers will also be forced to use Hiway 324 which will cause safety issues. 34

-2nd paragraph, section 4.4

"Construction noise is very transient in nature and dependant on the type of work. The equipment that produces it is limited to the construction area on airport or to the haul routes. This noise is mitigated by the fact that construction is predominantly performed during daylight hours when people are much less sensitive to noise"

Comment: With today's work force (3M, Larson's, Rainbow, Daktronics, etc) shift work is necessary, and daylight hours may be "sleeping" or "quiet" hours for some, this includes me. So I also disagree with the statement about "hours when people are much less sensitive to noise". We only hear tractors maybe about 6-12 hours a year. That is total for plowing, planting and harvest. When they are working it is usually finished that day or night, please refer to previous comments about ongoing construction, safety, re-routing of traffic, dirt moving, and 15-20 year construction timelines. Please understand that noise carries further in the country with its open spaces, compared to the buildings and trees in the city. 35

-1st paragraph, section 4.5

"The act requires that no project be approved unless there is no feasible and prudent alternative to using that land and planning for the project includes all possible measures to minimize harm resulting from the use of the land." (referring to taking public land) 36

Comment: I would ask that the private land owners be treated with the same courtesy.

-2nd paragraph, section 4.5

"In terms of noise, the land use compatibility guidelines in 14 CFR Part 150 may be used to determine if there would be a constructive use when the guidelines "are relevant to the value, significance, and enjoyment of the 4(f) lands in question. The use of 14 CFR Part 150 guidelines may not be appropriate when a 4(f) property is "located in a quiet setting and the setting is a generally recognized feature or attribute of the site's significance."" (referring to taking public land)

Comment: Again, I would ask that the private land owners be treated with the same courtesy. Below are samples of daytime "ambient" noise level readings taken during the day on a RadioShack 33-2055 meter for one minute, average or low/high are listed.

Table 2

Site/Area	Db(c)	Db(a)
Trenton Township (Skon's house)	Low-51	Low
Brookings (south 22nd)	80	60
Brookings (Orchard)	80	60
Brookings (Orchard with Train)	90	70
Brookings (6th street)	75-80	55-70
Brookings (downtown)	70-80	64

37

Turbo-fan aircraft at takeoff power at 200 ft . . .	118 dB
Jet flyover at 1000 feet . . .	103 dB
Propeller plane flyover at 1000 ft . . .	88 dB
High urban ambient sound . . .	80 dB
Lowest limit of urban ambient sound . . .	40 dB
Noticeable Change	+ 3 dB
Twice as loud	+ 10dB
Four times as loud	+ 20dB

http://www.rcaanews.org/noiselev.htm
http://www.gcaudio.com/resources/howtos/loudness.html

-1st paragraph, section 4.6.1

"In 2008 the airport property had 107 acres used in the production of crops and 167 acres of hay. The City is in the process of eliminating the production of crops due to its attraction of wildlife hazardous to aircraft operations" 38

Comment: If the airport is moved to Trenton Township there are many more crops in the area than with the existing airport. If hay or tall grass on the airport is a negative, massive food sources on the other side of the fence are sure to cause issues.

-2nd paragraph, section 4.6.2

"It would convert approximately 833.7 acres of farmland,"

Comment: I realize it says approximately, but the costs list 865 acres (paragraph 8, section 2.1.3, table) and the NRCS states 833.7, yet in another area it states 1,000 acres. In my opinion the true impact will be higher than all of these estimates. Why aren't the acres "nailed down"? This could greatly affect the true cost of the airport. The land surrounding the airport will also be impacted by this. I believe these numbers are low, when one looks at the impact on surrounding farms. 39

-2nd paragraph, section 4.6.2 : Also A-61

"The total score of 181 is less than 200 and the impact is therefore not considered a significant impact by NRCS"

Comment: Very important to see A-61 document.
Does the site contain prime, unique, statewide or local important farmland? Yes
Average Farm Size 435 acre (this means it is the equivalent of taking 1.5 to 2 farms away from people)
Distance From Urban Built-up Area (15 miles)
Relative Value Of Farmland (From Part V) (44 versus 86 on 100 scale) that means the value is twice as much in my opinion
Was A Local Site Assessment Used? NO

Without a site visit I believe we missed: 40
-proximity to ethanol plant for corn
-wind power potential
-proximity of wind power to City for Transmission lines
-no notes were made on land that was tiled
-grazing areas
-proximity of farmed land and farming operations to the site
-direct comparison between the possible Trenton Site and the existing BKX airport

-2nd paragraph, section 4.6.2

"The total score of 181 is less than 200 and the impact is therefore not considered a significant impact by NRCS"

Comment: I strongly disagree with this. More data should be considered for the NRCS, as listed below..

-It will take 17,642 Barrels of crude oil to replace the ethanol produced by 834 acres of corn. (834 acres of corn produce 344,025 gallons of ethanol.

Cost to deliver to ethanol plant is greatly reduced because of the proximity of the plant to the land. We need to consider politicians and other departments are calling for higher production of ethanol, and the threat to our national security by depending on foreign oil. This would seem like the score of 181 is rather low. 41

Corn calculation:

From Web:
42 gallon barrel of oil yields 19.5 gallons of gas
1 metric ton of shelled corn yields 110 gallon of ethanol (1 metric ton corn = 40 bushels)
834 acre * 150 bushels = 125,100 bushels / 40 = 3,128 metric tons * 110 gallon ethanol =

344,025 gallons of ethanol
344,025 gallons ethanol / 19.5 gallons of gas derived for a barrel = 17,642 barrels of crude it displaces

Oxygen displacement:

-By taking away corn production of 834 acres of land, it will displace enough oxygen for approximately 46,000 peoples use in a full year.

1 hectare=2.47 acre
834 acre = 338 hectare
Keep 11 summer days constant
834 acres / 2.47 hectare per acre = 338 hectare. 338 hectare * 325 people = 109,850 people
338 hectare / 1,000,000 hectare * 10,000,000 people = 3,380 people for 11 days
5 months = 150 days / 11 = 13.61 * 3,380 = 46,000 (this means that in a growing season of corn (5 months) it supplies the oxygen of 46,000 people for a year

http://www.metric-conversions.org/area/hectares-to-acres.htm
http://www.ontariocorn.org/envt/envphoto.html

41 CONT.

Water used by Corn:

-834 acres of corn will use approximately 375,000,000 gallons in a year. (flooding/tile issues)

834 acre * 150 bushel = 125,100 bushels / 200 = 625 * 600,000 gallons = 375,000,000 gallons of water. This water is normally evaporated. If corn is not there, the water will affect adjoining landowners. Flooding and extra water is not welcome on prime farmland.

A 200-bushel corn crop uses about 600,000 gallons of water — nearly 3,000 gallons per bushel."
http://southeastfarmpress.com/it-takes-lot-water-grow-corn-crop

-4th paragraph, section 4.6.2

"Any future actions that could convert farmland to residential, commercial or industrial uses related to the development of the New Airport Alternative site are speculative and unknown"

Comment: It is developed, its called farmland. In the future it could be divided into smaller acreages or combined into larger, but it is developed. Approximately $500-600k in Corn alone (834 acres * 150 bushels * 4.79 per bushel). In addition, many jobs are supported with that.

42

-3rd paragraph, section 4.6.2

"These alternative layouts were eliminated because they required homes to be relocated,"

Comment: It is designed too close to local residents with the proposed design. Brookings City would never split a business and put half of a business on one side of town, and half on the other.

43

-2nd paragraph, section 4.7.3.3

"Airport development at the new airport site is expected to have minor impacts on habitat generalists but would impact other species more negatively due to the greater acreage that would be impacted compared to acres impacted at the existing airport site. Wetland species and game species such as amphibians, pheasants, partridge, mallards, red-winged blackbirds, and common Yellowthroats that utilize wetlands for nesting, breeding, and foraging habitat would experience the greatest impacts"

44

Comment: I personally enjoy many of them, but mostly the hawks. Also, at the existing airport, management and pilots understand the existing threats and degree of danger they impose, where with a new airport that would all be new ground, or starting over. 44 CONT.

-3rd paragraph, section 4.8: A-62

"The possibility may exist, however, for a flood-hazard that could result from heavy rainfall in the immediate area, which would produce runoff in excess of storm sewer and local drainage way capacities. Flooding which results from this phenomenon is usually quite localized and shallow. Detailed definitions of this hazard would require a site-specific investigation."

Comment: Clearly this states further study needs to be done before the affects can be fully realized. Taking approximately 834 acres of corn or soybeans out of production and replacing this with parking lots, runways, taxiways, gravel, grass, with the comments being made throughout this document "to not have water build up on the airport (good drainage)" only means that this excessive water will potentially cause problems for neighbors. This could cause flooding, or potentially make them have to tile or change the characteristics of their farmland or operations. See notes below. Here are some calculations: 45

834 acres of corn will use approximately 375,000,000 gallons of water in a year. Where will this water go?

-2nd paragraph, section 4.10

"which requires projects funded by the DOT to avoid significant historic sites unless there is no "feasible and prudent" alternative."

Comment: Once again, "unless there is no "'feasible and prudent' alternative," It is not prudent to take 830 more acres of productive land out of production and spend 32.6 million dollars to do that. I realize that the reference is about historic sites, but the potential of "condemning" land when there is a feasible and prudent alternative makes no sense. 46

-3rd paragraph, section 4.10.3

"On the other hand, rural surroundings might be a key element of the integrity of a farm property eligible under Criterion A for its representation of agricultural traditions." and "Criterion A: Properties associated with events that have made a significant contribution to the broad patterns of our history"

Comment: We have 2nd and 3rd generation farms out here. For them, farming is their livelihood and way of life. Please consider this when making a decision. 47

-4th paragraph, 4.10.1.3

"It should be noted that all of the five property owners refused access to their property, thereby preventing a closer inspection regarding the assumption of NRHP eligibility."

Comment: I think I can explain why the five owners refused access to their property. It is common knowledge that their land could be condemned (See A-64). I realize that this was an evaluation that may have had positive impacts for the landowners out here, but we need to take a step back and look at it from their point of view. We received a registered letter on a Saturday stating they may build an airport on our property or in our area, to me this means I must disclose this if I sell my property, therefore making it harder to sell, (this happened 3 years ago), and ALL city offices are closed for the weekend. It is stated in numerous documents that the land can be condemned. In fact if an internet search was done (Brookings airport condemned), it would come up in documents 4+ years back. Many other statements in the Ea draft indicate extra rules that can be 48

imposed on farming and local residents. With all this, and the fact that a person would need a degree to understand all the different departments and agencies working with this project, it is not hard to understand why they didn't allow access. Additionally, the owners who didn't allow access are businesses or have full time jobs. Was the same courtesy extended to them (letter in advance with an explanation, and notice given before requesting a site visit) extended to them? 48 CONT.

-5th paragraph, section 4.10.1.3

"Since none of the five farms would be physically or audibly affected by the New Airport alternative, the focus was on the potential visual effect of the proposed airport lights and airport buildings associated with the New Airport Alternative."

Comment: By what standards are we determining there will be no audible affect? If it is quiet without planes flying around my house, and later we introduce planes to the area, there is an effect. (Existing background "ambient" noise versus introduction of airplane noise (including 2 stage engine noise).If there are no blinking lights, or "scatter" light, and then we introduce lighting, there is an effect. It is very clear that there are no issues with the existing airport with noise, with traffic, trains, elevators, construction, sports events, etc there is always a much higher level of background noise, and the planes are not that noticeable. (see table 2) 49

-2nd paragraph, section 4.10.2.2

"Due to some property owners' refusal to grant access,"

Comment: Please see comments from "-5th paragraph, section 4.10.1.3. This does make a statement though for the working environment or "atmosphere" that this project has created in Trenton Township (Please see Trenton votes unanimously against the new airport.(A-108) Because of this situation, delays and uncertainty will be added to the project. 50

-2nd paragraph, section 4.10.2.2

"However, the negative results of the field inspection strongly indicate that the properties affected by the New Airport Alternative that were not surveyed are even less likely to produce any archaeological evidence. It is concluded that the New Airport Alternative would most probably not adversely affect archaeological sites/resources, but if it is selected as the proposed project, then additional cultural resource survey would be required prior to the commencement of construction activities, subject to coordination with the SHPO (see SHPO letter dated April 16, 2010 at Appendix A-143) through a Memorandum of Agreement between FAA and SHPO." 51

Comment: "then additional cultural resource survey would be required prior to the commencement of construction " is one more "unknown" or possible delay to an airport in Trenton Township. How many unknowns, uncertainties and possible delays can be accounted for in such an expensive project?

-3rd paragraph, section 4.10.2.2

"Although no known archaeological sites in the APE for any alternative would be disturbed, as yet- unknown artifacts could be unearthed during construction activities. If this occurs, September 2010 construction will be halted until the SHPO is consulted and appropriate preservation procedures can be established."

Comment: September 2010 has passed, and from what I understand would be impossible because of the delays so far. Statements like this are why the property owners get concerned. How can they start construction without buying the land? If one were a land owner and had a full time job and didn't have time to read all of this, wouldn't they assume the land had already been condemned? I can see why some of the property owners didn't allow access. More delays, and 52

the project hasn't begun yet. I must emphatically state, we the landowners in Trenton Township are very good people that are very easy to get along with. In summary, if "unknown artifacts could be unearthed during construction activities" that would result in "construction will be halted". In addition to this, correspondence with several of the Indian tribes state the same thing. "construction will be halted". (A-73, A-75) 52 CONT.

-1st paragraph, section 4.11.3

"but some residents may find any new light emissions an annoyance"

Comment: Yes! Please understand that this is a major concern. We removed our yard light 3 years ago just so we'd be able to see the stars better. There is very little "scatter" light out here from the city, so we can see the stars. When we lived in town, we used to drive out into the country to star gaze with our kids. This is a very major issue to us. Scatter light, flickering lights, etc will all be annoying to us personally. 53

-2nd paragraph, section 4.11.3

"The beacon would also be on airport property and the nearest residence is approximately half a mile away and shielded by groups of trees. Baffles can be added to the beacon for mitigation if necessary"

Comment: The trees will not shield much in the winter when they are without leaves. Trees will vary with wind conditions also. These trees may also be required to be moved based on a hazard to the airport or being within the 10k distance of the airport. Even if the trees shield the light, there will be "scatter" light that the trees don't block. 54

-3rd paragraph, section 4.11.3

"Introduction of an airport in Trenton Township would contrast with the existing rural, agricultural and architectural environment. The New Airport Alternative would introduce aircraft activity that may be considered visually objectionable to the community. The nearest home would be 0.2 miles from the airfield; two more would be ½ mile from the airfield and five more within one mile. Residents in this area would see a new road providing access to the airport, various airport support buildings and the airfield itself. The City of Brookings would initiate an annexation. Brookings County is responsible for planning and zoning in Trenton Township and therefore has jurisdiction over use of the affected land. Trenton Township is opposed to the New Airport Alternative (see Appendix A-108)." 55

Comment: Thank you. Yes, it will be a major contrast with our area. It is flat out WRONG to do this. Please see A-108. It will affect more people than what is speculated because flight patterns will change. It will also impose at least 4 more new sets of rules (zoning and government entities) that will affect the use of our properties. In Brookings city it will only be an extension of what is existing today, and is presently zoned for an airport, out here there will be even more miscommunications, misunderstandings, and conflict.

-4th paragraph, section 4.11.3

"The City would consult with Brookings County, Trenton Township and affected residents in the design of the airport. Design elements that would reduce the adverse effects of visual encroachments into residential areas or that disrupt scenic vistas would be considered, including landscaping. Architectural treatments of airport facilities that reflect light so the light blends in with nearby architectural styles would be considered. Painting or shielding of structures, such as landing aid supports, would be employed to reduce visual effects. 56

Comment: A-88 (Engineer's ESTIMATE), does not list cost for this. This sounds like it could be

one of them "after the fact" items that we could wait years for till Brookings City gets a "GRANT". With words like "could be considered" and "would be considered" mean many more future airport meetings which is unacceptable to me and a wearying thought. This would change the total cost for a new Trenton Airport, but is already a part of the existing City setting and environment. The design elements would need to be addressed ahead of time. According to the chart on A-76 in the EA draft (~30,000 aircraft operations a year), what would we do about the 80 aircraft operations a day flying over and around our house? That is what we will really notice the most. 56 CONT.

-1st paragraph, section 4.12

"aircraft and ground vehicles that would have a measurable effect on local supplies of energy or natural resources"

Comment: According to A-61(Farmland conversion impact rating) the Trenton Airport is 15 minutes from center of town. Let's assume 25 miles round trip for vehicles. (Employees, SDSU, CAP, Vendors, Visitors). My estimates are 600-1000 uses a month. This is extra traffic and essentially "wasted" energy and time. 57

-1st paragraph, section 4.12.2

"The Big Sioux Community Water Systems, Incorporated have 1.5 inch water supply lines on the site, but they are far away from the pumping station and cannot handle the additional water needed for a new airport. Options exist for either on-site solutions or use of the City of Brookings water distribution and sanitary system. Well installation logs and hydrogeology information indicate that on-site water supply wells would satisfy the new airport's water needs"

Comment: Most local residents use rural water. If this is truly annexed, utilities including water, wastewater, electricity, and communications need to be calculated into the project cost and delivered to the site. If I were a city resident, could I drill a well (for water), and put in my own septic system while living in city limits? Of course I could not do this. If Brookings City Annexes parts of Trenton Township the utilities should be considered as an upfront cost, and be connected to Brookings City's facilities day one. Fire department requirements are another consideration that need to be checked. 58

-1st paragraph, section 4.12.2

"If the City of Brookings water distribution system or the wastewater treatment facility is relied upon for water supply/wastewater, it would require approximately seven miles of new supply lines and/or sanitary sewer lines to connect to the existing networks, which would not be cost effective" 59

Comment: This should've been done on day one and the cost introduced into the total project cost. Cutting corners has caused issues before.

-1st paragraph, section 4.13

"Based on the assumption that the noisier Stage Two aircraft will be phased out by 2025, the future scenarios were modeled without Stage Two aircraft. The fleet mix is presented at Appendix A-76."

Comment: "assumption" and "phasing out by 2025" I not only strongly disagree with this statement, it is very upsetting to me that a statement can be made like that when it is truly an unknown and it is unregulated. In addition, that is 15 years we would have to listen to something that will be an annoyance, but from an administration perspective will not even be acknowledged as happening. What are the relic military aircraft called, stage 2 or 3? They are very loud. 60

-2nd paragraph, section 4.13.1

"Therefore, none of the alternatives would cause a noise sensitive area to experience an increase in noise of DNL 1.5 dBA or more at or above the DNL 65 dBA noise exposure level. Therefore, no alternative would have an adverse noise impact"

Comment: What about the planes flying over the houses? If there are no airplanes now, and then they start flying over, that will surely increase the level. I realize we are not classified as a noise sensitive area, but look at the existing comparisons. (see Table 2) 61

-2nd paragraph, section 4.15.1.2

"Within the land to be acquired, there is one residence that would be displaced"

Comment: I believe that this has been purchased already. (section 2.1.2, note 2). 62

-2nd paragraph, section 4.15.1.3

"The New Airport Alternative would not require the displacement of any residences"

Comment: Direct displacement would be correct wording. Over time several residents will end up moving and most likely take a loss on their property. This will also displace or split some farming operations which will adversely affect their operations. 63

-2nd paragraph, section 4.15.1.3

"It is possible that this acquisition could diminish the economic viability of the overall property such that the owner may request a purchase of the entire property including the residence, if the affected property(s) rely on income from the cultivation of the acquired land."

Comment: This is a very possible scenario that needs to be added to the initial cost estimates. I believe Brookings City was allowed approximately $500,000 for purchase of businesses in the RPZ. On the first acquisition they paid 479,000 for an 80,000 (appraised) lot, please estimate that into the Trenton Township cost projection. (Reference City Council Minutes 2/14/2006) 64

-3rd paragraph, section 4.15.1.3

"The New Airport Alternative land acquisition would remove some annual property tax from the County and Trenton Township tax bases"

Comment: Not only would it remove revenue from the tax base, but also from the local economy. (sale of crops, ethanol, supporting businesses, etc). This would be taking two major parcels out of use for up to 20 years. 65

-5th paragraph, section 4.16.3

"The new facility could utilize above ground storage tanks with secondary containment which would reduce the potential for significant groundwater impacts from the existing facility"

Comment: In town there are roads nearby and more activity, if the tanks were to leak it would be noticed and responded to much quicker than in a rural setting. This also brings up the whole issue of security. If there are less people and traffic, the potential of someone stealing or vandalizing (introducing the chance of a spill) are possible. 66

-1st paragraph, section 4.19

"that a geographic boundary and timeframe be established, that a list of other actions contributing

to cumulative effects be identified, and that information related to the affected environment and environmental consequences be obtained. This information should include thresholds, standards, guidelines and planning goals."

Comment: The boundaries are too close. The problem with the existing airport is the boundaries. A new airport should be designed for future growth and as little impact on surrounding land owners as possible. Since the airport is expected to grow, additional area for the airport itself and additional businesses will also be needed. These needs should be addressed up front in the cost analysis. This document has referred to making the airport "blend" into the surroundings, where with more space, it will be easier to do that. More space will allow the planes to be at a greater height when they circle, and approach the airport providing a larger buffer zone. This will reduce the noise with adjacent land owners. 67

-table 11, 2nd page, section 4.20

Comment: The number of acres being taken out of production needs to be added also. 68

-table 11, 3rd, section 4.20

Comment: The amount of energy for driving 25 miles round trip for employees, pilots, passengers, service workers, etc needs to be added to this. I estimate 600-1000 "visits" a month. 69

-table 11, 3rd page, section 4.20

Comment: The noise comparison level (normal) versus (airport activity) will be substantially different. In town, there are automobiles, trains, dogs, grain elevators, and more people compared to in the country. (see table 2) 70

-table 11, 3rd page, section 4.20

Comment: The Secondary Induced impact is known, farmland will be taken out of production day one. 71

-table 11, 3rd page, section 4.20

"Socioeconomic Impacts"

Comments: The "1 household displaced" was purchased, see 5th paragraph, Section 2.1.2. 72

-table 11, 3rd page, section 4.20

"may impact economic viability of faming due to land acquisitions"
Should read "Will impact..." 73

Table 3

This table I originally put together in 2007/2008 to show timelines and options, Updated notes are stated. Compiled from Airport Master Plan, 7-3 and 7-20.

	Alternative onsite (Updated: This is not a alternative anymore, but included, in case funding were to stop this could be an option)	Onsite (expansion)	Offsite (new)	Note
2007	Out of compliance, RPZ other issues	Waiting, out of compliance	Waiting, out of compliance	
2008	Change ILS, buy land to fix RPZ work with FAA on other minor infractions. Limited to 5,231 feet but now can INVEST and MAINTAIN an airport this size (Update, by changing the ILS from SE to NW, this could fix over 90% of the RPZ non-compliant issues.	Waiting, Situation almost the same as to the right, BUT, planes will still be landing, and 150k will not be split 2 ways now.	Waiting, out of compliance Will the FAA provide the Money? Note the terms, DISCRETIONARY NON PRIMARY Airport	
2011	DONE	Build new 5,500 runway (adding 300ft over existing), cost 1.8 million (counting new terminal?)	Waiting, out of compliance	
2013	DONE	Waiting	Build new 5,500 & 3,600 runway. Same as the old one yet 5 years later? Cost 9 million local	
2014	DONE	Box Culvert for expansion	Waiting, and will the FAA money be there?	
2016	DONE	Addition of 1000 ft to make 6,500	Waiting	
2017	DONE	DONE	Taxi way and hanger (cost?) and is the City paying for the private hangers?	
2021	DONE	DONE	Add 1000 ft to runway to get to the 6,500. This is a decade and a half later (cost)	
2026	DONE	DONE	By the time the airport is "complete" it will be time to resurface. This is actually in the master plan.	
	DONE	DONE	DONE	
2028	DONE	DONE	DONE	

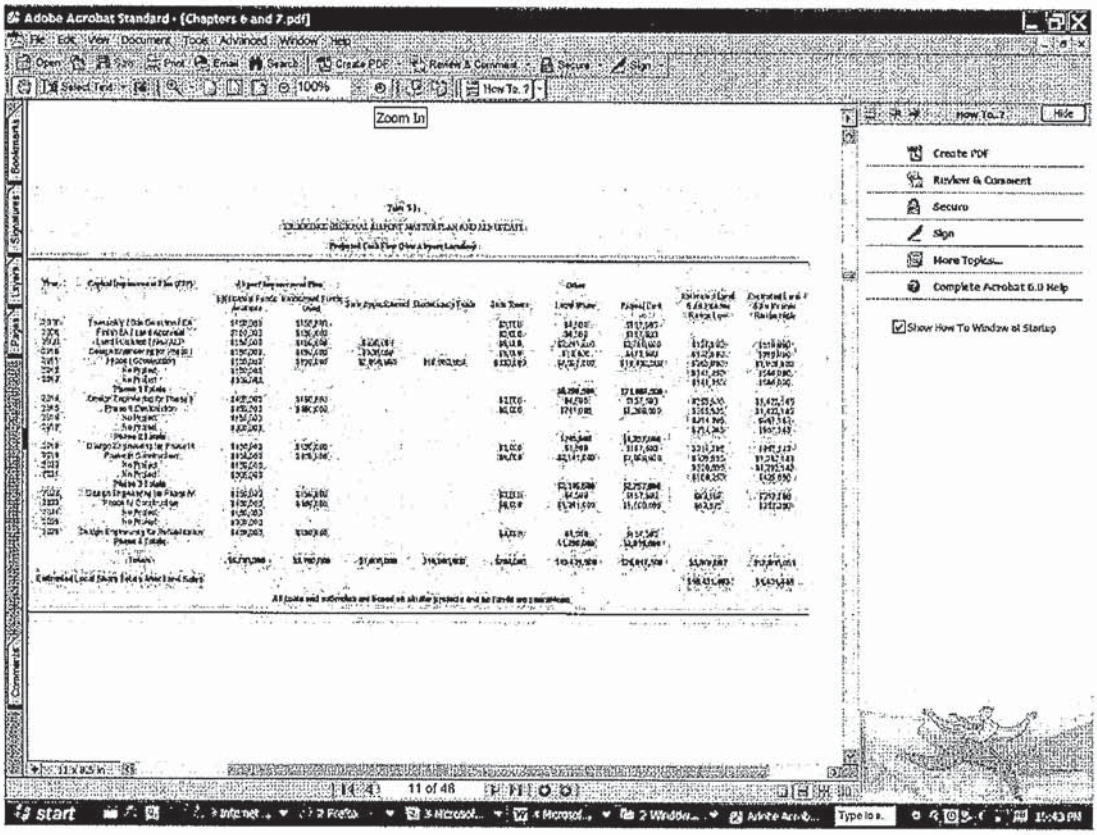
In conclusion:

Please make a decision. I'm very tired of this hanging over our heads.
I apologize in advance if any of the facts were not correct and will correct them if notified.
Any information that I can provide in the future will be available upon requested.

Thank you.

George Skon
47456 219th st
Brookings, Sd 57006

Master Plan, 7-3



Master Plan, 7-20

Adobe Acrobat Standard - [Chapters 6 and 7.pdf]

BROOKINGS REGIONAL AIRPORT MASTER PLAN AND ALP UPDATE

Projected Cash Flow (Alternative G)

Year	Capital Improvement Plan (CIP)	Airport Improvement Plan Entitlement Funds Available	Airport Improvement Plan Entitlement Funds Used	State Apportionment	Discretionary Funds	Other State Shares	Local Share	Total
2007	Environmental/Land Appraisal	$160,000	$150,000			$3,000	$4,500	$157,500
2008	Land Purchase for realignment & Crosswind	$160,000	$150,000	$300,000		$3,000	$1,472,500	$1,925,500
2009	Design Engineering	$160,000	$150,000			$3,000	$60,000	$213,000
2010	Construction Phase I	$160,000	$150,000		$6,770,000	$203,000	$330,000	$7,453,000
2011	No Project	$160,000						
2012	Design for Phase II	$300,000	$20,000			$400	$600	$21,000
2013	Construction Phase II	$430,000	$150,000			$3,000	$4,500	$157,500
2014	Design Phase III	$430,000	$150,000			$3,000	$4,500	$157,500
2015	Phase III Construction	$430,000	$430,000	$300,000	$1,000,000	$34,600	$635,400	$2,500,000
2016	No Project	$150,000						
2017	Overlay 17-35	$300,000	$300,000			$6,000	$9,000	$315,000
	Totals		$1,650,000	$600,000	$7,770,000	$259,000	$2,721,000	$13,000,000

Estimated Local Share Totals After Land Sales

All costs and estimates are based on similar projects and no funds are guaranteed

Master Plan Update

Brookings Regional Airport 7-20 Chapter Seven

Responses to George Skon 11/15/2010 Comments

As stated in the letter, the comment questions are "rhetorical", which means an answer is not expected.

1 – 8. Comments noted. The BKX Alternative is selected as the preferred alternative. See discussion in Section 2.3.1.

9. It is assumed that the rate of growth will return to the pre-recession average rate of growth beginning in 2012.

10 – 14. Comments and questions noted.

15. This acquisition is still an impact of this alternative; it was acquired because it was put up for sale and would be resold if the New Airport Alternative were selected.

16. Comments noted.

17. Comments noted.

18. According to Google Maps it is approximately 9.9 miles and 18 minutes from the Brookings City Hall. The Final EA has been revised accordingly.

19 – 21. Comments noted.

22. See Response 18 above.

23 – 28. Comments and questions noted.

29. The day-night sound levels (DNL) metric is used to describe the cumulative effect of aircraft noise. It is the logarithmic average of sound levels in dBA over a 24-hour period. Therefore, DNL 65 dBA is not the maximum noise exposure. The maximum is much greater. Manufacture of Stage 2 aircraft was prohibited after December 31, 1999 and annual operations are expected to significantly decrease nationally by 2025. Only 4 Stage 2 operations were recorded at BKX between July 2004 and July 2005, which would have no effect on the size of a DNL 65 contour because its cumulative effect on an average day would be essentially zero.

30 – 36. Comments and questions noted.

37. See Response 29 above.

38 – 59. Comments and questions noted.

60 - 61. See Response 29. Relic military aircraft are generally Stage 2.

62 – 73. Comments noted.

Appendix C
Figures

APPENDIX C

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Figure 2: Existing Airport and No Action Alternative
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Figure 7: BKX Alternative D – Eliminated
Figure 8: BKX Alternative E – Eliminated
Figure 9: BKX Alternative F – Eliminated
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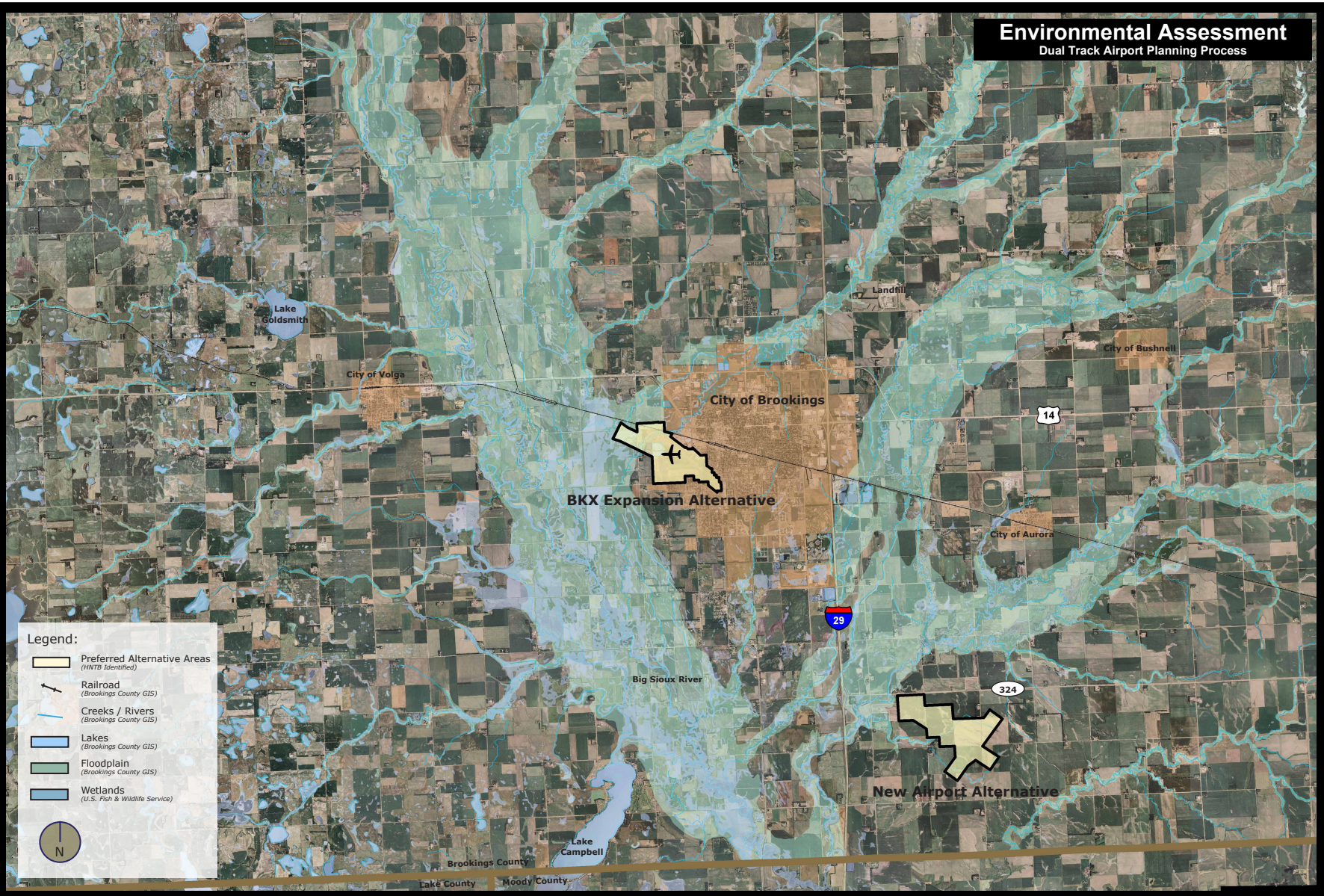
Figure 21a: Potential Wetland Mitigation Sites – BKX Expansion Alternative
Figure 22: Wetlands – New Airport Alternative



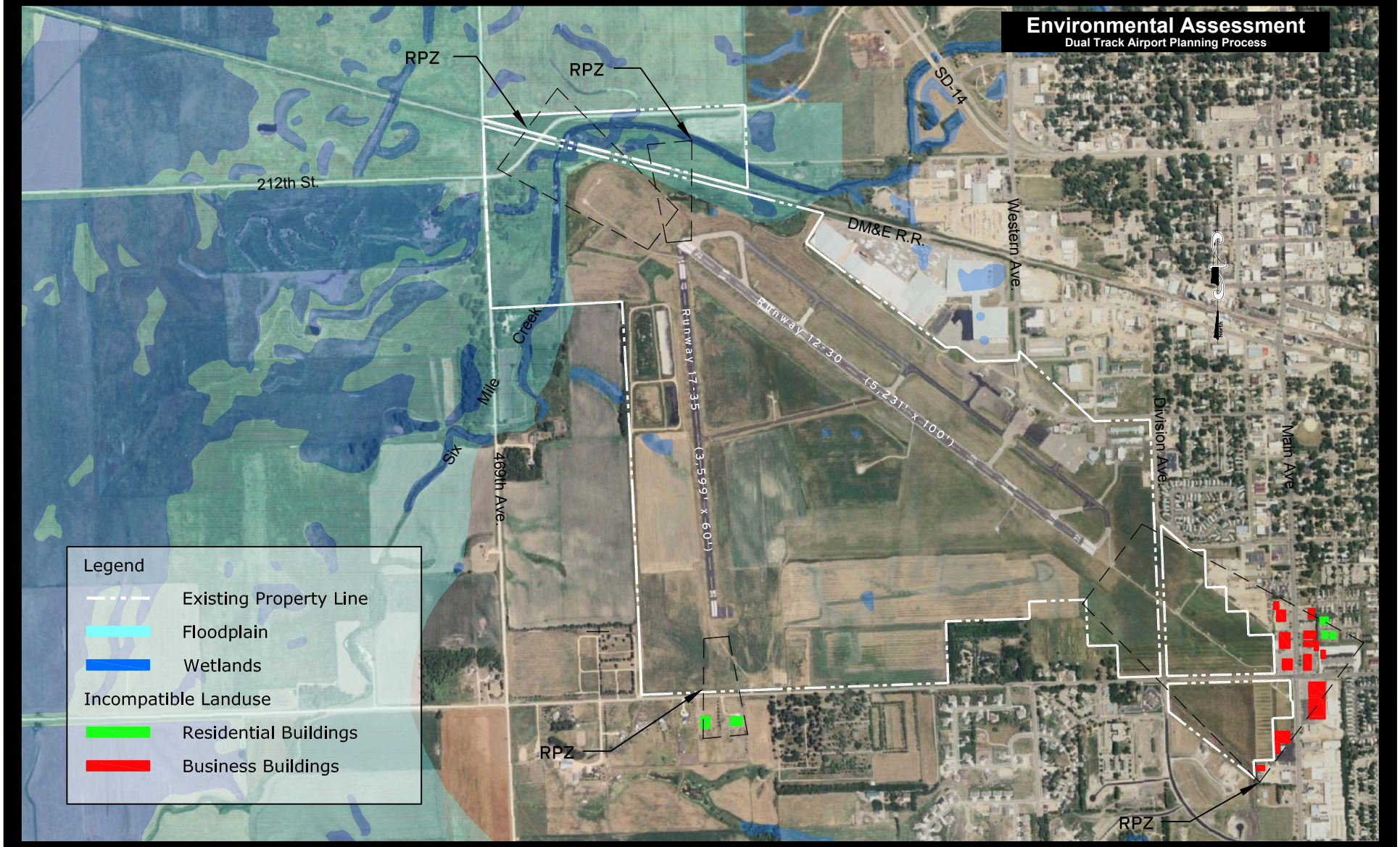
CITY OF BROOKINGS

Location Map

Brookings Regional Airport

Figure 1

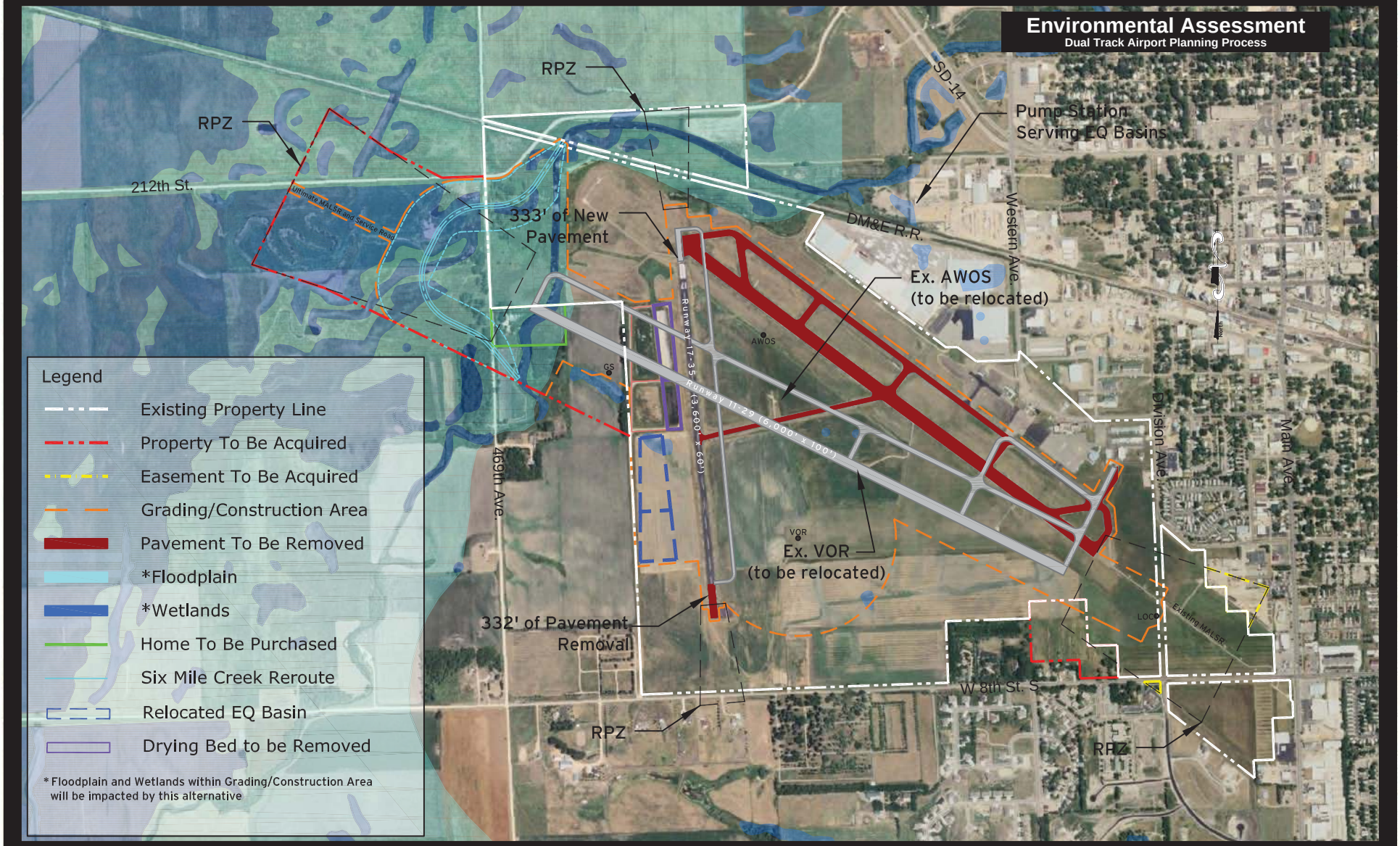
Helms & Associates
Civil Engineers & Land Surveyors
HNTB



Existing Airport and No Action Alternative

Brookings Regional Airport

Figure 2



CITY OF BROOKINGS

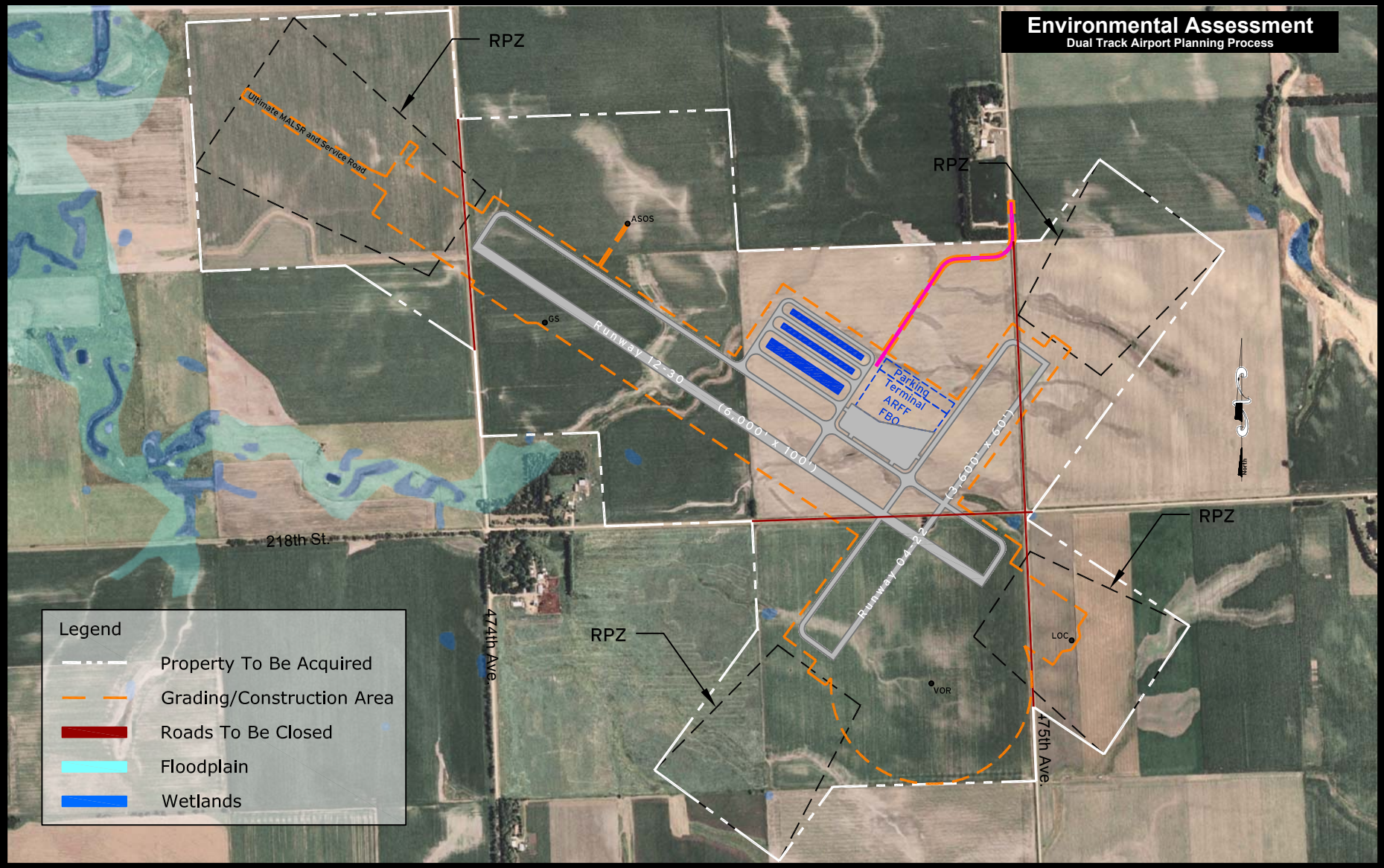
BKX Expansion Alternative

Brookings Regional Airport

Figure 3

Helms & Associates

HNTB



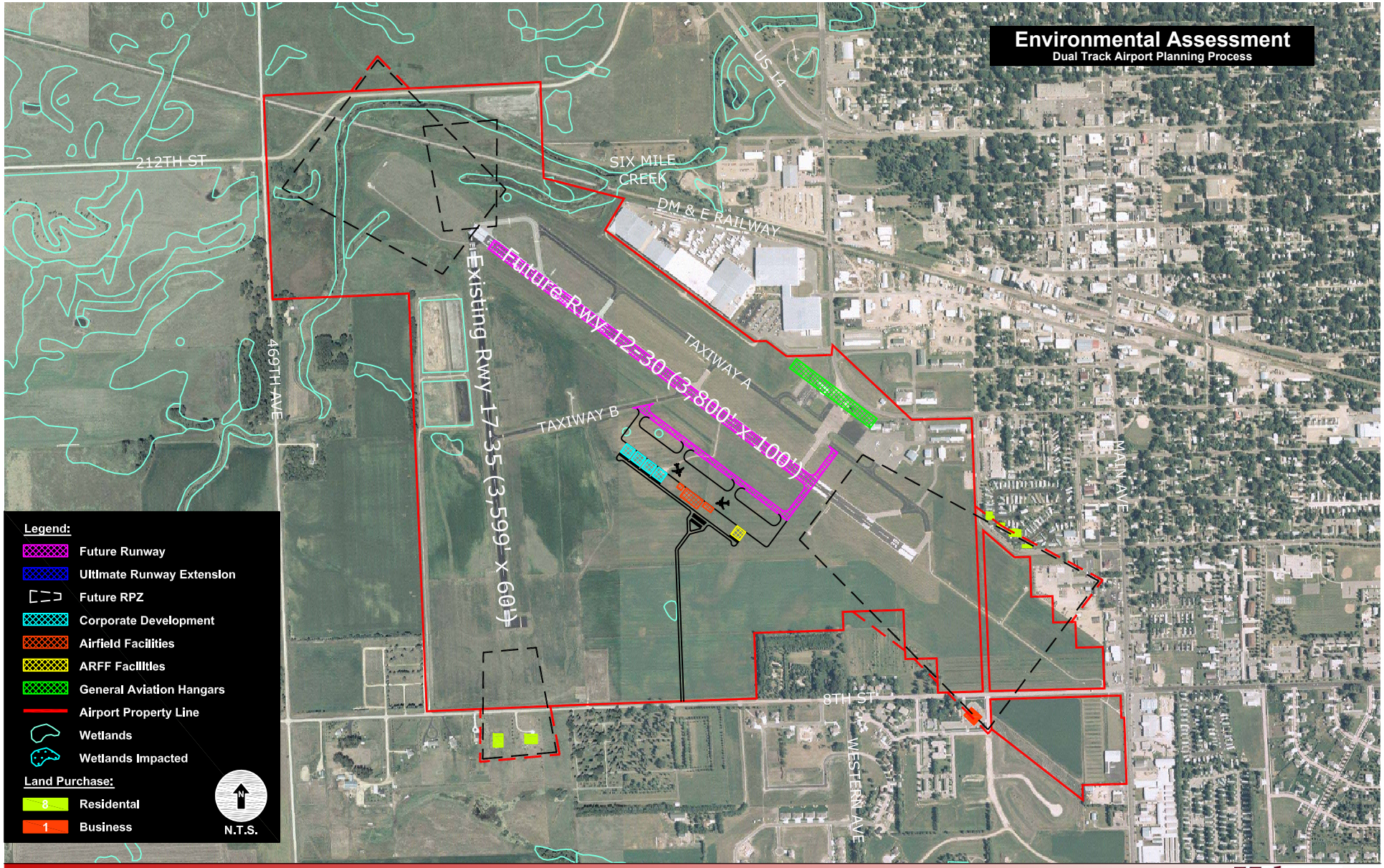
CITY OF BROOKINGS

New Airport Alternative

Brookings Regional Airport

Figure 4

Helms & Associates
Civil Engineers & Land Surveyors
HNTB



CITY OF BROOKINGS

BKX Alternative B - Eliminated

Brookings Regional Airport

Figure 5

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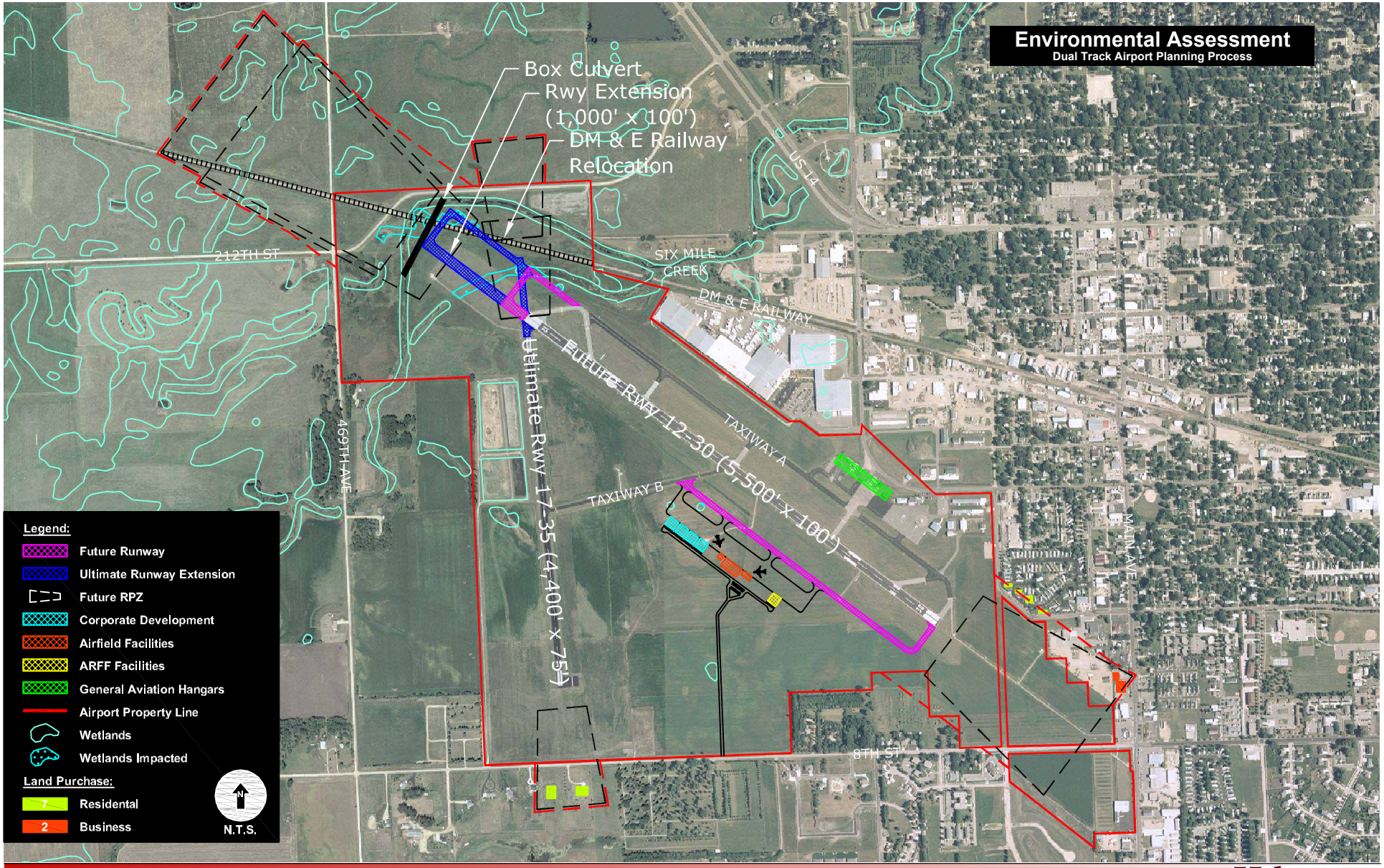
Civil Engineers & Land Surveyors
HNTB



CITY OF BROOKINGS

BKX Alternative C - Eliminated

Brookings Regional Airport

Figure 6

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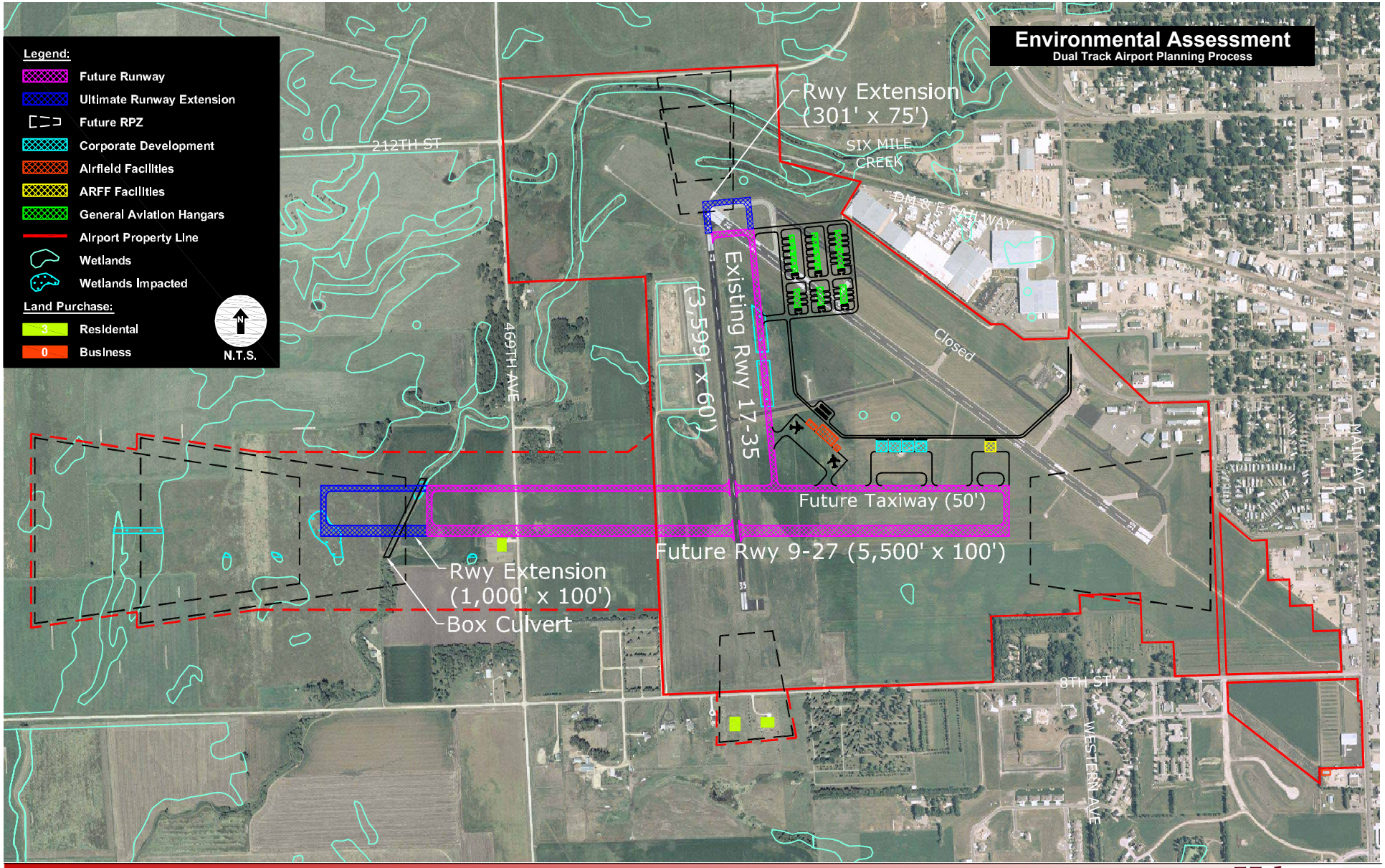
Civil Engineers & Land Surveyors
HNTB



CITY OF BROOKINGS

BKX Alternative D - Eliminated

Brookings Regional Airport

Figure 7

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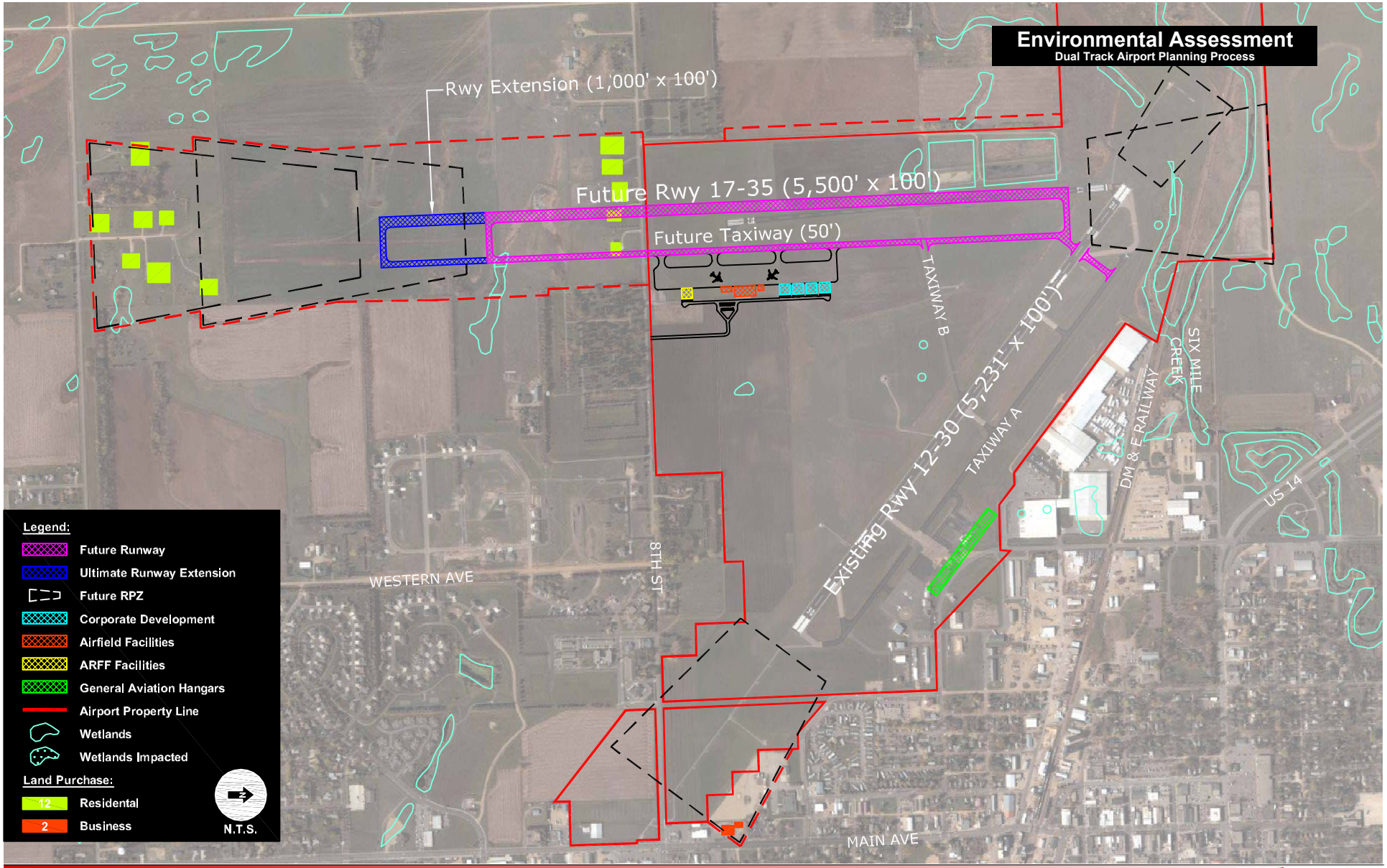
Civil Engineers & Land Surveyors
HNTB



CITY OF BROOKINGS

BKX Alternative E - Eliminated

Brookings Regional Airport

Figure 8

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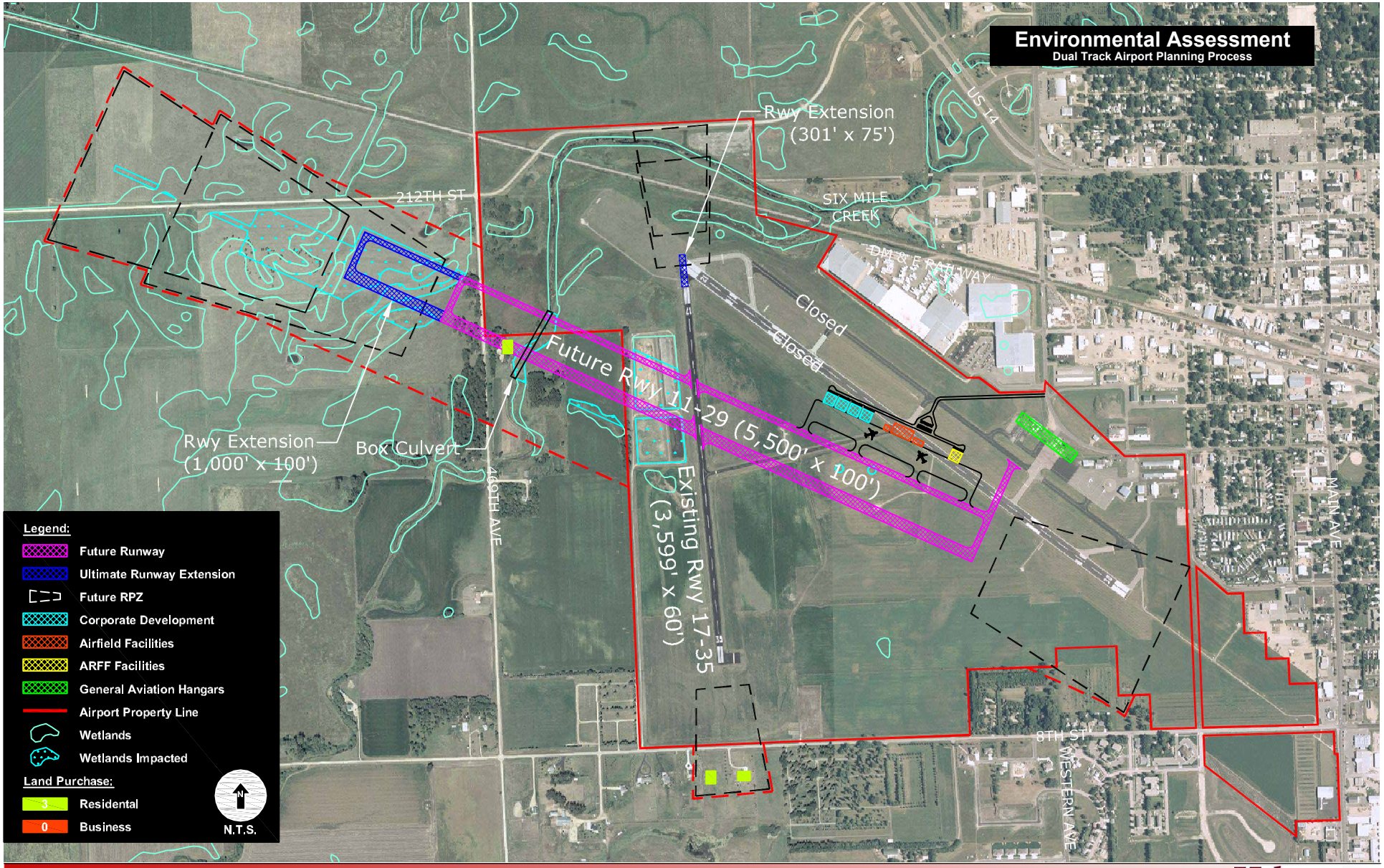
Civil Engineers & Land Surveyors
HNTB



CITY OF BROOKINGS

BKX Alternative F - Eliminated

Brookings Regional Airport

Figure 9

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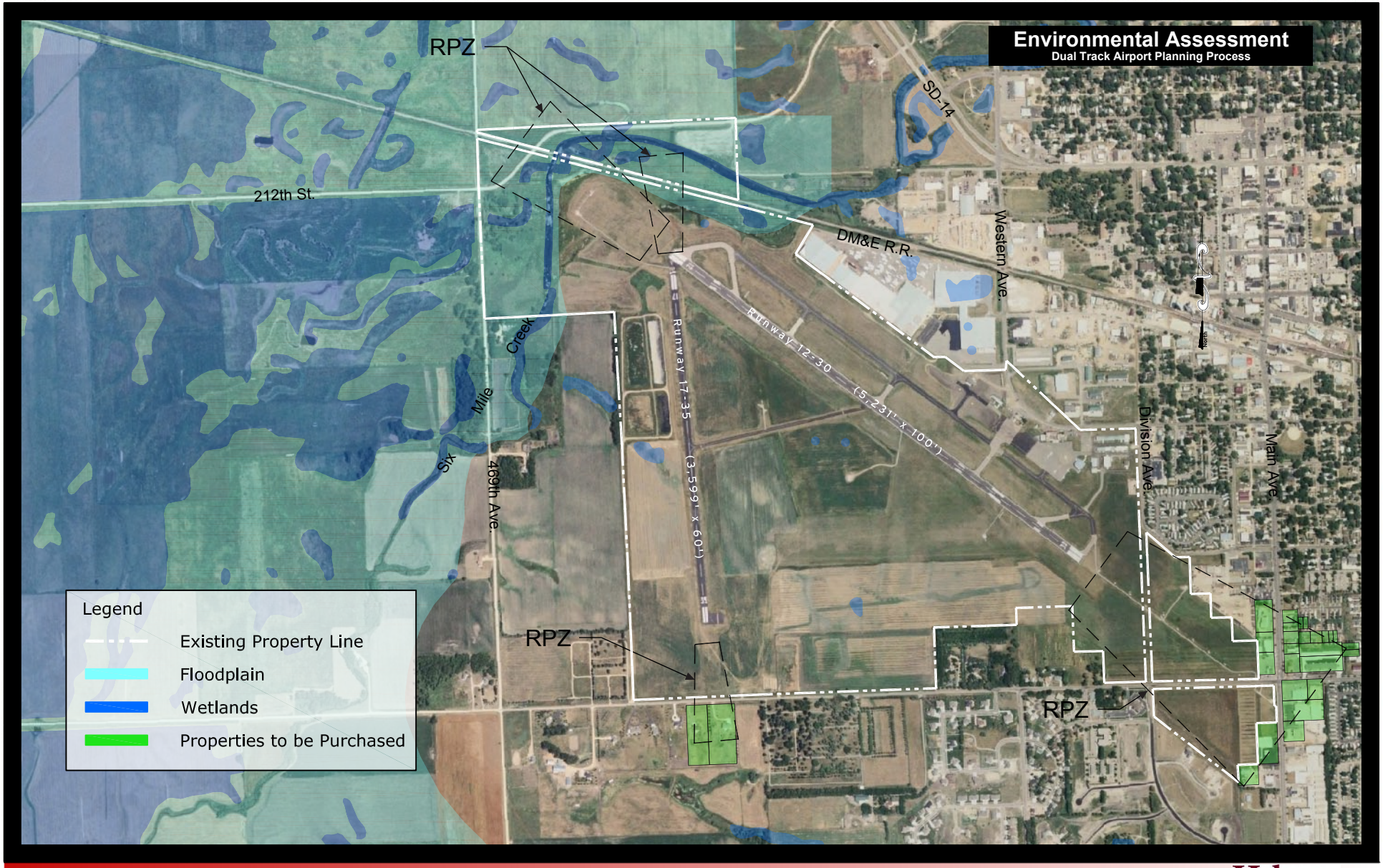

CITY OF BROOKINGS

BKX Alternative J - Eliminated

Brookings Regional Airport

Figure 10

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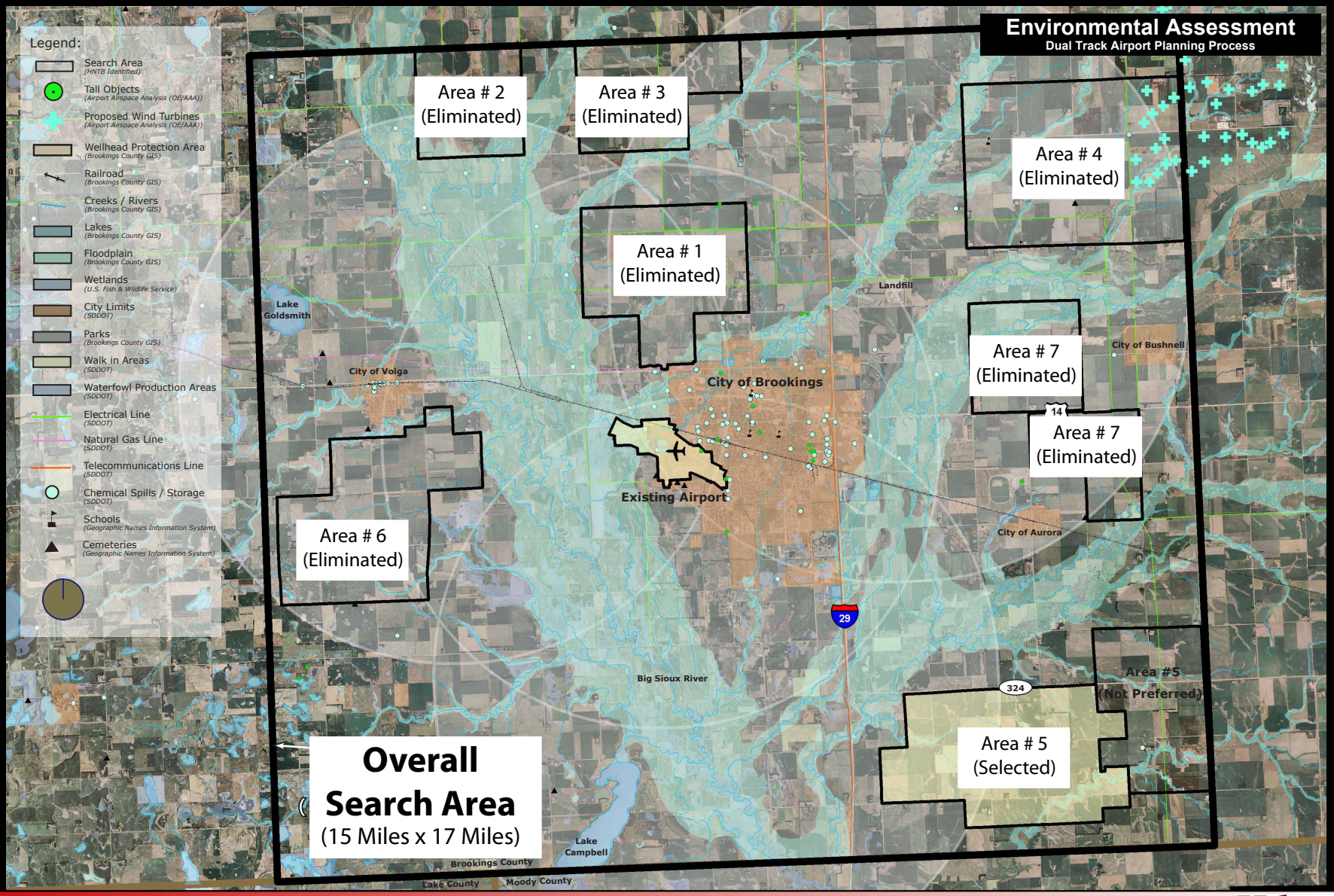
Civil Engineers & Land Surveyors
HNTB



CITY OF BROOKINGS

New Airport Search Areas

Brookings Regional Airport

Figure 11

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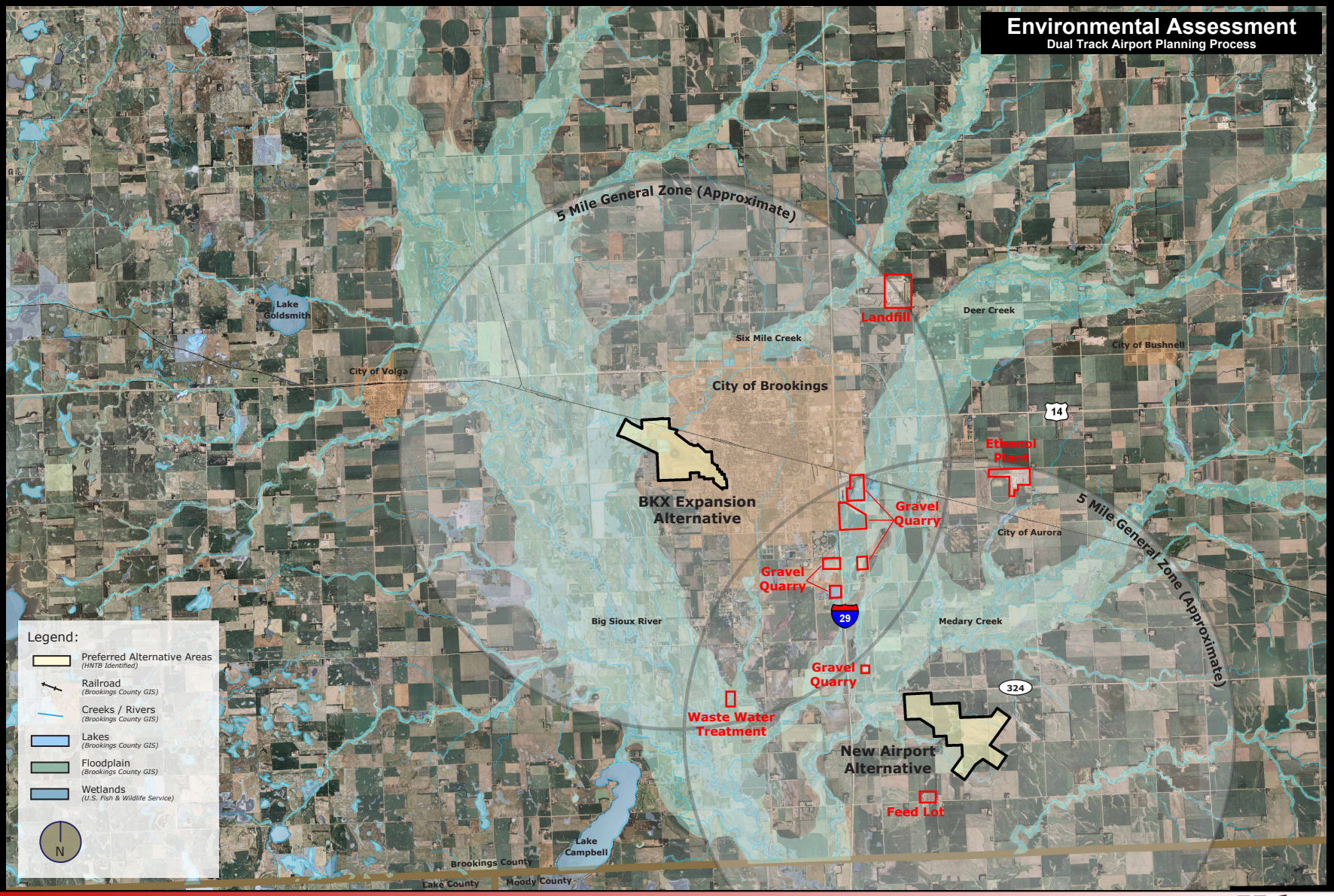
Civil Engineers & Land Surveyors
HNTB



CITY OF BROOKINGS

Incompatible Land Uses

Brookings Regional Airport

Figure 12

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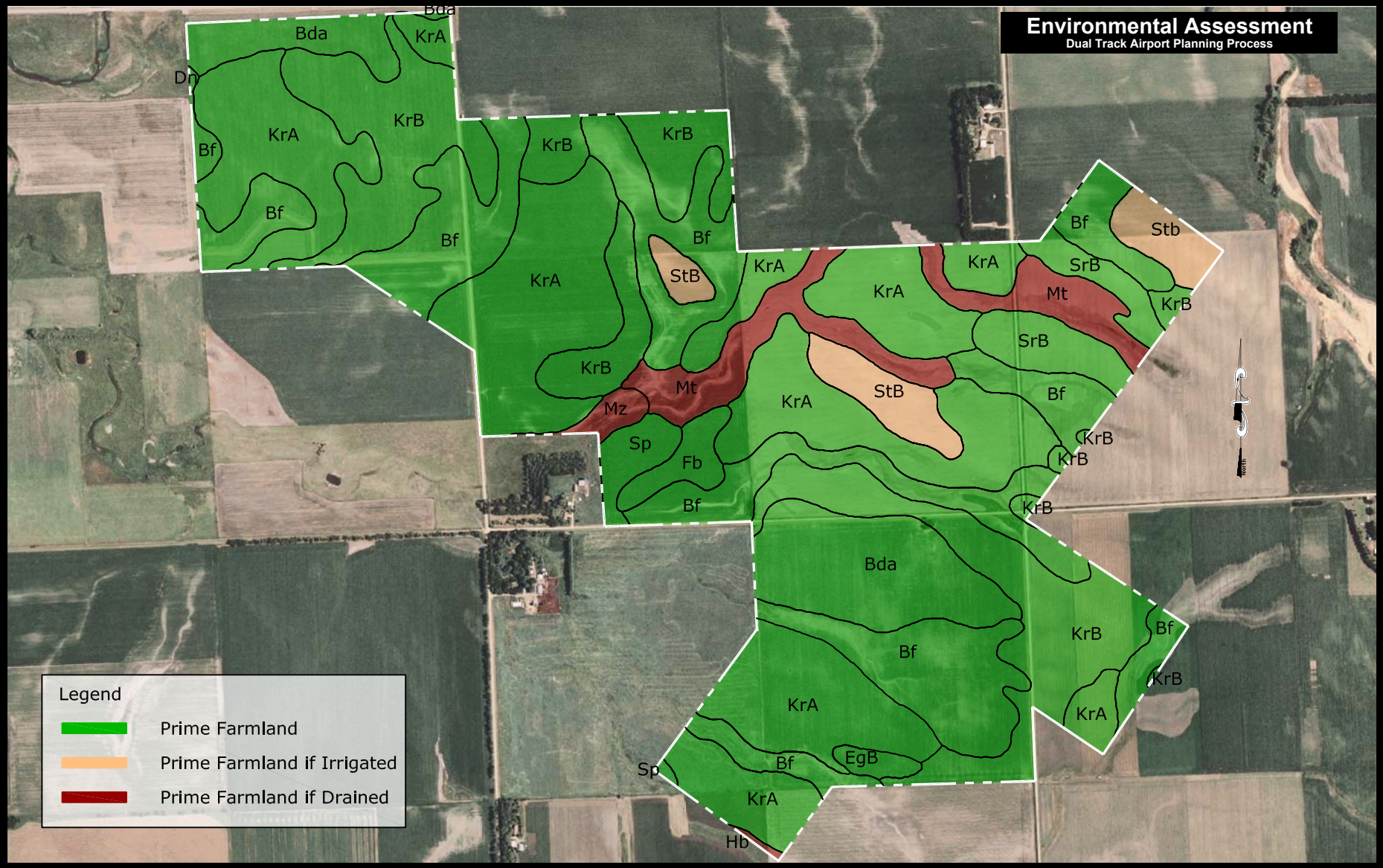
Civil Engineers & Land Surveyors
HNTB



CITY OF BROOKINGS

Farmland - New Airport Alternative

Brookings Regional Airport

Figure 13

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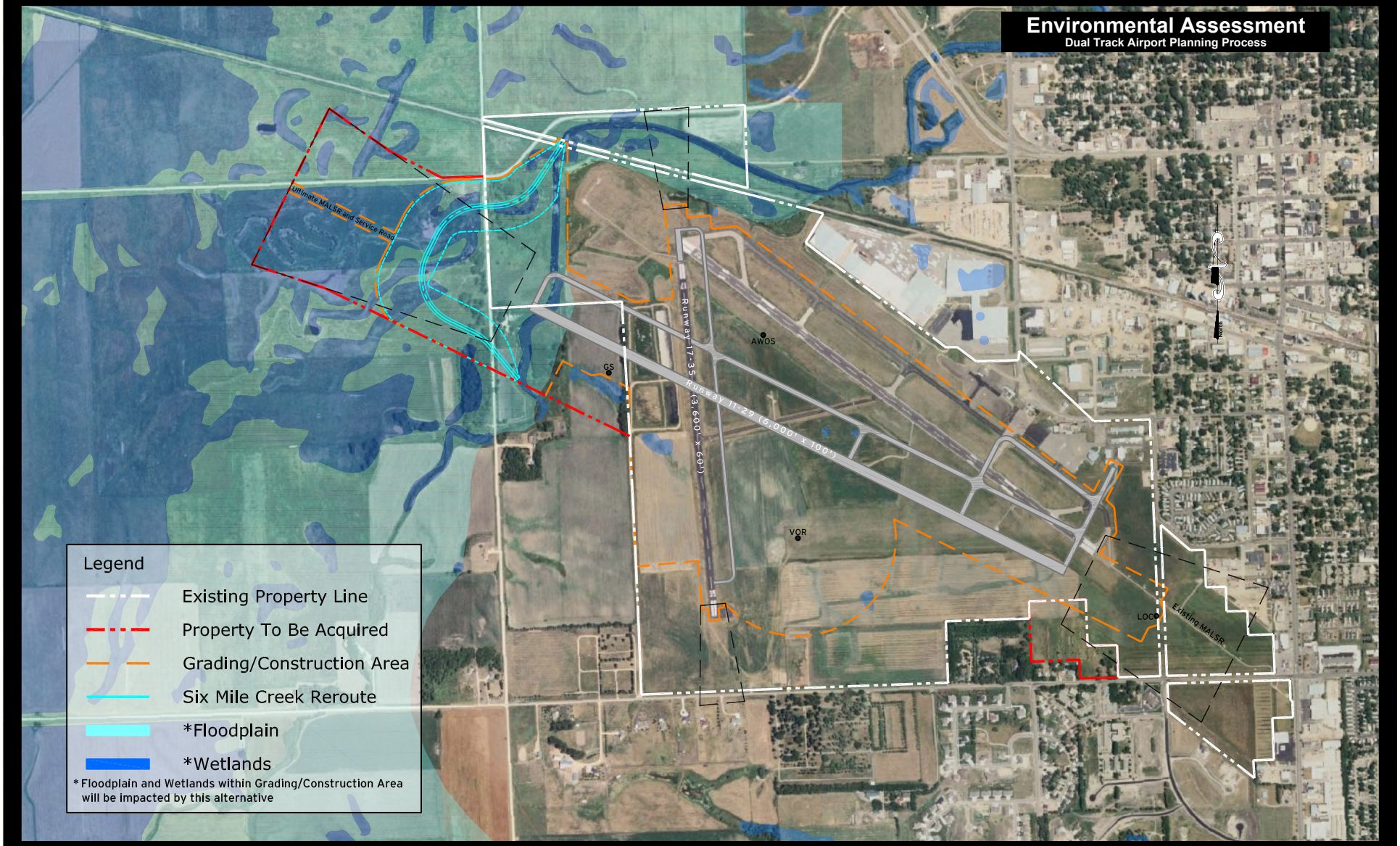
Civil Engineers & Land Surveyors
HNTB



CITY OF BROOKINGS

Floodplains - BKX Expansion Alternative

Brookings Regional Airport

Figure 14

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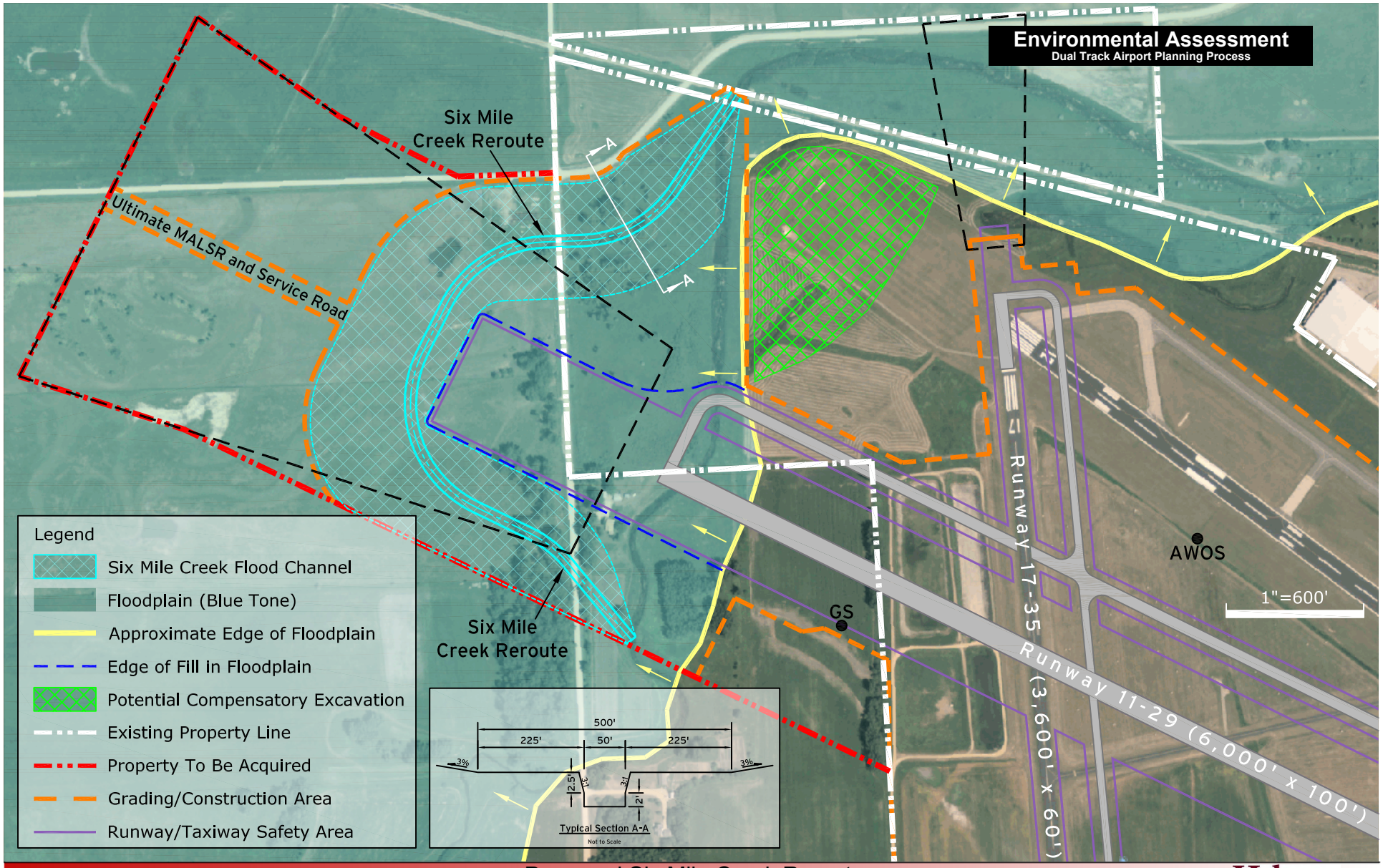
Civil Engineers & Land Surveyors
HNTB



CITY OF BROOKINGS

Proposed Six Mile Creek Reroute
and Compensatory Storage
Brookings Regional Airport

Figure 14a

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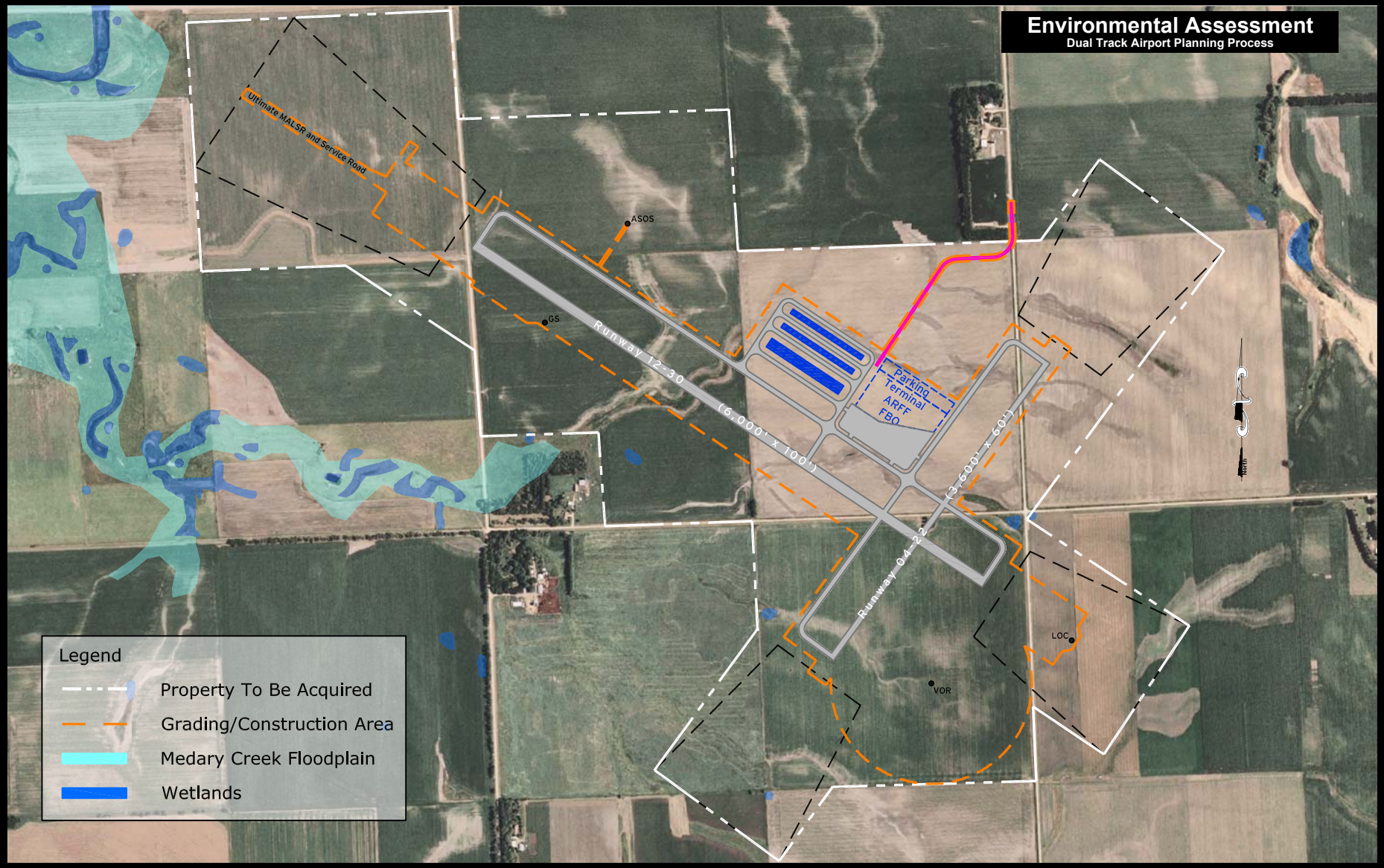
Civil Engineers & Land Surveyors
HNTB



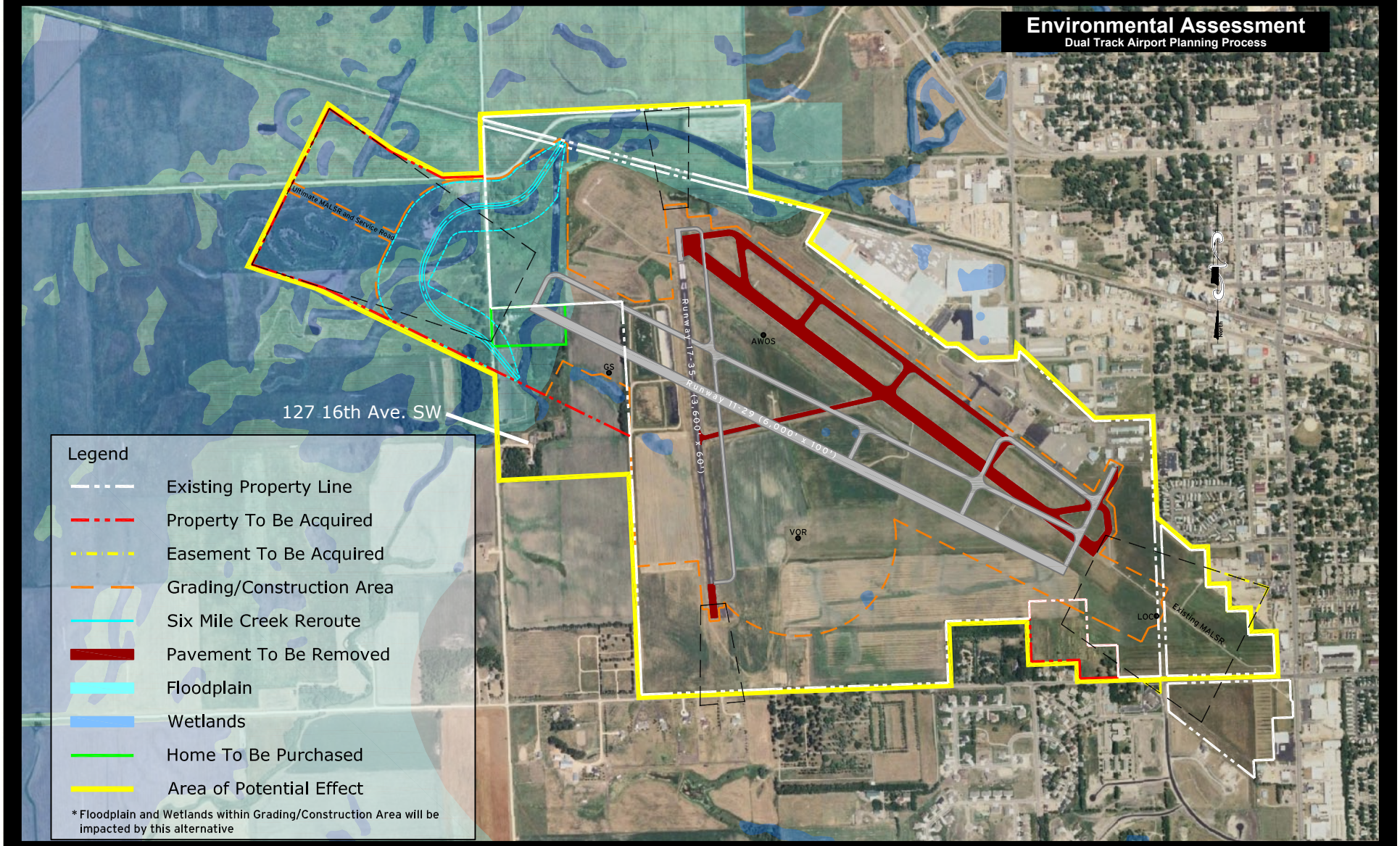
CITY OF BROOKINGS

Floodplains - New Airport Alternative

Brookings Regional Airport

Figure 15

Helms & Associates
Civil Engineers & Land Surveyors
HNTB



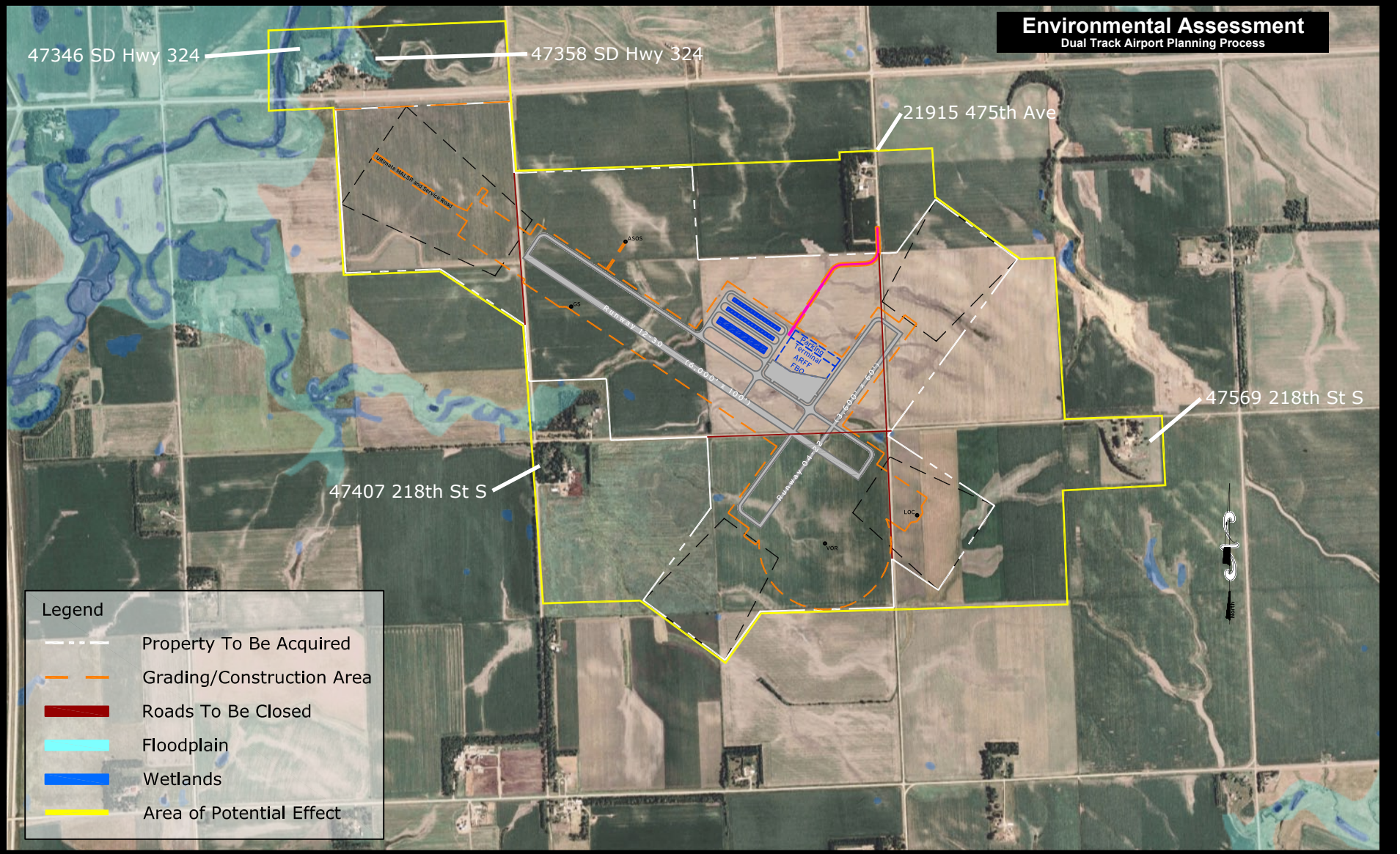
CITY OF BROOKINGS

Potentially Eligible Historic Properties - BKX Expansion Alternative

Brookings Regional Airport

Figure 16

Helms & Associates
Civil Engineers & Land Surveyors
HNTB



CITY OF BROOKINGS

Potentially Eligible Historic Properties - New Airport Alternative

Brookings Regional Airport

Figure 17

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Civil Engineers & Land Surveyors
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CITY OF BROOKINGS

Noise Contours - No Action Alternative

Brookings Regional Airport

Figure 18

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CITY OF BROOKINGS

Noise Contours - BKX Expansion Alternative

Brookings Regional Airport

Figure 19

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Civil Engineers & Land Surveyors
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CITY OF BROOKINGS

Noise Contours - New Airport Alternative

Brookings Regional Airport

Figure 20

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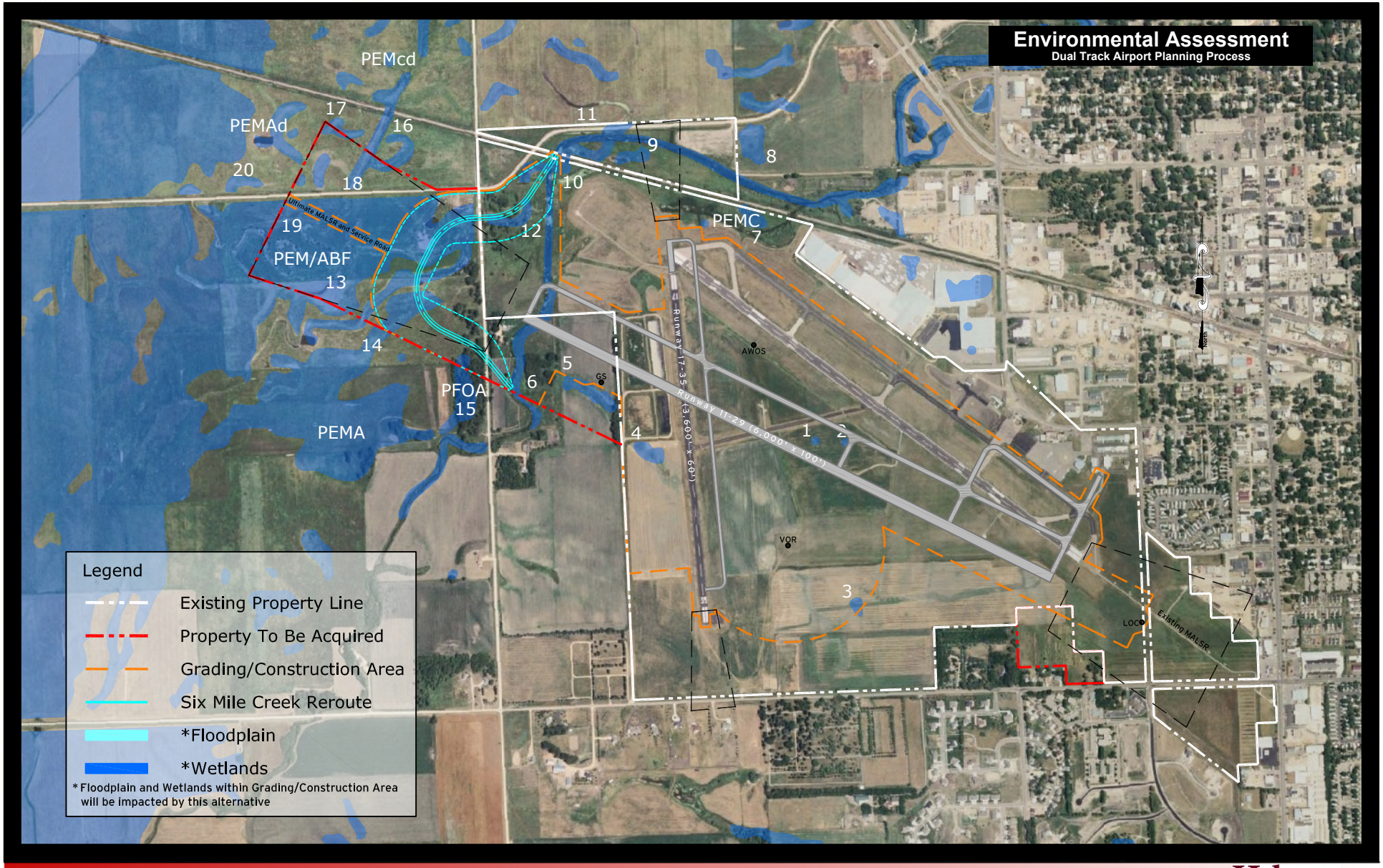
Civil Engineers & Land Surveyors
HNTB



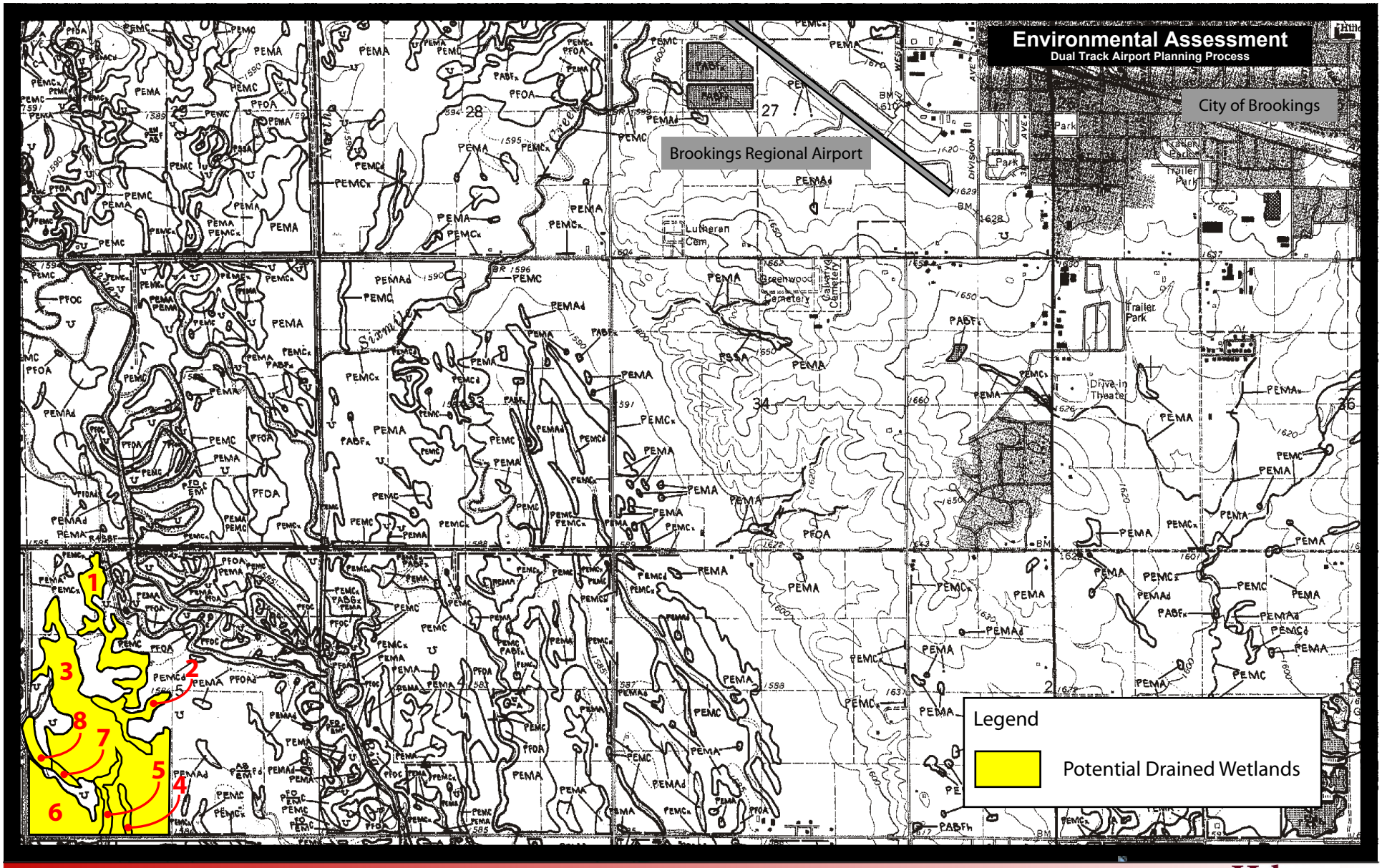
CITY OF BROOKINGS

Wetlands - BKX Expansion Alternative

Brookings Regional Airport

Figure 21

Helms & Associates
Civil Engineers & Land Surveyors
HNTB



CITY OF BROOKINGS

Potential Wetland Mitigation Sites

Brookings Regional Airport

Figure 21a

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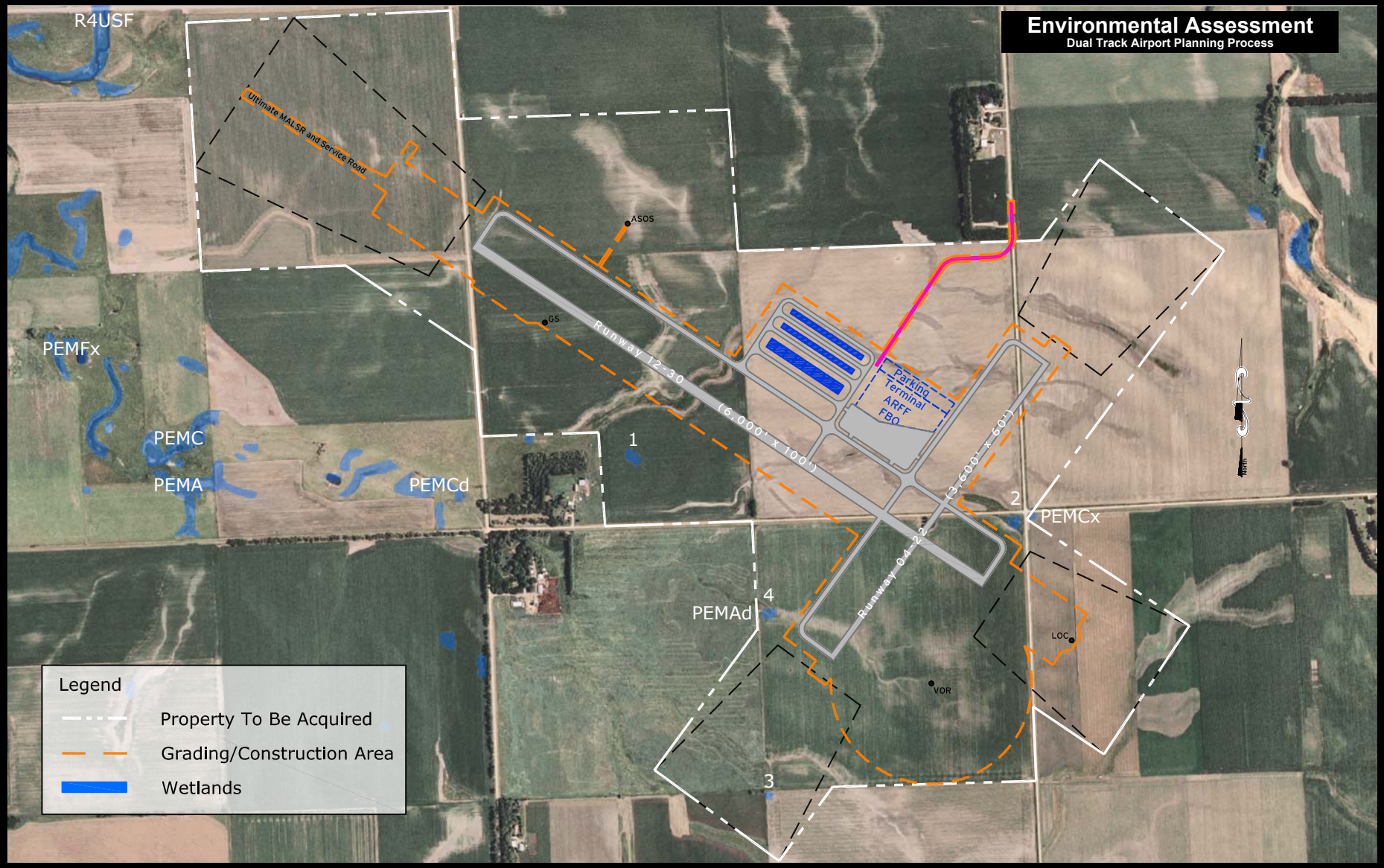
Civil Engineers & Land Surveyors
HNTB



CITY OF BROOKINGS

Wetlands - New Airport Alternative

Brookings Regional Airport

Figure 22

Helms & Associates
Civil Engineers & Land Surveyors
HNTB