

Final
Environmental Assessment
for Parallel Secondary Runway 11-29
at the
Bozeman Yellowstone
International Airport
Belgrade, Montana

BZN Bozeman Yellowstone
INTERNATIONAL AIRPORT 

May, 2016



2880 Technology Blvd. West
Bozeman, MT 59718
(406) 587-0721
www.m-m.net



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



Responsible FAA Official

June 2, 2016
Date

U.S. Department of Transportation

Federal Aviation Administration
Northwest Mountain Region

Finding of No Significant Impact/
Record of Decision

For the Parallel Secondary Runway 11-29 at the
Bozeman Yellowstone International Airport
Belgrade, Montana

May 2016

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I. Introduction

This document serves as the Federal Aviation Administration's (FAA) Finding of No Significant Impact/Record of Decision (FONSI/ROD) and provides final agency determinations and approvals for the federal actions necessary to implement the Parallel Secondary Runway 11-29 at the Bozeman Yellowstone International Airport (BZN), owned and operated by the Gallatin Airport Authority (Airport Sponsor). This FONSI/ROD is based on the information and analysis contained in the attached Final Environmental Assessment (FEA), dated May 2016. This FEA has been prepared in accordance with the guidelines and requirements set forth by the Council on Environmental Quality (CEQ) and the FAA to implement the environmental review and disclosure provisions of the National Environmental Policy Act of 1969 (NEPA).

II. Proposed Action

BZN is a public-use, commercial service airport that is located in southwest Montana in the Gallatin Valley, adjacent to the City of Belgrade and approximately 10 miles northwest of the City of Bozeman. BZN is owned and operated by the Gallatin Airport Authority.

BZN's Proposed Action is to construct an asphalt runway surface for the Proposed Secondary Runway 11-29 that is proposed to be 75' wide by 5,050' long (B-II small standards), generally parallel to the main Runway 12-30 and offset by 940' to the northeast. It is anticipated that the proposed action will reduce congestion, improve operational efficiency, accommodate aircraft currently using and forecasted to use BZN, reduce delays, and improve safety in accordance with planning guidelines established by the FAA. The existing turf (grass) Runway 11-29 will remain in its current location (generally parallel to the main Runway 12-30 and offset by 700' to the northeast) and the proposed Secondary Runway 11-29 will provide an alternate landing surface north of, and parallel to, the turf runway. The proposed improvements will act as one runway where either the turf or paved surface may be used as Runway 11-29, but they may not both be used for simultaneous approaches and departures. The Proposed Secondary Runway 11-29 will be VFR only and will not require any new approach procedures, or modifications to existing approaches. Other associated improvements associated with the Proposed Secondary Runway 11-29 include:

- Construction of a 35' wide full length parallel taxiway and associated ladder taxiways for the Proposed Secondary Runway 11-29;
- Installation of supplemental wind cones;
- Installation of Medium Intensity Runway Lights (MIRL) for the Proposed Secondary Runway 11-29;
- Installation of Medium Intensity Taxiway Lighting (MITL) system including signage;
- Installation of a Precision Approach Path Indicator (PAPI) system for the Proposed Secondary Runway 11-29;
- Installation of drainage improvements to include potential surface ditches, culverts, and drainage structures (manholes and inlets).

The Secondary Runway 11-29 is proposed to be constructed to B-II small standards as that size aircraft is the most demanding aircraft expected to regularly use the runway.

III. Purpose and Need

The purpose of the Proposed Action is to reduce congestion, improve operational efficiency, accommodate aircraft (up to B-II small) currently using and forecasted to use BZN, reduce delays, and improve safety in accordance with planning guidelines established by FAA.

The Proposed Action is needed because during busy times of the day when the primary Runway 12-30 at BZN is being used by both high speed and low speed aircraft, the air traffic control tower personnel are forced to hold arriving and departing traffic to maintain proper separation of aircraft. The construction of a secondary runway (Proposed Action) will allow for the separation of high speed and low speed traffic, thereby improving safety and operational efficiency. In addition, without the construction of the secondary runway, BZN will continue to operate above 112% of the Annual Service Volume (ASV). FAA guidance recommends planning for additional runway capacity to reduce ASV when runway operations are at 60-75% of the ASV.

IV. Agency Actions and Approvals

The FAA actions, determinations, and approvals necessary for this project to proceed include the following:

- Unconditional approval of the Proposed Action as shown on the Airport Layout Plan.
- A determination that the environmental analysis prerequisites associated with any future Airport Improvement Program (AIP) funding application concerning the Proposed Action have been fulfilled pursuant to 49 USC 47101.

V. Alternatives

In accordance with NEPA, FAA Orders 1050.1E and 5050.4B, and FAA design standards, the FEA identified and evaluated reasonable alternatives that may accomplish the objectives of the Proposed Action. The 2008 Master Plan Update indicated the need to start planning for a secondary runway and considered six alternatives for a secondary runway. Planning for secondary runway development researched alternatives for a site that would ultimately allow for the construction of a wider and longer runway (C-II) than the B-II runway that is currently justified to make sure future potential expansion of this runway to C-II can be accommodated, should it ever be warranted. The alternatives developed for the secondary runway were all located in the same general area of the airport as the Proposed Action, but varied in their threshold locations and separation from the primary Runway 12-30. These served as the basis for the alternatives that were evaluated. Five of the alternatives considered in the 2008 Master Plan Update were initially considered in the FEA, but were eliminated from further evaluation. Details about these alternatives and the reasons for their elimination can be found in Chapter 3 of the FEA.

The 2008 Master Plan Update identified Option 1-2 as the Sponsor's secondary runway alternative. For Option 1-2, the secondary runway would have a 905' separation from primary Runway 12-30. The Phase I length planned for 5,135' was based on the threshold locations and allowing the VOR to remain, with the ultimate length planned for 6,890'. Due to changes in FAA guidance since the 2008 Master Plan was completed (new AIP Handbook requirements used to justify secondary runways, the Runway Protection Zone (RPZ) land use interim guidance, and changes in the design AC 150/5300-13A), and through further discussion with the FAA, Option 1-2 was refined in the ALP Narrative Report - Planning Update to 2008 Master Plan for Parallel Runway in Appendix I of the FEA. Adjustments to Option 1-2 from the 2008 Master Plan Update resulted in the Proposed Action of the EA.

Ultimately, two alternatives were carried forward for analysis in the EA:

- **Alternative 1 – Non-Development Alternative – No Action:** The No Action alternative would not include any improvements to BZN and would maintain the airfield in its current condition. Because the number of aircraft that utilize BZN will continue to exceed the calculated ASV with no improvements to existing infrastructure, the control tower personnel will need to continue to use special methods to maintain separation of aircraft flying in the BZN airspace. This will result in a reduction of safety and reduces the efficient use of primary Runway 12-30.

This alternative does not meet the Purpose and Need. Even though this alternative does not meet the Purpose and Need, NEPA regulations require the FAA to consider a No Action Alternative (40 CFR § 1502.14(d)). The environmental effects will be considered as a baseline for evaluation of the other alternative.

- **Alternative 2 - Proposed Action:** The alternative for the Proposed Secondary Runway 11-29 was initially developed in the 2008 Master Plan Update as Option 1-2 and selected in that document as the preferred secondary runway alternative. It was further refined through the Planning Update to the 2008 Master Plan for Parallel Runway. This Alternative includes the improvements described above for the Proposed Action.

VI. Preferred Alternative

The FEA provides a detailed analysis of the No Action Alternative and the Alternative 2 - Proposed Action. After careful consideration of the analysis of the impacts of the various alternatives considered, and of the ability of these alternatives to satisfy the identified purpose and need for the proposed project; the FAA has selected Alternative 2 – Proposed Action as the FAA's Preferred Alternative. Alternative 2 – Proposed Action will be referred to as Preferred Alternative for the remainder of this document.

VII. Affected Environment

BZN is located within the Gallatin Valley, adjacent to the City of Belgrade and approximately 10 miles northwest of the City of Bozeman, Montana. The Bridger Mountains are located approximately 6.5 miles east of airport property and rise to an elevation of roughly 5,000 feet above the valley floor to 9,600 feet above mean sea level. The land directly surrounding BZN in all directions is relatively flat with an elevation of approximately 4,460 feet above mean sea level. There are no identified wetlands on or immediately adjacent to the Preferred Alternative area. The only surface water located on airport property is a lateral of the seasonally used Spain Ferris Irrigation Ditch. The City of Belgrade's sewer lagoons are located near the northwest boundary of the airport on State of Montana property that is under a right-of-way deed with the airport. Soils present in the Study Area consist of loams, clay loams, clay and sandy gravels. Several gravel pits are located east and south of BZN. These are separated from the airport by the Highway 10 Frontage Road on the south and Airport Road on the east.

Gallatin County, including BZN, is in attainment for all criteria pollutants. Given the location of BZN, there are no coastal resources or wild and scenic rivers in the project area.

VIII. Environmental Consequences

Environmental impact categories identified in FAA Orders 1050.1E and 5050.4B were evaluated in the FEA. Environmental consequences of the No Action Alternative and the Preferred Alternative are included in Chapter 4 of the FEA. Below is a summary of the findings.

A. Air Quality

Gallatin County, including BZN, is within attainment for all National Ambient Air Quality Standards (NAAQS). The implementation of the Preferred Alternative is not being proposed to promote new traffic at BZN, but rather address existing traffic issues (ASV) and forecasted growth. There is no difference in the operations forecast between the No Action Alternative and Preferred Alternative. As the Preferred Alternative involves runway and taxiway construction, there will be the production of construction vehicle exhaust emissions, as well as emissions from fugitive dust. Best Management Practices would be utilized during construction to limit construction related impacts. Given the low levels of increased emissions, and the temporary nature of the construction, the Preferred Alternative is not expected to result in an exceedance of the NAAQS for any pollutant.

B. Climate

The implementation of the Preferred Alternative is not being proposed to promote new traffic at BZN, but rather address existing traffic issues (ASV) and forecasted growth. A comparison of the Preferred Alternative emissions to those of the No Action Alternative shows that no measurable increase in operational emissions from any individual pollutant would occur due to the Preferred Alternative. The Preferred Alternative would increase GHG emissions by 1,995 metric tons of CO₂ equivalent over the No Action Alternative, an increase of 8.9% (temporary increase due to the limited duration of construction). This increase would comprise less than 0.00000030% of U.S.-based GHG emissions and less than 0.000000062% of global GHG emissions. Therefore, the project should not result in any substantial increase in greenhouse gas emissions.

C. Coastal Resources

BZN is located in Southwest Montana in the heart of the Gallatin Valley at 4,460 feet above sea level and it experiences a subarctic climate with cold, sometimes bitterly cold winters, and brief but generally warm summers. The nearest coastal waterways are in the vicinity of Seattle, Washington, approximately 550 miles to the west. Therefore, there would be no impact to Coastal Resources.

D. Compatible Land Use

The Preferred Alternative is consistent with existing zoning and planned future land uses. Compatible land use off airport property allowing aircraft the right to flight exists and no modification is expected in the off airport land uses. No residential or other noise-sensitive land uses would be within the 65 DNL with the implementation of the Preferred Alternative.

E. Construction

All construction activities associated with the Preferred Alternative will take place within airport property. Construction activities associated with the Preferred Alternative will cause specific temporary environmental impacts that are adverse in nature, but localized to the project site. These temporary impacts and their degree of adversity would be reduced as construction activities are completed. The following impacts are anticipated as construction activities are initiated and completed during the construction of the Preferred Alternative: temporary increases in noise levels due to the operation of construction equipment, temporary and minor impacts to air quality due to vehicle emissions from construction equipment and particulate generation (dust) from the construction operations, ground disturbing activities that could lead to erosion, possible surface water contamination, and noxious weed invasion.

While the implementation of the Preferred Alternative is expected to create noise and generate emissions and fugitive dust, the impacts are expected to be temporary due to the nature of construction.

F. Section 4(f) Land

The nearest Section 4(f) property is 6 miles away from the airport property. The Preferred Alternative will take place entirely on airport property and no change in flight patterns over Section 4(f) property is projected. Therefore, no impact to Section 4(f) property is anticipated.

G. Farmlands

Approximately 15.2 acres of farmland located on current airport property and designated as "farmland of local importance" will be directly converted to non-farmland uses as new impervious surfaces. According to FAA Order 1050.1E, a significant impact to "Prime and Important Farmland" would occur when the total combined score on Form AD-1006 ranges between 200 and 260 points. The total score for Preferred Alternative impacts is 21, which is below the significant impact threshold. The Preferred Alternative is anticipated to result in insignificant impacts to Prime and Important Farmland.

H. Fish, Wildlife, and Plants

No federally listed threatened or endangered species were identified in the project area. No significant impacts on fish, wildlife, or plants are expected from the Preferred Alternative.

Communication and data received on October 24, 2014 (Appendix VI of the FEA), from the USFWS stated "(we) do not anticipate adverse effects to threatened, endangered, proposed or candidate species or critical habitat to result from proposed project implementation within the designated project area."

I. Floodplains

The Preferred Alternative is not located within a 100-year floodplain. No impacts to floodplains will occur with the Preferred Alternative due to the absence of floodplains in or near the proposed project area.

J. Hazardous Materials, Pollution Prevention, and Solid Waste Natural Resources, Energy Supply, and Sustainable Design

None of the data reviewed from the Montana Department of Environmental Quality (MDEQ) reveal danger from hazardous waste or indicate significant reductions in pollution prevention activities would occur on BZN during the implementation of the Preferred Alternative.

Demolished and waste materials produced as a result of implementing the Preferred Alternative are not anticipated to be of a volume that will produce deleterious effects to standard solid waste handling facilities. Site grading will be required to meet the necessary grades for the Preferred Alternative, as well as 14 CFR Part 77 surfaces. It is proposed that the majority of material will remain on airport property, either in selected waste areas, as part of shoulder fill, or if the excavation produces adequate gravels, as part of the base for the Preferred Alternative. Should any excess material not be able to be wasted on airport property then the contractor will be required to dispose of excess material in one of the local gravel pits that are permitted to receive such material.

The Preferred Alternative has the potential to create short-term and temporary impacts to hazardous materials, pollution prevention, and solid waste. The contractor will be required to have a Spill Prevention, Control, and Countermeasure (SPCC) plan in place, as well as maintain a supply of absorbent materials on-site in the event a spill occurs with the construction of the

Preferred Alternative. An erosion control plan will be submitted to the Montana Department of Environmental Quality as part of the SWPPP permit. The Contractor will also be required to provide a collection area for non-recyclable waste and arrange for its removal as appropriate.

Hazardous materials, pollution prevention, and solid waste impacts for the Preferred Alternative are anticipated to be able to meet all applicable Federal, State, Tribal, and local laws and regulations on hazardous or solid waste management. There is no measureable impact expected to hazardous waste, pollution prevention and waste management as a result of implementing the Preferred Alternative.

K. Historical, Architectural, and Cultural Resources Climate

Cultural resource surveys for portions of airport property have been previously performed and no historic or cultural resources had been located on airport property.

The FAA invited The Blackfeet Nation, Chippewa Cree Tribe of the Rocky Boy's Reservation, Confederated Salish and Kootenai Tribes of the Flathead Reservation, and The Crow Nation to participate in consultation for the proposed project. The Crow Nation responded to the invitation with a determination of "No Adverse Effect", which is defined as "cultural properties will be affected but not in a harmful way, and a Crow Tribe Historic Preservation Office monitor is requested". The FAA sent three requests for additional information about the cultural properties that may be affected in the area in order to evaluate the effect of the project and the Crow Tribe's request for a monitor. On April 20, 2015, the FAA received a response of "The Crow Tribe finds no significant impact to cultural properties." Since there is no evidence of cultural properties in the area, a monitor will not be required for the Preferred Alternative.

The FAA provided the project description and project layout, the two previous cultural resource inventories and the correspondence with the Tribes to the Montana State Historic Preservation Office (SHPO). As the area has been heavily disturbed and the previous two cultural resource inventories did not identify historic or cultural resources in the project area, FAA made a determination of No Historic Properties Affected for the proposed project. After reviewing the provided information SHPO concurred that the "undertaking will have No Effect on Historic Properties". Correspondence to and from the Tribes and SHPO is included in Appendix VI of the FEA.

L. Light Emissions and Visual Impacts

Improvements associated with the Preferred Alternative include the installation of Medium Intensity Runway Lights (MIRL), Precision Approach Path Indicators (PAPI), Runway End Identifier Lights (REIL), Medium Intensity Taxiway Lights (MITL), and airfield signs.

BZN is situated on the valley floor with no significant terrain variations for miles around the airport. The property immediately surrounding BZN is a mix of agricultural, low density rural residential, urban areas (City of Belgrade), major transportation corridors with several interchanges (Interstate 90 and U.S. Hwy 10), and numerous gravel pits.

BZN has existed in this area for many decades with comparable lighting features. The new installations associated with the Preferred Alternative are not anticipated to create an annoyance among people or interfere with normal activities. Additionally, the Preferred Alternative would not include vertical improvements, nor is expected to result in any of those factors noted above. Therefore, no significant light emissions or visual impacts would be expected.

M. Natural Resources and Energy Supply

The implementation of the Preferred Alternative will require fuel for construction equipment. However, because project construction activities are a temporary impact, the impact to fuel consumption related to construction activities is also temporary and considered to be very limited. There are also no known sources of minerals or other energy resources on BZN that would be adversely affected by the Preferred Alternative. No increased consumption of fuel from air or ground vehicles is anticipated that would produce a shortage in fuel supplies. No significant impact to Natural Resources and Energy Supply is anticipated as a result of the Preferred Alternative.

N. Noise

While the Proposed Action would not change the number or type of operations at BZN, it does provide a secondary runway that would result in an associated shift of the noise contours. Noise contours were developed to analyze the current condition at BZN and the opening day (2016) and Year 5 (2021) contours for the No Action and Preferred Alternative. The noise contours show the DNL 65 dB contours remaining on airport property until Year 5, when the contour leaves the airport property boundary near the threshold of proposed Runway 29.

To identify the noise impacts that leave the airport boundary adjacent to the threshold of proposed Runway 29, a detailed location point analysis was conducted. The point analysis shows that there are no residences residing within the DNL 65 dB with the construction of the Preferred Alternative during the reasonably foreseeable time frame (out to Year 5).

Temporary and short-term noise from equipment is anticipated in association with the construction of the Preferred Alternative. However, the construction equipment will largely be operated during day-time hours, thereby reducing the perception of the noise impacts.

O. Secondary (Induced) Impacts

No impacts to shifts in population density and growth rate, public service demands, long-term changes in business and economic activity, and related effects on air, water, and other natural systems were identified as being associated with the Preferred Alternative.

P. Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety Risks

The Preferred Alternative is not projected to result in any changes in population patterns or growth, disruption of existing communities or neighborhoods, displacement of existing populations, or relocation of residences or businesses. Therefore, the Preferred Alternative is not expected to significantly impact socioeconomic factors.

The U.S. Census Bureau information does not indicate the presence of either low-income populations or minority populations residing in the area of BZN. In addition, the Natural Resources Conservation Service (NRCS) maintains a list of Montana's Environmental Justice Communities. There are no identified Environmental Justice communities on the list maintained by the NRCS located in Gallatin County, Montana. Given that there are no identified populations, and that there are no identified actions that would cause disproportionately high and adverse effects on minority or low income populations if they did exist, it is determined that the Preferred Alternative would have no effect on low income or minority populations.

No environmental impacts are expected to exceed significance thresholds as identified in FAA Order 1050.1E for air quality, noise, and water quality, and no other environmental impacts

were noted that may negatively impact the health and safety of children. Therefore, it is expected that there will not be any significant impacts as a result of the Preferred Alternative to Children's Environmental Health and Safety Risks.

Q. Water Quality

No significant impact on water quality is anticipated due to the Preferred Alternative. Site erosion with disturbed soil, leaking fluids from construction equipment, concrete washout, refuse and trash have the potential to contribute to water quality contamination if the Preferred Alternative is implemented. The expanded area of impermeable surface produces additional surface runoff with potential to impact water quality with the presence of motor oil, grease, tire rubber, and herbicides/pesticides. However, mitigation techniques, discussed below in Mitigation, can greatly minimize the potential for these contaminants to come in contact with a surface water body and cause water quality degradation.

R. Wetlands

Two surface water bodies on BZN include: the seasonal lateral of the Spain Ferris Ditch and the City of Belgrade sewage lagoons. No wetlands or non-wetland waterways were delineated within the area of Preferred Alternative improvements. Therefore, no impacts to wetlands are anticipated due to the Preferred Alternative.

S. Wild and Scenic Rivers

The only two rivers in Montana that are considered Wild and Scenic are specific reaches of the Flathead River and the Missouri River. Neither of these rivers is located near BZN, and therefore, no impacts to Wild and Scenic Rivers are expected due to the Preferred Alternative.

T. Cumulative Impacts

The analysis included in Section 4.21 of the FEA identifies past, present, and reasonably foreseeable actions that could contribute to cumulative impacts in specific environmental resource categories evaluated and highlights project-related effects that could contribute to cumulative impacts in these resource categories. Significant adverse cumulative impacts are not anticipated when the Preferred Alternative is considered with reasonably foreseeable past, present, and reasonably foreseeable projects.

IX. Mitigation

The Airport Sponsor has committed to the following mitigation measures as part of the Preferred Alternative:

- A General Permit for Storm Water Discharges Associated with Construction Activity, a Storm Water Pollution Prevention Plan (SWPPP), and any applicable dust permitting will be required for the proposed project activities by Montana Department of Environmental Quality (MDEQ).
- The contractor will ensure that all waste fuels, lubricating fluids, and other chemicals are stored and disposed of properly. The contractor will inspect construction equipment daily during active construction to ensure hydraulic fluids, fuel, and lubrication systems are in good condition and free of leaks. The contractor will be required to have a Spill Prevention, Control, and Countermeasure (SPCC) plan in place, as well as maintain a supply of absorbent materials on-site in the event a spill occurs with the construction of the Preferred Alternative.

- The Contractor will be required to provide a collection area for non-recyclable waste (i.e. trash, concrete wash out, portable toilet sanitary waste, etc.) and arrange for its removal as appropriate.
- Vehicle emissions are to be in compliance with EPA standards and dust control will be required of the contractor throughout the project (water trucks, calcium chloride, etc.)
- Impacts from construction noise will be largely limited to daylight hours in an effort to be compatible with residences surrounding the airport property.
- Avoid disturbing excess ground area and vegetation within the limits of disturbance and adjacent to proposed construction activities.
- Phase projects appropriately so that disturbed earth is not left without vegetative cover for a long period of time.
- If nesting, communal roost sites, or foraging areas for the Bald Eagle are noted within 0.5 mile of the Preferred Alternative area, Morrison-Maierle environmental personnel will comply with the recommended temporary seasonal and distance construction buffers stipulated in the 2010 Montana Bald Eagle Management Guidelines: An Addendum to Montana Bald Eagle Management Plan (1994) and consult with a qualified biologist from MFWP regarding the development of a site-specific management plan.
- If subsurface cultural manifestations are detected during construction, work shall be halted until a qualified archaeologist can determine the significance of the resource.

X. Public and Agency Coordination

Public involvement is a vital component of the NEPA process. Public and agency coordination was conducted during the NEPA process.

The Draft EA was published on March 12th, 2016 and was followed by a 45-day comment period that ended on April 25th, 2016. Notice of availability of the Draft EA was advertised in the Bozeman Daily Chronicle on March 12th, 2016, March 13th, 2016, and March 20th, 2016, as well as in the Belgrade News on March 17th, 2016 and March 24th, 2016. Copies of the Draft EA were available to the public in hard copy and made available for review at the Office of the Airport Director, the Belgrade Community Library, and the Bozeman Public Library. Electronic copies were also available through the Bozeman Yellowstone International Airport's website. To further facilitate comments, the Airport Sponsor held a public hearing on April 13, 2016. Four written comments were received during the public comment period and one verbal comment was received during the public hearing. Responses to all verbal and written comments are provided in Appendix XIV of the FEA.

XI. Agency Findings

The FAA makes the following determinations for this project based upon a careful review of the attached FEA, comments on the Draft EA, the supporting administrative record, and appropriate supporting information.

The following determinations are prescribed by the statutory provisions set forth in the Airport and Airway Improvement Act of 1982, as codified in 49 USC §47106 and 47107.

- i. **The Project is reasonably consistent with existing plans of public agencies for development of the area surrounding the airport (49 USC §47106(a)(1)).**

The determination prescribed by this statutory provision is a precondition to agency approval of Airport Improvement Program (AIP) funding. Extensive coordination regarding the Preferred Alternative has taken place among federal, state and local agencies. The Preferred Alternative is not in conflict with the comprehensive planning and goals of Gallatin County. Evidence of public and agency coordination can be found in Appendices VI and XIV of the FEA.

ii. The interests of the community in or near which the project may be located have been given fair consideration (49 USC §47106(b)(2)).

The determination prescribed by this statutory provision is a precondition to agency approval of AIP funding. The Draft EA was provided to the public and governmental agencies for review and comment on March 12, 2016 and was followed by a 45-day comment period that ended on April 25, 2016. Furthermore, a public hearing was held on April 13, 2016. Appendix XIV contains transcripts from the hearing and copies of all comments received (5 in total).

iii. The airport sponsor has taken, or will take, actions to restrict land use in the airport vicinity, including adoption of zoning laws, to ensure the uses are compatible with airport operations (49 USC §47107(a)(10)).

The determination prescribed by this statutory provision is a precondition to agency approval of AIP funding. As a recipient of AIP funding, the Airport Sponsor has signed grant assurances that require them to take appropriate action, to the extent reasonable, including the adoption of zoning laws, 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 Belgrade City-County Planning Board, established by the Belgrade City Council and the Gallatin County Commission has zoned BZN as PLI, Public Lands and Institutions. Airports and customary accessory uses required for their operation are permitted uses under the PLI designation. An Airport Influence Area (AIA) around BZN was approved by Gallatin County Commissioners which provides noise, height and land use regulations within the AIA so they do not conflict with air space required for the operation of BZN. Height limitations are based on Title 14, Code of Federal Regulations, Part 77, "Safe, Efficient Use, And Preservation of the Navigable Airspace"

iv. Certification from the airport sponsor that it has provided an opportunity for a public hearing (49 U.S.C. 47106(c)(1)(A)(i))

The determination prescribed by this statutory provision is a precondition to agency approval for grant funding applications for airport development projects involving the location of a new airport or new runway or a major runway extension. A public hearing was held on April 13, 2016. Appendix XIV contains transcripts from the public hearing and copies of all comments received (5 in total).

v. Certification from the airport sponsor that the airport management board has voting representation from the communities in which the project would be located or that the sponsor has advised communities they have a right to petition the Secretary of Transportation about a proposed project (49 U.S.C. 47106(c)(1)(A)(ii)).

The determination prescribed by this statutory provision is a precondition to agency approval for grant funding applications for airport development projects involving the location of a new airport or new runway or a major runway extension. BZN is located within Gallatin County, Montana. The "airport management board" for BZN consists of a five-member Board of Commissioners. On 22 November 1972, the Board of County Commissioners of Gallatin County, Montana created by Resolution 1553 the Gallatin Airport Authority under Title 1,

Chapter 9, R.C.M. 1947. The Gallatin Airport Authority (GAA) is a public body, corporate and politic, established to own and operate the Bozeman Yellowstone International Airport. The GAA Board of Commissioners consists of five Commissioners appointed by Gallatin County and are given broad powers under Section 67-10-303, M.C.A., to plan, establish, acquire, develop, construct, enlarge, improve, maintain, equip, operate and regulate the Bozeman Yellowstone International Airport. By statute, the GAA Board is required to have voting representation from Gallatin County. Specifically, Section 67-10-202, M.C.A., required that a board may be created "from the residents of the county. . . ." All GAA Board members are residents of Gallatin County and therefore provide voting representation from Gallatin County. A letter certifying this information has been signed by the Sponsor and is attached to this FONSI/ROD.

XII. Decision and Order

After careful and thorough consideration of the facts contained herein, the undersigned finds that the proposed Federal action, namely the Preferred Alternative, is consistent with existing national environmental policies and objectives as set forth in Section 101 (a) of NEPA and other applicable environmental requirements and is not a major federal action significantly affecting the quality of the human environment or otherwise, including any condition requiring consultation pursuant to Section 102(2)(c) of NEPA.

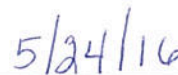
The FAA has carefully and thoroughly considered the facts contained in the attached FEA. Based on that information, the FAA finds that the Preferred Alternative is consistent with existing national environmental policies and objectives of Section 101(a) of NEPA and other applicable environmental requirements. FAA also finds that the proposed Federal action will not significantly affect the quality of the human environment or include any condition requiring any consultation pursuant to Section 102(2)(C) of NEPA. As a result, FAA will not prepare an Environmental Impact Statement.

This decision does not constitute a commitment of funds under the Airport Improvement Program (AIP); however, it does fulfill the environmental prerequisites to approve applications for grants of AIP funds for the proposed project in the future. (49 U.S.C § 47101)

Accordingly, under the authority delegated to me by the Administrator of the FAA, I approve and direct that agency action be taken to carry out implementation of the Preferred Alternative.



KC Yanamura
Regional Administrator
FAA Northwest Mountain Region



Date

Right of Appeal

This FONSI/ROD constitutes a final order of the FAA Administrator and is subject to the exclusive judicial review under 49 USC § 46110 by the US Circuit Court of Appeals for the District of Columbia or the US Circuit Court of Appeals for the circuit in which the person contesting the decision resides or has its principal place of business. Any party having substantial interest in this order may apply for review of the decision by filing a petition for review in the appropriate US Court of Appeals no later than 60 days after the order is issued in accordance with the provisions of 49 USC § 46110. Any party seeking to stay implementation of the ROD must file an application with the FAA prior to seeking judicial relief as provided in Rule 18(a) of the Federal Rules of Appellate Procedure.

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CHAPTER 1

BACKGROUND AND PROPOSED ACTION

1.1 INTRODUCTION

The Bozeman Yellowstone International Airport (BZN) is located in the Gallatin Valley of southwest Montana (**Figure 1-1**). The sponsor for the airport, the Gallatin Airport Authority (Sponsor), is proposing the construction of a paved, Visual Flight Rule (VFR), all-weather surface, Runway 11-29 at BZN. The existing turf (grass) Runway 11-29 will remain and the proposed Secondary Runway 11-29 will provide an alternate landing surface north of, and parallel to, the turf runway. The proposed improvements will act as one runway where either the turf or paved surface may be used as Runway 11-29, but they may not both be used for simultaneous approaches and departures. The Proposed Action is described in additional detail in Section 1.5.

The Sponsor, in cooperation with the FAA, has prepared this Environmental Assessment (EA), to identify the potential environmental impacts associated with the Proposed Action, as well as how any identified impacts can be eliminated or mitigated. The preparation of this EA was triggered by the requirements of the National Environmental Policy Act (NEPA) and the Council of Environmental Quality (CEQ) regulations as well as FAA Orders for implementing NEPA. Federal Aviation Administration (FAA) Order 1050.1E¹, *Environmental Impacts: Policies and Procedures*, and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions* describe Federal airport and aviation actions that trigger the requirement for environmental evaluations pursuant to NEPA. Both FAA Orders also provide detailed guidance on the preparation of airport and aviation environmental studies.

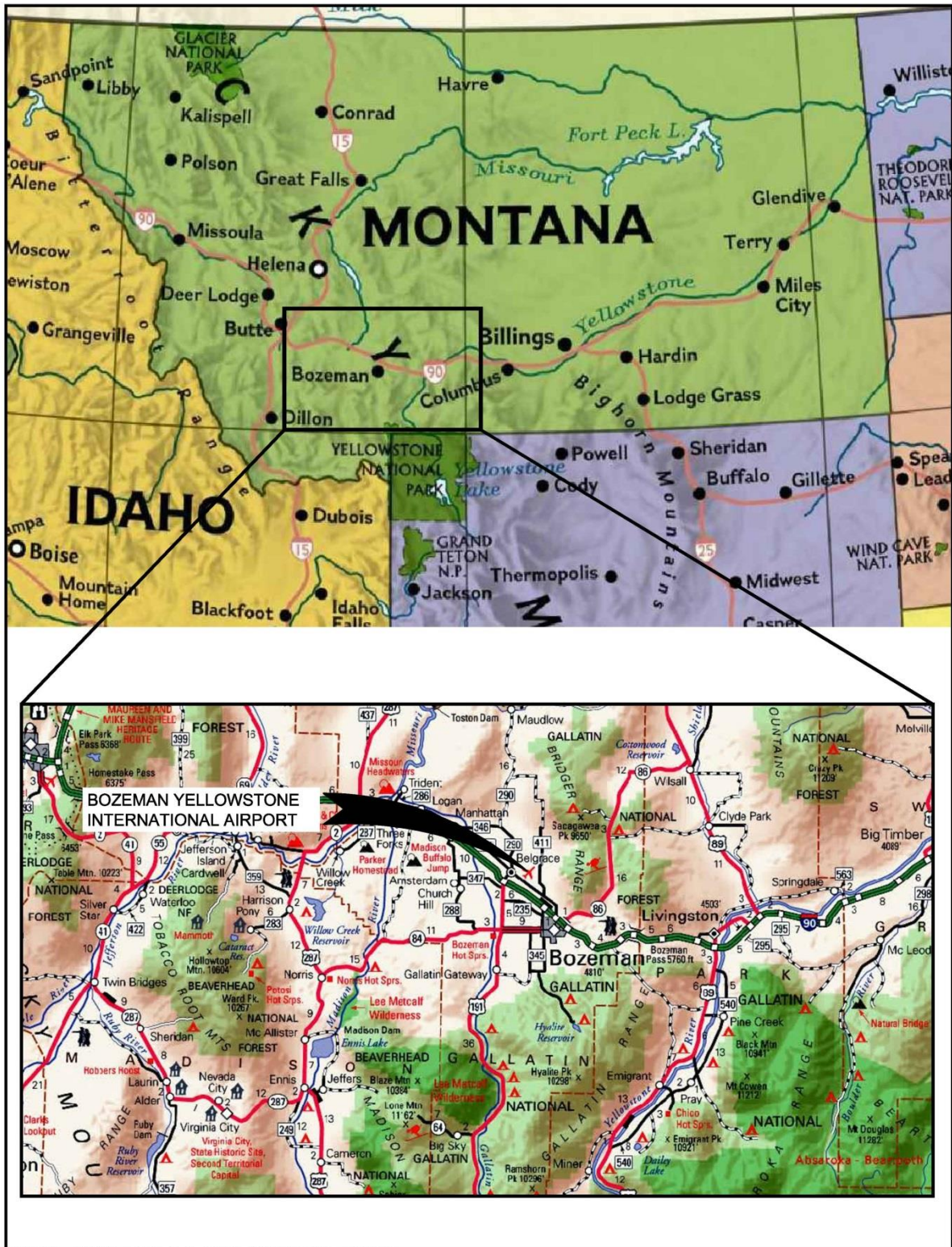
The implementation of the Proposed Action is contingent on the outcome of this EA and availability of required FAA approval of grant applications and funding. If approved and funded, the proposed project is expected to begin construction in 2016.

1.2 BACKGROUND AND EXISTING FACILITIES

Bozeman Yellowstone International Airport (BZN) is located in southwest Montana in the heart of the Gallatin Valley (**Figure 1-1**). BZN is the only airport serving as a year-around gateway for two Yellowstone National Park entrances. BZN also provides access to the recreation areas of Big Sky Resort and the Bridger Bowl Ski Area as well as the business centers of Bozeman, Belgrade, and Livingston and higher education at Montana State University.

BZN began operating at its present site in 1941, and since those early days has undergone significant expansion and improvements to meet the continuing needs of increased passenger numbers. BZN ranks as the eighth busiest passenger airport in the seven-state FAA Northwest Mountain Region (MT, WA, OR, ID, WY, UT and CO), and is the busiest airport in Montana with approximately 1,000,000 passengers using BZN every year. BZN is served by five airlines, two cargo carriers, and seven aircraft and helicopter charter services as well as five flight schools.

¹ Order 1050.1E has been superseded by 1050.1F, dated July 16, 2015. As this EA was started under 1050.1E, and there were no substantial changes for the evaluation required between the two versions, the FAA has allowed proceeding with complying with and referencing Order 1050.1E for this document.



N:\08411014\Acad\Exhibits\Figure 1-1 - Location Map BOZO.dwg Plotted by brad drvinle on Feb/22/2016

Figure 1-1 – LOCATION MAP

BZN has three active runways: Runway 12-30 (primary runway), Runway 3-21 (crosswind runway), and Runway 11-29 (turf runway).

The primary Runway 12-30 is a precision instrument runway that functions as the commercial service runway and is also used by the General Aviation (GA) fleet. It has an 8,994' x 150' grooved asphalt surface. The grooved surface provides for increased braking and skid resistance. The runway has High Intensity Runway Lighting (HIRL) and distance-to-go signs. Runway 12 (west end) includes an Instrument Landing System (ILS) consisting of a glide-slope, localizer, Medium-intensity Approach Lighting System with Runway alignment indicator (MALSR) and is classified as a precision approach Category I (CAT I) runway. A CAT I runway is defined as being a runway with an instrument approach procedure which provides for approaches to a decision height of not less than 200 feet and visibility of not less than ½ mile. The decision height for ILS Runway 12 is 211 feet above ground level with a visibility minimum of ½ statute mile. Runway 30 (east end) has a Visual Approach Slope Indicator (VASI), Runway End Identifier Lights (REILs), and is striped as a precision instrument runway. Runway 30 has one non-precision circling approach and one Required Navigation Performance (RNP) approach.

As identified by Boise Terminal Radar Approach Control (TRACON) in a letter dated January 7, 2015 (**Appendix I**), the ILS approach serves Runway 12. Generally speaking, air traffic utilizing the ILS on Runway 12 (often larger air carrier aircraft) prefer to fly over the lower and flatter terrain of the Gallatin Valley and Horseshoe Hills (northwest of BZN), and land southeast towards the higher terrain of the Bridger Mountains. Another advantage to landing in this direction on Runway 12 is that it allows them to land uphill based on the runway slope (the runway slopes uphill from the threshold of Runway 12 to the threshold of Runway 30 approximately 37 feet).

At the same time, and as identified by the TRACON letter dated January 7, 2015 referenced in the preceding paragraph, the favored departing runway is Runway 30 (in which air traffic travels in the exact opposite direction of Runway 12 on the same pavement) due to the terrain (takeoffs on Runway 30 are away from the higher elevation Bridger Mountains east of BZN). This also allows departing aircraft to take advantage of the downhill slope (the runway slopes downhill from the threshold of Runway 30 to the threshold of Runway 12 approximately 37 feet). Use of Runway 30 for departures then has the advantage of traffic taking off downhill and climbing over the flatter terrain of the Gallatin Valley and the lower elevation Horseshoe Hills, as compared to having to depart on Runway 12 which slopes uphill and then presents the challenge of having to climb over or maneuver around the Bridger Mountains.

The result of these conditions is that air traffic prefer to approach BZN over lower terrain to land on the uphill slope of Runway 12, but depart on the same runway in the opposite direction (which is Runway 30) to take advantage of the downhill slope and lower terrain after takeoff. This creates challenges both for coordinating traffic on the ground as well as mixing approaching and departing aircraft over the lower terrain of the Gallatin Valley and Horseshoe Hills.

Runway 3-21 is a 2,650' x 75' asphalt surface, positioned perpendicular to Runway 12-30 and is often called the crosswind runway, serving small GA aircraft exclusively. It is not lighted, and in addition, does not meet the minimum FAA recommended runway length. There are no improvements proposed to Runway 3-21 with the proposed Runway 11-29 project. The runway length of RW 3-21 is not intended to be changed given that there are alternate landing surfaces at BZN which do meet recommendations.

Turf Runway 11-29 is a 3,197' x 80' turf (grass) surface and is not lighted. It is located 700 feet northeast and is generally parallel to Runway 12-30. This turf runway is separated from Runway 12-30 at a distance that is far enough away to allow for simultaneous Visual Flight Rule (VFR) approaches and departures to Runways 11 and 12 or Runways 29 and 30. Runway 11-29 is closed to fixed wing aircraft for the majority of the winter because of snowfall, and much of the spring due to a wet and soft landing surface.

A parallel taxiway system serves the primary Runway 12-30 and includes Medium Intensity Taxiway Lights (MITL) and a guidance sign array. In addition to the parallel taxiway system, BZN serves the GA fleet with several taxilanes. These taxilanes provide access routes to the hangar areas located south of the runway(s).

BZN is served by a Very High Frequency Omni Directional Radio Range (VOR) short-range radio navigation system collocated with Distance Measuring Equipment (VOR/DME). Bozeman's VOR/DME is one of the only "High Altitude" VORs in the region, making it a vital navigation aid to aircraft using BZN and to those navigating a route to elsewhere in the region. The VOR/DME is located north of Runway 12-30 at approximately mid-field.

Figure 1-2 provides a graphic presentation of the existing airport facilities.

BZN is also served by an Airport Traffic Control Beacon Interrogator (ATCBI-6) "Beacon-Only" radar facility located north of Runway 12-30. It provides surveillance support to the Boise TRACON and Salt Lake City Air Route Traffic Control Center (ARTCC). As the ATCBI-6 at BZN is not visual radar, the system can only see aircraft operating with radio transponders. The Airport Traffic Control Tower (ATCT) operated at BZN uses the ATCBI-6 for situational awareness but it is not considered to be a radar environment. As such, the radar is not considered to increase the number of aircraft that BZN can safely accommodate.

1.3 EXISTING OPERATIONS

In 2014, BZN had 80,722 total operations. Of these operations, 24% (18,948) were air carrier, air taxi, or military operations. The remaining operations (76%) are made up of GA and corporate jets that are further identified as local and itinerant operations. Local operations (defined as one takeoff or landing of a locally based aircraft) accounted for 41% (33,038) of the overall operations. Itinerant operations (defined as one takeoff or landing of a GA aircraft that is not locally based) accounted for the remaining 35% (28,736) of overall operations.

In 2014, there were 308 based aircraft at BZN. Each based aircraft averaged 107 local operations (33,038 operations/308 local aircraft) in 2014. Of the based aircraft, approximately 80% are design group A-II gliders or approach category A and B single engine aircraft. Approach Category A aircraft are those that have approach speeds of less than 91 knots. Approach Category B aircraft are those that have approach speeds of 91 knots or more but less than 121 knots. Aircraft Design Group (ADG) II aircraft are those with tail heights of 20 feet to less than 30 feet and/or wingspans of 49 feet to less than 79 feet. **Table 1-1** shows the complete based aircraft for BZN for the year ending in 2014.



Engineers
Surveyors
Scientists
Planners

2880 Technology Blvd- West
Bozeman, MT 59718

Phone: (406) 587-0721
Fax: (406) 922

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CHK'D. BY: MJM
APPR. BY: MJM
DATE: 03/2015

BELGRADE

BOZEMAN YELLOWSTONE INTERNATIONAL AIRPORT

MONTANA

PROJECT NO.
0761.118

ENVIRONMENTAL ASSESSMENT RUNWAY 11-29
EXISTING AIRFIELD LAYOUT

FIGURE NUMBER
FIG. 1-2

Table 1-1. Based Aircraft at BZN for Year 2014

Glider	10
Single Engine	235
Twin Engine	18
Helicopter	22
Jet	23
Total	308

Air-carrier commercial operations at BZN currently are conducted by Alaska, Allegiant, Delta, Frontier, and United Airlines. During 2015, arrivals and departures have been scheduled every hour of the day except for the 6:00 to 7:00 p.m. hour, the 10:00 to 11:00 p.m. hour, and the 12:00 a.m. to 6:00 a.m. period. The respective aircraft types, airport approach category, design groups, and daily operations are reflected in **Table 1-2**. Such aircraft are spread between approach categories A and D, with design groups ranging from II to III. Approach Category C aircraft are those that have approach speeds of 121 knots or more but less than 141 knots. Approach Category D aircraft are those that have approach speeds of 141 knots or more but less than 166 knots. ADG III aircraft are those with tail heights of 30 feet to less than 45 feet and/or wingspans of 79 feet to less than 118 feet.

Table 1-2. Commercial Aircraft Types and Operations at BZN

Airline	Aircraft	Airport Approach Category/Design Group	Operations per Day
Alaska	Bombardier Q400 (DH4)	A-III	8
Allegiant	McDonnell Douglas (MD-80)	C-III	4
Allegiant	Airbus A319	C-III	2
Delta	Canadair Regional Jet CRJ 200	C-II	4
	Canadair Regional Jet CRJ 900	C-III	2
	Airbus A319 & A320	C-III	8
	Embraer E175	C-III	2
	Boeing 737-800	D-III	2
Frontier	Airbus A319	C-III	2
United	Canadair Regional Jet CRJ 200	C-II	4
	Canadair Regional Jet CRJ 900	C-III	14
	Airbus A319 & A320	C-III	8
Total			60

Source: BZN Airline Flight Schedule 3/23/15 to 3/29/15. There are no Category B commercial aircraft currently utilizing BZN.

BZN is one of the fastest growing airports in the Region. As one of two small hub airports in Montana and one of seven in the Northwest Mountain Region, passenger enplanements reached 480,000 in 2014. Tower operations have increased 47% percent since 2000.

Economic growth over multiple industry sectors in the Gallatin Valley area has been continuous for the past ten years, and the area has shown economic stability even through the recent recession. Fueling this growth is a diversified economy identified as one of the communities in the Intermountain West that has experienced more than three times the national average rate of job growth (14.7%) over the past 10 years. Much of this growth is within the tech industry and Science, Technology, Engineering and Mathematics (STEM) occupations. It is assumed that the Gallatin Valley area will experience similar economic growth in the years ahead. Although tourism is a major component of the Gallatin Valley area economy, BZN passengers arriving for recreational purposes comprise only 24% of all passengers annually; 76% are flying to the Gallatin Valley for other reasons (i.e. Montana State University, business, governmental, medical profession/patients, personal use, etc.).

The Visual Flight Rules (VFR) contract tower at BZN controls all aircraft within 7 miles of the airport in a non-radar environment. Visual Flight Rules are a set of regulations under which a pilot operates an aircraft in weather conditions generally clear enough to allow the pilot to see and avoid other aircraft. As growth at BZN has continued to increase, the Sponsor, in conjunction with the FAA, has been proactive in implementing measures to reduce delay, improve the level of service, and improve safety for the travelling public. Such measures have included the installation of ATCBI-6 radar beacon (2006), installing the radar display in the tower (2009), and the development of approach and departure procedures (2011).

With the recent implementation of Terminal Radar Approach Control (TRACON) by Big Sky Approach (a sector of Boise TRACON) in 2013, transponder equipped aircraft are now identified on radar. Sequencing and separation guidance for IFR aircraft is provided by Boise TRACON for aircraft above 16,000 feet mean sea level and within 50 nautical miles of the airport. At 7 miles from the airport, aircraft are handed off from Boise TRACON to contract tower personnel at BZN, which is a non-radar environment. This has allowed BZN tower personnel to concentrate on the immediate airport environment which has improved safety. However, sequencing and separation are still largely affected by the varying size and speed of aircraft operating at the airport.

One factor that influences the analysis of operations on primary Runway 12-30 at BZN is the large peak hour operations caused by the geographic location of the airport within the United States. BZN is a destination airport with low amounts of passengers traveling through the airport to connect to flights traveling to other destinations. Passengers flying to BZN on flights departing from the east and west coast and other hubs arrive within approximately the same time frame, creating a high volume of traffic in a short time frame. This schedule and traffic situation creates a larger than average peak hour demand, as compared to other airports with flights that are spread out more evenly throughout the day. In turn, this high level of peak hour operations affects Annual Service Volume (ASV)², which is a reasonable estimate of the number of operations the airport can accommodate annually. Due to the high number of commercial flights arriving within short time periods at BZN, the number of operations the airport can accommodate (ASV) is smaller than it would be at an airport that experiences more consistent or evenly spread traffic throughout the day.

² According to Advisory Circular 150/5060-5, *Airport Capacity and Delay*, annual service volume (ASV) is a reasonable estimate of the number of operations the airport can accommodate annually. It accounts for differences in runway use, aircraft mix, weather conditions, etc., that would be encountered over a year's time.

Boise TRACON provides approach control on Runway 12 with a peak hour average of 3 minute intervals between each commercial aircraft. All local and VFR traffic must be sequenced into this interval by the local tower. In the past, Salt Lake City Control would hold planes before they were sequenced into BZN airspace to create 10 minute intervals. This is not the case with Boise TRACON, and the tower has been required to adjust their sequencing of local traffic.

Boise TRACON correspondence (**Appendix I**) has noted that the BZN contract tower designates the runway in use and uses the wind direction and speed to ensure that the runway in use is aligned with wind direction. Frequently, small aircraft are operating on Runway 12 and the larger air carrier aircraft request to depart from Runway 30 (for downhill takeoffs and terrain). This can create a challenging configuration for BZN and increases complexity because Runways 12 and Runway 30 do not share the same characteristics.

Size and approach speed of aircraft using BZN vary greatly as a result of a high level of GA operations mixing with air-carrier type traffic. Most airports are set up to accommodate either GA or commercial traffic, or have separate runways to accommodate the different size and approach speeds of various aircraft. Therefore, large and high speed commercial aircraft do not normally mix with smaller and slower GA aircraft on the same runway. BZN serves a complex mix of various aircraft types (commercial, air carrier, multiple flight school operations, and various GA aircraft, including gliders). All these aircraft are essentially limited to using one runway. When prevailing winds dictate that gliders use Runway 12-30, they create additional delay since they take longer to clear the runway for use by follow on aircraft. This mix of lower and higher performance aircraft utilizing primary Runway 12-30 creates inefficiency and potential safety issues.

In recent years, as the airport environment has become more congested, control tower personnel have been directing slower General Aviation (GA) traffic to delay entry into the airport airspace, or denying access to the pattern for slower GA traffic until it was determined safe to accommodate them. During these times of high congestion, the tower generally gives priority to the commercial service aircraft and jet traffic. Even so, faster commercial service and jet aircraft have also been asked at times to make “S” turns to slow down and provide additional space for slower traffic ahead.

Tower personnel must coordinate simultaneously the arrivals and departures of slower GA traffic, high speed commercial and GA turbo jet aircraft, provide instruction to aircraft on the ground and in the air, and provide Instrument Flight Rule (IFR) clearances. All of this is completed by one tower technician much of the time at BZN. The numerous factors at BZN create the opportunity for additional stress on students, pilots, and tower personnel, and potentially increase the opportunity for such errors as runway incursions, airspace/pattern conflicts with aircraft, authorization of landing or departure of aircraft ahead of recommended time delays for wake turbulence, etc.

1.4 AIRPORT FORECASTS

In 2008, BZN completed a comprehensive Master Plan Update in accordance with FAA Advisory Circular 150/5070-6B, *Airport Master Plans*. As part of that effort, forecasting was completed for the airport to identify future development needs and potential timelines for implementation. The FAA reviewed and approved the forecasting methodology, fleet mix identification, and subsequent projections for such areas as enplanements, aircraft operations, based aircraft, air taxi, air cargo, and commercial air traffic growth. The forecasts were based on the assumption of unconstrained growth and therefore did not limit the projections to the existing

infrastructure (one main runway and one cross wind runway only). Chapter 2 – *Forecasting of the 2008 Master Plan Update* can be referenced in that document for further information.

Table 1-3 below shows actual enplanements and operations recorded in comparison to the 2008 Master Plan Update forecast values (Years 2010 and 2015). Analysis shows that, as a whole, the yearly growth of the airport in enplanements may be on track with the forecasting as airlines carry more passengers with fewer aircraft. It also reflects that the annual operations of both air carrier/air taxi and general aviation traffic follow more closely with the FAA's Traffic Area Forecast (TAF) projections, and are tracking behind the Master Plan forecasts which were approved by the FAA.

The 2008 Master Plan Update also included Chapter 3 – *Airside Facility Requirements and Developments*, which is included in **Appendix II** of this document. Chapter 3 utilized the 2008 Master Plan Update forecasting information (Chapter 2) to evaluate existing infrastructure for ASV needs and recommended projects to meet those projected needs. The forecasts were reviewed and approved by the FAA (correspondence dated March 3rd, 2009 in **Appendix I**) and included in the final 2008 Master Plan Update.

The narrative report in **Appendix I – Planning Update to 2008 Master Plan for Parallel Runway**, reviewed the assumptions of the 2008 Master Plan Update and Airport ASV under the recent operating conditions. It shows BZN is operating at 112% of its ASV, and is operating in excess of its hourly capacity on an increasing basis. As noted previously, exceeding ASV and experiencing high peak hour demands reflect that air traffic is at times congested in the airport environment and beyond FAA recommended concentrations. A congested environment can result in reduced level of service, reduced aircraft separation, increased delays, and a greater potential for safety issues. The Proposed Action, as described below, was developed and refined in these two planning documents. The Proposed Action will not allow or encourage larger or faster aircraft to use BZN than currently do. The Proposed Action will safely and efficiently accommodate the annual volume of air traffic currently using and forecast to use BZN.

Table 1-3. Recent Airport History vs. 2008 Master Plan Update Forecasting

*Values as identified in 2008 Master Plan Update - see also **Figure 2-7** in Chapter 2 of the 2008 Master Plan Update. Years 2010 and 2015 highlighted in gray are forecasts from the 2008 Master Plan Update.

	2005*	2006	2007	2008	2009	2010*	2010	2011	2012	2013	2014	2015*
Passenger Enplanements	335,679	317,850	335,276	351,214	342,714	419,500	365,210	397,822	433,829	442,540	483,132	503,500
Annual Operations												
Air Carrier/Air Taxi	18,590	18,135	18,989	17,678	16,398	21,933	18,184	17,241	17,933	17,880	18,732	24,701
General Aviation Total	52,744	64,642	61,053	58,846	52,163	65,847	54,091	56,337	63,216	56,755	61,774	79,073
Local	26,477	34,258	29,147	29,779	25,982	33,027	26,722	29,525	35,324	28,931	33,038	39,693
Itinerant	26,267	30,384	31,906	29,067	26,181	32,820	27,369	26,812	27,892	27,824	28,736	39,380
Military – Total	192	160	564	238	352	192	172	171	333	317	216	192
Total Operations	71,526	82,937	80,606	76,762	68,913	87,972	72,447	73,749	81,482	74,952	80,722	103,966
TAF Total Operations	69,076					75,375						82,022
Based Aircraft	263	275	292	293	289	327	280	290	285	302	308	393

1.5 PROPOSED ACTION – PROPOSED SECONDARY RUNWAY 11-29

The Proposed Secondary Runway 11-29 evaluated by this document includes the following major improvements that will meet the Purpose and Need (as described in Chapter 2):

- Construction of an asphalt runway surface for the Proposed Secondary Runway 11-29. Construct the runway 75' wide by 5,050' long to B-II small standards, offset from main Runway 12-30 by 940' to the northeast. This facility will be VFR only and will not require any new approach procedures, or modifications to existing approaches;
- Construction of a 35' wide full length parallel taxiway and associated ladder taxiways for the Proposed Secondary Runway 11-29;
- Installation of supplemental wind cones;
- Installation of Medium Intensity Runway Lights (MIRL) for the Proposed Secondary Runway 11-29;
- Installation of Medium Intensity Taxiway Lighting (MITL) system including signage;
- Installation of a Precision Approach Path Indicator (PAPI) system for the Proposed Secondary Runway 11-29;
- Installation of drainage improvements to include potential surface ditches, culverts, and drainage structures (manholes and inlets).

The Secondary Runway 11-29 is proposed to be constructed to B-II small standards as that size aircraft is the most demanding aircraft expected to regularly use the runway. The FAA defines "regular use" as 500 annual operations, and uses the term "critical aircraft" to describe the aircraft that meets this threshold. It will serve the slower, small Aircraft Approach Category A and B aircraft and gliders with an Airplane Design Group (ADG) II category and smaller. Small

aircraft are those identified as having a maximum certificated takeoff weight of 12,500 pounds or less. Although BZN is served by larger and faster aircraft than those with B-II small characteristics, the paving of Runway 11-29 will provide a landing surface for the smaller airplanes using BZN while the faster and larger aircraft can simultaneously use Runway 12-30.

CHAPTER 2 PURPOSE AND NEED

2.1 PURPOSE

The purpose of the Proposed Action is to reduce congestion, improve operational efficiency, accommodate aircraft currently using and forecasted to use BZN, reduce delays, and improve safety in accordance with planning guidelines established by FAA.

2.2 NEED FOR THE PROPOSED ACTION

The Proposed Action is needed because during busy times of the day when the primary Runway 12-30 is being used by both high speed and low speed aircraft, the air traffic control tower personnel are forced to hold arriving and departing traffic to maintain proper separation of aircraft. The construction of a secondary runway (Proposed Action) will allow for the separation of high speed and low speed traffic, thereby improving safety and operational efficiency. In addition, without the construction of the secondary runway, BZN will continue to operate above 112% of the Annual Service Volume (ASV). FAA guidance recommends planning for additional runway capacity to reduce ASV when runway operations are at 60-75% of the ASV.

2.2.1 Planning and the Expenditure of Federal Funds on a Secondary Runway

When the FAA considers planning for a secondary runway, the FAA Order 5090.3C *Field Formulation of the National Plan of Integrated Airport Systems* (NPIAS), Section 3-6.b states:

“Capacity development should be recommended with sufficient lead-time so that the improvement can be made before a problem becomes critical. Capacity development should be recommended when activity approaches the following levels:³”

New (Secondary) Runway	60% to 75% Annual Capacity (Annual Service Volume)
Short Runway (small aircraft only)	75,000 Total Operations of which 20,000 are Itinerant (non-local) Operations

In addition, for a secondary runway to be eligible for federal funding, FAA Order 5100.38D, *Airport Improvement Program Handbook*, indicates that construction of a secondary runway must meet the eligibility criteria in Table 3-7, item c.(3)(a) which states:

“The primary runway is operating at 60% or more of its annual capacity” (annual service volume), which is based on guidance from Airport Planning and Environmental Division (APP-400) as the threshold for considering when to plan a new runway.”

At BZN, the total operations shown by year have exceeded the planning threshold of 75,000 operations in five of the last eight years. Additionally, the planning threshold of 20,000 itinerant operations has also been exceeded each year since 1999 (see **Table 1-3** and **Figure 2-1**).

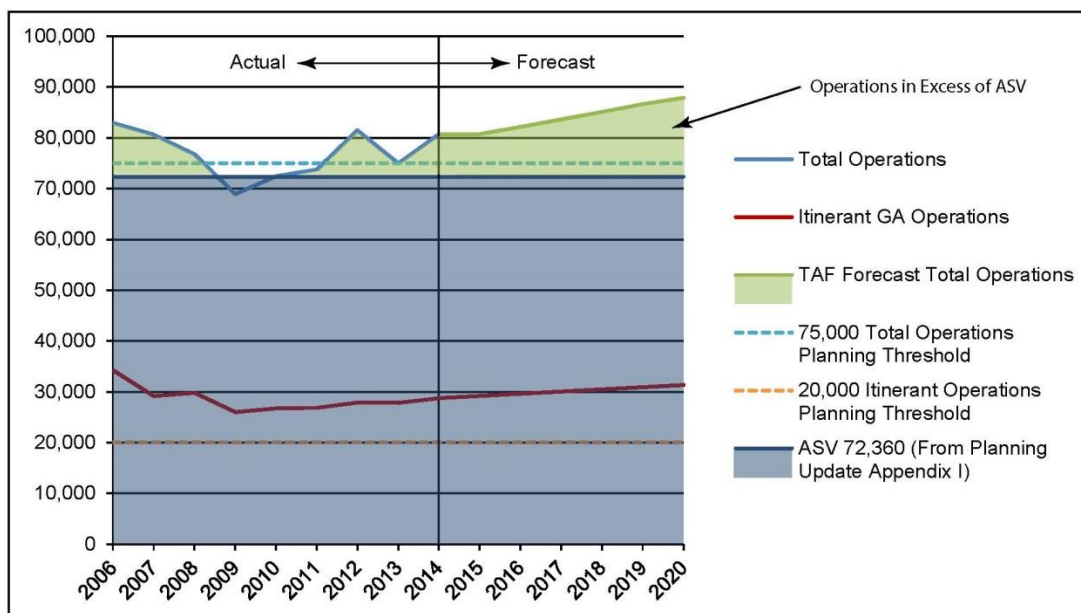
³ (see FAA Order 5090.3C, Table 3-2 Activity Levels for Planning Capacity Development, page 24)

Therefore, planning for a secondary runway to enable separation of faster traffic from slower traffic was warranted based on the criteria set forth in the FAA Order 5090.3C, Section 3-6.b shown above.

The Sponsor completed an update to the 2008 Master Plan which is titled: *Planning Update to 2008 Master Plan for Parallel Runway* (see **Appendix I**). Using the most current ASV Estimation Calculator as described in ACRP Report No. 79, the Planning Update showed that in 2014, the ASV for BZN was 72,360, but the annual operations were 80,722. This means that operations have reached 112% of the projected ASV. This demonstrates that ASV for BZN was exceeded and therefore, a secondary runway to serve smaller aircraft is eligible to receive federal funding.

The following **Figure 2-1** illustrates the FAA planning and funding criteria which must be met to justify federal expenditures on a secondary runway match against the current operational levels that exist at BZN.

Figure 2-1: BZN ASV, Operations, and Planning Thresholds



Exceeding the FAA's established ASV thresholds indicates that air traffic is at times congested in the airport environment. A congested environment results in reduced level of service, reduced aircraft separation, increased delays, and a greater potential for safety issues. In addition, high levels of peak hour operations and a challenging fleet mix have greatly contributed to this situation.

In regards to the appropriate size of the secondary runway, the critical aircraft that would utilize the runway is the determining factor. For the Proposed Action, the critical aircraft has been determined to be B-II; and therefore, the runway will be constructed to B-II standards for runway width and length. The B-II critical aircraft designation is based on the evaluation of the existing General Aviation (GA) aircraft usage at BZN to project the volume and type of aircraft expected to operate on the proposed secondary runway which is further explained in the Planning Update to the 2008 Master Plan (**Appendix I**).

2.2.2 Justification for Runway Length

Because there are so many variables associated with aircraft performance and so many variables influencing whether an airport can accommodate a particular aircraft, runway length is not an FAA standard. However, FAA Advisory Circular (AC) 150/5325-4B, *Runway Length Requirements for Airport Design*, provides the guidance to determine recommended runway lengths. In this case, the guidance in AC 150/5325-4B was used to determine the recommended length of a secondary runway to serve aircraft of 12,500 pounds or less (small airplanes).

Table 1-2 of AC 150/5325-4B shows that for additional primary runways where the purpose of the additional runway is to separate airplanes classes (thus improving the operational efficiency of the airport), Figure 2-1 of AC 150/5325-4B should be used to determine the runway length serving small airplanes. This figure is provided as **Figure 2-2** below. It categorizes small airplanes with less than 10 passenger seats into two “family” groupings according to “percent of fleet”. The two family groupings are 95 and 100 percent of the fleet that the designer will seek to accommodate with the runway length.

The 95 percent of fleet category includes airports that are primarily intended to serve low activity locations, small population communities and remote recreation areas. The 100 percent of fleet category is primarily intended to serve communities on the fringe of a metropolitan area or a relatively large population remote from a metropolitan area.

The following facts for BZN were used in to determine the runway length for the Proposed Action:

- Airport Elevation: 4,473.5 feet above mean sea level,
- Temperature: 83.2 degrees F mean daily maximum temp of hottest month.

The application of the above facts specific to BZN to **Figure 2-2** indicates that a runway length of 5,400 feet is recommended to accommodate 95 percent of small airplanes with fewer than 10 passenger seats. Using the same figure, a runway length of 5,700 feet is recommended to accommodate 100 percent of small airplanes with fewer than 10 passenger seats.

While development of the proposed secondary runway to a recommended length of 5,400 feet would allow 95% of small aircraft of 12,500 pounds or less to operate at their optimum capabilities (without weight restrictions), existing facilities at BZN restrict the runway length that could be constructed. An existing VOR system (described in Section 1.2) lies on the Runway 11 end of the proposed runway. On the Runway 29 end, the length of the proposed runway is limited by the requirements of siting of the Runway Protection Zones (RPZs) to clear existing Airport Road. These constraints result in the ability to design for a runway length of only 5,050 feet.

While the recommended length of 5,400 feet is not able to be obtained at this time because that length of runway would cause the relocation of the VOR (an existing navigational facility), the proposed length of 5,050 feet is adequate to accommodate most of the small aircraft projected to use this runway and is in accordance with the Planning Update to the 2008 Master Plan (**Appendix I**). Prior to AC 150/5325-4B, dated July 1, 2005, AC 150/5325-4A included recommended runway lengths (precursor to **Figure 2-1** above) that included 75% of the fleet, in addition to the 95% and 100% fleet family groupings. While 75% of the fleet is no longer identified in the latest AC, the preceding edition was reviewed as a check of a potential percentage of the fleet that the Proposed Action runway length of 5,050 feet may accommodate.

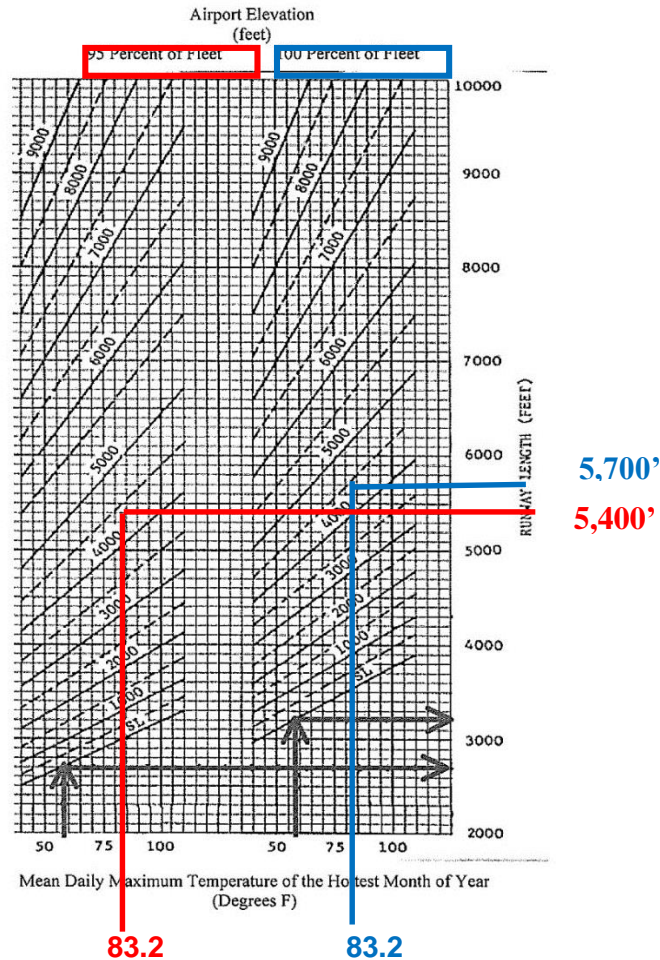


Figure 2-2: AC 150/5325-4B: Small Airplanes with Fewer than 10 Passenger Seats

Utilizing the same mean daily maximum temperature of the hottest month and airport elevation as used in **Figure 2-1** resulted in a runway length recommendation of 4,200 feet to accommodate 75% of the fleet of small airplanes with fewer than 10 passenger seats per AC 150/5325-4A.

While the exact percentage of the fleet that the proposed runway length of 5,050 feet may accommodate was not calculated from individual aircraft performance curves, the existing approximate 9,000 foot Runway 12-30 is available and can be used during periods of higher density altitude that may limit the use of the proposed 5,050 foot runway by 100% of the fleet.

A runway length of 5,050 feet meets the Purpose and Need by providing the separation of faster and slower aircraft which will bring hourly service volumes within thresholds. In other words, slower, smaller aircraft can be directed to the proposed secondary runway (referred to as Runway 11-29) allowing the faster, larger aircraft to utilize Runway 12-30. This separation of aircraft with speed differential issues would improve the operational efficiency and the safety of BZN.

2.2.3 Justification for Full-Length Parallel Taxiway

With the construction of any runway comes the need for ancillary improvements to compliment the safety and operational efficiency of the environment. Per FAA Engineering Brief 75, *Incorporation of Runway Incursion Prevention into Taxiway and Apron Design*, full-length parallel taxiways are recommended as a standard airport design element. FAA Order 5090.3C, *Field Formulation of the National Plan of Integrated Airport Systems (NPIAS)* lists parallel taxiways as a fundamental component of the basic configuration recommended for an airport in the national system. BZN is in the NPIAS system.

In situations where a parallel taxiway does not exist, a condition is created where aircraft must utilize the runway as a taxiway to access facilities in other areas of the airport (i.e. fuel, hangars, mechanical facilities, tie down area, Fixed Base Operator (FBO), etc.), or to access the threshold of a runway should prevailing conditions (i.e. wind) dictate that as a runway of choice. Any use of a runway as a taxiway increases the probability for incursions and increases runway occupancy time, which reduces overall airport operational capability and service volume. Incursions are defined as any unauthorized intrusion onto a runway, regardless of whether or not an aircraft presents a potential conflict. Use of a runway as a taxiway also detracts from the overall operational flexibility in that there is essentially only one way in and one way out for traffic accessing a dead end runway. Installation of a full length, 35' wide parallel taxiway, in accordance with FAA design criteria, will improve safety through the reduction of incursions, improve overall airport operational efficiency and flexibility, and maximize the use and efficiency of the runway.

2.2.4 Justification for Medium Intensity Runway and Taxiway Lights and Signage

An edge lighting system is a configuration of lights that defines the lateral and longitudinal limits of the usable landing or taxiing areas of the pavement. Edge lighting systems are used to outline usable operational areas of airports during periods of darkness and low visibility weather conditions. The installation of edge lighting improves safety and operational efficiency of the airport systems. Per AC 150/5340-30H, *Design and Installation Details for Airport Visual Aids*, the standard for lighting airports includes Medium Intensity Runway Lights (MIRL) and Medium Intensity Taxiway Lights (MITL) for visual or non-precision instrument runways. MITL taxiway lights are the only option for lighting taxiways. FAA Order 5090.3C, *Field Formulation of the National Plan of Integrated Airport Systems (NPIAS)* also considers runway and taxiway lighting a fundamental development for an airport in the national system.

2.2.5 Justification for Precision Approach Path Indicators (PAPIs)

PAPIs would be installed along with the other Runway 11-29 improvements. They are considered an economic visual approach lighting aid according to FAA AC 150/5340-30H, *Design and Installation Details for Airport Visual Aids*. The PAPI system enhances safety by providing beneficial visual approach slope guidance to assist the pilot of an aircraft in flying a stabilized approach. The system has an effective visual range of approximately 5 miles during the day and up to 20 miles at night.

2.3 REQUESTED FEDERAL ACTIONS

The requested Federal Actions related to the Proposed Action are as follows:

- Unconditional approval of the Proposed Action as shown on the updated ALP (**Appendix III**).
- Determination that environmental analysis prerequisites associated with any future Airport Improvement Program (AIP) funding application concerning the Proposed Action have been fulfilled pursuant to 49 U.S.C. §47101.

CHAPTER 3 ALTERNATIVES

3.1 OVERVIEW AND 2008 MASTER PLAN UPDATE

Previous upgrades to improve safety, efficiency, and reduce delays, such as radar installation and the addition of approach control, have helped improve the airport environment at BZN. However, while these upgrades have improved conditions, the control tower personnel still need to hold aircraft arriving and departing BZN because the ASV is still being exceeded; therefore, further upgrades are warranted. The Proposed Action will address the current ASV constraints at BZN.

The 2008 Master Plan Update indicated the need to start planning for a secondary runway and considered six alternatives for a secondary runway to reduce congestion, improve operational efficiency, accommodate current and future forecasted operations, reduce delays, and improve safety, all while reducing impacts to existing infrastructure, pilots, and the general public. (The Master Plan Update utilized the terminology “additional parallel runway”, which is the same as the term “secondary runway” used in this EA, as consistent with current guidance). The full analysis of the six alternatives is included in **Appendix II**, as well as summarized below. The six alternatives for developing a secondary runway (discussed in the Master Plan as “parallel runway development”) varied in separation from 700’ to 2,500’ away from the existing primary Runway 12-30. Five of the six alternatives provided enough separation for simultaneous VFR operations and the sixth alternative allowed for simultaneous Instrument Flight Rules (IFR) operations.

Planning for secondary runway development researched alternatives for a site that would ultimately allow for the construction of a wider and longer runway (C-II) than the B-II runway that is currently justified to make sure future potential expansion of this runway to C-II can be accommodated, should it ever be warranted. The main components for each development alternative of the 2008 Master Plan Update for a secondary runway included the following:

- Sufficient length to serve 75% of planes of 60,000 pounds or less at 60% useful load (6,890 feet).
- Dimensional standards for both ARC B-II and C-II.

The 2008 Master Plan Update recommended a phased development of the secondary runway with the first phase being planned for B-II aircraft with fewer than 10 passengers. Although it was prudent planning to evaluate sites that would accommodate future growth and the ability to meet C-II dimensional standards, the Proposed Action in this EA only analyzes the development of a parallel B-II small runway since current operations to justify a C-II runway are not reasonably foreseeable.

The 2008 Master Plan Update then analyzed each of these components in six (6) different development alternatives which are briefly described below. The alternatives developed for the secondary runway were all located in the same general area of the airport as the Proposed Action, but varied in their threshold locations and separation from the primary Runway 12-30:

- **Option 1-1:** The secondary runway would have a 1,020’ separation from primary Runway 12-30. The Phase I length planned for 5,265’ was based on the threshold locations and allowing the VOR to remain, with the ultimate length planned for 7,020’.

This option is displayed in **Appendix II** as Figure 3-7 of the 2008 Master Plan Update, as well as at the end of this chapter. The figure number references for these figures have not changed so as to reduce confusion and correlate to **Appendix II**.

- **Option 1-2:** The secondary runway would have a 905' separation from primary Runway 12-30. The Phase I length planned for 5,135' was based on the threshold locations and allowing the VOR to remain, with the ultimate length planned for 6,890'. This option is displayed in **Appendix II** as Figure 3-8 of the 2008 Master Plan Update, as well as at the end of this chapter.
- **Option 1-3:** The secondary runway would have a 700' separation from primary Runway 12-30. The Phase I length planned for 5,265' was based on the threshold locations and allowing the VOR to remain, with the ultimate length planned for 7,020'. This option is displayed in **Appendix II** as Figure 3-9 of the 2008 Master Plan Update, as well as at the end of this chapter.
- **Option 2-1:** The secondary runway would have a 1,020' separation from primary Runway 12-30. The Phase I length planned for 3,310' was based on the threshold locations and allowing the VOR to remain, with the ultimate length planned for 7,043'. This options is displayed in **Appendix II** as Figure 3-10 of the 2008 Master Plan Update, as well as at the end of this chapter.
- **Option 2-2:** The secondary runway would have a 700' separation from primary Runway 12-30. The Phase I length planned for 3,310' was based on the threshold locations and allowing the VOR to remain, with the ultimate length planned for 7,043'. This option is displayed in **Appendix II** as Figure 3-11 of the 2008 Master Plan Update, as well as at the end of this chapter.
- **Option 3:** The secondary runway would have a 2,500' separation from primary Runway 12-30 with a length planned for 6,600'. This option is displayed in **Appendix II** as Figure 3-12 of the 2008 Master Plan Update, as well as at the end of this chapter.

3.2 EVALUATION OF DEVELOPMENT ALTERNATIVES

All development alternatives for a secondary runway from the 2008 Master Plan Update were compared to the Purpose and Need objectives of Chapter 2 of this EA. Any development alternatives that did not meet the Purpose and Need, or that were considered to be impractical alternatives from a technical standpoint during the planning process (as discussed below), were eliminated from further consideration. Impractical alternatives were considered those that required changes to existing design features of the airport that would negatively impact the flying public, or required extensive land acquisitions or road relocations that would negatively impact adjacent landowners or existing roads. A summary table of this analysis is included in **Table 3-2**.

Table 3-1 below discusses the key advantages and disadvantages of each alternative reviewed in the 2008 Master Plan Update.

Table 3-1. 2008 Master Plan Update Alternatives Overview

<p>Option 1-1: 1,020' separation from Runway 12-30</p>	<p>This option does not negatively affect the flying public as it maintains the turf runway and spray effluent system (in the area of the turf runway). It allows for simultaneous VFR approaches to Runway 12-30 and 11-29. It also eliminates wake turbulence delay on Runway 30. The first phase to accommodate B-II provides sufficient length for the majority of small aircraft which meets the Purpose and Need of this EA.</p> <p>This option requires abandonment of approximately 4,000' of Tubb and Airport Roads due to the proposed runway Object Free Area (OFA) requirements. This abandonment would require land acquisition for the construction of approximately 7,800' of road to access adjacent private property. Lagoon and Baseline Roads would require the abandonment of 1,200' of existing road and construction of approximately 900' of new road. These relocations would have negative impacts to the adjacent landowners.</p> <p>Additional land acquisition would be required for the RPZ for Runway 29 for ultimate development. This option also requires the relocation of the VOR and ASOS for ultimate development.</p>
<p>Option 1-2: 905' separation from Runway 12-30</p>	<p>This option does not negatively affect the flying public as it maintains the turf runway and spray effluent system (in the area of the turf runway). It allows for simultaneous VFR approaches to Runway 12-30 and 11-29. It also eliminates wake turbulence delay on Runway 30. The first phase to accommodate B-II provides sufficient length for the majority of small aircraft which meets the Purpose and Need of this EA. It does not negatively affect the adjacent landowners as it does not require relocations of Tubb and Airport Road or land acquisition. To accommodate the ultimate length for C-II development should operations ever justify it, Lagoon and Baseline Roads would require the abandonment of 800' of existing road and construction of approximately 600' of new road, but does not require additional land acquisition or negatively affect neighboring land owners as it would occur on airport property.</p> <p>Land acquisition would be required for the RPZ for Runway 29 for ultimate development. This option also requires the relocation of the VOR and ASOS for ultimate development.</p>
<p>Option 1-3: 700' separation from Runway 12-30</p>	<p>This option allows for simultaneous VFR approaches to Runway 12-30 and 11-29 and eliminates wake turbulence delay on Runway 30. The first phase to accommodate B-II provides sufficient length for the majority of small aircraft which meets the Purpose and Need of this EA. This option does not negatively affect adjacent landowners as relocations of Tubb, Airport, Lagoon or Baseline Roads due to the runway OFA requirements are not required.</p> <p>This option would negatively affect the flying public as it would eliminate the turf runway and a portion of the spray effluent system in the area of the turf runway and extended area.</p>

	<p>Modifications to the spray effluent sprinkler system to the west of the turf runway would need to be made in order for the system to continue to operate correctly. This option would result in a loss of the monetary investment for the turf runway and a portion of the spray effluent system in the area of the turf runway and extended area, as well as a loss of turf facilities desired by some pilots.</p> <p>Land acquisition would be required for the RPZ for Runway 29 for ultimate development.</p>
Option 2-1: 1,020' separation from Runway 12-30	<p>This option does not negatively affect the flying public as it maintains the turf runway and spray effluent system in the area of the turf runway. Modifications to the spray effluent sprinkler system to the west of the turf runway would need to be made in order for the system to continue to operate correctly.</p> <p>It allows for simultaneous VFR approaches to Runway 12-30 and 11-29, and eliminates wake turbulence delay on Runway 12.</p> <p>The shorter Phase I (B-II) length of 3,310' in this option is due to constraints of the VOR and threshold location. The shorter length serves fewer aircraft than most other alternatives, less than 75% of the fleet, and does not meet the Purpose and Need of this EA.</p> <p>This option requires abandonment of approximately 4,000' of Tubb Road due to the runway OFA requirements. This abandonment would require land acquisition for the construction of approximately 6,800' of new road to access adjacent private property. This option also requires relocations of Tubb, Lagoon, and Baseline Roads, and modifications to the sewer lagoons. These relocations would have negative impacts to the adjacent landowners.</p>
Option 2-2: 700' separation from Runway 12-30	<p>This option allows for simultaneous VFR approaches to Runway 12-30 and 11-29, and eliminates wake turbulence delay on Runway 12. It does not negatively affect the adjacent landowners as it does not require relocations of any roads or land acquisition.</p> <p>This option would negatively affect the flying public as it would eliminate the turf runway and nearly eliminates the entire spray effluent system.</p> <p>This option would result in a loss of the monetary investment for the turf runway and a portion of the spray effluent system (in the area of the turf runway), as well as a loss of turf facilities desired by some pilots.</p> <p>The shorter Phase I (B-II) length of 3,310' in this option is due to constraints of the VOR and threshold location. The shorter length serves fewer aircraft than most other alternatives, less than 75% of the fleet, and does not meet the Purpose and Need of this EA.</p>

Option 3: 2,500' separation from Runway 12-30	<p>This option does provide separation for simultaneous approaches for IFR conditions to Runway 12-30 and Secondary Runway 11-29. This option does not negatively affect the flying public as it maintains the turf runway.</p> <p>This option requires major land acquisition including commercial and residential properties. Major relocation of Tubb, Lagoon, and Baseline Roads are required, along with the construction of a large amount of road for access to private property. This option also requires relocation of infiltration and percolation (IP) beds and the radar beacon. While this option meets the Purpose and Need, a second IFR runway is not expected to be needed and implementation of this option comes with negative impacts on adjacent landowners.</p>
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The alternatives were rigorously explored and evaluated during the 2008 Master Plan Update. **Table 3-2** below briefly discusses the comparisons of the alternatives based on if they met the Purpose and Need of the project, the effects on the public, and whether or not the options are considered for further evaluation under this EA.

Table 3-2 – 2008 Master Plan Update Alternatives Comparison

Alternative	Does it meet the Purpose and Need?	Does it negatively affect adjacent roads and landowners?	Does it negatively affect the flying public?	Is this option being carried forward for consideration in this EA?
Option 1-1	Yes	Yes	No	No
Option 1-2	Yes	No	No	YES
Option 1-3	Yes	No	Yes	No
Option 2-1	No	Yes	Yes	No
Option 2-2	No	No	Yes	No
Option 3	Yes	Yes	No	No

Review of **Table 3-2** shows that Option 1-2 is the only alternative that meets the Purpose and Need and is prudent and feasible as it does not negatively affect adjacent roads, landowners, or the flying public. Therefore, it is the only development alternative carried forward for analysis in this EA.

It should be mentioned that a change to the FAA's AC 150/5300-13A, *Airport Design* was made on February 26, 2014. This change created a new design category within the Runway Design Code. This new category is for "small" or light aircraft (less than 12,500 pounds) within the Category B, Design Group II designation. At the time of the 2008 Master Plan Update, there was no designation for small aircraft within the Category B, Design Group II design standards. This change does not affect the Purpose and Need of this EA, nor does it diminish the efforts of

the 2008 Master Plan Update. Rather, the new design category allowed the alternatives to be refined and developed for small aircraft.

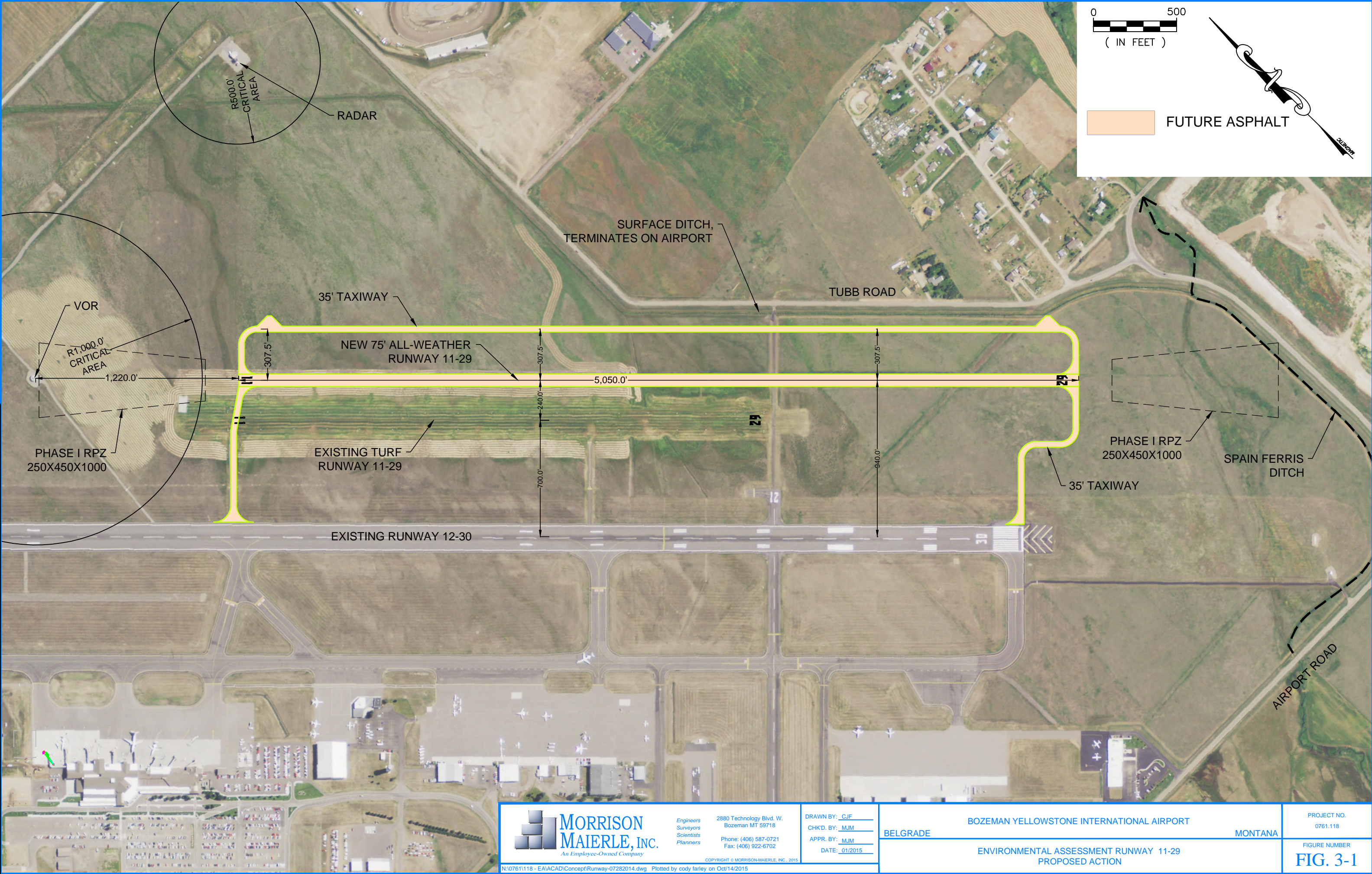
Due to changes in FAA guidance since the 2008 Master Plan was completed (new AIP Handbook requirements used to justify secondary runways, the RPZ land use interim guidance, and changes in the design AC 150/5300-13A), and through further discussion with the FAA, Option 1-2 was refined in the *ALP Narrative Report - Planning Update to 2008 Master Plan for Parallel Runway* in **Appendix I**. Adjustments to Option 1-2 from the 2008 Master Plan Update that resulted in the Proposed Action of this EA include the following:

- B-II Small sized RPZs are reflected in Alternative 2 (Proposed Action) and sited outside of the existing Airport Road right-of-way and VOR critical area.
- The entrance taxiway to Runway 29 was modified to meet updated FAA AC 150/5300-13A, *Airport Design* requirements for end around taxiways.
- The separation between the Proposed Secondary Runway 11-29 and the turf Runway 11-29 was increased by 35' to meet runway/taxiway separation which allows aircraft to operate to/from Proposed Secondary Runway 11-29 while aircraft occupy turf Runway 11-29. This further results in the separation between the primary Runway 12-30 and the Proposed Secondary Runway 11-29 increasing from 905' separation proposed in the 2008 Master Plan Update to 940' separation with the Proposed Action.
- The runway length is proposed to be 5,050', as previously described in *Runway Length*, in Chapter 2 of this document.
- The end around taxiway option was removed as that type of facility is no longer allowable under FAA design criteria.

This refined Option 1-2 was submitted for airspace analysis to the FAA and was approved as Airspace Case 2014-ANM-1550-NRA on March 9th of 2015. A copy of the approval is included in **Appendix I**. The refined Option 1-2, that is identified from this point forward as "Alternative 2 - Proposed Action", would provide options for the landing of aircraft during congested periods, reduction of hourly service volume thresholds through provision of simultaneous operations, the separation of aircraft with speed differentials, and improve safety through increased separation to accommodate pilots in training and varied aircraft characteristics, all while reducing the impacts to existing infrastructure, pilots, and the general public.

The secondary runway alternative that originated in the 2008 Master Plan Update (Option 1-2) and was further refined and supported by the Planning Update to the 2008 Master Plan (**Appendix I**) is now referred to as the Proposed Action (illustrated in **Figure 3-1**) of this EA for the following reasons:

- Allows for simultaneous VFR approaches to the primary Runway 12-30 and the Proposed Secondary Runway 11-29;
- Eliminates wake turbulence delay on Runway 30;
- Allows turf runway and spray effluent system to remain in use;
- Allows for the turf runway to be occupied while Secondary 11-29 is in use,
- Does not require the relocation of Tubb Road;
- Additional land acquisition is not required;
- Meets the design standards of the forecasted design aircraft for the Proposed Secondary Runway 11-29;
- Length is adequate for the majority of aircraft that will utilize the parallel runway (B-II Small aircraft);
- Meets the Purpose and Need as identified in Chapter 2.



Engineers
Surveyors
Scientists
Planners

2880 Technology Blvd. W.
Bozeman MT 59718
Phone: (406) 587-0721
Fax: (406) 922-6702

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DRAWN BY: CJF
CHKD. BY: MJM
APPR. BY: MJM
DATE: 01/2015

N:\07611\118 - EA\ACAD\Concept\Runway-07282014.dwg Plotted by cody farley on Oct/14/2015

BELGRADE	BOZEMAN YELLOWSTONE INTERNATIONAL AIRPORT	MONTANA
ENVIRONMENTAL ASSESSMENT RUNWAY 11-29 PROPOSED ACTION		

PROJECT NO. 0761.118
FIGURE NUMBER FIG. 3-1

3.3 ALTERNATIVES BEING EVALUATED

Two alternatives are being carried forward for a more detailed analysis in this EA. Those alternatives are:

- Alternative 1 – No Action
- Alternative 2 – Proposed Action

3.3.1 Alternative 1 – Non-Development Alternative – No Action

The No Action alternative would not include any improvements to BZN and would maintain the airfield in its current condition. Because the number of aircraft that utilize BZN will continue to exceed the calculated ASV with no improvements to existing infrastructure, the control tower personnel will need to continue to use special methods to maintain separation of aircraft flying in the BZN airspace. This will result in a reduction of safety and reduces the efficient use of the primary Runway 12-30.

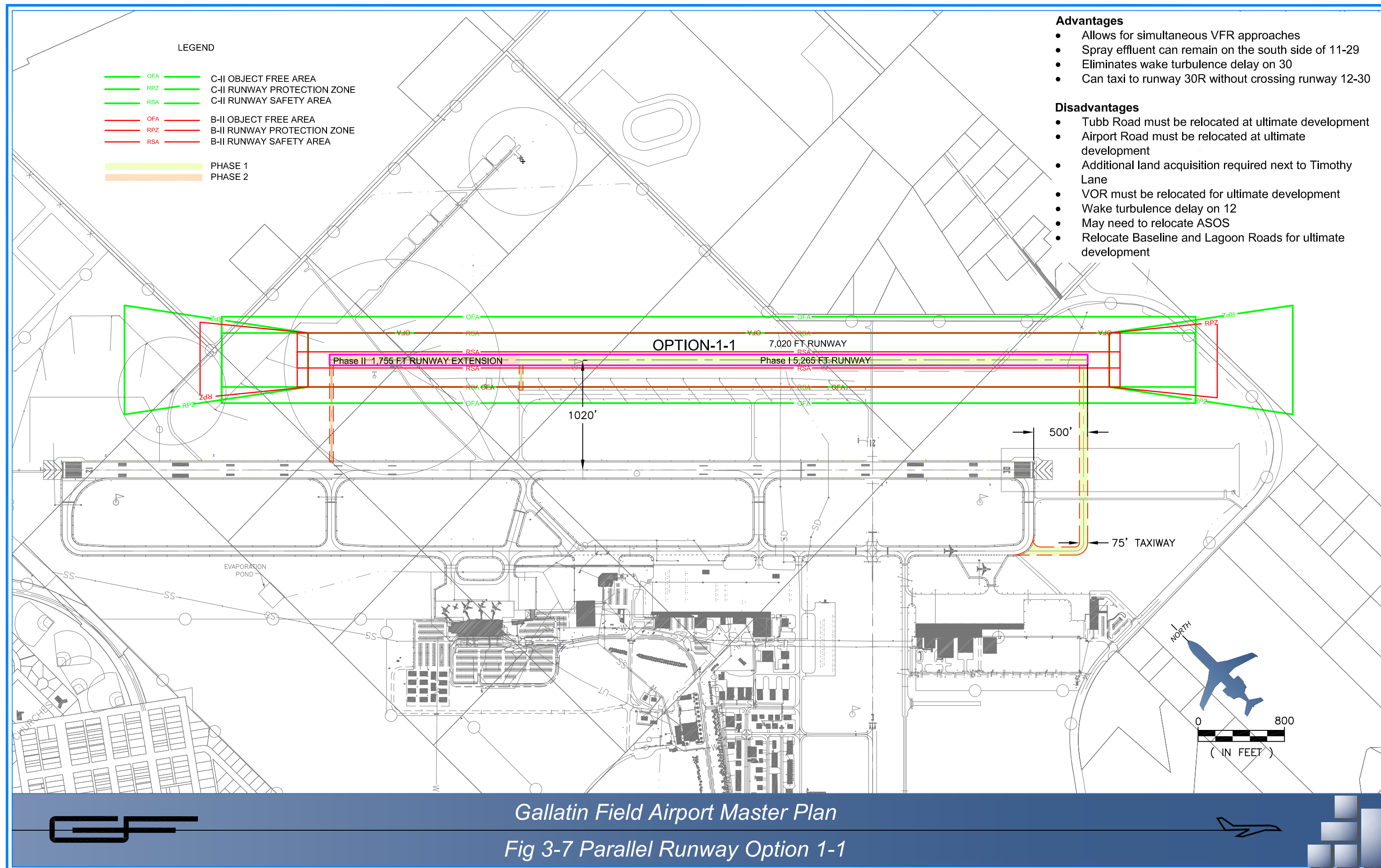
This alternative does not meet the Purpose and Need. Even though this alternative does not meet the Purpose and Need, NEPA regulations require the FAA to consider a No Action Alternative (40 CFR § 1502.14(d)). The environmental effects will be considered as a baseline for evaluation of the other alternative.

3.3.2 Alternative 2 – Proposed Action

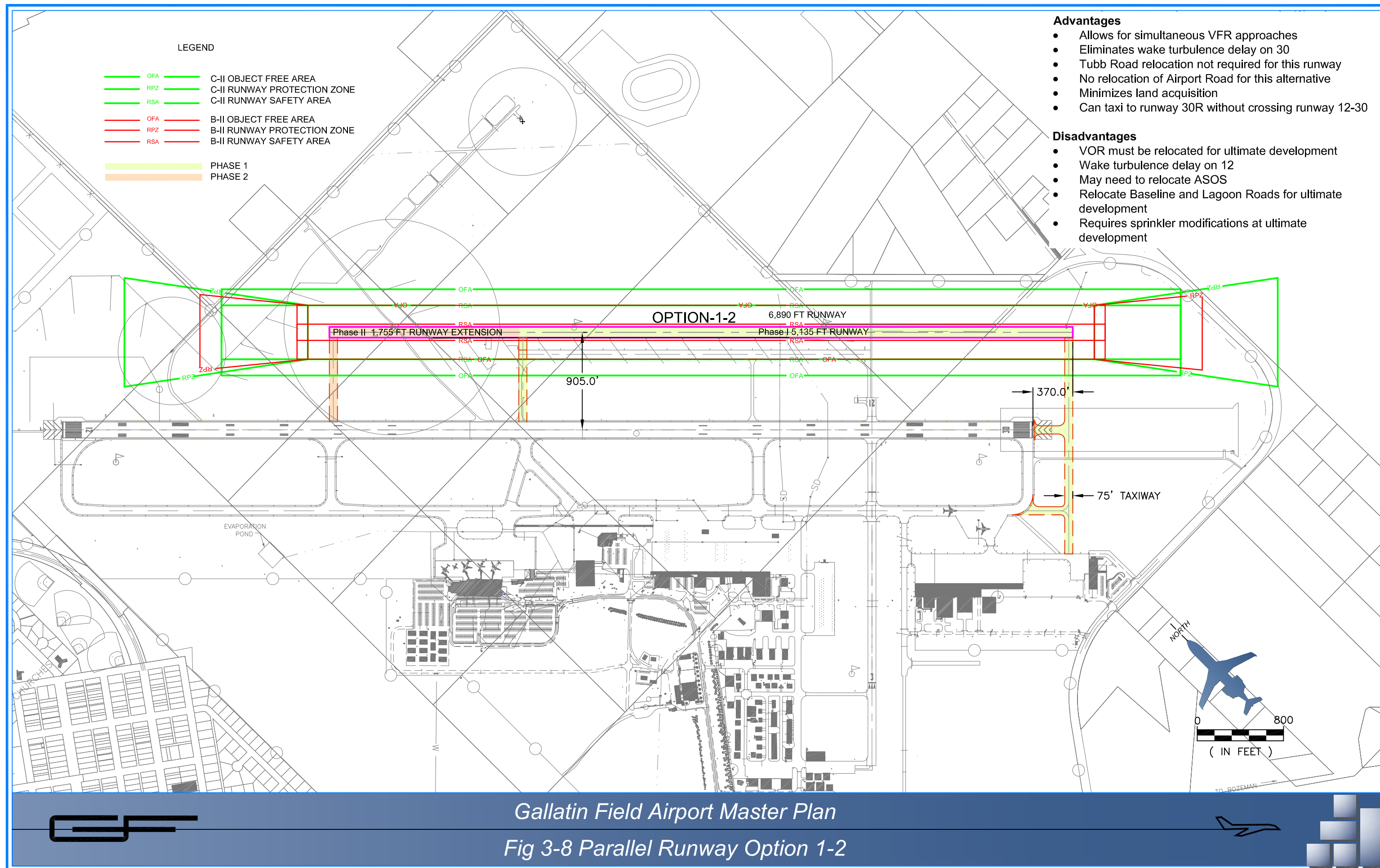
As described in Chapter 3, Alternatives, of this EA, Alternative 2 - Proposed Action was initially developed in the 2008 Master Plan Update as Option 1-2 and chosen in that document as the preferred secondary runway alternative. It was further refined through the *Planning Update to 2008 Master Plan for Parallel Runway*.

3.3.3 Selection of Preferred Alternative

By regulation, a federal agency is required to identify a Preferred Alternative as defined in CEQ's 40 CFR 1502.14. As defined in CEQ's "40 Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations," an agency's preferred alternative is "the alternative which the agency believes would fulfill its statutory mission and responsibilities, giving consideration to economic, environmental, technical, and other factors." This EA provides a detailed analysis of the No Action Alternative and the Alternative 2 - Proposed Action. Alternative 2 - Proposed Action has been selected as the FAA's Preferred Alternative based on the analysis presented in this document and this Alternative's ability to meet the Purpose and Need of this EA. Alternative 2 – Proposed Action will be referred to as Preferred Alternative for the remainder of this document.



Gallatin Field Airport Master Plan
Fig 3-7 Parallel Runway Option 1-1



LEGEND

- | | |
|-------------|-------------------------------|
| — OFA — | — C-II OBJECT FREE AREA |
| — RPZ — | — C-II RUNWAY PROTECTION ZONE |
| — RSA — | — C-II RUNWAY SAFETY AREA |
| — OFA — | — B-II OBJECT FREE AREA |
| — RPZ — | — B-II RUNWAY PROTECTION ZONE |
| — RSA — | — B-II RUNWAY SAFETY AREA |
| — PHASE 1 — | |
| — PHASE 2 — | |

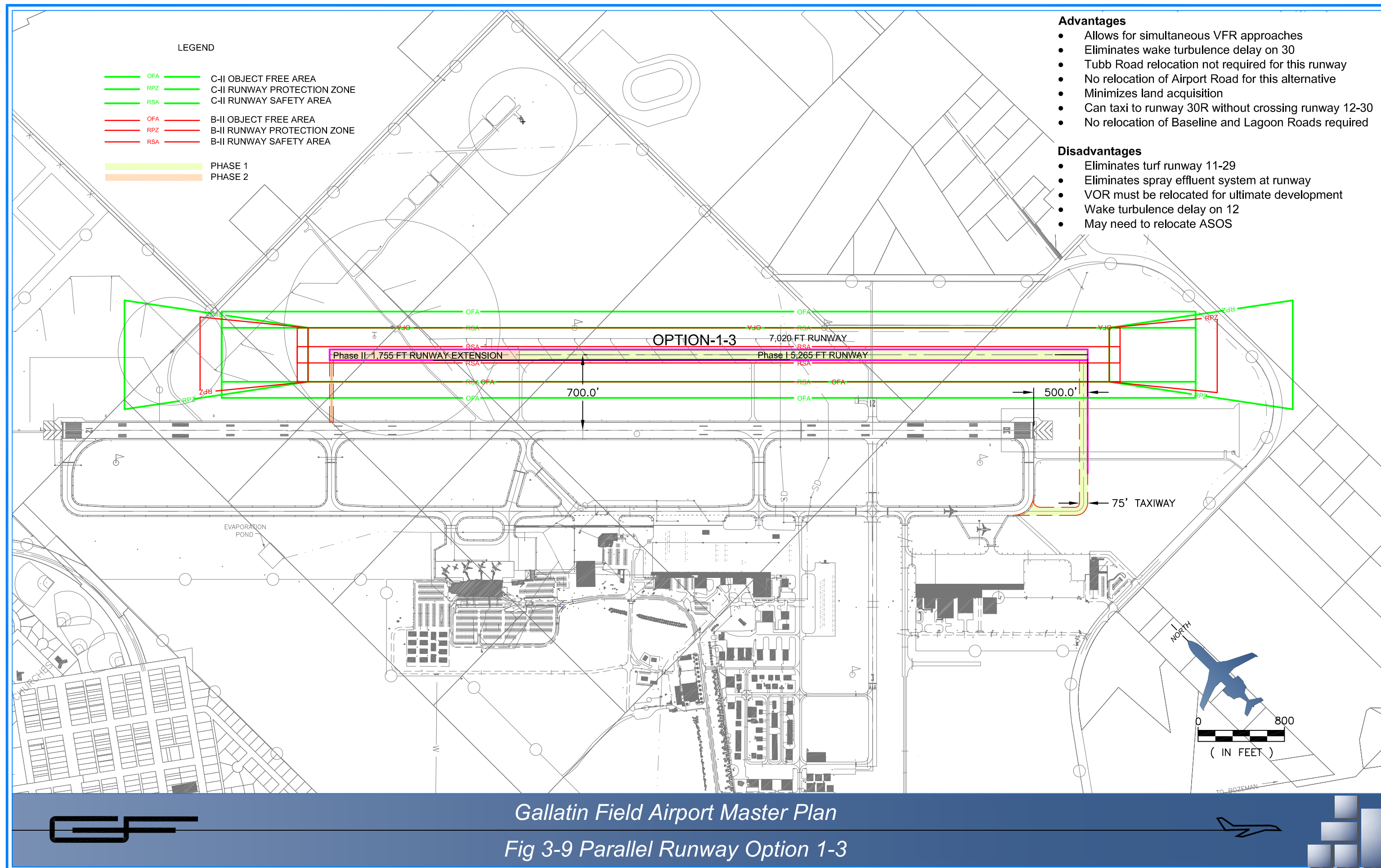
Advantages

- Allows for simultaneous VFR approaches
- Eliminates wake turbulence delay on 30
- Tubb Road relocation not required for this runway
- No relocation of Airport Road for this alternative
- Minimizes land acquisition
- Can taxi to runway 30R without crossing runway 12-30

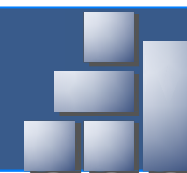
Disadvantages

- VOR must be relocated for ultimate development
- Wake turbulence delay on 12
- May need to relocate ASOS
- Relocate Baseline and Lagoon Roads for ultimate development
- Requires sprinkler modifications at ultimate development

Gallatin Field Airport Master Plan
Fig 3-8 Parallel Runway Option 1-2



Gallatin Field Airport Master Plan
Fig 3-9 Parallel Runway Option 1-3



LEGEND

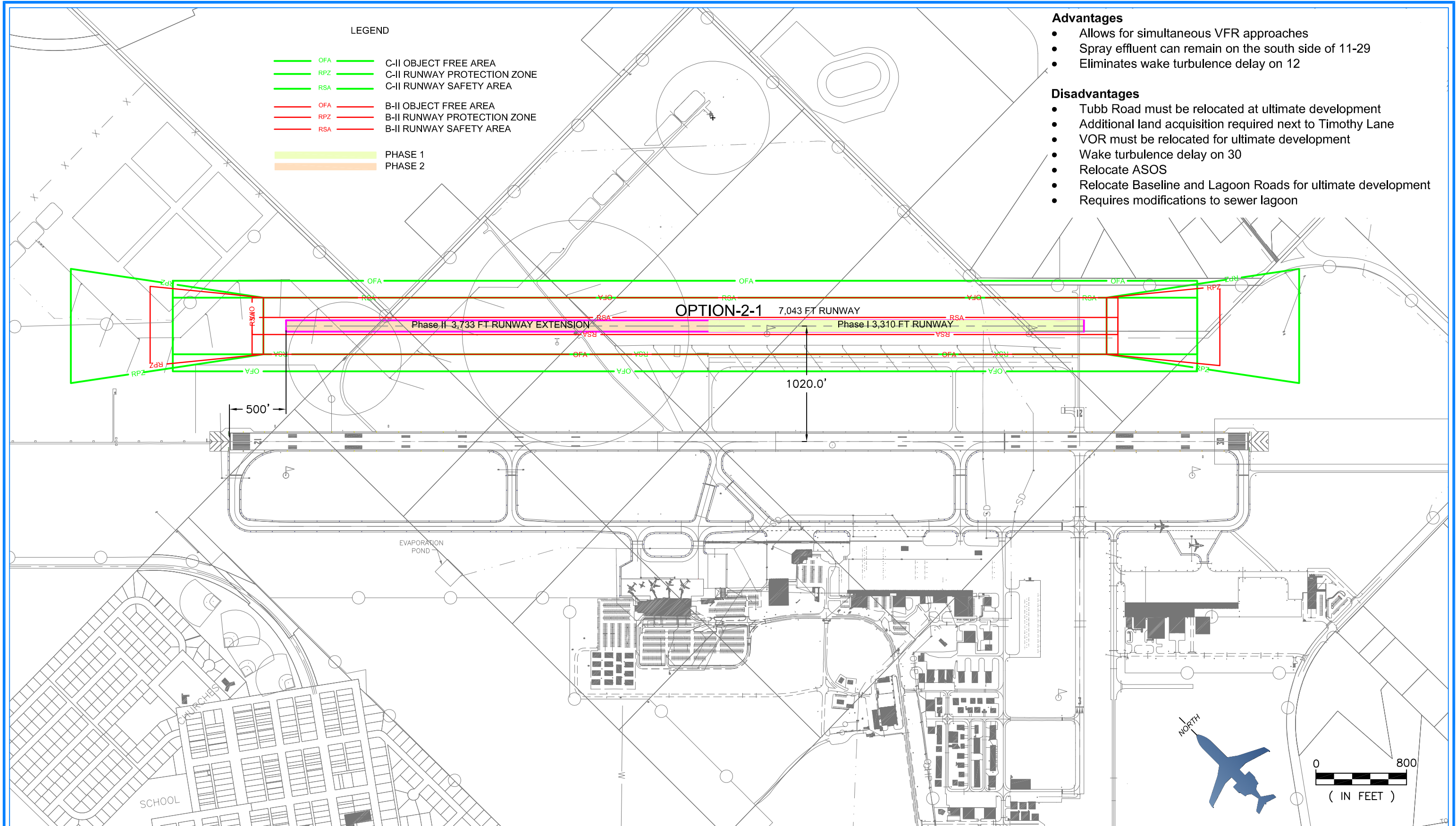
—	OFA	C-II OBJECT FREE AREA
—	RPZ	C-II RUNWAY PROTECTION ZONE
—	RSA	C-II RUNWAY SAFETY AREA
—	OFA	B-II OBJECT FREE AREA
—	RPZ	B-II RUNWAY PROTECTION ZONE
—	RSA	B-II RUNWAY SAFETY AREA
	PHASE 1	
	PHASE 2	

Advantages

- Allows for simultaneous VFR approaches
- Spray effluent can remain on the south side of 11-29
- Eliminates wake turbulence delay on 12

Disadvantages

- Tubb Road must be relocated at ultimate development
- Additional land acquisition required next to Timothy Lane
- VOR must be relocated for ultimate development
- Wake turbulence delay on 30
- Relocate ASOS
- Relocate Baseline and Lagoon Roads for ultimate development
- Requires modifications to sewer lagoon



Gallatin Field Airport Master Plan
Fig 3-10 Parallel Runway Option 2-1

LEGEND

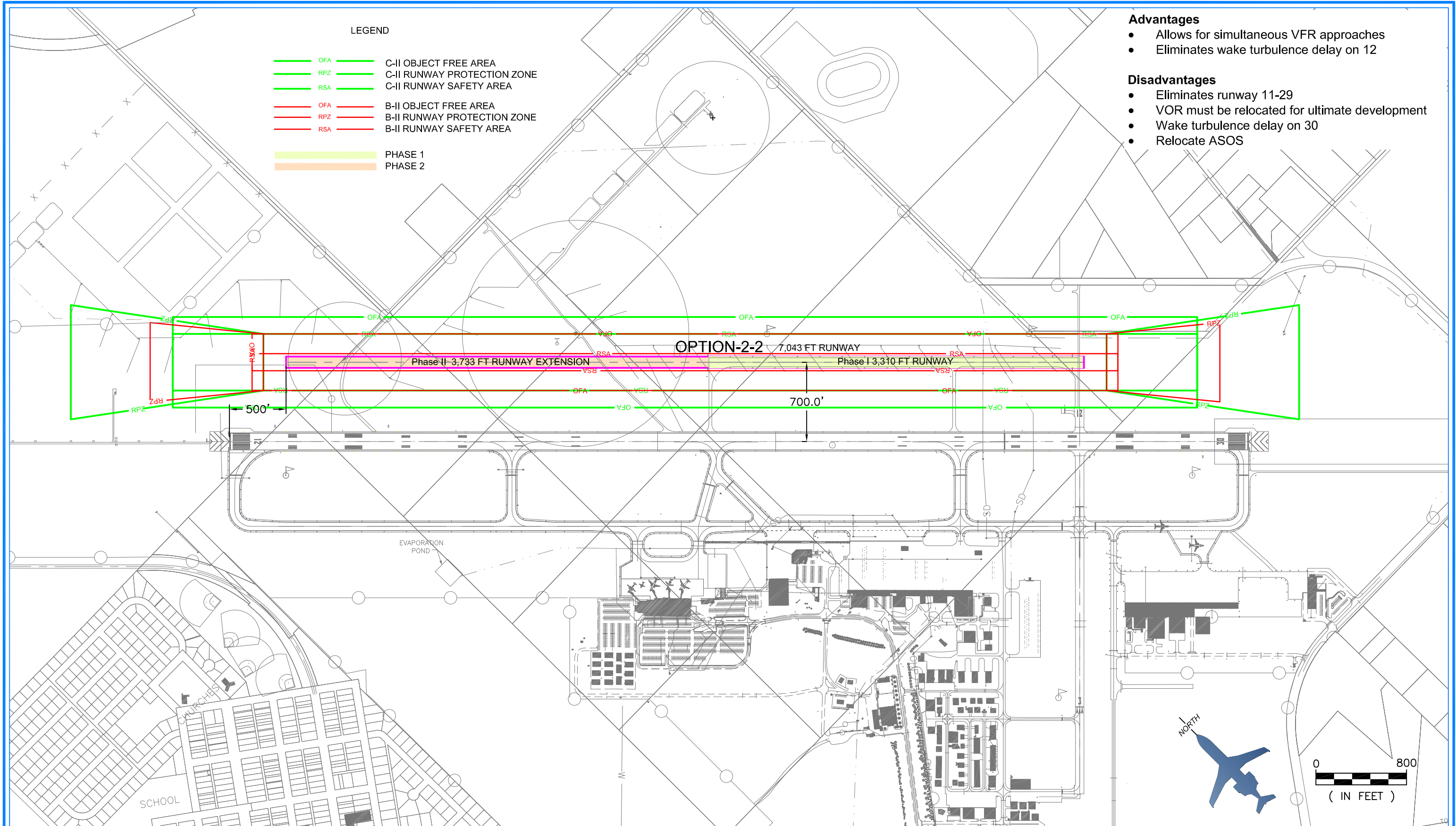
—	OFA	C-II OBJECT FREE AREA
—	RPZ	C-II RUNWAY PROTECTION ZONE
—	RSA	C-II RUNWAY SAFETY AREA
—	OFA	B-II OBJECT FREE AREA
—	RPZ	B-II RUNWAY PROTECTION ZONE
—	RSA	B-II RUNWAY SAFETY AREA
	PHASE 1	
	PHASE 2	

Advantages

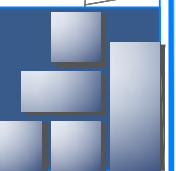
- Allows for simultaneous VFR approaches
- Eliminates wake turbulence delay on 12

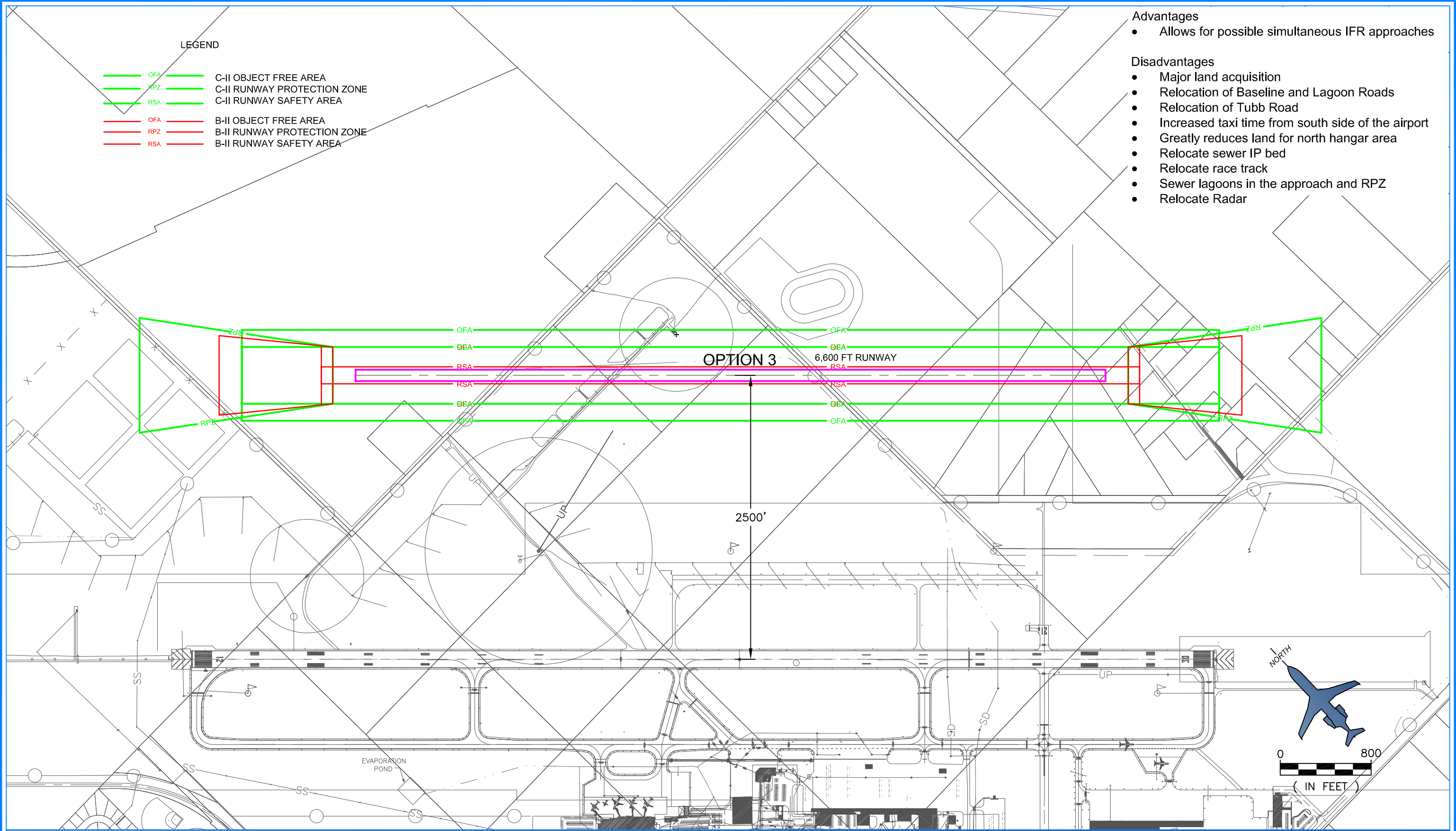
Disadvantages

- Eliminates runway 11-29
- VOR must be relocated for ultimate development
- Wake turbulence delay on 30
- Relocate ASOS



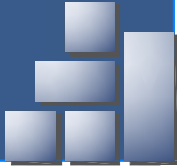
Gallatin Field Airport Master Plan
Fig 3-11 Parallel Runway Option 2-2





Gallatin Field Airport Master Plan

Fig 3-12 Parallel Runway Option 3



CHAPTER 4

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

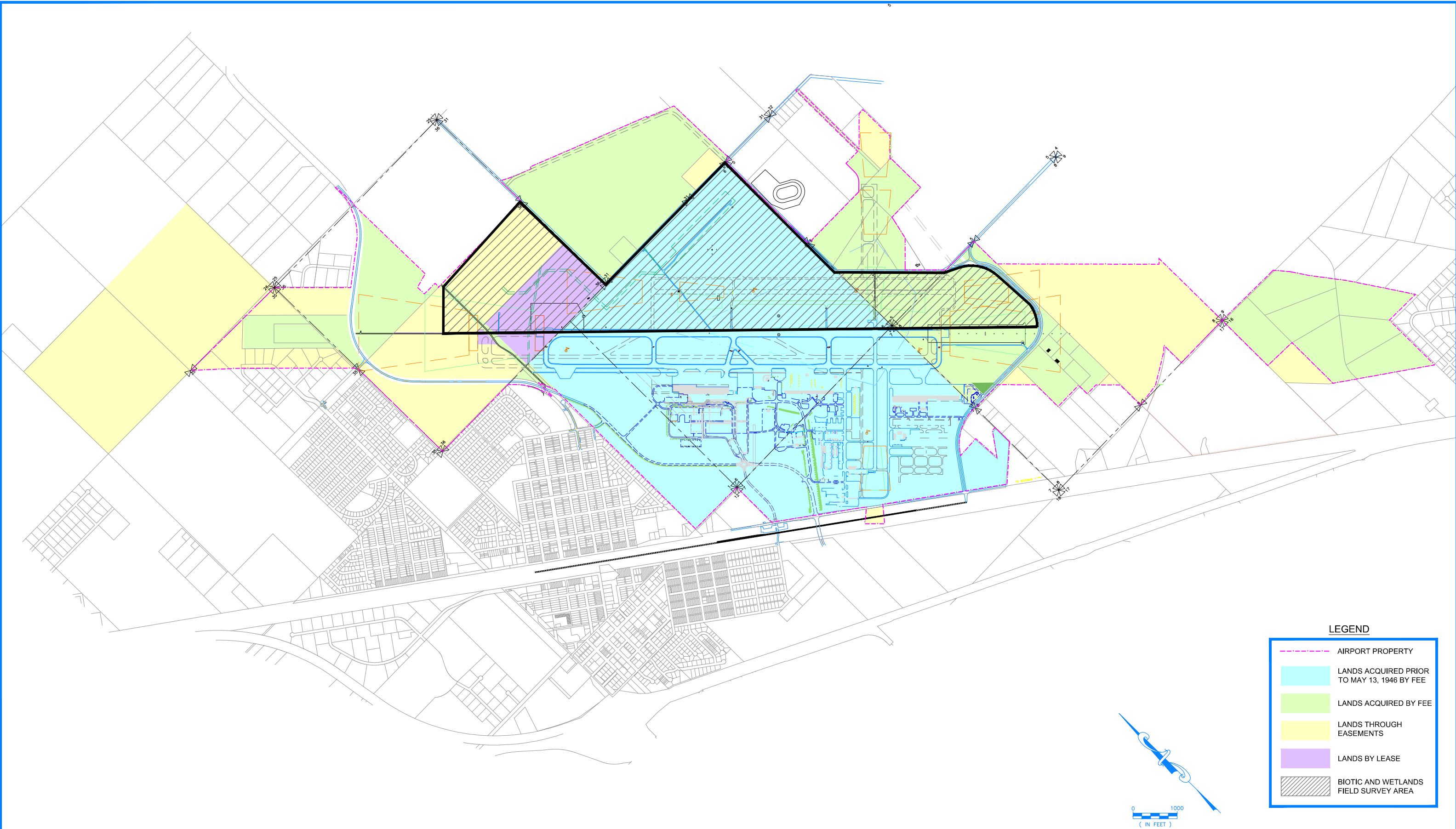
4.1 Introduction

This chapter analyses each environmental category for each alternative. Each category begins with the review of the affected environment. The affected environment is defined as the ecological, cultural, social, aesthetic and economic conditions of the area that the proposed alternatives could potentially impact. Additionally, the environmental consequences of the identified alternatives: Alternative 1 – No Action; and Alternative 2 – Preferred Alternative are being reviewed herein in accordance with FAA Order 1050.1E – *Environmental Impacts: Policies and Procedures* and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*. A list of preparers of this EA is provided in **Appendix XII**.

The FAA orders identify the environmental impact categories to be analyzed and summarize the requirements and procedures to be used in the environmental analysis. Thresholds of significance are also established for a number of the categories to aid in the analysis. The analysis of the impacts associated with the Preferred Alternative is a comparison of the impacts one would encounter with the No Action Alternative as compared with the Preferred Alternative. The analysis completed for each environmental impact category follows for each development alternative (per FAA Order 1050.1E as this EA was initiated prior to the issuance of 1050.1F). Significant impact thresholds, as identified in FAA Order 1050.1E, Appendix A, *Analysis of Environmental Impact Categories*, are evaluated for each applicable impact category.

BZN is a public-use, commercial service aviation airport serving Bozeman, Big Sky, Southwest Montana, and Yellowstone National Park. BZN is located within the Gallatin Valley off of Frontage Road, State Highway 10, adjacent to the City of Belgrade and approximately 10 miles northwest of the City of Bozeman. All proposed runway improvements will be confined to existing airport property and facilities. **Figure 4-1** shows the overall airport property boundaries, as well as the immediate vicinity around BZN.

The Bridger Mountains are located approximately 6.5 miles east of airport property and rise to an elevation of roughly 5,000 feet above the valley floor to 9,600 feet above mean sea level. The land directly surrounding BZN in all directions is relatively flat with an elevation of approximately 4,460 feet above mean sea level. There are no identified wetlands on or immediately adjacent to the Preferred Alternative area. The only surface water located on airport property is a lateral of the seasonally used Spain Ferris Irrigation Ditch. The City of Belgrade's sewer lagoons are located near the northwest boundary of the airport on State of Montana property that is under a right-of-way deed with the airport. Soils present in the Study Area consist of loams, clay loams, clay and sandy gravels. Several gravel pits are located east and south of BZN. These are separated from the airport by the Highway 10 Frontage Road on the south and Airport Road on the east.



LEGEND

- AIRPORT PROPERTY
- LANDS ACQUIRED PRIOR TO MAY 13, 1946 BY FEE
- LANDS ACQUIRED BY FEE
- LANDS THROUGH EASEMENTS
- LANDS BY LEASE
- BIOTIC AND WETLANDS FIELD SURVEY AREA



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Bozeman MT 59718
Phone: (406) 587-0721
Fax: (406) 922-6702

DRAWN BY: CJF
CHK'D. BY: MJM
APPR. BY: MJM
DATE: 02/2015

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N:\07611\118 - EA\ACAD\Exhibits\Chapter 4\PROPERTY MAP AND STUDY AREA.dwg Plotted by garrett p. schultz on Mar/8/2016

BELGRADE BOZEMAN YELLOWSTONE INTERNATIONAL AIRPORT MONTANA
ENVIRONMENTAL ASSESSMENT RUNWAY 11-29
PROPERTY MAP

PROJECT NO.
0761.118

FIGURE NUMBER

FIG. 4-1

4.2 AIR QUALITY

4.2.1 Affected Environment

The EPA has promulgated National Ambient Air Quality Standards (NAAQS) to safeguard public health and environmental welfare against the detrimental effects of outdoor air pollution. Primary NAAQS are health-based standards geared toward protecting sensitive or at-risk portions of the population such as asthmatics, children, and the elderly. Secondary NAAQS are welfare oriented and are designed to prevent decreased visibility and damage to animals, vegetation, and physical structures. NAAQS have been established for six criteria air pollutants: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM), and sulfur dioxide (SO₂).

The extent of the evaluation of air quality is in part based on the level of air pollution in the existing environment. Guidance in the *Aviation Emissions and Air Quality Handbook Version 3, Update 1*, dated January, 2015, notes that areas possessing monitored outdoor air concentrations within the NAAQS are considered “Attainment” areas; areas possessing outdoor air concentrations in excess of the NAAQS are considered “Nonattainment”. Once a nonattainment area meets the NAAQS and additional redesignation requirements in the Clean Air Act (CAA), the EPA will designate the area as a “Maintenance area”.

Environmental Protection Agency 40 CFR Parts 51 and 93 [EPA-HQ-OAR-2006-0669; FRL-9131-7] RIN 2060-AH 93, *Revisions to the General Conformity Regulations* notes that “only actions which cause emissions in designated nonattainment and maintenance areas are subject to the regulations.” Review of the EPA Green Book reports that identify nonattainment and maintenance areas show that Gallatin County does not contain EPA-regulated non-attainment areas or a maintenance plan for criteria air pollutants. The closest classified area is Silver Bow County (Butte), Montana, approximately 85 miles to the northwest, with a PM-10 particulates area identified as moderate. Other neighboring classified areas include Yellowstone County (Laurel and Billings), Montana, approximately 140 miles to the east with SO₂ nonattainment areas and CO nonattainment, and Lewis and Clark County (East Helena), Montana approximately 92 miles to the northwest for SO₂ and Pb nonattainment.

4.2.2 Analysis

Aviation Emissions and Air Quality Handbook Version 3, Update 1, dated January, 2015, states “such rules and requirements (Clean Air Act (CAA) and National Environmental Policy Act (NEPA) mandate that the air quality impacts associated with federal actions and projects do, in the case of the CAA, not cause, or worsen, violations of relevant air quality standards, criteria and/or thresholds and environmental impacts are disclosed under NEPA to the public.” The overall premise is that some type of assessment or consideration of air quality is always necessary under NEPA or the CAA – whether it be qualitative or quantitative.

As the Preferred Alternative involves runway and taxiway construction, there will be the production of construction vehicle exhaust emissions, as well as emissions from fugitive dust. In addition, aircraft taxi patterns would be altered slightly with the Preferred Alternative as aircraft departing on Runway 29 would have an increased taxi distance of approximately 1,000 feet as compared to the existing taxi distance to Runway 30. Aircraft departing Runway 11 would have a reduced taxi distance of approximately 3,550 feet as compared to the taxi distance to Runway 12. GA aircraft maneuvering to or from the proposed secondary runway may have to hold for aircraft on Runway 12-30. The extent of delay and resultant emissions is

difficult to quantify. Given the varied taxi lengths associated with the Preferred Alternative, the inability to quantify taxiing patterns accurately, and the unknown delay associated with potential holding for clearance to cross Runway 12-30, the modeling for air emissions did not vary the taxi times between the No Action Alternative and Preferred Alternative. Ground Support Equipment (GSE) such as aircraft tugs, air start units, forklifts, tractors, air-conditioning units, ground power units, baggage tugs, belt loaders, fuel or hydrant trucks, catering trucks, cabin trucks, deicer trucks, water trucks, lavatory trucks, and cargo loaders, among others are usually reserved for commercial and larger aircraft that are not projected to utilize the Preferred Alternative facilities due to the limited runway length. Therefore additional support equipment emissions are not expected.

Based on the information provided above, and in consultation with the Helena Airport's District Office (ADO), it has been determined that a quantitative air quality analysis is warranted as the project involves construction emissions and varied taxi patterns. The following sections discuss the Operational Emissions Inventory and Construction Emissions Inventory assessment methodologies that provide the quantitative air quality analysis. Greenhouse Gas (GHG) Emissions is discussed under Section 4.3 *Climate*.

4.2.2.1 Aircraft Operations Inventory

As provided in the *Aviation Emissions and Air Quality Handbook Version 3, Update 1*, an operational emissions inventory is designed to quantify the amounts (i.e. mass) of criteria pollutant emissions (and their precursors) associated with operational activity in the proposed project/action. Based upon current and forecasted activity levels coupled with appropriate emissions factors, the results provide a measure of the magnitude of the potential air quality impacts and enable useful comparisons of emissions between project alternatives and significance criteria. The results are typically expressed in units of tons/year segregated by pollutant type (i.e. CO, NO_x, etc.), emission source (i.e. aircraft engines, GSE, etc.) and alternative (i.e. No Action Alternative and Preferred Alternative) for the specified study period.

The aircraft operations emissions inventory was performed using the FAA's Emissions and Dispersion Modeling System (EDMS) Version 5.1.4.1. FAA requires the use of this model in airport environmental studies, and EDMS is approved by the EPA. Default aircraft time-in-mode from EDMS was used for all scenarios and all aircraft based on the anticipated levels of activity. For this assessment, emission inventories were prepared for CO, VOC, NO_x, SO_x, PM₁₀ and PM_{2.5}, and Pb. Since lead emissions are not part of the EDMS model output, Lead (Pb) emissions from aircraft were calculated using EPA's *Calculating Piston-Engine Aircraft Airport Inventories for Lead for the 2008 National Emissions Inventory* methodologies.

Information from tower records was utilized in creating the fleet mix and operations (**Table 4-1**) that were input into EDMS to complete the emissions inventory.

To more accurately inventory the environment, GSE that is available on the airport was modeled with each respective aircraft to include such equipment as aircraft tugs, air start units, forklifts, tractors, air-conditioning units, ground power units, baggage tugs, belt loaders, fuel or hydrant trucks, catering trucks, cabin trucks, deicer trucks, water trucks, lavatory trucks, and cargo loaders, among others. This equipment is usually reserved for commercial and larger aircraft that are not projected to utilize the Preferred Alternative facilities due to the limited runway length. Although GSE is not projected to be used in any Preferred Alternative facilities, the modeling of such equipment provides a basis and emissions impacts for the existing condition. The fuel for each type of equipment (diesel, gasoline, and electric) was also input in the model

to define the environment. Periods of taxi in and out times were recorded for actual field conditions and the higher end of the time spread utilized in the EDMS model.

In the absence of airport specific data, the EPA calculated a national default estimate for lead for the landing and take-off (LTO) activity of piston-engine aircraft at a facility. Using EPA's *Calculating Piston-Engine Aircraft Airport Inventories for Lead for the 2008 National Emissions Inventory* methodologies, the concentration of lead in 100 Low Lead (LL) AvGas is 2.12 grams/gallon, which correlates to 7.34 grams of lead per LTO. The number of LTO's for aircraft identified in the fleet mix in **Table 4-1** equates to 23,975 LTO's (half of the Cessna 206 and 172 operations total) for the GA aircraft identified at BZN.

The implementation of the Preferred Alternative is not being proposed to promote new traffic, but rather address existing traffic issues (ASV) and forecasted growth of BZN. In developing the operational forecasts discussed in Section 1.4, *Airport Forecasts*, no demand constraints (such as delays or constrained use of the primary Runway 12-30) were placed upon the development of the forecasts for BZN; therefore, there is no difference in the operations forecast between the No Action Alternative or Preferred Alternative.

Table 4-1: EDMS Fleet Mix and Operations Input (Annual Operations)

Aircraft Type	Identification	2015 Operations	Opening Day (2016) Operations	Year 5 (2021) Operations
Airbus A320-100 Series	Airline	3,784	3,852	4,125
Boeing 737-800 Series	Airline	1,052	1,071	1,147
Bombardier CRJ-900	Airline	7,360	7,493	8,022
Bombardier de Havilland Dash 8 Q400	Airline	2,804	2,854	3,056
Bel 206 Jet Ranger	Air Taxi	1,896	1,930	2,067
Raytheon Super King Air 200	Air Taxi	4,700	4,785	5,123
Gulfstream IV-SP	Corporate	4,772	4,858	5,201
Hawker HS-125 Series 400	Corporate	6,404	6,519	6,980
Cessna 206	General Aviation	24,500	24,941	26,705
Cessna 172 Skyhawk	General Aviation	23,450	23,872	25,561
Total:		80,722	82,175	87,987

Summaries of emission information from EDMS are included in **Appendix V**. Estimated emissions comparing the operation of the No Action Alternative and Preferred Alternative are depicted in **Table 4-2** for "Opening Day" emissions for the first day the proposed project is open (2016), and in **Table 4-3** for the emissions projected for 5 years after the proposed project would be completed (2021). Based on the results summarized in **Table 4-2** and **4-3**, there are no measurable differences between the No Action Alternative and Preferred Alternative for operational emissions.

Table 4-2: Operational Emissions Inventory Results – Opening Day (2016)

<u>Operational Emissions (Metric Tons/Year)</u>				
		Preferred Alternative		
<u>Pollutant</u>	<u>No Action RW 12-30</u>	<u>RW 11-29</u>	<u>RW 12-30</u>	<u>Net Project Emissions</u>
Aircraft				
Carbon Monoxide (CO)	182.3	16.8	165.5	0
Volatile Organic Compounds (VOC)	10.7	0.2	10.5	0
Nitrogen Oxides (NOx)	81.9	0.1	81.8	0
Sulfur Oxides (SOx)	8.3	0.0	8.3	0
Particulate Matter (PM10)	1.6	0.1	1.5	0
Particulate Matter (PM2.5)	1.6	0.1	1.5	0
Lead (Pb)	0.2	0.02	0.18	0
Alternate Power Unites (APUs)				
Carbon Monoxide (CO)	6.2	0.0	6.2	0
Volatile Organic Compounds (VOC)	0.3	0.0	0.3	0
Nitrogen Oxides (NOx)	2.4	0.0	2.4	0
Sulfur Oxides (SOx)	0.4	0.0	0.4	0
Particulate Matter (PM10)	0.4	0.0	0.4	0
Particulate Matter (PM2.5)	0.4	0.0	0.4	0
Ground Support Equipment (GSE)				
Carbon Monoxide (CO)	40.9	0.0	40.9	0
Volatile Organic Compounds (VOC)	1.3	0.0	1.3	0
Nitrogen Oxides (NOx)	3.1	0.0	3.1	0
Sulfur Oxides (SOx)	0.1	0.0	0.1	0
Particulate Matter (PM10)	0.1	0.0	0.1	0
Particulate Matter (PM2.5)	0.1	0.0	0.1	0

Source: Morrison-Maierle, Inc. July, 2015 via EDMS Software

Table 4-3: Operational Emissions Inventory Results – Year 5 (2021)

<u>Operational Emissions (Metric Tons/Year)</u>				
		Preferred Alternative		
<u>Pollutant</u>	<u>No Action RW 12-30</u>	<u>RW 11-29</u>	<u>RW 12-30</u>	<u>Net Project Emissions</u>
Aircraft				
Carbon Monoxide (CO)	191.2	43.6	147.6	0
Volatile Organic Compounds (VOC)	11.5	0.6	10.9	0
Nitrogen Oxides (NOx)	87.7	0.3	87.4	0
Sulfur Oxides (SOx)	8.9	0.1	8.8	0
Particulate Matter (PM10)	1.7	0.2	1.5	0
Particulate Matter (PM2.5)	1.7	0.2	1.5	0
Lead (Pb)	0.2	0.06	0.14	0
Alternate Power Unites (APUs)				
Carbon Monoxide (CO)	6.6	0.0	6.6	0
Volatile Organic Compounds (VOC)	0.3	0.0	0.3	0
Nitrogen Oxides (NOx)	2.6	0.0	2.6	0
Sulfur Oxides (SOx)	0.4	0.0	0.4	0
Particulate Matter (PM10)	0.5	0.0	0.5	0
Particulate Matter (PM2.5)	0.5	0.0	0.5	0
Ground Support Equipment (GSE)				
Carbon Monoxide (CO)	43.7	0.0	43.7	0
Volatile Organic Compounds (VOC)	1.4	0.0	1.4	0
Nitrogen Oxides (NOx)	3.4	0.1	3.3	0
Sulfur Oxides (SOx)	0.1	0.0	0.1	0
Particulate Matter (PM10)	0.1	0.0	0.1	0
Particulate Matter (PM2.5)	0.1	0.0	0.1	0

Source: Morrison-Maierle, Inc. July, 2015 via EDMS Software

4.2.2.2 Construction Emissions Inventory

As provided in the *Aviation Emissions and Air Quality Handbook Version 3, Update 1*, a construction emissions inventory is designed to quantify the amounts (i.e. mass) of criteria pollutant emissions (and their precursors) associated with the construction of the proposed project/action. Based upon forecasted construction equipment and resource needs, activity levels and appropriate emission factors, the results provide an estimate of the potential air quality impacts and enable useful comparisons between project alternatives and significance criteria. The results are typically expressed in units of tons/year segregated by pollutant type (i.e. CO, PM_{2.5}, PM₁₀, etc.), emission source (i.e. construction equipment) and alternative over the construction period. Construction-related emissions are primarily associated with the exhaust from heavy equipment (i.e. backhoes, bulldozers, graders, etc.), delivery trucks (i.e. cement trucks, dump trucks, etc.), and construction worker vehicles traveling to, from and moving around the site, as well as fugitive dust from site preparation, land clearing, material handling, and demolition activities. Construction emissions also evolve from the storage/transportation of raw materials, the disposal of construction debris and the production of

asphalt or concrete. These emissions are temporary in nature (i.e. during the construction period only) and generally confined to the construction site and the access/egress roadways. Although comparatively short-term in duration, construction-related air emissions can have an impact on both local air quality conditions and on the regional airshed.

The evaluation of construction emissions was conducted using construction equipment emission factors specific to Gallatin County obtained from the EPA's NONROAD2008 model and Motor Vehicle Emission Simulator (MOVES) 2014. Construction equipment mix and use was estimated based on the cost estimates prepared for the proposed project, translated into estimates of construction vehicle use. These estimates included material delivery and site preparation/paving activities. The main source of lead (Pb) emissions in construction projects would be operation of construction vehicles using leaded gasoline. Because leaded gasoline is no longer used, and diesel fuel does not contain Pb, there are no Pb emissions expected from this project from construction equipment. Mitigation for air quality is required if the project exceeds 100 tons of project-related emissions. Additional factors are defined in the summary of the construction activities and associated emissions presented in **Appendix V. Table 4-4** presents emissions associated with project construction as determined with the MOVES program.

Table 4-4: Construction Emission Inventory Results

Construction Emissions (Metric Tons/Year)				
<u>Pollutant</u>	Preferred Alternative			
	<u>No Action RW 12-30</u>	<u>RW 11-29</u>	<u>RW 12-30</u>	<u>Net Project Emissions</u>
Carbon Monoxide (CO)	0	3.89	0	3.89
Volatile Organic Compounds (VOC)	0	0.74	0	0.74
Nitrogen Oxides (NOx)	0	9.26	0	9.26
Sulfur Oxides (SOx)	0	0.01	0	0.01
Particulate Matter (PM10)	0	0.42	0	0.42
Particulate Matter (PM2.5)	0	0.41	0	0.41
Lead (Pb)	N/A	N/A	N/A	N/A

Note: PM10 and PM2.5 includes fugitive dust related emissions. All fugitive dust is assumed to be PM10 and PM2.5

Note: Reflects worse case emissions with all construction occurring in one year.

Source: Morrison-Maierle, Inc. January, 2015

According the FAA Order 1050.1E, potentially significant air quality impacts associated with an FAA project or action would be demonstrated by the project or action exceeding one or more of the NAAQS pollutants for any of the time periods analyzed, or if there was an increase in the frequency or severity of any existing violations. Neither of these cases results from either the No Action Alternative or Preferred Alternative.

4.2.3 Environmental Consequences

No Action Alternative

With the No Action Alternative, the proposed project would not be undertaken. Therefore, no project-related construction would occur and there would be no construction emissions or variations in existing traffic patterns.

Preferred Alternative

A comparison of the Preferred Alternative operational (aircraft related) emissions to those of the No Action Alternative shows that no measurable increase in operational emissions from any individual pollutant would occur due to the Preferred Alternative (**Table 4-2** (Opening Day) and **Table 4-3** (Year 5)).

A comparison of the Preferred Alternative construction emissions to those of the No Action Alternative shows (**Table 4-4**) CO and NO_x would increase temporarily (a maximum increase of 3.89 and 9.26 metric tons, respectively), while emissions of VOC, SO_x, PM₁₀, and PM_{2.5} would increase by less than 1 metric ton during construction.

Table 4-5 shows the total project emission inventory results for “Opening Day” of the proposed project (2016) and **Table 4-6** shows the total project emission inventory for Year 5 following project implementation (2021). These tables include *de minimus* thresholds for comparison purposes. The *de minimus* thresholds represent emission quantities of a NAAQS-regulated pollutant or its applicable precursors, in tons per year, over which an action in a nonattainment or maintenance area may cause or contribute to a new or continued violation of the NAAQS.

Table 4-5: Total Construction / Operational Emissions Inventory Results for “Opening Day” (2016)

<u>Pollutant</u>	<u>No Action (Metric Tons/Yr)</u>			<u>Preferred Alternative (Metric Tons/Yr)</u>			<u>Net Project Emissions (Ton/Yr)</u>	<u>NAAQS de minimus Threshold Values (Ton/Yr)*</u>
	<u>Operational Emissions Total</u>	<u>Construction Emissions Total</u>	<u>Total</u>	<u>Operational Emissions Total</u>	<u>Construction Emissions Total</u>	<u>Total</u>		
Carbon Monoxide (CO)	229.4	0	229.4	229.4	3.9	233.3	3.9	100
Volatile Organic Compounds (VOC)	12.3	0	12.3	12.3	0.7	13.0	0.7	100
Nitrogen Oxides (NO _x)	87.4	0	87.4	87.4	9.3	96.7	9.3	100
Sulfur Oxides (SO _x)	8.8	0	8.8	8.8	0.0	8.8	0	100
Particulate Matter (PM ₁₀)	2.1	0	2.1	2.1	0.4	2.5	0.4	100
Particulate Matter (PM _{2.5})	2.1	0	2.1	2.1	0.4	2.5	0.4	100
Lead (Pb)	0.2	0	0.2	0.2	N/A	0.2	0	25

*As no de minimus thresholds exist for those areas that meet air quality standards, nonattainment and maintenance area de minimus thresholds are provided for general comparison purposes.

Table 4-6: Total Construction / Operational Emissions Inventory Results for Year 5 (2021)

<u>Pollutant</u>	<u>No Action (Metric Tons/Yr)</u>			<u>Preferred Alternative (Metric Tons/Yr)</u>			<u>Net Project Emissions (Ton/Yr)</u>	<u>NAAQS de minimus Threshold Values (Ton/Yr)*</u>
	<u>Operational Emissions Total</u>	<u>Construction Emissions Total</u>	<u>Total</u>	<u>Operational Emissions Total</u>	<u>Construction Emissions Total</u>	<u>Total</u>		
Carbon Monoxide (CO)	241.5	0	241.5	241.5	3.9	245.4	3.9	100
Volatile Organic Compounds (VOC)	13.2	0	13.2	13.2	0.7	13.9	0.7	100
Nitrogen Oxides (NO _x)	93.7	0	93.7	93.7	9.3	103.0	9.3	100
Sulfur Oxides (SO _x)	9.4	0	9.4	9.4	0.0	9.4	0	100
Particulate Matter (PM ₁₀)	2.3	0	2.3	2.3	0.4	2.7	0.4	100
Particulate Matter (PM _{2.5})	2.3	0	2.3	2.3	0.4	2.7	0.4	100
Lead (Pb)	0.2	0	0.2	0.2	N/A	0.2	0	25

*As no de minimus thresholds exist for those areas that meet air quality standards, nonattainment and maintenance area de minimus thresholds are provided for general comparison purposes.

Given the low levels of increased emissions, and the temporary nature of the construction, the Preferred Alternative is not expected to result in an exceedance of the NAAQS for any pollutant.

4.2.4 Mitigation

No mitigation is required, as the Preferred Alternative would not result in an exceedance of the NAAQS.

The project specifications will include temporary control measures to minimize the effects to air quality by the project during construction activities. Project construction activities will have similar effects to air quality as agricultural and gravel pit activities that occur on adjoining properties. Temporary control measures will include implementation of Best Management Practices (BMPs) to minimize airborne dust resulting from ground-disturbing activities. Project specifications will include requirements to meet permitting requirements for the general construction, asphalt plant and crushing operations, as well as State and Federal air quality requirements.

4.2.5 Conclusion

The No Action Alternative is not anticipated to result in any additional impacts to air quality as it is a non-development alternative.

Part of the purpose of the Preferred Alternative is to reduce congestion, improve operational efficiency, and reduce delays. While the same criteria were utilized for modeling ground emissions from taxiing for the No Action Alternative and Preferred Alternative, it can be deduced that any reduction in delay to aircraft will also result in a reduction in emissions. As the alternatives were modeled with the same taxi times, the analysis is considered conservative. While there are no *de minimus* levels for areas that meet air quality standards (attainment), **Table 4-5** and **Table 4-6** show *de minimus* levels for non-attainment and maintenance areas. This reflects that the net project emissions are below established *de minimus* levels and therefore, we conclude that the Preferred Alternative would not cause an exceedance of the NAAQS.

4.3 CLIMATE

4.3.1 Affected Environment

BZN is located at 4,460 feet above sea level and it experiences a subarctic climate with cold, sometimes bitterly cold winters, and brief but generally warm summers. The Western Regional Climate Center collected data from a weather station located at BZN from 1941 to 2013. This data reflects an average low temperature during the summer of 48.9 °F, with an average high of 84.6 °F. During the winter, the average low is 6 °F, with an average high of 30 °F. The area receives on average approximately 13.92 inches of precipitation, with the highest amounts occurring during May and June. Given the cold climate, the area receives on average approximately 47 inches of snowfall, with the highest amounts occurring during January and February.

FAA Order 1050.1E, Change 1, Guidance Memo #3 – Considering Greenhouse Gases and Climate Under the National Environmental Policy Act (NEPA): Interim Guidance, dated January 12, 2012, states that while it is well established that greenhouse gas (GHGs) emissions can affect climate, there are no federal standards for aviation-related GHG emissions. The Council on Environmental Quality (CEQ) has indicated that climate should be considered in NEPA analyses. As noted by CEQ, however, “it is not currently useful for the NEPA analysis to attempt to link specific climatological changes, or the environmental impacts thereof, to the particular project or emissions, as such direct linkage is difficult to isolate and to understand.”

The International Civil Aviation Organization (ICAO) estimates that GHG emissions from aircraft account for approximately 3 percent of all anthropogenic GHG emissions on earth (Melrose 2010). Climate change due to GHG emissions is a global phenomenon and the affected environment is the global climate.

According to the above referenced guidance memo (FAA 2012), for FAA NEPA reviews, GHG emissions should be quantified under the following applicable circumstances:

- 1) “Where there is reason to quantify emissions for air quality purposes, then metric tons of CO₂ equivalent (MTCO₂e) should also be quantified and reported in the NEPA documentation; or”

- 2) "When fuel burn is computed and reported in the NEPA document, quantification of MT CO₂e calculated from the fuel burned should also be included in this document."

4.3.2 Analysis

As provided in the *Aviation Emissions and Air Quality Handbook Version 3, Update 1*, notes that GHGs are pollutants for which there are no NAAQS but are of concern because of their role in climate change. The GHG emissions inventory is designed to quantify the amounts (i.e. mass) of these emissions associated with the operation (or implementation) of the proposed project. The results are typically expressed in units of metric tons/year, segregated by emission type (i.e. CO₂, etc.) emission source, and alternative for the study period.

As noted in Section 4.3.1 *Air Quality*, EDMS Version 5.1.4.1 was utilized in calculating emissions for the operational inventory of aircraft and support equipment. EPA's NONROAD2008 model and MOVES2014 were utilized in calculating emissions for the projected construction impacts. **Table 4-7** provides the associated CO₂ emissions expected for each category, as well as how they compare to the national CO₂ emission totals publically reported by the EPA and to global emission totals. As noted in **Table 4-7** the total metric tons of CO₂ produced by the base case aircraft usage and the projected construction of the parallel runway amounts to a very small fraction of a percent of the National and Global greenhouse gas production.

Table 4-7: Greenhouse Gas (CO₂) Inventory Results

Emissions	"Opening Day" (2016)	Year 5 – (2021)
	Metric Tons (Annual Emissions)	Metric Tons (Annual Emissions)
No Action Alternative – Base Case	20,288	21,783
Aircraft with Preferred Alternative	20,288	21,783
Construction of the Preferred Alternative	1,995	0
Total Aircraft and Construction of Preferred Alternative	22,283	21,783
EPA National Standard	6,526,000,000	
Global Greenhouse Gases	32,000,000,000	

Source: <http://www.epa.gov/climatechange/ghgemissions/usinventoryreport.html> for 2012
<http://www.epa.gov/climatechange/ghgemissions/global.html> for 2008

4.3.3 Environmental Consequences

No Action Alternative

With the No Action Alternative, the proposed project would not be undertaken. Therefore, no project-related construction would occur and there would be no construction emissions or variations in traffic patterns.

Preferred Alternative

A comparison of the Preferred Alternative emissions to those of the No Action Alternative shows that no measurable increase in operational emissions from any individual pollutant would occur due to the Preferred Alternative. The Preferred Alternative would increase GHG emissions by 1,995 MT CO₂e over the No Action Alternative, an increase of 8.9% (temporary increase due to

the limited duration of construction). This increase would comprise less than 0.00000030% of U.S.-based GHG emissions and less than 0.000000062% of global GHG emissions.

4.3.4 Mitigation

No mitigation is required as there are no quantifiable impacts, nor federal standards for aviation-related GHG emissions that are required to be met at this time for both the No Action Alternative and the Preferred Alternative.

4.3.5 Conclusion

The No Action Alternative is not anticipated to result in any additional impacts to GHG emissions as it is a non-development alternative. The Preferred Alternative would increase GHG emissions by 1,995 MT CO₂e over the No Action Alternative, an increase of 8.9% (temporary increase due to the limited duration of construction). This increase would comprise less than 0.00000030% of U.S.-based GHG emissions and less than 0.000000062% of global GHG emissions. FAA Order 1050.1E does not identify a specific significance threshold for the impacting the global climate. However, based on the fact that there are no quantifiable impacts to the climate with the implementation of the proposed project, the Preferred Alternative will result in no potential to impact the global climate.

4.4 COASTAL RESOURCES

4.4.1 Affected Environment

BZN is located in Southwest Montana in the heart of the Gallatin Valley. The Airport occupies land located in Section 5, 6, 7, 8, and 16 of Township 1 South, Range 5 East; Section 1 of Township 1 South, Range 4 East; Sections 25, 26, 35, and 36 of Township 1 North, Range 4 East; and Section 31 of Township 1 North, Range 5 East, Principal Montana Meridian, Gallatin County, Montana. BZN is located at 4,460 feet above sea level and it experiences a subarctic climate with cold, sometimes bitterly cold winters, and brief but generally warm summers. The nearest coastal waterways are in the vicinity of Seattle, Washington, approximately 550 miles to the west. Therefore, this resource category is eliminated from further consideration in this evaluation.

4.5 COMPATIBLE LAND USE

4.5.1 Affected Environment

BZN and surrounding areas fall under multiple land use and zoning jurisdictions. Responsible entities include the City of Belgrade and Gallatin County.

Airport property is not annexed to the City of Belgrade, however, it is within the Belgrade Planning Jurisdiction area, and portions of it are zoned PLI (Public Lands and Institutions). Airports and customary accessory uses required for their operation are permitted uses under the PLI designation. The underlying zoning does not present obstacles to the general functioning of BZN and specifically to construction of the proposed parallel runway. **Figure 4-2** shows the zoning around the area.

FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures*, notes that the compatibility of existing and planned land uses in the vicinity of an airport is usually associated with the extent of the airport's noise impacts. Therefore, there must be assurances that zoning laws, existing infrastructure, and adoption of zoning regulations are compatible with the location of the airport. Following is a summary of the actions the Airport Sponsor has taken to help ensure compatible land use.

The Sponsor currently owns 2,179 acres of land in fee title. They also control 1,279 acres of land through clear zone easements, development rights and leases. In total, the Sponsor controls 3,458 acres of land surrounding BZN. The lands controlled by the Sponsor are displayed on **Figure 4-1**, Study Area and Property Map.

In 1979, the Sponsor, Belgrade City-County Planning Board, Aeronautics Division of the Montana Department of Community Affairs, and the FAA sponsored the Gallatin Field Airport Noise – Land Use Study prepared by T.A.P., Inc. The study was used to establish the Airport Influence Area (AIA) which provides noise, height and land use regulations for the AIA. The AIA was approved by the Gallatin County Commissioners as Resolution #381 on June 28, 1979. The resolution has since been amended on August 15, 1979, September 9, 1997 and September 30, 2003.

The noise contours developed in the study identified noise sensitive Districts A and B. These two zones, or districts, are the areas where significant exposure (District B) and severe exposure (District A) to noise is expected. District B being “normally unacceptable” for residences because the decibels range between 65 and 75, and the classification of “clearly unacceptable” is placed on District A which is 75 decibels and higher. The classification of the two districts is to limit residences and their exposure to excessive noise located in those areas. The study made specific recommendations on land acquisition and the securing of development rights and certain restrictions within the noise contours. The AIA and noise contours are displayed on **Figure 4-3**. The Airport Sponsor has completed the acquisition of all of the property recommended in the Airport Noise – Land Use Study from 1979.

The Sponsor established the height limits of objects within the AIA area so they do not conflict with air space required for the operation of the airport. Height limitations are based on Federal Air Regulation Part 77 Controlling Navigational Air Space.

4.5.2 Analysis

Subdivision Regulations

In cooperation with the Airport Sponsor, Gallatin County and the City of Belgrade amended their subdivision regulations creating an aviation easement area that covers 107 square miles of land, or approximately 246,528 acres. The City of Belgrade and Gallatin County require an aviation easement to be granted to the Sponsor on any new subdivision of land within this area.

These easements inform landowners that they live in an area adjacent to the Airport and the easement grants the Sponsor “the right of flight for the passage of aircraft for the use and benefit of the public in the airspace above the Grantor's property, together with the continuing right to cause in said airspace such noise, vibration, dust, fumes, smoke, vapor, and other effects as may be inherent for navigation of or flight in air, using said airspace, or landing at, taking off from, or operating at Gallatin Field.” The easement also limits the height of any structure, tree or other vegetation as required by Federal Aviation Regulations (FAR) Part 77, “Objects affecting Navigational Airspace” for BZN.

The easement further restricts property around BZN from interference with radio communications, navigational aids or devices such as instrument landing system, by generators, motors, and artificial lighting devices that can cause interference. The easement prevents the installation of any structure, business or tree which is dangerous or hazardous to the safety of aircraft using BZN or to the property or persons using BZN or flying in the vicinity thereof. The aviation easement area boundary and easements granted to date are displayed on **Figure 4-4**.

Zoning and Adjacent Land Use

The Belgrade City-County Planning Board, established by the Belgrade City Council and the Gallatin County Commission, has jurisdiction of a 4.5 mile area surrounding the city. The current Belgrade Zoning map is shown on **Figure 4-2**. BZN is zoned PLI, Public Lands and Institutions.

The 2008 Master Plan for BZN also reviewed the existing land uses surrounding the area. Current land uses surrounding BZN are shown in **Figure 4-5**.

FAA criteria recommend that no solid waste disposal facilities be located within, or planned within, 5,000 feet of runways used by piston powered aircraft, or within 10,000 feet of runways planned to be used by turbo jet aircraft. No solid waste disposal facilities or transfer stations fall within either range under the No Action Alternative, nor the Preferred Alternative.

Section 4.15 *Noise* discusses in detail the impacts of noise and effects on compatible land uses.

4.5.3 Environmental Consequences

No Action Alternative

With the No Action Alternative, the proposed project would not be undertaken. Therefore, no project-related construction would occur and there would be no impact on land uses.

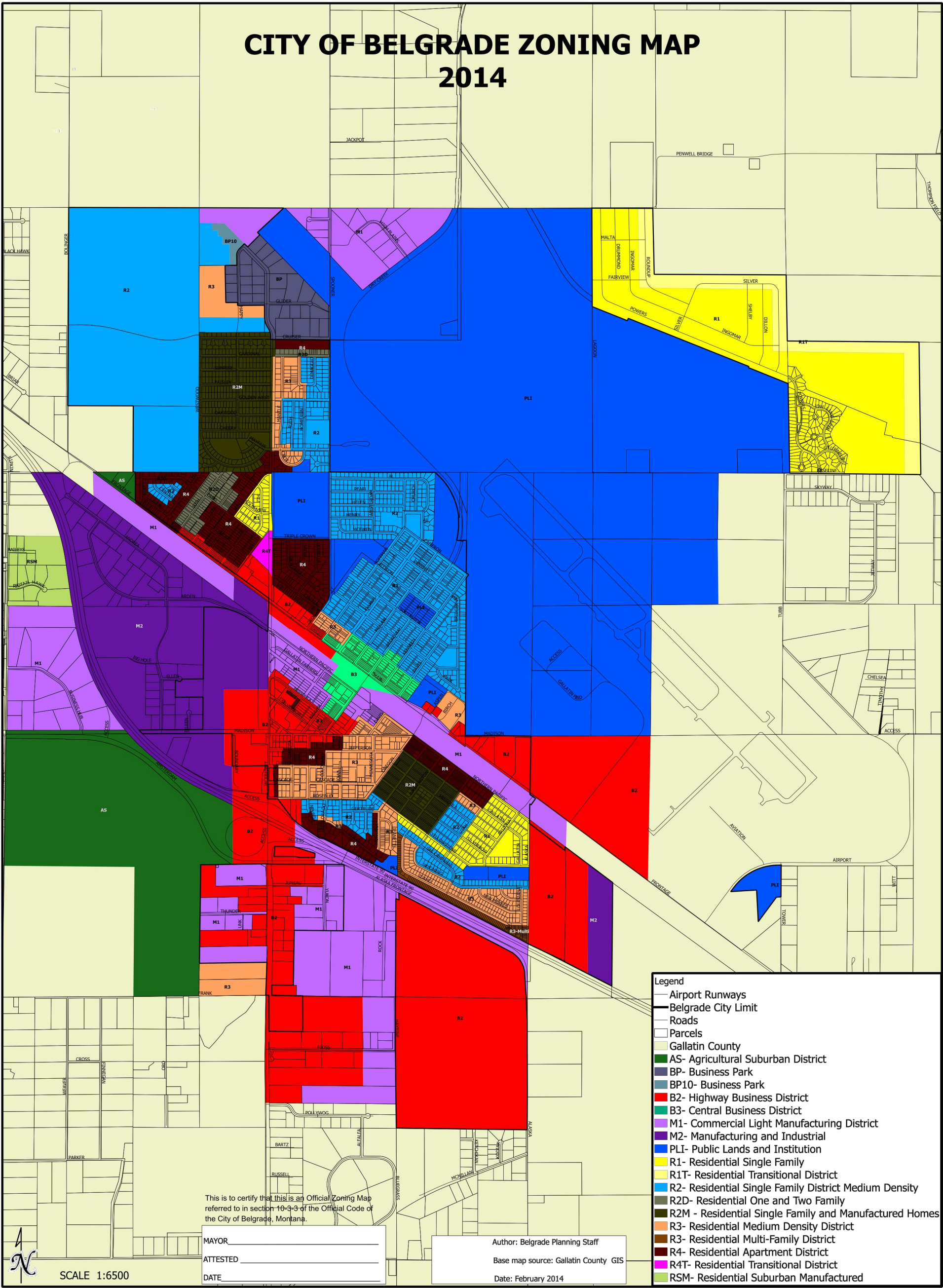
Preferred Alternative

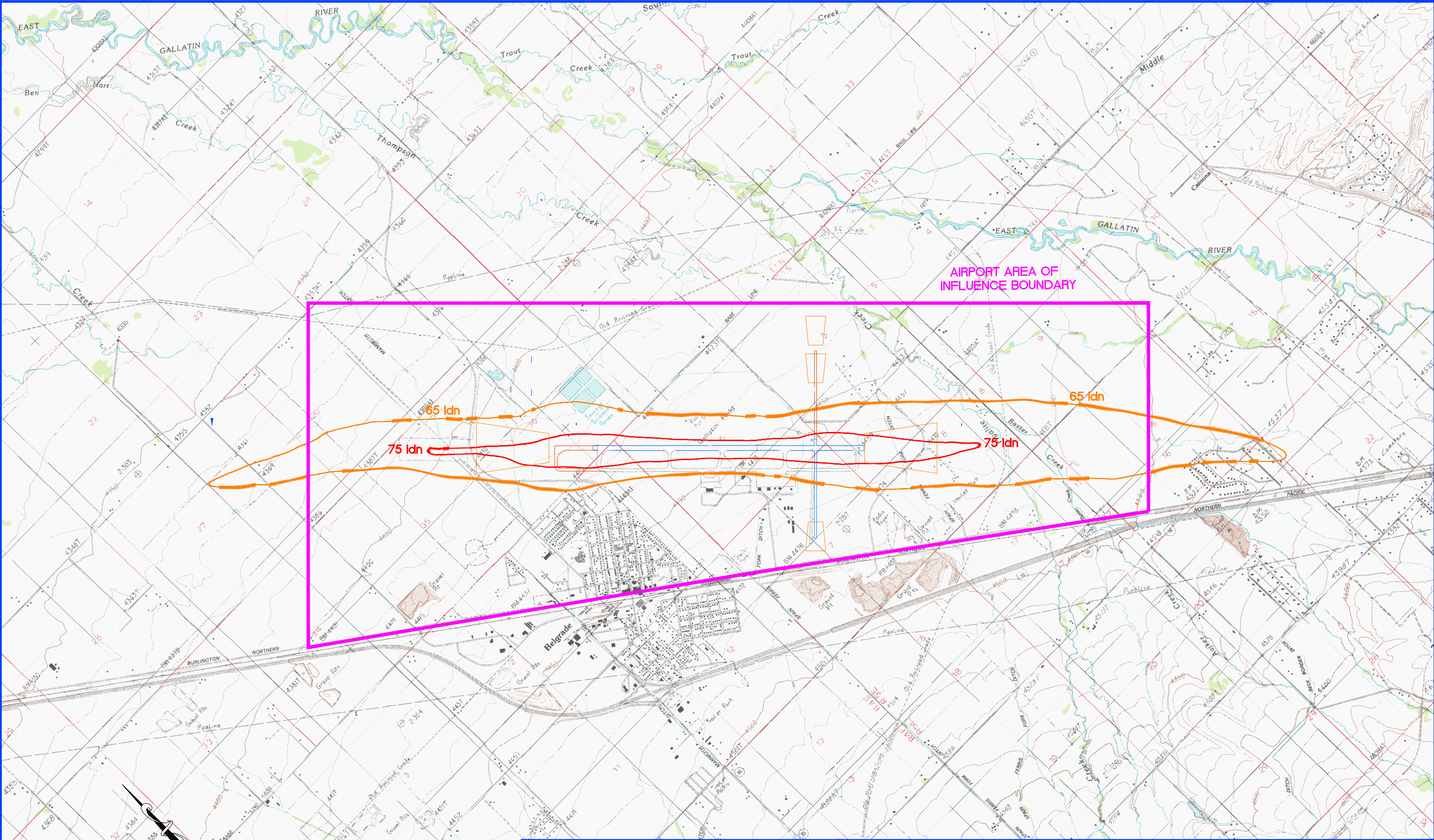
As a result of the establishment of the AIA, noise resolution, and aviation easement requirement to the subdivision regulations, compatible land use off airport property allowing aircraft the right to flight exists and no modification is expected in the off airport land uses.

4.5.4 Mitigation

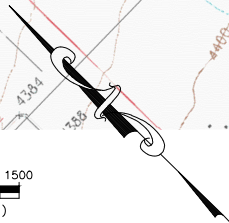
No subdivision applications, zoning laws, or zoning regulations will need to be created or augmented in order to implement the Preferred Alternative.

CITY OF BELGRADE ZONING MAP
2014





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(IN FEET)



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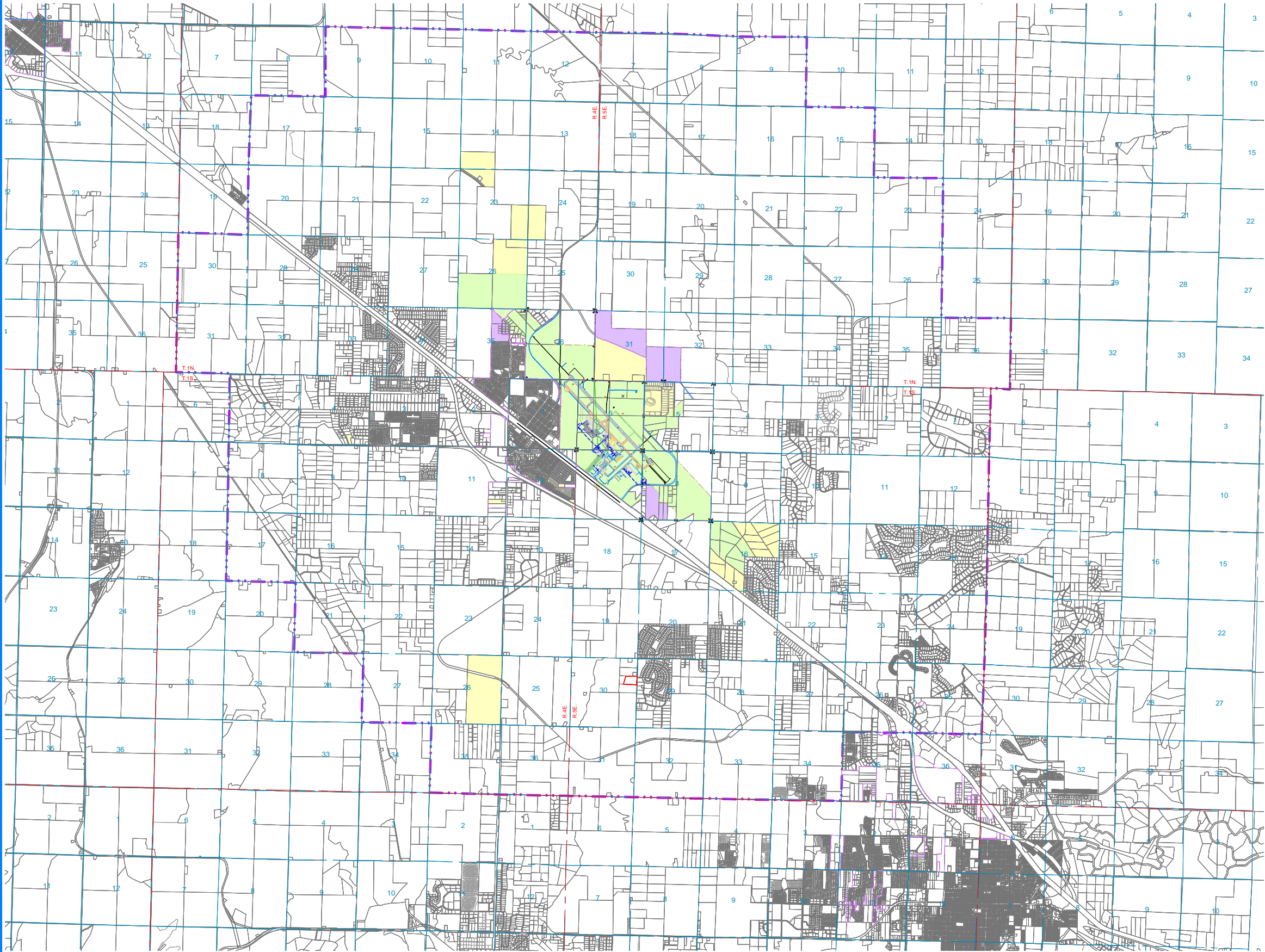
2880 Technology Blvd. W.
Bozeman MT 59718
Phone: (406) 587-0721
Fax: (406) 922-6702

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DATE: 01/2015

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BOZEMAN YELLOWSTONE INTERNATIONAL AIRPORT		PROJECT NO. 0761.118
BELGRADE	MONTANA	FIGURE NUMBER FIG. 4-3
ENVIRONMENTAL ASSESSMENT RUNWAY 11-29		
AIRPORT INFLUENCE AREA		

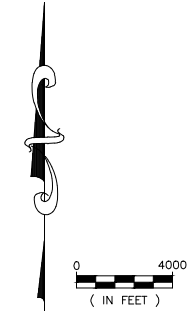


LANDS CONTROLLED BY AIRPORT BY FEE, EASEMENT, OR LEASE

LANDS COVERED BY AN EXISTING AVIGATION EASEMENTS

LANDS THAT WILL HAVE AN AVIGATION EASEMENT FOR FINAL PLAT APPROVAL

AVIGATION EASEMENT AREA BOUNDARY-ALL NEW SUBDIVISIONS WITHIN THIS BOUNDARY WILL HAVE AN AVIGATION EASEMENT FILED WITH THEIR FINAL PLAT.



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Bozeman MT 59718
Phone: (406) 587-0721
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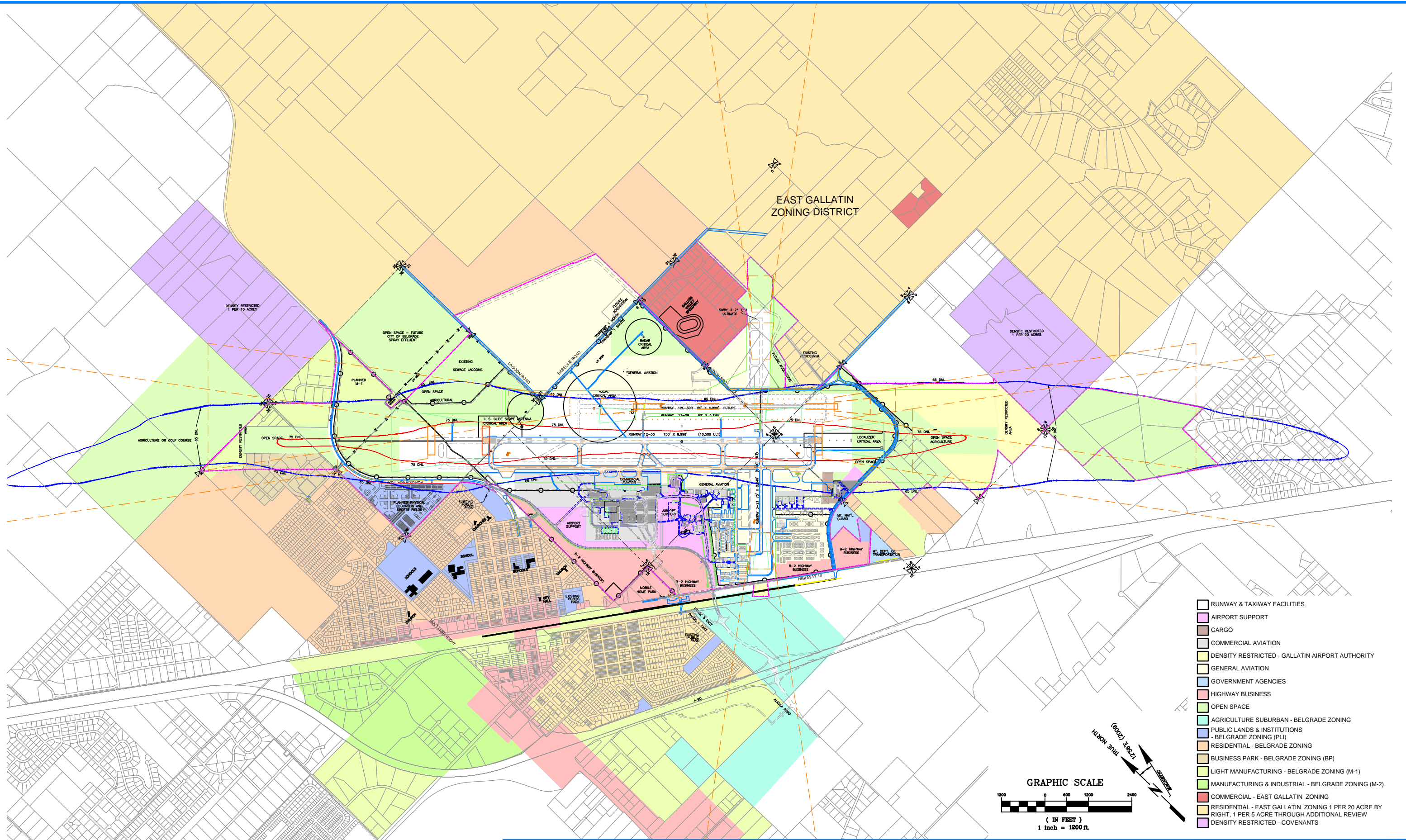
BOZEMAN YELLOWSTONE INTERNATIONAL AIRPORT
BELGRADE MONTANA

ENVIRONMENTAL ASSESSMENT RUNWAY 11-29
AVIGATION EXHIBITS

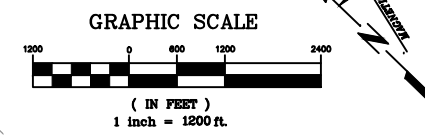
PROJECT NO.
0761.118


FIGURE NUMBER
FIG. 4-4

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- RUNWAY & TAXIWAY FACILITIES
- AIRPORT SUPPORT
- CARGO
- COMMERCIAL AVIATION
- DENSITY RESTRICTED - GALLATIN AIRPORT AUTHORITY
- GENERAL AVIATION
- GOVERNMENT AGENCIES
- HIGHWAY BUSINESS
- OPEN SPACE
- AGRICULTURE SUBURBAN - BELGRADE ZONING
- PUBLIC LANDS & INSTITUTIONS
- BELGRADE ZONING (PLI)
- RESIDENTIAL - BELGRADE ZONING
- BUSINESS PARK - BELGRADE ZONING (BP)
- LIGHT MANUFACTURING - BELGRADE ZONING (M-1)
- MANUFACTURING & INDUSTRIAL - BELGRADE ZONING (M-2)
- COMMERCIAL - EAST GALLATIN ZONING
- RESIDENTIAL - EAST GALLATIN ZONING 1 PER 20 ACRE BY RIGHT, 1 PER 5 ACRE THROUGH ADDITIONAL REVIEW
- DENSITY RESTRICTED - COVENANTS



<div style="text-align: center;">  <p>MORRISON MAIERLE, INC. <small>An Employee-Owned Company</small></p> </div> <p>Engineers Surveyors Scientists Planners</p> <p>2880 Technology Blvd. W. Bozeman MT 59718 Phone: (406) 587-0721 Fax: (406) 922-6702</p> <p><small>COPYRIGHT © MORRISON-MAIERLE, INC. 2015</small></p>	<p>DRAWN BY: C.JF</p> <p>CHK'D. BY: M.JM</p> <p>APPR. BY: M.JM</p> <p>DATE: 01/2015</p>	<p style="text-align: center;">BOZEMAN YELLOWSTONE INTERNATIONAL AIRPORT</p> <p style="text-align: center;">BELGRADE MONTANA</p> <p style="text-align: center;">ENVIRONMENTAL ASSESSMENT RUNWAY 11-29</p> <p style="text-align: center;">LAND USE MAP</p>	<p>PROJECT NO. 0761.118</p> <p>FIGURE NUMBER FIG. 4-5</p>

N:\0761\118 - EA\ACAD\Exhibits\Chapter 4\LAND USE MAP.dwg Plotted by cody farley on Oct/13/2015

4.5.5 Conclusion

According to the FAA Order 1050.1E, the compatibility of existing and planned land uses in the vicinity of an airport is usually associated with the extent of the airport's noise impacts. Airport development actions to accommodate fleet mix changes or the number of aircraft operations, air traffic changes, or new approaches made possible by new navigational aids are examples of activities that can alter aviation-related noise impacts and affect land uses subjected to those impacts.

As a result of the establishment of the AIA, noise resolution, and aviation easement requirement to the subdivision regulations, compatible land use off airport property allowing aircraft the right to flight exists and no modification is expected in the off airport land uses. The No Action Alternative is not anticipated to result in any compatible land use impacts as it is a non-development alternative. For the Preferred Alternative, no additional incompatible land uses and no additional significance thresholds were identified. Noise and the associated impacts are discussed in Section 4.15 *Noise*.

4.6 CONSTRUCTION

4.6.1 Affected Environment

All construction activities associated with the Preferred Alternative will take place within airport property as shown on **Figure 3-1**. Potential construction activities associated with the Preferred Alternative may include: installation of construction Best Management Practices, excavation, grubbing, clearing, grading, and Preferred Alternative installation.

4.6.2 Analysis

Construction activities associated with the Preferred Alternative will cause specific temporary environmental impacts that are adverse in nature, but localized to the project site. These temporary impacts and their degree of adversity would be reduced as construction activities are completed. The following impacts are anticipated as construction activities are initiated and completed during the construction of the Preferred Alternative:

- Temporary increases in noise levels due to the operation of construction equipment.
- Temporary and minor impacts to air quality due to vehicle emissions from construction equipment and particulate generation (dust) from the construction operations. (discussed in *Air Quality* under Section 4.2.2 – *Analysis*)
- Ground disturbing activities that could lead to erosion, possible surface water contamination, and noxious weed invasion.

4.6.3 Environmental Consequences

No Action Alternative

With the No Action Alternative, the proposed project would not be undertaken. Therefore, no project-related construction would occur and there would be no construction activities.

Preferred Alternative

While the implementation of the Preferred Alternative is expected to create noise and generate emissions and fugitive dust (see respective sections for additional detail), the impacts are expected to be temporary due to the nature of construction. After construction activities have been completed, no more construction impacts will be associated with the Preferred Alternative.

4.6.4 Mitigation

There would be no mitigation required with the No Action Alternative as there would be no construction impacts.

The following mitigation is proposed for the Preferred Alternative construction impacts identified:

- Impacts from construction noise will be largely limited to daylight hours in an effort to be compatible with residences surrounding the airport property (see Section 4.15 *Noise*).
- Vehicle emissions are to be in compliance with EPA standards and dust control will be required of the contractor throughout the project (water trucks, calcium chloride, etc.)
- A General Permit for Stormwater Discharges Associated with Construction Activity, a Stormwater Pollution Prevention Plan (SWPPP), and any applicable dust permitting will be required for the proposed project activities by Montana Department of Environmental Quality (MDEQ). MDEQ's guidance states that "construction-related disturbances equal to or greater than one acre due to clearing, grading, excavation, stockpiling earth materials, and other placement or removal of earth material performed during construction projects through to final stabilization" will require coverage under this permit program. Surface waters will be protected by implementing best management practices (BMPs) and installing silt fencing, earthen dams, concrete washout area(s), and erosion control measures to prevent contamination from construction equipment fuels and oils or erosion from disturbed areas.
- The contractor will ensure that all waste fuels, lubricating fluids, and other chemicals are stored and disposed of properly. The contractor will inspect construction equipment daily during active construction to ensure hydraulic fluids, fuel, and lubrication systems are in good condition and free of leaks.
- The project will be seeded with an established airport seed mixture once final grading is completed to promote regrowth of vegetation. Establishment of vegetation that has been successful at the Airport will aid in the reduction of noxious weed invasion. The Airport would monitor the construction area as part of any weed management program.

4.6.5 Conclusion

According to the FAA Order 1050.1E, there are no identified significant impact thresholds for construction impacts. There are no permanent construction impacts associated with the No Action Alternative. While the implementation of the Preferred Alternative is expected to create noise and generate emissions and fugitive dust, the impacts are expected to be temporary due to the nature of construction. With the implementation of the proposed mitigation measures noted above, the construction impacts are anticipated to be insignificant.

4.7 SECTION 4(f) LAND

4.7.1 Affected Environment

49 USC Section 303 (c) Section 4(f) of the Department of Transportation Act of 1966 requires evaluation of a transportation program or project requiring the use of publicly-owned land of a park, recreational area, or wildlife and waterfowl refuge of natural, state, or local significance or land of a historic site of national, state, or local significance. Existing 4(f) resources in the area of BZN include the Cherry River Fishing Access Site on the East Gallatin River located approximately 6 miles southeast of BZN, and the Gallatin National Forest located approximately 7 miles east of BZN.

4.7.2 Analysis

According to the FAA Order 1050.1E, significant impact thresholds for Section 4(f) property are those that would occur pursuant to NEPA when a proposed action (Preferred Alternative) either involves more than a minimal physical use of Section 4(f) property or is deemed a “constructive use” substantially impairing the 4(f) property, and mitigation measures do not eliminate or reduce the effects of the use below the threshold of significance. Substantial impairment would occur if when impacts to Section 4(f) lands are sufficiently serious that the value of the site in terms of its prior significance and enjoyment are substantially reduced or lost.

The Preferred Alternative will take place entirely on airport property and does not physically occupy and therefore require the use of any 4(f) property. While the nature of the Preferred Alternative will result in varied flight paths for some aircraft in a very close proximity to BZN (i.e. aircraft on approach to the runway threshold), the existing flight patterns over 4(f) properties are not proposed to change given their distance from BZN (6 miles at the closest point). The US Department of Agriculture (USDA) Forest Service Office for the Gallatin National Forest, the City of Bozeman, and the City of Belgrade were provided a general project description and a request for comment letter (a listing of agencies consulted, with correspondence received, is provided in **Appendix VI**) to ensure that any existing 4(f) properties were identified in the area and what potential impacts they may foresee. No comments were received as of the time of this writing.

As neither of the alternatives require physical use of Section 4(f) property, and existing flight patterns over existing 4(f) properties are not proposed to change, there are no impacts anticipated to Section 4(f) land.

4.7.3 Environmental Consequences

No Action Alternative

With the No Action Alternative, the proposed project would not be undertaken. Therefore, no project-related construction would occur and there would be no impact on Section 4(f) properties.

Preferred Alternative

The nearest Section 4(f) property is 6 miles away from the airport property. The Preferred Alternative will take place entirely on airport property and no changes in flight patterns over Section 4(f) property is projected. Therefore, no impact to Section 4(f) property is anticipated.

4.7.4 Mitigation

There would be no mitigation required with the No Action Alternative as there would be no construction impacts. There would be no mitigation required with the Preferred Alternative as no impacts to Section 4(f) resources were identified.

4.7.5 Conclusion

No direct or indirect impacts to Section 4(f) resources are anticipated to occur as a result of the No Action Alternative as it is a non-development alternative. The Preferred Alternative will not require the use of, or impact any, publicly owned land from a public park, recreation area, or wildlife or waterfowl refuge of national, state, or local significance. Thus, the Preferred Alternative will have no effect on Department of Transportation Section 303/4(f) resources. See also Section 4.12, *Historical, Architectural, Archeological and Cultural Resources*, and Section 4.15, *Noise*.

4.8 FARMLANDS

4.8.1 Affected Environment

The *Farmland Protection Policy Act (FPPA)*, P.L. 97 98, authorized the U.S. Department of Agriculture (USDA) to develop criteria for identifying the effects of Federal programs on the conversion of farmland to nonagricultural uses. Farmland is defined as “prime or unique” as referenced in the FPPA, or as determined by the appropriate state or local government to be of importance.

According to the Soil Survey for Gallatin County, Montana area, five soil map units occur within the project area. Please see **Table 4-8** for a list of soil types and prime farmland designation. A graphical representation of the soil types and locations within the airport property is reflected in **Appendix VII**.

Table 4-8: USDA NRCS Soil Survey Data for BZN

Map Unit Symbol	Map Unit Name	Approximate Acres on Airport Property	Acres of Soil Converted by Proposed Project Activities	“Prime or Unique”
33B	Attewan clay loam, 0 to 4 percent slopes	4.0	0.2	Prime farmland if irrigated
41A	Beaverell loam, 0 to 2 percent slopes	98.7	None	Farmland of local importance
43A	Beavwan loam, 0 to 2 percent slopes	47.2	None	Farmland of statewide importance
241A	Beaverell cobbly loam, 0 to 2 percent slopes	420.6	5.4	Farmland of local importance
741A	Beaverell-Beavwan complex, 0 to 2 percent slopes	1,000.2	9.5	Farmland of local importance

4.8.2 Analysis

The National Resource Conservation Service (NRCS) Farmland Conversion Impact Rating Form (AD-1006) is used to determine the significance of impacts to farmlands. The form utilizes points that are assigned based on numerous site assessment criteria and farmland's relative value. Site assessment scores are assigned points between 0 and 160, with farmland's relative value for agricultural production assigned points between 0 and 100. Significant impacts are indicated if the combined total of the two respective scores is between 200 and 260. Scores between 161 and 200 show the potential to adversely affect important farmlands, requiring mitigation to help reduce the acreage of converted important farmland. Scores below 160 are deemed not to require further analysis.

Table 4-8 indicates that approximately 0.2 acres of farmland designated "prime farmland if irrigated" and approximately 15 acres of farmland designated as "farmland of local importance" will be directly converted to non-farmland uses as new impervious surfaces. Form AD-1006, Farmland Conversion Impact Rating has been completed (**Appendix VII**) and reviewed by the NRCS as required by the FPPA. Total sight assessment points for the conversion of approximately 15 acres of property that is not actively farmed, but is mowed for hay, is 21. This shows that the total score is below the 160 required, resulting in a need for no further analysis.

4.8.3 Environmental Consequences

No Action Alternative

With the No Action Alternative, the Preferred Alternative would not be undertaken. Therefore, no project-related construction would occur and there would be no impact to prime and important farmlands.

Preferred Alternative

Approximately 15.2 acres of farmland designated as "farmland of local importance" will be directly converted to non-farmland uses as new impervious surfaces.

4.8.4 Mitigation

The No Action Alternative will not result in any impacts to "Prime and Important Farmland" as identified by the FPPA.

While the Preferred Alternative will result in the conversion of approximately 15.2 acres of property, the results of Form AD-1006 reflect a score of 21. This indicates that there are no significant impacts to "Prime and Important Farmland" anticipated to occur and that no mitigation is required.

4.8.5 Conclusion

There are no farmland impacts associated with the No Action Alternative. According the FAA Order 1050.1E, a significant impact to "Prime and Important Farmland" would occur when the total combined score on Form AD-1006 ranges between 200 and 260 points. The total score for Preferred Alternative impacts is 21, which is below the significant impact threshold. The Preferred Alternative is anticipated to result in insignificant impacts to Prime and Important Farmland.

4.9 FISH, WILDLIFE, AND PLANTS

The following information provides descriptions of the project area and biological resources that occur within and in the vicinity of the Preferred Alternative. Analyses of general fisheries; general wildlife; migratory birds and eagles; threatened and endangered species; general vegetation; and noxious weeds are provided below.

To document the presence or absence of vegetation, terrestrial, and aquatic species, including Federally-listed threatened, endangered and candidate (T&E) species and noxious weeds, a reconnaissance-level pedestrian survey of the airport property was performed by Morrison-Maierle environmental scientists in October, 2013 (see **Figure 4-1**). Observations from this reconnaissance-level pedestrian survey are documented in each of the Affected Environment sections for those areas analyzed as noted above.

Information pertaining to significant species that could potentially occur within the project area was obtained from the following documents:

- Bozeman Yellowstone International Airport Wildlife Hazard Assessment (WHA) (Airport Wildlife Consultants 2014): This assessment documents potential airport wildlife hazards and contains the results of a year-long wildlife study that was conducted in and around the Airport property (**Appendix IV**).
- Bozeman Yellowstone International Airport Wildlife Hazard Management Plan (Airport Wildlife Consultants 2014): This document identifies the specific actions BZN will take to mitigate the risk of wildlife strikes on or near the Airport. This plan focuses on mitigating wildlife hazards through habitat modification, harassment technology, and research.
- MFWP MFISH database (MFWP 2014): The Montana Fisheries Information System (MFISH) is a database containing information on fish species distribution, supporting data for distribution, and information related to the management of aquatic resources in Montana.
- Montana Natural Heritage Program (MNHP): The MNHP serves as Montana's information source for animals, plants, and plant communities with a focus on species and communities that are rare, threatened, and have declining trends, and as a result are at risk or potentially at risk of extirpation in Montana.
- USFWS County List of Threatened, Endangered, Proposed, and Candidate Species: This list contains information on endangered, threatened, proposed and candidate species listed by Montana Counties.
- Correspondence with MFWP and USFWS biologists (**Appendix VI**).

4.9.1 Affected Environment: General Fisheries

Water bodies on the airport property include the City of Belgrade wastewater treatment plant lagoons and the seasonal Spain Ferris Ditch. The City of Belgrade wastewater treatment lagoons are not considered surface waters that would support a fisheries resource. The Spain Ferris Ditch was built in 1905 and starts on the West Gallatin River near Bozeman Hot Springs. The Ditch flows northeast for approximately 18 miles and terminates into Hyalite Creek. Fish may occasionally stray into this ditch but the Spain Ferris Ditch is not considered a viable fishery. No fisheries data for the seasonal Spain Ferris Ditch is maintained on MFWP MFISH database.

4.9.1.1 Analysis

There are no fisheries resources located on the airport property. Fish may incidentally occur within the Spain Ferris Ditch but the Preferred Alternative will not impact this ditch. The Spain Ferris Ditch is shut off during the fall and winter months.

4.9.1.2 Environmental Consequences

No Action Alternative

With the No Action Alternative, the Preferred Alternative would not be undertaken. Therefore, no project-related construction would occur and there would be no impact to general fisheries.

Preferred Alternative

There are no impacts to the seasonal Spain Ferris Ditch, and therefore no impact to fisheries and surface water resources will occur with the Preferred Alternative.

4.9.1.3 Mitigation

No impacts were identified with either alternative, and therefore, no mitigation measures have been identified associated with potential impacts to fisheries.

4.9.2 Affected Environment: General Wildlife

The proximity of BZN to the surrounding agricultural, urban areas, major transportation corridors, gravel pits, and segmented environments makes the property less than optimal habitat for most terrestrial species. A review of Foresman's Mammals of Montana (Foresman 2012) indicated that there have been 68 species of mammals in Gallatin County for which specimens have been collected or recorded. An additional 6 species are thought to probably occur in the county based on broader generalized North American Range distributions.

A 7-foot tall chain link fabric security fence with 12 inches of barb wire on top encompasses the air operations area of the airport property. The fence restricts entry to the larger wildlife – deer, elk, etc. to reduce hazards to aircraft. Smaller wildlife, including fox, skunk, birds, are not restricted by the security fence.

Species observed on the airport property during the on-site field investigation conducted by Morrison Maierle environmental science personnel that took place on October 16, 2013 included: Hungarian partridge (*Perdix perdix*), Canada geese (*Branta canadensis*), raven (*Corvus corax*), muskrat (*Ondatra zibethicus*), and the deer mouse (*Peromyscus maniculatus*).

Results from the mammal survey conducted for the Wildlife Hazards Assessment (**Appendix IV**) included the observations of two meadow voles and two deer mice. Larger mammals, such as deer, antelope, coyotes, and marmots were observed outside of the perimeter of the airport fence (Airport Wildlife Consultants 2014).

4.9.2.1 Analysis

Permanent loss of vegetation will occur and small mammal species may be permanently or temporarily displaced from their burrows. Sufficient suitable habitat is available in the immediate vicinity to provide refuge for displaced individuals. Property within the airport fence has been highly altered, accommodates regular and frequent air-traffic, and does not represent high-quality general wildlife habitat.

4.9.2.2 Environmental Consequences

No Action Alternative

No impacts to general wildlife will occur with the No Action Alternative as it is a non-development alternative. Therefore, there are no mitigation measures required for this alternative.

Preferred Alternative

Although the Preferred Alternative may adversely affect some animal species in the short-term, it is not anticipated to have any adverse effects to general wildlife species in the long-term. Therefore, the Preferred Alternative is not anticipated to have a significant impact on general wildlife species.

4.9.2.3 Mitigation

As the No Action Alternative does not include any development, there are no mitigation measures anticipated. For the Preferred Alternative, to the extent practicable, avoid and minimize the area of earth disturbance and damage to vegetation within and adjacent to the Preferred Alternative area.

4.9.3 Affected Environment: Migratory Birds and Eagles

An unknown variety of migratory birds inhabit the airport property. MNHP stated that two confirmed bald eagle nests have been documented within 1-mile of the subject property. Additionally, the USFWS states that active bald eagle or golden eagle nesting and wintering occurrences have been documented within one mile of the Preferred Alternative. In the correspondence from the USFWS noted above (dated October 24, 2014 in **Appendix VI**) the following was stated:

“...active bald eagle or golden eagle nesting and wintering occurrences have been documented within one mile of the proposed project site. During the nesting season, especially early in the season, eagles can be very sensitive to disturbance near the nest site and may abandon the nest as a result of low-level disturbance, even from foot traffic. We recommend that the presence and activity status of bald and golden eagle nests within 1 mile of the project be determined prior to construction. Should occupied eagle nests occur within 0.5 mile of the proposed site, we recommend that you comply with the recommended temporary seasonal and distance construction buffers stipulated in the *2010 Montana Bald Eagle Management Guidelines: An Addendum to Montana Bald Eagle Management Plan (1994)*.”

The Wildlife Hazard Assessment (Airport Wildlife Consultants 2014) (**Appendix IV**) stated that bald eagles are winter migrants to the area and nest at various sites on the Gallatin River. During the Wildlife Hazard Assessment field work, bald eagles were observed soaring in the

approach and departure corridors and had the potential to intersect flightlines used by aircraft at the Airport. The Wildlife Hazard Assessment concludes that bald eagles pose a primary wildlife hazard to the Airport.

4.9.3.1 Analysis

The Migratory Bird Treaty Act provides that it is unlawful to pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product, manufactured or not. The Act does not contain any prohibition that applies to the destruction of an unoccupied migratory bird nest (without birds or eggs), provided that no possession occurs during the destruction. Direct disturbance of an occupied nest is prohibited under the law.

In addition to the Migratory Bird Treaty Act, bald eagles and golden eagles are provided additional protection under the Bald and Golden Eagle Protection Act (BGEPA). The BGEPA prohibits any form of possession or taking of both bald and golden eagles. The statute imposes criminal and civil sanctions, as well as enhanced penalty provision for subsequent offenses. Further, the BGEPA provides for the forfeiture of anything used to acquire eagles in violation of the statute. The statute accepts from its prohibitions on possession the use of eagles or eagle parts for exhibition, scientific, and Indian religious uses. The USFWS provided the following comments with regards to bald and golden eagles in communication dated October 24, 2014: **(Appendix VI)**

“The BGEPA defines take as pursue, shoot, shoot at, poison, would, kill, capture, trap, collect, molest or disturb. “Disturb” means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior. In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagles return, such alterations agitate or bother an eagle to a degree that injures an eagle or substantially interferes with normal breeding, feeding, or sheltering habits and causes, or is likely to cause, a loss of productivity or nest abandonment.

BZN has obtained a “depredation at airports” permit from the USFWS Migratory Bird Permit Office in order to lethally take birds that present a hazard to aircraft operations. This permit is used to control American Coots, Canada Geese, common ravens, Franklin’s Gulls, Green-winged Teal, Northern Flickers, Red-tailed Hawk, Ring-billed Gulls, Turkey Vultures, and Western Kingbirds that inhabit the sewage treatment lagoons and airport property. A copy of this permit is located in **Appendix VIII**. Only non-lethal wildlife management actions are allowed for eagles and special permits are required for such actions.

Tree removal activities are not anticipated to occur as part of the Preferred Alternative, as there are no trees located in the area of the Preferred Alternative. Additionally, the operation of a commercial airport has been an on-going activity that could be potentially disturbing to eagles, yet they are still observed within a mile of the airport property. The Preferred Alternative is not anticipated to cause more air traffic in the area.

4.9.3.2 Environmental Consequences

No Action Alternative

No impacts to migratory birds will occur with the No Action Alternative as this is a non-development alternative. Therefore, there are no mitigation measures required for this alternative.

Preferred Alternative

The Preferred Alternative is not likely to impact migratory birds or eagles. The Preferred Alternative is not anticipated to cause more air traffic in the area. The threshold provided by the USFWS indicated that impact would not occur unless the bald eagle nest was closer than 0.5 mile. Trees within 0.5 miles of the Preferred Alternative are extremely limited and occur adjacent to residential development, making them unlikely nesting sites for eagles. Implementing the Preferred Alternative will not create additional air traffic and should not impact bald eagles in a manner greater than that of the existing pre “Preferred Alternative” condition.

4.9.3.3 Mitigation

If nesting, communal roost sites, or foraging areas for the Bald Eagle are noted within 0.5 mile of the Preferred Alternative area, Morrison-Maierle environmental personnel will comply with the recommended temporary seasonal and distance construction buffers stipulated in the *2010 Montana Bald Eagle Management Guidelines: An Addendum to Montana Bald Eagle Management Plan (1994)* and consult with a qualified biologist from MFWP regarding the development of a site-specific management plan.

4.9.4 Affected Environment: Threatened and Endangered Species

Threatened and Endangered (T&E) species include those species that have been federally-listed or are proposed for federal listing by the USFWS as threatened or endangered. According to the Endangered Species Act (ESA) of 1973, threatened species are defined as “any species which is likely to become endangered within the foreseeable future throughout all or a significant portion of its range,” and endangered species are defined as “any species which is in danger of extinction throughout all or a significant portion of its range.” Pursuant to Section 7 of the ESA, any action that is funded, authorized, or conducted by a federal agency must be reviewed for its effects on federally-listed T&E species or designated critical habitat.

The July 2015 USFWS County List of Threatened, Endangered, Proposed, and Candidate Species currently lists the following species as potentially occurring in Gallatin County (USFWS 2015):

Table 4-9 USFWS Listed Species for Gallatin County, Montana (as of the most recent list dated July 2015)

Common Name	Scientific Name	Status
Ute Ladies' Tresses	<i>Spiranthes diluvialis</i>	Listed Threatened
Canada Lynx	<i>Lynx Canadensis</i>	Listed Threatened, Critical Habitat
Grizzly Bear	<i>Ursus arctos horribilis</i>	Listed Threatened
Sprague's pipit	<i>Anthus spragueii</i>	Candidate
Whitebark Pine	<i>Pinus albicaulis</i>	Candidate

Note: While listed on the July, 2015 USFWS listed species as a Candidate, the Greater Sage-Grouse (*Centrocercus urophasianus*) was delisted as a Candidate in September, 2015.

4.9.4.1 Analysis

To confirm the presence or absence of any protected species, research was conducted to assess distribution maps and habitat characteristics of each species list on the Gallatin County USFWS T&E list. The Wildlife Hazard Assessment was reviewed for observation of any of the above listed species in and around the airport property (Airport Wildlife Consultants 2014). Additionally, correspondence with Jodi L. Bush, USFWS Field Supervisor was also used to assess impacts to listed species. Copies of correspondence with USFWS and MFWP personnel are provided in **Appendix VI**.

No federally listed species were observed during the on-site investigation of the airport property by Morrison-Maierle environmental personnel or Airport Wildlife Consultants personnel performing field work for the Wildlife Hazard Assessment. Based on communication and data received on October 24, 2014 (**Appendix VI**), the USFWS states“(we) *do not anticipate adverse effects to threatened, endangered, proposed or candidate species or critical habitat to result from proposed project implementation within the designated project area.*” Additionally, they provided the guidance regarding bald and golden eagles which can be reviewed in Section 4.9.3.

The Wildlife Hazard Assessment (2014) also concludes that BZN contains no suitable habitat for any federally or state listed threatened or endangered species, and no federally listed threatened or endangered species were observed during the preparation of the assessment (Airport Wildlife Consultants 2014) (**Appendix IV**).

The following information summarizes the potential impacts to the ESA listed species in Gallatin County, Montana.

Ute Ladies' Tresses

Suitable habitat characteristics include river meander wetlands. No wetlands were identified on the airport property. According to the Montana Field Guide website, the Ute ladies' tresses is known to occur in only a few occurrences in southwest and south-central Montana in Missouri, Jefferson, Beaverhead, Ruby and Madison River drainages. It also notes that the species is restricted in area by specific hydrologic requirements. The airport property is not within any of the listed drainages nor does it possess specialized hydrologic requirements. Therefore, the Preferred Alternative activities will have **no effect** on the Ute ladies' tresses identified as a federally listed threatened species that occurs in Gallatin County because neither the species nor its habit is found on the airport property. Therefore, no further analysis of the Ute ladies' tresses is provided in this document.

Canada Lynx

Suitable habitat characteristics include subalpine forests between 4,000 and 7,000 feet above sea level. Canada lynx prefer pure stands of lodgepole pine but also mixed stands of subalpine fir, lodgepole pine, and Douglas-fir (MNHP 2014). Based on the absence of suitable habitat characteristics, the occurrence of the Canada lynx within the project area is not likely. The Preferred Alternative activities will have **no effect** on the Canada lynx identified as a federally listed threatened species that occurs in Gallatin County because neither the species nor its habit is found on the airport property. Therefore, no further analysis of the Canada lynx is provided in this document.

Canada Lynx Critical Habitat

According to the *Critical Habitat for Lynx Canadensis (Canada Lynx), Unit 5– Greater Yellowstone Map* (USFWS 2013), no critical habitat for Canada lynx is present in within the project area. This map (available in **Appendix VIII**) indicates that the critical habitat is located south of Interstate 90, approximately 16 miles south of the airport property. Therefore, the Preferred Alternative activities will have **no effect** on Canada Lynx critical habitat in Gallatin County.

Grizzly Bear

According to the USFWS, grizzly bear range in Montana includes alpine/subalpine coniferous forests in western Montana. These habitat characteristics do not exist within airport property, therefore, the occurrence of grizzly bears within the proposed project area is unlikely. The Preferred Alternative activities will have **no effect** on the grizzly bear identified as a federally listed threatened species in Gallatin County because neither the species nor its habit is found on airport property. Therefore, no further analysis of the grizzly bear is provided in this document.

Sprague's Pipit

Based on the absence of suitable habitat characteristics (large areas of native grasslands), the occurrence of the Sprague's pipit within the project area is not likely. The Preferred Alternative activities will have **no effect** on the Sprague's pipit identified as a federally listed candidate species that occurs in Gallatin County because neither the species nor its habit is found on airport property. Therefore, no further analysis of Sprague's pipit is provided in this document.

Whitebark Pine

Based on the absence of suitable habitat characteristics (sub-alpine environment), the occurrence of the whitebark pine within the project area is not likely. Additionally, no whitebark pines were identified on airport property during the on-site field investigation. The Preferred Alternative activities will have **no effect** on the whitebark pine identified as a federally-listed candidate species that occurs in Gallatin County because neither the species nor its habit is found on airport property. Therefore, no further analysis of the whitebark pine is provided in this document.

4.9.4.2 Environmental Consequences

No Action Alternative

No impacts to threatened, endangered, or candidate species will occur with the No Action Alternative as it is a non-development alternative. Therefore, there are no mitigation measures required for this alternative.

Preferred Alternative

Based on the information obtained from MNHP and the USFWS, in addition to the results of the field investigation, no threatened, endangered or candidate species are projected to occur within the Preferred Alternative area; therefore, there are no mitigation measures required for this alternative.

4.9.4.3 Mitigation

No mitigation measures are required for either alternative due that no impacts to threatened, endangered, or candidate species have been identified.

4.9.5 Affected Environment: General Vegetation

The Preferred Alternative area is located within the Environmental Protection Agency (EPA) Level IV ecoregion 17w, Townsend Basin (Woods et al. 2002). Ecoregions are geological areas that share similarities in the type, quality, and quantity of environmental resources. Vegetation within the ecoregion encompassing the project area primarily consists of foothills prairie grasses and grama-needlegrass-wheatgrass. Land is frequently used for cropland, rangeland, and urban-suburban-industrial activity (Woods et al. 2002).

According to the vegetation classification system developed by Payne (1973), the Preferred Alternative area occurs in the vegetation type identified as *Foothill Grassland*. This landscape is characterized by topography of rolling foothills from edges of timber in mountains to plains, including wide valleys and benches. Species that distinguish this vegetative type include bluebunch wheatgrass (*Pseudoroegneria spicata*), western wheatgrass (*Pascopyrum smithii*), Idaho fescue (*Festuca idahoensis*) and sheep fescue (*Festuca ovina*).

As a part of the biological data collection effort completed by Morrison-Maierle on October 16, 2013, general vegetation was surveyed and included: reed canary grass (*Phalaris arundinacea*), Canada thistle (*Cirsium arvense*), crested wheatgrass (*Agropyron cristatum*), curly dock (*Rumex crispus*), common tansy (*Tanacetum vulgare*), bull thistle (*Cirsium vulgare*), western salsify (*Tragopogon dubius*), dandelion (*Taraxacum officinale*), hoary alyssum (*Berteroa incana*), common mullein (*Verbascum thapsus*), lupine (*Lupinus* spp), yarrow (*Achillea millefolium*), prickly lettuce (*Lactuca serriola*), licorice (*Glycyrrhiza glabra*), smooth brome (*Bromus inermis*), wild rose (*Rosa acicularis*), slender wheatgrass (*Elymus trachycaulus*), sandbur (*Cenchrus longispinus*), and cow parsnip (*Heracleum maximum*).

Additionally, MNHP identifies small dropseed (*Sporobolus neglectus*) as potentially occurring near the project area. The first and last observation of this species near BZN was stated to have occurred on August 8, 1941. According to the Montana Field Guide, the small dropseed is rare in Montana and only known from a few widely scattered and poorly documented sites (MNHP 2014). No specimens of small dropseed were identified during the on-site field investigation; however, the field investigation took place outside of the normal growing season.

4.9.5.1 Analysis

Long-term permanent impacts to vegetation will occur as a result of implementing the Preferred Alternative. Approximately 15 acres of currently vegetated land will be graded and/or paved to create the parallel runway, taxiway and associated ladder taxiways. Vegetation in the project area is sparse, previously disturbed, non-native and is regularly mowed during the active growing season in order to accommodate air traffic activities.

Areas where vegetation is impacted due to project implementation are susceptible to invasive weed establishment and spread. Noxious weed and invasive species occurrence, project related impacts, and mitigation measures are described in more detail in Section 4.9.6.

4.9.5.2 Environmental Consequences

No Action Alternative

No impacts to vegetation will occur with the No Action Alternative. Therefore, there are no mitigation measures required for this alternative.

Preferred Alternative

Long-term permanent impacts and short-term impacts to vegetation within the Preferred Alternative area are anticipated from disturbance associated with grading and construction equipment. However, the majority of the vegetative species that are impacted by disturbance will have the ability to rejuvenate from subsurface rooting structures and/or seeds. Disturbed areas will also be reseeded in accordance with an established seed mix that has been utilized at BZN for many years, and that will comply with the FAA T-901 Seeding specifications.

4.9.5.3 Mitigation

In order to prevent significant long-term impacts and unnecessary harm to the Preferred Alternative area resources, the following conservation and coordination measures are recommended to minimize and avoid impacts to vegetation.

- Avoid disturbing excess ground area and vegetation within the limits of disturbance and adjacent to proposed construction activities.
- Phase projects appropriately so that disturbed earth is not left without vegetative cover for a long period of time.
- Revegetate bare ground that is created from construction activities with a perennial grass seed mix that is appropriate for the area and will provide sufficient competition against invasive species establishment. Revegetation will occur according to specifications outlined in the T-901 Seeding specification.
- Seeding of disturbed areas should occur in the fall (preferably) or spring of the year.

4.9.6 Affected Environment: Noxious Weeds

Pursuant to Executive Order 13112, BZN is responsible for controlling and preventing the spread of invasive species, including noxious weeds, which are located within the boundaries of transportation project areas in the State of Montana. The Montana County Noxious Weed Control Law, as authorized by Montana Code Annotated (MCA) §7-22, defines noxious weeds in MCA §7-22-2101 as being any exotic plant species that may render land unfit for agriculture, forestry, livestock, wildlife, or other beneficial uses or that may harm native plant communities.

During the site visit, the following noxious weeds were noted: Canada thistle, common tansy, hoary alyssum, and spotted knapweed (*Centaurea maculosa*). Hoary alyssum is a Priority 2A weed; and Canada thistle, common tansy, and spotted knapweed are all Priority 2B weeds.

4.9.6.1 Analysis

The Montana Department of Agriculture (2010) lists and classifies noxious weeds into five categories that identify frequency of occurrence, rate of spread, and subsequent levels of concern. Priority 1A noxious weeds are those species that are not present in Montana and will require eradication if detected. Priority 1B weeds are species that have limited presence in the state and will require eradication or containment. Priority 2A weeds are common in isolated areas of Montana and will require eradication or containment where less abundant. Priority 2B weeds are abundant and widespread in many counties. These weeds require eradication or containment where less abundant. Management of Priority 2A and 2B weeds is prioritized by local weed districts. Priority 3 species are classified as regulated plants and are not state-listed.

noxious weeds. Regulated plants have the potential to have significant negative impacts and may not be intentionally spread or sold.

In addition to state listed noxious weeds, the Gallatin County Weed Board also identifies Scotch thistle (*Onopordum acanthium*), musk thistle (*Carduus nutans*), meadow knapweed (*Centaurea pratensis*), poison hemlock (*Conium maculatum*), field scabious (*Knautia arvensis*), and scentless chamomile (*Tripleurospermum perforatum*) as county-specific noxious weeds.

4.9.6.2 Environmental Impact by Alternative

No Action Alternative

No impacts to distribution of noxious weeds will occur with the No Action Alternative as it is a non-development alternative. Therefore, there are no mitigation measures required for this alternative.

Preferred Alternative

Earth disturbing activities associated with the Preferred Alternative could promote noxious weed invasion and spread. Bare ground that is created from disturbance facilitates favorable conditions for weeds to spread into those disturbed areas and for viable weed seeds in the seed bank to become established. Potential impacts to the disturbance of vegetation within the Preferred Alternative area would likely consist of the increased spread and establishment of the identified noxious weed species if not properly managed.

4.9.6.3 Mitigation

The following mitigation is proposed for the impacts associated with implementing the Preferred Alternative:

- Control existing noxious weeds using approved mechanical and chemical methods. If chemical weed control is necessary, select herbicides appropriate for use in upland areas.
- In order to reduce the spread and establishment of noxious weeds and to re-establish native vegetation, seed mixes appropriate for the area should be utilized to reseed areas disturbed by construction activities. Revegetation will occur according to specifications outlined in the T-901 Seeding specification.

4.9.7 Conclusion: Fish, Wildlife and Plants

According the FAA Order 1050.1E, a significant impact to Federally-listed threatened and endangered species would occur when the FWS or NMFS determines that the proposed action (Preferred Alternative) would be likely to jeopardize the continued existence of a federally listed threatened or endangered species, or would result in the destruction or adverse modification of federally designated critical habitat. Additionally, this reference provides guidance on non-listed species, noting that NEPA practitioners should consider factors affecting population dynamics and sustainability for the affected species such as reproductive success rates, natural mortality rates, non-natural mortality, and the minimum population levels required for population maintenance.

There are no fish, wildlife, and/or plant impacts associated with the No Action Alternative as it is a non-development alternative.

Based on communication and data received on October 24, 2014 (**Appendix VI**), the USFWS stated “(we) *do not anticipate adverse effects to threatened, endangered, proposed or candidate species or critical habitat to result from proposed project implementation within the designated project area.*” Through this correspondence, and the analysis above, no significant impacts to general fisheries, general wildlife, migratory birds and eagles, threatened and endangered species, general vegetation, and noxious weeds were identified for the Preferred Alternative. Therefore, it is expected that the Preferred Alternative will have no measureable impact on general fisheries; general wildlife; migratory birds and eagles; threatened and endangered species; general vegetation; and noxious weeds.

4.10 FLOODPLAINS

4.10.1 Affected Environment

Executive Order 11988 and subsequent 2015 amendments under Executive Order 13690, *Floodplain Management*, contain the requirements to evaluate floodplains and flood risk. The Federal Emergency Management Agency (FEMA) issues Flood Insurance Rate Maps (FIRM) that identifies flood risks. According to FEMA FIRM for Gallatin County, Montana, and Unincorporated Areas 30031C0595D dated September 2, 2011, the property in and around BZN is not designated as a special flood hazard area and is classified as Zone X - areas determined to be outside the 0.2% annual chance floodplain. A copy of the FEMA FIRM is located in **Appendix IX**. The nearest flood zone to BZN is associated with the East Gallatin River approximately 1.5 miles east of the proposed project area.

4.10.2 Analysis

According the FAA Order 1050.1E, floodplain impacts would be significant pursuant to NEPA if it results in notable adverse impacts on natural and beneficial floodplain values as defined in Paragraph 4.k of DOT Order 5650.2, *Floodplain Management and Protection*. The Preferred Alternative is not located within a 100-year floodplain.

4.10.3 Environmental Consequences

No Action Alternative

No impacts to floodplains will occur with the No Action Alternative as this is a non-development alternative. Therefore, there are no mitigation measures required for this alternative.

Preferred Alternative

No impacts to floodplains will occur with the Preferred Alternative due to the absence of floodplains in or near the proposed project area. Therefore, there are no mitigation measures required for this alternative.

4.10.4 Mitigation

No impacts have been identified with either of the alternatives therefore, no mitigation measures are necessary.

4.10.5 Conclusion

According to the FAA Order 1050.1E, floodplain impacts would be significant pursuant to NEPA if it results in notable adverse impacts on natural and beneficial floodplain values as defined in Paragraph 4.k of DOT Order 5650.2, *Floodplain Management and Protection*. The Preferred Alternative is not located within a 100-year floodplain. No impacts to floodplains are anticipated to occur as a result of the No Action Alternative or the Preferred Alternative.

4.11 HAZARDOUS MATERIALS, POLLUTION PREVENTION AND SOLID WASTE

4.11.1 Affected Environment

A variety of hazardous materials, pollution prevention and solid waste control techniques currently exist on airport property. Jet fuel and 100LL has historically been and is currently delivered, stored for, and placed into aircraft at BZN. Best Management Practices (BMP) have been and would remain established to ensure that fuel is properly dispersed, stored, and that necessary mitigation measures remain in place to address potential fuel spills.

The Montana Department of Environmental Quality maintains a list of underground storage tank (UST) facility operating permit status throughout the state. BZN contains several USTs used for fuel storage. The following table lists the USTs on airport property, indicates their last inspection date and notes the operating permit renewal date.

Table 4-10: UST Facility Operating Permit Status (MDEQ 2014)

Facility ID	Facility Name	Last Inspection Date	Operating Permit Renewal Date
6015152	Gallatin Field Airport	June 24, 2013	July 3, 2016
1612952	Gallatin Field Cardlock	June 27, 2013	July 22, 2016
1604440	Yellowstone Jet Center LLC	June 5, 2015	August 4, 2018

Additionally, a query was performed on the MDEQ online data mapper on September 11, 2014 for additional information pertaining to on-site hazardous materials. The query revealed that two hazardous waste handlers were located on or adjacent to airport property including: US FAA Bozeman Sector and Montana National Guard. Both of the facilities are classified as conditionally exempt small quantity generators but do not have records of releases, spills, or violations. The data query also revealed that the Yellowstone Jet Center is listed as participating in the Petroleum Tank Release Cleanup Fund. According to MDEQ, the Petroleum Tank Release Cleanup Fund provides financial resources and effective procedures through which tank owners and operators may undertake, and be reimbursed for, cleanup of petroleum contamination and payment to third parties for damages caused by releases from petroleum storage tanks; to assist tank owners and operators in meeting financial assurance requirements under state and federal law governing operation of petroleum storage tanks; to assist in protecting public health and safety and the environment by providing cleanup of petroleum tank releases; and to provide tank owners with incentives to improve petroleum storage tank facilities in order to minimize the likelihood of accidental releases.

4.11.2 Analysis

None of the data reviewed from MDEQ reveal danger from hazardous waste or indication of significant reductions in pollution prevention activities would occur on BZN during the implementation of the Preferred Alternative. The Yellowstone Jet Center site (Latitude: 45.7681 Longitude: -111.1611 per the Montana DEQ online data mapper) identified in the Petroleum Tank Release Cleanup Fund program was considered resolved (or closed) on September 25, 2012, meaning that this site is no longer considered a threat to human health or the environment.

Construction, renovation, or demolition of most projects produces debris (i.e. dirt, concrete, asphalt, electrical components, etc.) and proper disposal must be utilized. New or renovating building projects also produce debris that can have impacts on the solid waste collection/treatment system. Minor demolition (asphalt, concrete washout etc.) will occur as a part of the Preferred Alternative. Demolished and waste materials produced as a result of implementing the Preferred Alternative are not anticipated to be of a volume that will produce deleterious effects to standard solid waste handling facilities.

Site grading will be required to meet the necessary grades for the Preferred Alternative, as well as FAR Part 77 surfaces. It is proposed that the majority of material will remain on airport property, either in selected waste areas, as part of shoulder fill, or if the excavation produces adequate gravels, as part of the base for the Preferred Alternative. Should any excess material not be able to be wasted on airport property then the contractor will be required to dispose of excess material in one of the local gravel pits that are permitted to receive such material. There is no removal of existing pavements proposed. Other construction-related waste material may include concrete forms and other temporary structures; food and packaging waste from construction workers; and containers from oil, lubricants and other materials used in construction. Some of these materials may be recycled by the contractor for use on future projects. The contractor will be required to provide a collection area for non-recyclable waste and arrange for its removal as appropriate.

According to the FAA Order 1050.1E, the FAA has not established a significance threshold for hazardous materials, solid waste, and pollution prevention. Factors to consider however, would be if the Preferred Alternative would have the potential to: 1) violate applicable Federal, State, Tribal, or local laws or regulations regarding hazardous materials and/or solid waste management, 2) involve a contaminated site listed on the National Priorities List (NPL), 3) produce an appreciably different quantity or type of hazardous waste, 4) generate an appreciably different quantity or type of solid waste or use a different method of collection or disposal and/or would exceed local capacity, and/or 5) adversely affect human health and the environment. None of the alternatives are expected to produce any of the consideration factors noted above.

4.11.3 Environmental Consequences

No Action Alternative

No impacts to hazardous materials, pollution prevention, and solid waste will occur with the No Action Alternative as it is a non-development alternative. Therefore, there are no mitigation measures required for this alternative.

Preferred Alternative

The Preferred Alternative has the potential to create short-term and temporary impacts to hazardous materials, pollution prevention, and solid waste. Mitigation measures will be employed in order to reduce the risk of impact.

4.11.4 Mitigation

Any time construction occurs; there is a risk that fuel, lubricants or other potentially hazardous materials may be accidentally spilled. The contractor will be required to have a Spill Prevention, Control, and Countermeasure (SPCC) plan in place, as well as maintain a supply of absorbent materials on-site in the event a spill occurs with the construction of the Preferred Alternative. An erosion control plan will be submitted to the Montana Department of Environmental Quality as part of the SWPPP permit identified in Section 4.6, *Construction* of this document. The Contractor will also be required to provide a collection area for non-recyclable waste and arrange for its removal as appropriate.

4.11.5 Conclusion

There are no hazardous materials, pollution prevention or solid waste impacts for the No Action Alternative. Hazardous materials, pollution prevention, and solid waste impacts for the Preferred Alternative are anticipated to be able to meet all applicable Federal, State, Tribal, and local laws and regulations on hazardous or solid waste management. The Preferred Alternative is not projected to have the potential to produce any of the consideration factors noted in the *Analysis* section above. Therefore, is no measureable impact expected to hazardous waste, pollution prevention and waste management as a result implementing the Preferred Alternative.

4.12 HISTORICAL, ARCHITECTURAL, ARCHEOLOGICAL AND CULTURAL RESOURCES

4.12.1 Affected Environment

There are a number of Federal statutes and Executive Orders that guide protecting historic and cultural resources. The National Historic Preservation Act defines Federal agency's responsibilities for the protection of sites listed or eligible for listing in the National Register of Historic Places. It also establishes the requirements for consultation with the State Historic Preservation Office and/or Tribal Historic Preservation Officers if there is a potential for adverse effects on listed or eligible sites.

Two cultural resource surveys were conducted by GCM Services Inc. for portions of the airport property: the first in 1992 and the second in 2002. These reports are located in **Appendix X**. The findings of the reports are summarized below.

4.12.2 Analysis

The 1992 GCM Service Inc. report concluded that: "On 23 March through 26 March 1992, a cultural resources inventory was completed on the 548 acres of a proposed general aviation airport expansion project. No historic cultural resources were found and no additional investigations are recommended. "

The 2002 GCM Service Inc. report concluded that: “No sites or isolated finds were found within either of the survey parcels. The reported location of the one previously recorded site within the survey area 24GA423 (Cultural Resource Survey dated April, 2002 – **Appendix X**), was very intensively examined; however, nothing was found. Site 24GA423 is identified as a prehistoric shallow lithic scatter located by Marilyn Bailey in 1978 in conjunction with an airport improvement project at that time. Site report 24GA423 is on file in Archaeology Records, University of Montana, Missoula. Most of this site was surface collected when it was recorded in 1978 (Bailey, 1978). Since no cultural resources were found within the project parcels, no further work is recommended. However, if subsurface cultural manifestations are detected during construction, work should be halted until a qualified archaeologist can determine the significance of the resource. Although a potentially eligible site (The Northern Pacific Railroad) borders one of the project parcels, it is considered unlikely that any possible visual or other indirect effects would substantially affect the integrity of this site.”

Solicitations for comment regarding historical, architectural, archeological and cultural resources for the Preferred Alternative discussed herein were sent to Chippewa Cree Tribe of the Rocky Boy’s Reservation, Confederated Salish and Kootenai Tribes of the Flathead Reservation, Crow Tribe of Indians, Blackfeet Nation, Fort Belknap Indian Community, Northern Cheyenne, and Fort Peck Assiniboine and Sioux Tribes. The Crow Nation was the only Tribe to respond to the solicitation with a determination of “No Adverse Effect”. This is defined as “cultural properties will be affected but not in a harmful way, and a Crow Tribe Historic Preservation Office monitor is requested”. The FAA sent three requests for additional information about the cultural properties that may be affected in the area in order to evaluate the effect of the project and the Crow’s request for a monitor. On April 20, 2015, the FAA received a response of “The Crow Tribe finds no significant impact to cultural properties.” Since there is no evidence of cultural properties in the area, a monitor will not be required.

The FAA provided the project description and project layout, the two previous cultural resource inventories and the correspondence with the Tribes to the Montana State Historic Preservation Office (SHPO). As the area has been heavily disturbed and the previous two cultural resource inventories did not identify historic or cultural resources in the project area, FAA made a determination of **No Historic Properties Affected** for the proposed project. After reviewing the provided information SHPO concurred that the “undertaking will have No Effect on Historic Properties”. Correspondence to and from the Tribes and SHPO is include in **Appendix VI**.

4.12.3 Environmental Consequences

No Action Alternative

No impacts to historical, architectural, archeological and cultural resources have been identified with the No Action Alternative as this is a non-development alternative. Therefore, there are no mitigation measures required for this alternative.

Preferred Alternative

The analysis above provided no indication that the Preferred Alternative would have an impact on historical, architectural, archeological, and cultural resources within the project area. Because no impacts have been identified, no mitigation strategies have been developed.

4.12.4 Mitigation

As there are no impacts to properties associated with the No Action Alternative or Preferred Alternative, there is no mitigation required. However, if subsurface cultural manifestations are detected during construction, work shall be halted until a qualified archaeologist can determine the significance of the resource.

4.12.5 Conclusion

There are no impacts associated with the No Action Alternative. As the FAA and SHPO have determined there are no Historic Properties Affected by the Preferred Alternative, there are not anticipated to be any measureable impacts.

4.13 LIGHT EMISSIONS AND VISUAL IMPACTS

4.13.1 Affected Environment

For airports, light emissions of general concern can include ground-based lighting (runway/taxiway lighting, navigational aids, beacons, building/parking lot lighting, etc.), and aircraft lighting from approach lights. Due to relatively low levels of light intensity from airport lighting, compared to background levels associated with airport development, light emission impacts are not often identified as having an adverse impact on human activity or the use or characteristics of protected properties.

Visual effects are more subjective because they include personal aesthetic preferences. These impacts can include contrasts between an area and its environment and the general perception of the community concerning any change. Usually visual effects at an airport that may provide potential significance include structures that may block scenic vistas, or significantly detract from the context of a site.

BZN is situated on the valley floor with no significant terrain variations for miles around the airport. The property immediately surrounding BZN is mix of agricultural, low density rural residential, urban areas (City of Belgrade), major transportation corridors with several interchanges (Interstate 90 and U.S. Hwy 10), and numerous gravel pits.

The following light sources currently exist at BZN:

- High Intensity Runway Lighting (HIRL) system and distance to go signage along Runway 12-30;
- Medium Approach Light System with Runway Alignment Indicator Lights (MALSR);
- Visual Approach Slope Indicator (VASI);
- Runway End Identifier Lighting (REIL);
- Medium Intensity Taxiway Lighting (MITL) system and airfield sign array;
- Rotating beacon with clear and green lenses;
- Lighted windcones;
- Security and apron lighting at the Terminal and miscellaneous buildings and hangars;
- Parking lot lighting at the Terminal,
- Entrance and circulation road lighting, and
- Identification lights, strobe lights, and landing lights typically installed on aircraft.

4.13.2 Analysis

Improvements associated with the Preferred Alternative include the installation of Medium Intensity Runway Lights (MIRL), Precision Approach Path Indicators (PAPI), Runway End Identifier Lights (REIL), Medium Intensity Taxiway Lights (MITL), and airfield signs.

According to the FAA Order 1050.1E, the FAA has not established a significance threshold for Light Emissions or for Visual Resources / Visual Character. Factors to consider however, would be if the Preferred Alternative would have the potential to: 1) create annoyance or interfere with normal activities from light emissions, 2) affect the nature and/or visual character of the area due to light emissions, including the importance, uniqueness, and aesthetic value of the affected visual resources, 3) contrast with the visual resources and/or visual character in the study area, and/or 4) block or obstruct the views of visual resources, including whether these resources would still be viewable from other locations.

BZN has existed in this area for many decades with comparable lighting features. The new installations associated with the Preferred Alternative are not anticipated to create an annoyance among people or interfere with normal activities. Additionally, the Preferred Alternative would not include vertical improvements, nor is expected to result in any of those factors noted above. Therefore, no significant light emissions or visual impacts would be expected.

4.13.3 Environmental Consequences

No Action Alternative

As there are no lighting improvements proposed with the No Action Alternative as this is a non-development alternative, with no light emissions or visual impacts. Therefore, there are no mitigation measures required for this alternative.

Preferred Alternative

The analysis above provided no indication that the Preferred Alternative would have a measureable impact on light emissions or visual impact. Because no impacts have been identified, no mitigation strategies have been developed.

4.13.4 Mitigation

As there are no impacts to properties associated with the No Action Alternative or Preferred Alternative, there is no mitigation expected. Should any lighting impacts be identified during construction or following implementation, there are measures that can be taken to mitigate impacts. Light shielding is one measure that can produce immediate results.

4.13.5 Conclusion

Improvements associated with the Preferred Alternative include the installation of Medium Intensity Runway Lights (MIRL), Precision Approach Path Indicators (PAPI), Runway End Identifier Lights (REIL), Medium Intensity Taxiway Lights (MITL), and airfield signs. Because BZN has existed in this area for many decades with comparable lighting features, these new facilities are not anticipated to create an annoyance among people or interfere with normal activities. Since the Preferred Alternative would not include vertical improvements, nor is

expected to result in any of those factors noted in the *Analysis* section above, it is expected that it would not have any notable light emissions or visual impacts.

4.14 NATURAL RESOURCES AND ENERGY SUPPLY

4.14.1 Affected Environment

Gallatin County has areas with significant natural resources such as national forestland, wilderness areas, and wildlife refuges that will continue to be protected in the future.

Gallatin County includes about 2,632 square miles or approximately 1,684,480 acres. Twenty-nine square miles of this area (about 1.1%) are water features. Slightly less than half of the County (about 882,000 acres) is in private ownership. The remainder is publicly owned and managed by either the U.S. Forest Service, Bureau of Land Management, National Park Service, Montana Fish, Wildlife, and Parks, Montana Department of Transportation, Department of Natural Resources and Conservation, and various local governments. The Gallatin National Forest (GNF) is the single largest public entity landholder. The GNF Forest Plan and other respective agency plans govern natural resource management decisions and activities. There are also private lands in the County subject to conservation easements. Such easements are consistent with goals and policies to protect and maintain natural resources such as significant wildlife habitat.

Electricity and natural gas for Gallatin County, including the Preferred Alternative area, is supplied and delivered by Northwestern Energy.

4.14.2 Analysis

Energy requirements associated with airport improvements generally consist of either: 1) those related to existing facilities (terminal and airfield lighting requirements), or 2) air/ground vehicle movement requiring fuel consumption.

The implementation of the Preferred Alternative will require fuel for construction equipment. However, because project construction activities are a temporary impact, the impact to fuel consumption related to construction activities is also temporary and considered to be very limited. There are also no known sources of minerals or other energy resources on BZN that would be adversely affected by the Preferred Alternative. No increased consumption of fuel from air or ground vehicles are anticipated that would produce a shortage in fuel supplies.

According the FAA Order 1050.1E, the FAA has not established a significance threshold for Natural Resources and Energy Supply. Factors to consider however, would be if the alternative(s) would have the potential to cause demand to exceed available or future supplies of these resources. While resources will be utilized in the construction of the Preferred Alternative, the quantity is not expected to cause demand to exceed available or future supplies of resources.

4.14.3 Environmental Consequences

No Action Alternative

As no construction activities will occur with the No Action Alternative, no impact to natural resources and energy supply will occur. Therefore, there are no mitigation measures required for this alternative.

Preferred Alternative

The analysis above concluded that impacts to fuel consumption related to construction activities will be temporary and limited. Mitigation measures can be developed to ensure fuel is not wasted and construction equipment is run efficiently.

4.14.4 Mitigation

As there are no impacts to properties associated with the No Action Alternative, there is no mitigation required. In order to reduce already insignificant energy consumption associated with the temporary use of construction equipment for the Preferred Alternative, construction equipment should be in good working order to ensure the most efficient use of fuel. In addition, construction equipment should not be kept idling more than necessary.

4.14.5 Conclusion

There are no impacts on natural resources or energy supply with the No Action Alternative as it is a non-development alternative. Impacts resulting from the implementation of the Preferred Alternative are anticipated to be insignificant with respect to energy supply, natural resources and sustainable design as no energy short falls or impacts on energy availability are expected to occur. In addition, there should not be increased consumption from air or ground vehicles that should produce shortages in supplies, beyond the temporary use of construction equipment.

4.15 NOISE

4.15.1 Affected Environment and Background

According to the FAA's Environmental Desk Reference for Airport Actions, *Chapter 17 – Noise*, a proposed airport development action's environmental analysis normally addresses potential noise impacts. Typical airport actions that could cause noise impacts include: new or extended runways and taxiways; navigational aid (NAVAID) installation; land purchases for airport-related uses; substantial amounts of airport construction or demolition activities; and substantial changes in aircraft operations involving numbers of aircraft, aircraft types, new or revised approach or departure profiles or tracks; or new or relocated airport access roadways.

Day Night Average Sound Level (DNL) is the standard Federal metric for determining cumulative exposure of individuals to noise. In 1981 the FAA formally adopted DNL as its primary metric to evaluate cumulative noise effects on people due to aviation activities. Past and present research by the Federal Interagency Committee on Noise (FICON) verified that the DNL metric provides an excellent correlation between the noise level an aircraft generates and community annoyance to that noise level. DNL is the 24-hour average sound level in decibels (dB). This average is derived from all aircraft operations during a 24-hour period that represents an airport's average annual operational day. It is important to note that due to the logarithmic

nature of noise, the loudest noise levels control the 24-hour average. DNL adds a 10 dB noise penalty to each aircraft operation occurring during nighttime hours (10 p.m. to 7 a.m.). That penalty is included to compensate for people's heightened sensitivity to noise during this period. For general reference, 40 dBA is comparable to a quiet suburban nighttime setting or theater, and 20 dBA is comparable to a bedroom at night. While these decibel readings are for general reference, they are not a direct correlation as the noise contours reflected are decibel DNL contours that are 24-hour average sound levels in decibels (dB).

4.15.2 Analysis

Appendix A of FAA Order 1050.1E provides the FAA's significance threshold for noise: "*A significant noise impact would occur if analysis shows that the proposed action will 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.*" Special consideration needs to be given to the evaluation of the significance of noise impacts on noise sensitive areas within Section 4(f) properties (including, but not limited to, noise sensitive areas within national parks; national wildlife and waterfowl refuges; and historic sites, including traditional cultural properties) where the land use compatibility guidelines in 14 CFR part 150 are not relevant to the value, significance, and enjoyment of the area in question. For example, the DNL 65 dB threshold does not adequately address the impacts of noise on visitors to areas within a national park or national wildlife and waterfowl refuge where other noise is very low and a quiet setting is a generally recognized purpose and attribute. With regards to this EA and the Preferred Alternative, there are no noise sensitive areas within Section 4(f) properties in or near the study area.

FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*, Section 9.n identifies that normally, noise sensitive areas include residential, educational, health, and religious structures and sites, and parks, recreational areas (including areas having wilderness characteristics), wildlife refuges, and cultural and historical sites.

The FAA requires the use of the Integrated Noise Model (INM) for airport development actions requiring a detailed noise analysis. INM is an average-value-model designed to estimate long-term average effects using average annual input conditions. It also provides information on other pre-defined supplemental noise metrics. For this analysis the Integrated Noise Model (INM) 7.0d version was utilized to evaluate the existing and proposed DNL contours. Respective output data from the INM 7.0d version is provided in **Appendix XI**.

Contours were developed using the 2014 year end operations recorded by the air traffic control tower and forecasts using terminal area forecasts, the Master Plans, and the planning update included in **Appendix I**. Aircraft were modeled in the software to best represent the aircraft that are using BZN. Contours were developed for the existing airport configuration with 2014 year-end operations representing the existing or No Action Alternative. Noise contours were then developed for the No Action Alternative and Preferred Alternative at "Opening Day" when the Preferred Alternative is anticipated to open (2016). Noise contours were additionally developed for the No Action Alternative and Preferred Alternative five years out from opening day (2021) as being reasonably foreseeable.

Noise contours representing the current condition are displayed in **Figure 4-6**. **Figure 4-6** also displays the noise contours developed in 1979. These contours have been the basis for compatible land use planning since they were completed. They continue to be used for land use planning in the Airport Influence Area and the Noise Resolution that established compatible land

uses around BZN as described in detail in Section 4.5. The current condition is based on the total tower operations of 80,722 for the calendar year end 2014. The TAF projections from the 2008 Master Plan Update, and reviewed in the planning update in **Appendix I**, show the estimated operations from 2015 to 2021 will increase from 80,722 to 87,987, which is an increase of approximately 9% over that 5 year period, or 1.8% per year. The "Opening Day" (2016) contours for BZN with No Action Alternative and the Preferred Alternative are displayed in **Figures 4-7** and **4-8** respectively. Both "Opening Day" conditions have the same total operations, reflecting an increase of 1.8% from the base year (2015). "Opening Day" (2016) for the No Action Alternative is based on 72,468 operations on primary Runway 12-30, 8,144 operations on turf Runway 11-29, and 1,563 helicopter operations (a total of 82,175 total operations). "Opening Day" (2016) for the Preferred Alternative is based on 70,616 operations on primary Runway 12-30, 6,000 operations on the proposed Secondary Runway 11-29 (which reflects operations shifting to the proposed runway from the primary Runway 12-30 and the turf Runway 11-29), 4,000 operations on turf Runway 11-29, and 1,559 helicopter operations (a total of 82,175 total operations). Analysis and comparison of the two options show that the DNL 65 dB contour shifts north with the consideration of the Preferred Alternative, but does not leave airport property as a result of the Preferred Alternative for "Opening Day" (2016).

Contours for Year 5 (2021), the reasonably foreseeable future time frame, are displayed on **Figures 4-9** and **4-10**. Operations at the end of Year 5 are forecast to be 87,987 using the 1.8% annual increase for the 5 year period described above. The No Action Alternative noise contours on **Figure 4-9** show a small increase in the size of the DNL 65 dB contour with the forecast growth, with the contour remaining on airport property. The noise contours for the Year 5 (2021) operations for the Preferred Alternative are displayed on **Figure 4-10**. The total operations on BZN for the Year 5 Preferred Alternative match that of the Year 5 No Action Alternative because the forecasts utilized to predict future operations are based on the assumption of unconstrained growth at the airport and therefore do not limit the projections to the existing infrastructure. The Preferred Alternative contours developed for the Year 5 timeframe include an assumed doubling in the use of the proposed Secondary Runway 11-29 and existing 11-29 turf from 10,000 operations in 2016 to 20,000 operations in 2021, reflecting 12,000 single engine operations on the proposed Secondary Runway 11-29 and 8,000 single engine operations on the turf runway. While use of the Preferred Alternative facilities is assumed to double (for noise modeling purposes), it should be noted that this traffic is expected to be a result of the forecasted growth at BZN discussed in Section 1.4 *Airport Forecasts*, of this document, and that some traffic use will shift from using primary Runway 12-30 to the Preferred Alternative facilities. Review of the DNL 65 dB contour on **Figure 4-10** for the Year 5 Preferred Alternative (2021) shows the contour leaving the airport property boundary near the threshold of proposed Runway 29.

To identify the noise impacts that leave the airport boundary adjacent to the threshold of proposed Runway 29, a detailed location point analysis was conducted. The location point data is more accurate than the noise contours as the points are not interpolated and smoothed to a contour. **Figure 4-11** displays the results of the point analysis and compares the location point results for the No Action Alternative today, No Action Alternative and Preferred Alternative at "Opening Day" (2016), and No Action Alternative and Preferred Alternative at Year 5 (2021). The results of the comparison show the neighboring residences (Points 6 and 7 on **Figure 4-11**) at "Opening Day" (2016) are below DNL 65 dB for both the No Action Alternative and the Preferred Alternative. The results of the comparison for the Year 5 No Action Alternative to the Year 5 Preferred Alternative show that the residential structures are still below DNL 65 dB and have an increase of DNL 1.9 dB and DNL 1.7 dB respectively. This point analysis shows that there are no residences residing within the DNL 65 dB with the construction of the Preferred Alternative during the reasonably foreseeable time frame (out to Year 5).

Review of the Year 5 Preferred Alternative location point analysis shows that at the airport boundary the noise levels reach 65.0, 65.2, and DNL 64.9 dB at locations points 1, 2, and 3 respectively. These points increase 2.0, 2.1, and DNL 1.8 dB respectively when compared to the Year 5 No Action Alternative. FAA Order 1050.1E requires that if there are noise sensitive areas within the DNL 65 dB that have an increase of DNL 1.5 dB, review of the area between the DNL 65 dB and DNL 60 dB should be conducted to identify increases of DNL 3 dB from the Preferred Alternative when compared to the No Action Alternative for the same time period. To identify noise sensitive areas between the DNL 60 dB contour and the DNL 65 dB contour, additional noise location points were placed through the neighboring residential lots. Review of points 4 through 10 on **Figure 4-11** shows that none of the points between the DNL 60 dB and DNL 65 dB contours are projected to experience an increase of DNL 3 dB when the Preferred Alternative is compared with the No Action Alternative for the same time period. Noise increases in the DNL 60 dB to DNL 65 dB area range from DNL 0.4 dB to DNL 1.9 dB.

In regards to the aviation easements described in section 4.5 Compatible Land Use, the two properties discussed above are not currently covered by an existing easement. While they are within the aviation easement boundary, the aviation easement requirement is tied to subdivision review. If the properties were to go under review for subdivision in the future they would be required to grant BZN an aviation easement.

4.15.3 Environmental Consequences

No Action Alternative

As no construction activities or shifts in traffic patterns will occur with the No Action Alternative, no impact due to noise will occur. Therefore, there are no mitigation measures required for this alternative.

Preferred Alternative

The land use compatibility guidelines provided in 14 CRF Part 150, *Airport Noise Compatibility Planning*, Appendix A, Table 1, reflect that residential land use and related structures are considered compatible without restrictions below the 65 DNL dB contour. The analysis above concluded that there are no residences that will be exposed to the DNL 65 level through the reasonably foreseeable time frame (out to Year 5 after opening day) when compared to the No Action Alternative for the same timeframe. Mitigation measures, such as insulation, can be made to reduce noise levels, but are not required for residences located outside of the 65 DNL dB contour.

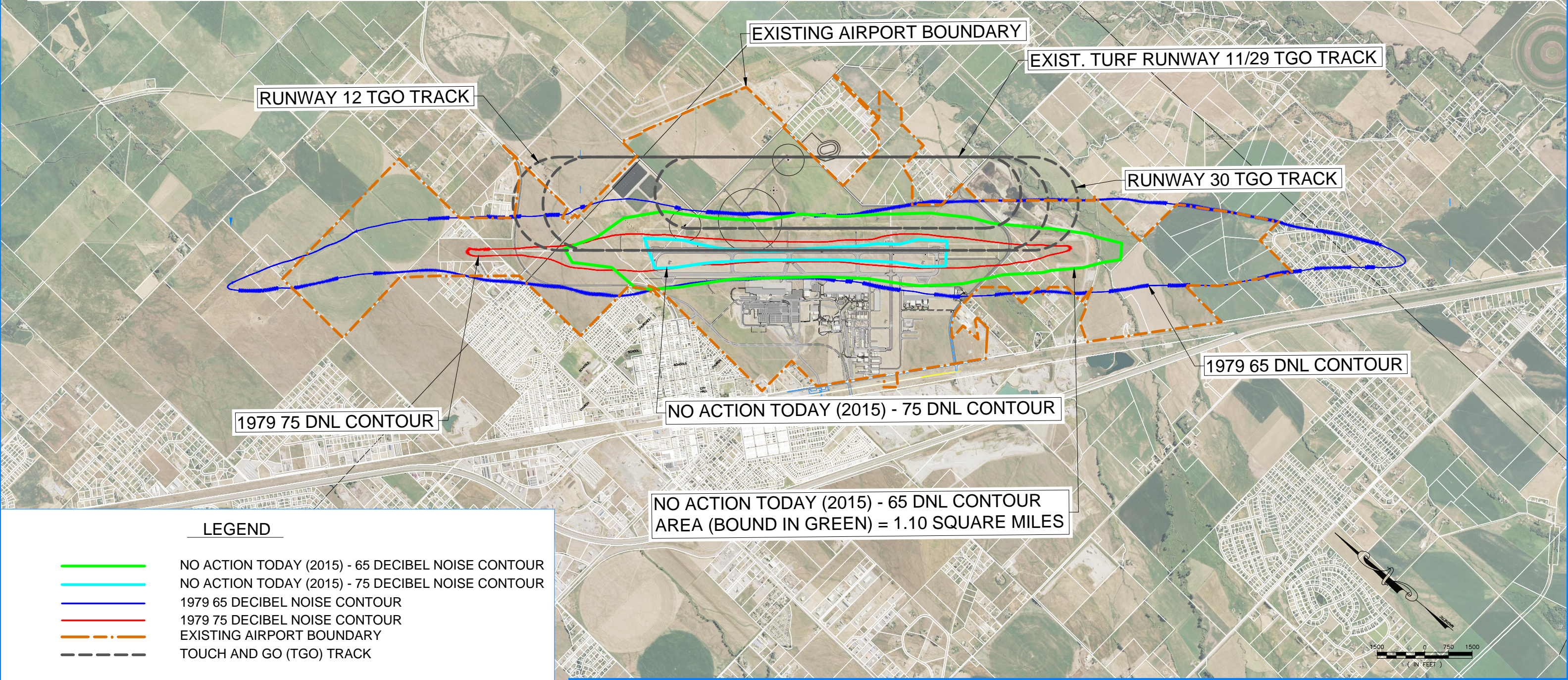
4.15.4 Mitigation

As there are no new noise impacts associated with the No Action Alternative, there is no mitigation required. The Preferred Alternative shows an increase to the 65.2 DNL at the property boundary but less than 65 DNL at the residential structures. Because the Preferred Alternative does not exceed the 65 dB threshold at the residential structures they are compatible with the Preferred Alternative and no mitigation or sound insulation is necessary. The Airport Sponsor currently holds a first right of refusal for the purchase of the western triangle shaped parcel (Parcel 55 on the Exhibit 'A' – see **Appendix III**) that has the increase to 65.0 and 65.2 DNL dB at its property corners.

4.15.5 Conclusion

There are no noise impacts associated with the No Action Alternative as this is a non-development alternative. For the Preferred Alternative, temporary and short-term noise from equipment is anticipated in association with the construction of the Preferred Alternative. However, the construction equipment will largely be operated during day-time hours, thereby reducing the perception of the noise impacts. The review of the INM noise contours and location point analysis associated with the Preferred Alternative shows that significance threshold of DNL 65 dB and a DNL 1.5 dB increase has not been reached at the neighboring residences. BZN plans to ultimately own the western triangle shaped lot that hits the DNL 65 dB level at the lot line as the Sponsor currently holds the first right of refusal to purchase the property in the event the owner elects to sell.

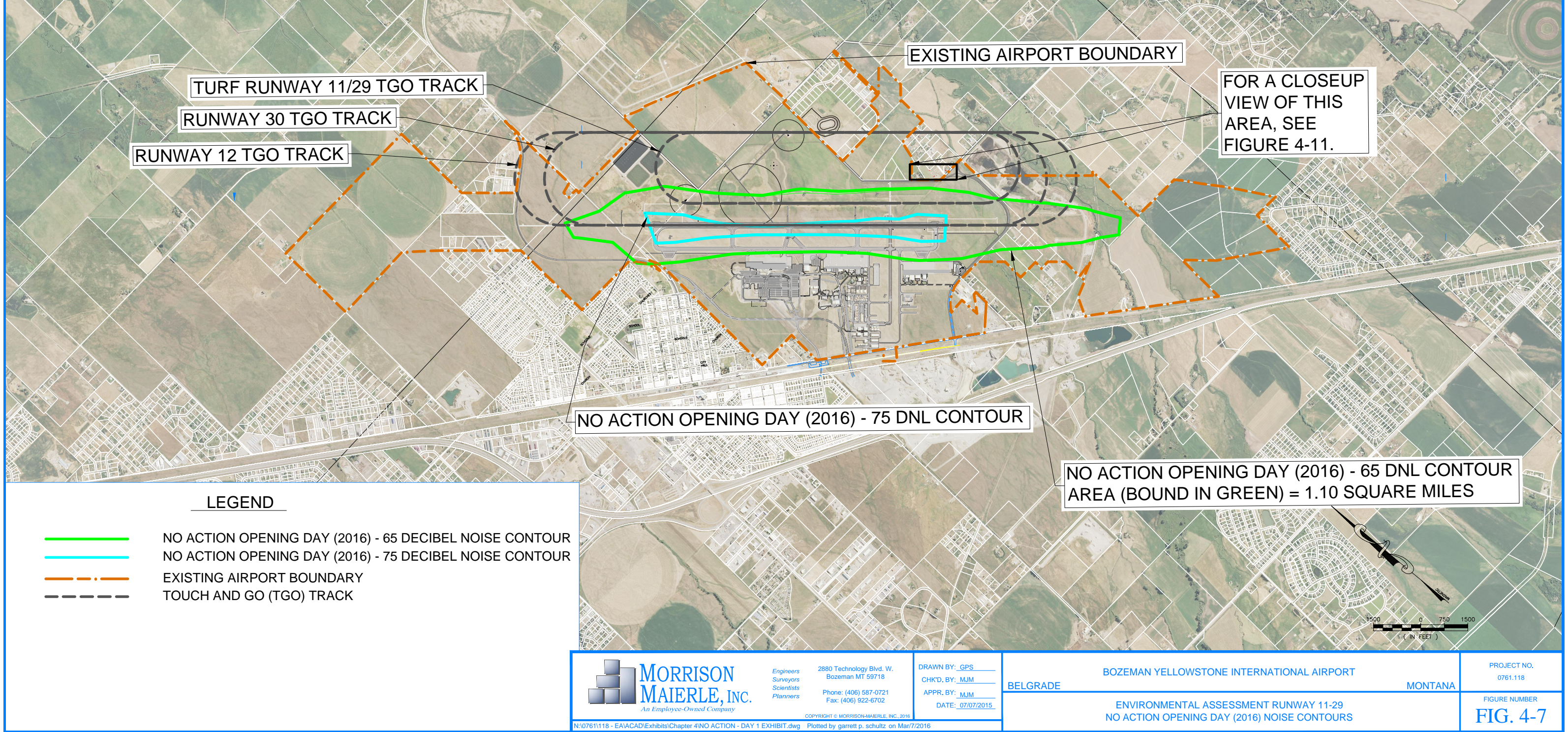
NO ACTION TODAY (2015) - 80,722 TOTAL OPERATIONS
RWY 12/30 OPS: 71,187 FULL CIVIL AND MILITARY FLEET OPS (INCLUDING 5,000 SINGLE ENGINE PROPELLER TOUCH-AND-GO, AND 66,187 REMAINING OPS STRAIGHT IN/OUT)
EXISTING TURF RUNWAY 11/29 OPS: 8,000 SINGLE ENGINE PROPELLER OPS SPLIT 50/50 TOUCH-AND-GO AND STRAIGHT IN/OUT. 1,535 HELICOPTER OPS ON TURF RWY 11, SPLIT 50/50 DEPARTURE/ARRIVALS.
RUNWAY 12/30 DIRECTIONAL SPLIT: 70% RWY 12 AND 30% RWY 30
EXISTING TURF RUNWAY 11/29 DIRECTIONAL SPLIT: 70% RWY 11 AND 30% RWY 29
DEPARTURE/ARRIVAL SPLIT (BOTH RUNWAYS): 50/50%
SEE INM SCENARIO RUN INPUT REPORT FOR ADDITIONAL DETAILS



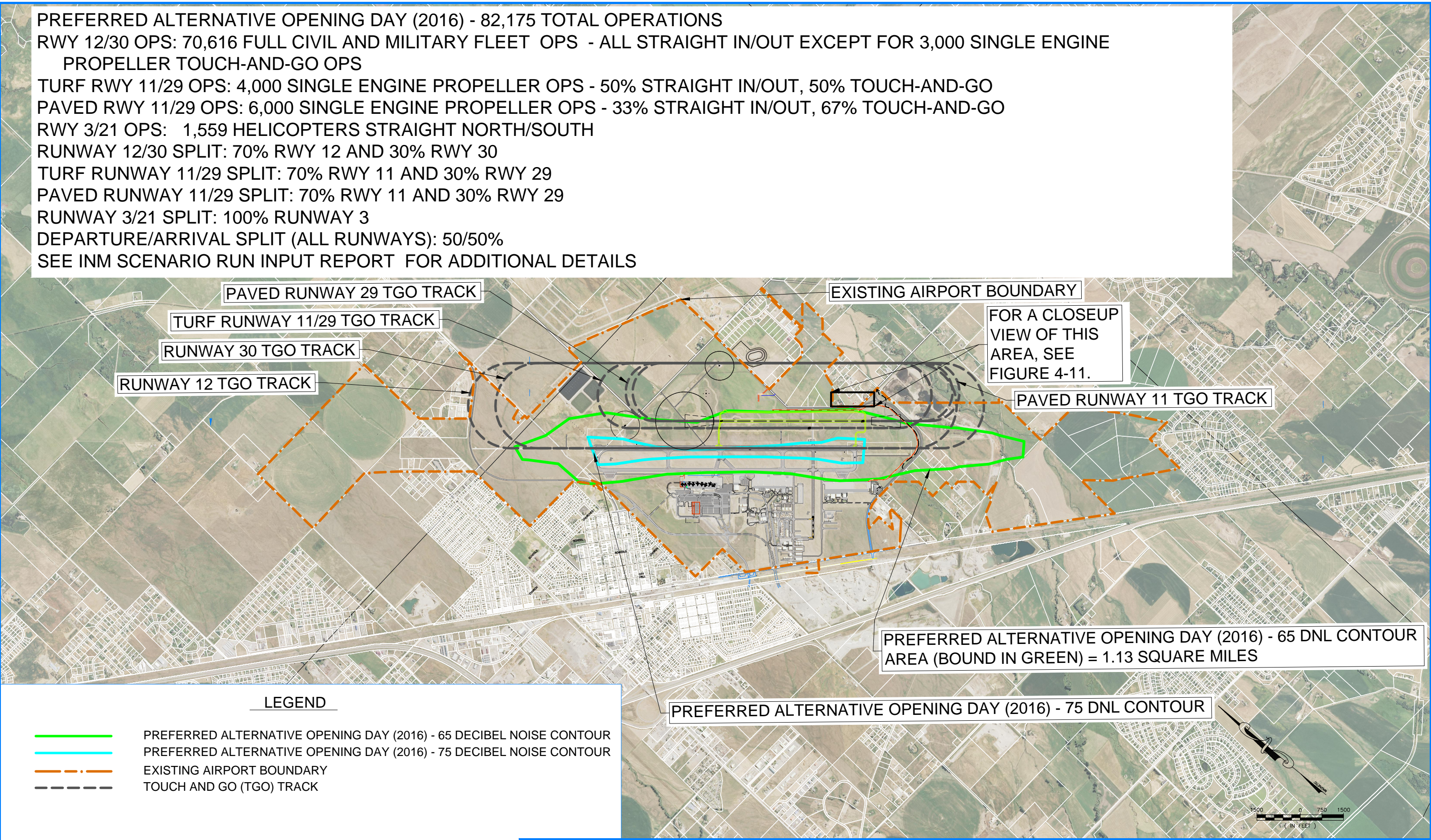
LEGEND

- NO ACTION TODAY (2015) - 65 DECIBEL NOISE CONTOUR
- NO ACTION TODAY (2015) - 75 DECIBEL NOISE CONTOUR
- 1979 65 DECIBEL NOISE CONTOUR
- 1979 75 DECIBEL NOISE CONTOUR
- EXISTING AIRPORT BOUNDARY
- TOUCH AND GO (TGO) TRACK

NO ACTION OPENING DAY (2016) - 82,175 TOTAL OPERATIONS
RWY 12/30 OPS: 72,468 FULL CIVIL AND MILITARY FLEET OPS - ALL STRAIGHT IN/OUT EXCEPT FOR 5,090 SINGLE ENGINE PROPELLER TOUCH-AND-GO OPS
TURF RWY 11/29 OPS: 8,144 SINGLE ENGINE PROPELLER OPS - 50% STRAIGHT IN/OUT, 50% TOUCH-AND-GO, 1,563 HELICOPTERS STRAIGHT NORTH/SOUTH
RUNWAY 12/30 SPLIT: 70% RWY 12 AND 30% RWY 30
TURF RUNWAY 11/29 SPLIT: 70% RWY 11 AND 30% RWY 29
PAVED RUNWAY 11/29 SPLIT: 70% RWY 11 AND 30% RWY 29
DEPARTURE/ARRIVAL SPLIT (ALL RUNWAYS): 50/50%
SEE INM SCENARIO RUN INPUT REPORT FOR ADDITIONAL DETAILS



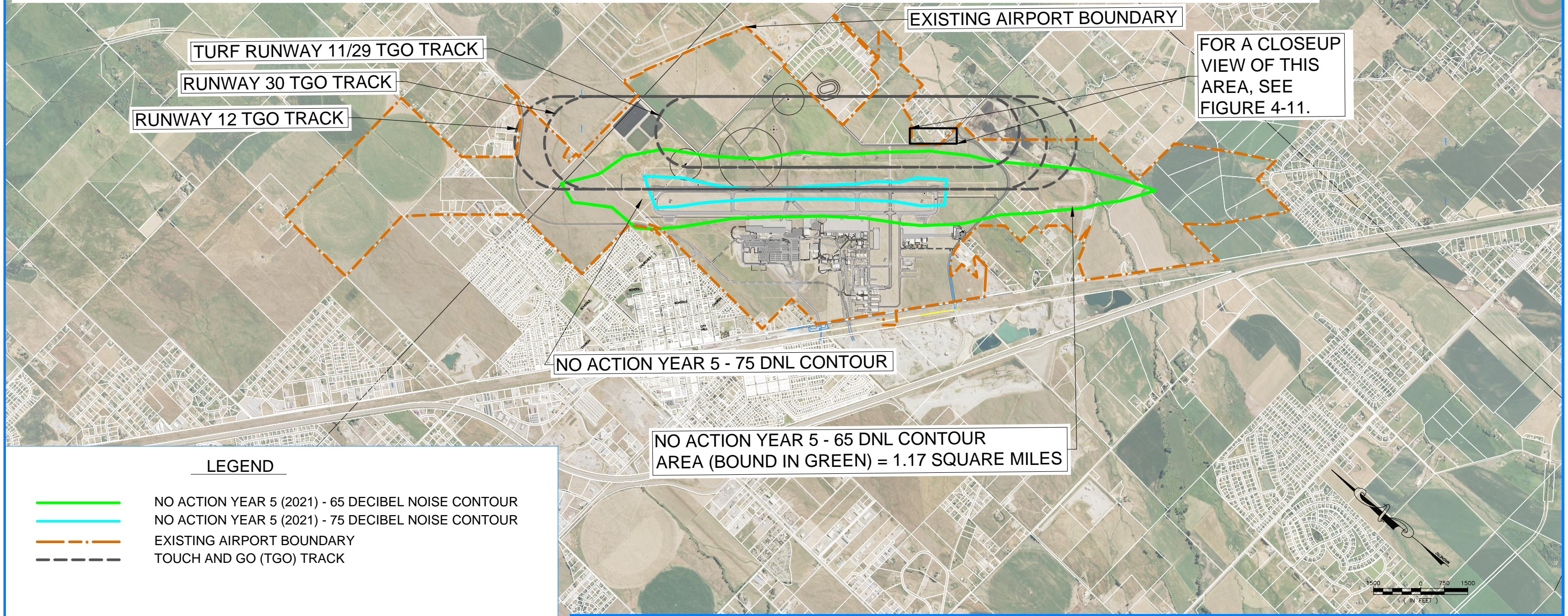
PREFERRED ALTERNATIVE OPENING DAY (2016) - 82,175 TOTAL OPERATIONS
RWY 12/30 OPS: 70,616 FULL CIVIL AND MILITARY FLEET OPS - ALL STRAIGHT IN/OUT EXCEPT FOR 3,000 SINGLE ENGINE PROPELLER TOUCH-AND-GO OPS
TURF RWY 11/29 OPS: 4,000 SINGLE ENGINE PROPELLER OPS - 50% STRAIGHT IN/OUT, 50% TOUCH-AND-GO
PAVED RWY 11/29 OPS: 6,000 SINGLE ENGINE PROPELLER OPS - 33% STRAIGHT IN/OUT, 67% TOUCH-AND-GO
RWY 3/21 OPS: 1,559 HELICOPTERS STRAIGHT NORTH/SOUTH
RUNWAY 12/30 SPLIT: 70% RWY 12 AND 30% RWY 30
TURF RUNWAY 11/29 SPLIT: 70% RWY 11 AND 30% RWY 29
PAVED RUNWAY 11/29 SPLIT: 70% RWY 11 AND 30% RWY 29
RUNWAY 3/21 SPLIT: 100% RUNWAY 3
DEPARTURE/ARRIVAL SPLIT (ALL RUNWAYS): 50/50%
SEE INM SCENARIO RUN INPUT REPORT FOR ADDITIONAL DETAILS



LEGEND

- PREFERRED ALTERNATIVE OPENING DAY (2016) - 65 DECIBEL NOISE CONTOUR
- PREFERRED ALTERNATIVE OPENING DAY (2016) - 75 DECIBEL NOISE CONTOUR
- - - EXISTING AIRPORT BOUNDARY
- - - TOUCH AND GO (TGO) TRACK

NO ACTION YEAR 5 (2021) - 87,987 TOTAL OPERATIONS
RWY 12/30 OPS 77,594 FULL CIVIL AND MILITARY FLEET OPS - ALL STRAIGHT IN/OUT EXCEPT FOR 5,450 SINGLE ENGINE PROPELLER TOUCH-AND-GO OPS
TURF RWY 11/29 OPS: 8,720 SINGLE ENGINE PROPELLER OPS - 50% STRAIGHT IN/OUT, 50% TOUCH-AND-GO, 1,673 HELICOPTERS STRAIGHT NORTH/SOUTH
RUNWAY 12/30 SPLIT: 70% RWY 12 AND 30% RWY 30
TURF RUNWAY 11/29 SPLIT: 70% RWY 11 AND 30% RWY 29
PAVED RUNWAY 11/29 SPLIT: 70% RWY 11 AND 30% RWY 29
DEPARTURE/ARRIVAL SPLIT (ALL RUNWAYS): 50/50%
SEE INM SCENARIO RUN INPUT REPORT FOR ADDITIONAL DETAILS



LEGEND

- NO ACTION YEAR 5 (2021) - 65 DECIBEL NOISE CONTOUR
- NO ACTION YEAR 5 (2021) - 75 DECIBEL NOISE CONTOUR
- EXISTING AIRPORT BOUNDARY
- TOUCH AND GO (TGO) TRACK



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MAIERLE, INC.**
An Employee-Owned Company

Engineers
Surveyors
Scientists
Planners

2880 Technology Blvd. W.
Bozeman MT 59718

Phone: (406) 587-0721
Fax: (406) 922-6702

DRAWN BY: GPS
CHK'D. BY: MJM
APPR. BY: MJM
DATE: 07/07/2015

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BELGRADE

BOZEMAN YELLOWSTONE INTERNATIONAL AIRPORT

MONTANA

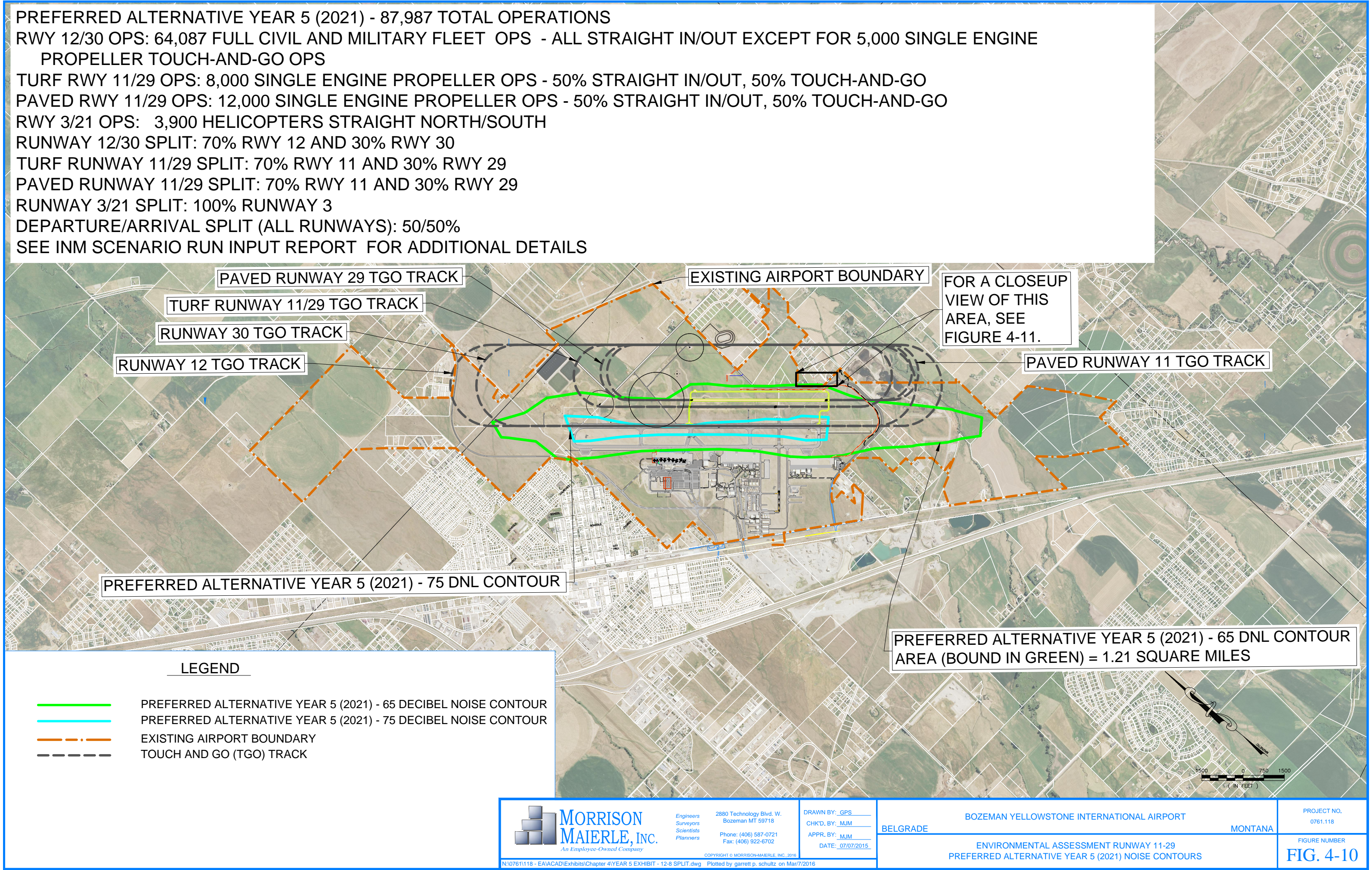
ENVIRONMENTAL ASSESSMENT RUNWAY 11-29
NO ACTION YEAR 5 (2021) NOISE CONTOURS

PROJECT NO.
0761.118

FIGURE NUMBER

FIG. 4-9

PREFERRED ALTERNATIVE YEAR 5 (2021) - 87,987 TOTAL OPERATIONS
RWY 12/30 OPS: 64,087 FULL CIVIL AND MILITARY FLEET OPS - ALL STRAIGHT IN/OUT EXCEPT FOR 5,000 SINGLE ENGINE PROPELLER TOUCH-AND-GO OPS
TURF RWY 11/29 OPS: 8,000 SINGLE ENGINE PROPELLER OPS - 50% STRAIGHT IN/OUT, 50% TOUCH-AND-GO
PAVED RWY 11/29 OPS: 12,000 SINGLE ENGINE PROPELLER OPS - 50% STRAIGHT IN/OUT, 50% TOUCH-AND-GO
RWY 3/21 OPS: 3,900 HELICOPTERS STRAIGHT NORTH/SOUTH
RUNWAY 12/30 SPLIT: 70% RWY 12 AND 30% RWY 30
TURF RUNWAY 11/29 SPLIT: 70% RWY 11 AND 30% RWY 29
PAVED RUNWAY 11/29 SPLIT: 70% RWY 11 AND 30% RWY 29
RUNWAY 3/21 SPLIT: 100% RUNWAY 3
DEPARTURE/ARRIVAL SPLIT (ALL RUNWAYS): 50/50%
SEE INM SCENARIO RUN INPUT REPORT FOR ADDITIONAL DETAILS



LEGEND

- PREFERRED ALTERNATIVE YEAR 5 (2021) - 65 DECIBEL NOISE CONTOUR
- PREFERRED ALTERNATIVE YEAR 5 (2021) - 75 DECIBEL NOISE CONTOUR
- - - EXISTING AIRPORT BOUNDARY
- - - TOUCH AND GO (TGO) TRACK



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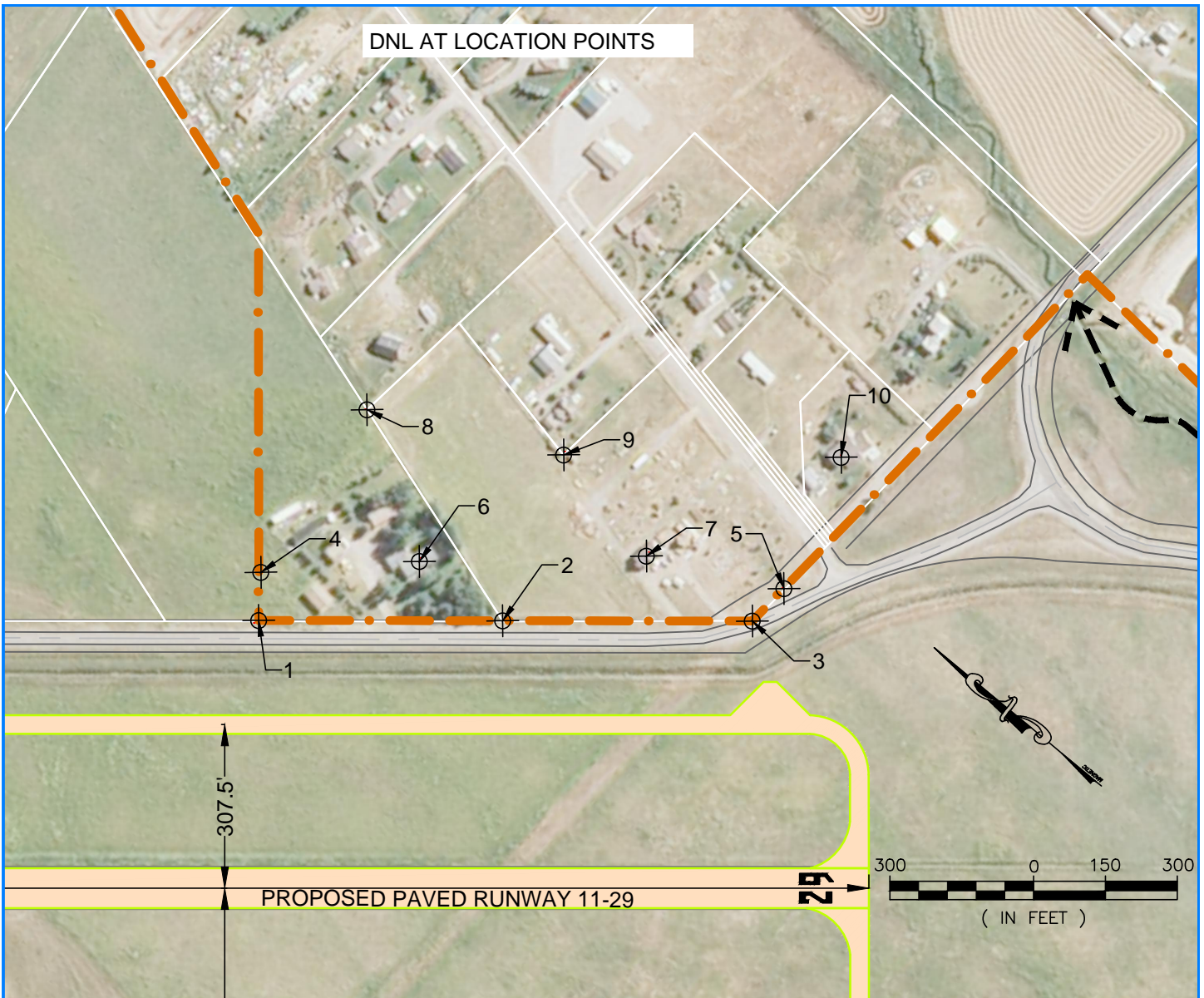
2880 Technology Blvd. W.
Bozeman MT 59718
Phone: (406) 587-0721
Fax: (406) 922-6702

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CHK'D. BY: MJM
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BOZEMAN YELLOWSTONE INTERNATIONAL AIRPORT	
BELGRADE	MONTANA
ENVIRONMENTAL ASSESSMENT RUNWAY 11-29 PREFERRED ALTERNATIVE YEAR 5 (2021) NOISE CONTOURS	

DNL AT LOCATION POINTS



LOCATION POINT DNL						
	NO ACTION - TODAY	NO ACTION - OPENING DAY	PREFERRED ALTERNATIVE - OPENING DAY	NO ACTION - YEAR 5	PREFERRED ALTERNATIVE - YEAR 5	INCREASE FROM NO ACTION - YEAR 5 TO PREFERRED ALTERNATIVE - YEAR 5
POINT NUMBER	DNL* (dB)	DNL* (dB)	DNL* (dB)	DNL* (dB)	DNL* (dB)	DNL* (dB)
1	62.7	62.8	63.9	63.0	65.0	2.0
2	62.8	62.9	64.0	63.1	65.2	2.1
3	62.7	62.8	63.7	63.1	64.9	1.8
4	62.0	62.1	63.1	62.4	64.2	1.8
5	62.4	62.4	63.3	62.7	64.4	1.7
6	62.0	62.1	63.1	62.3	64.2	1.9
7	62.0	62.0	62.9	62.3	64.0	1.7
8	60.3	60.4	61.1	60.6	62.1	1.5
9	60.8	60.9	61.7	61.2	62.7	1.5
10	60.8	60.9	61.6	61.2	62.5	1.3

*LOCATION POINT DNL DATA IS CONSIDERED MORE ACCURATE THAN CONTOUR REPRESENTATION, DUE TO INTERPOLATION AND REFINEMENT SETTINGS OF THE INM PROGRAM.

LEGEND

- EXISTING AIRPORT BOUNDARY
- # LOCATION POINT



**MORRISON
MAIERLE, INC.**
An Employee-Owned Company

Engineers
Surveyors
Scientists
Planners

1 Engineering Place
Helena, MT 59602
Phone: (406) 442-3050
Fax: (406) 442-7862

DRAWN BY: GPS
DSGN. BY: MJM
APPR. BY: MJM
DATE: 06/29/2015

BOZEMAN YELLOWSTONE INTERNATIONAL AIRPORT
BELGRADE MONTANA

ENVIRONMENTAL ASSESSMENT RUNWAY 11-29 -
DETAILED NOISE POINT ANALYSIS

PROJECT NO.
0761.118

FIGURE NUMBER
FIG. 4-11

4.16 SECONDARY (INDUCED) IMPACTS

4.16.1 Affected Environment

Secondary (induced) impacts are those that are the result of an action that has occurred but become apparent at a later time and/or location. Such examples may include shifts in population density and growth rate, public service demands, changes in business and economic activity, and related effects on air, water, and other natural systems. Normally, induced impacts are not significant unless there are significant impacts in other categories such as noise, land use, or direct social impacts. Guidance for assessing secondary impacts is taken from the Council on Environmental Quality Regulations Implementing NEPA (40 CFR Section 1500 et seq). This guidance identifies secondary impacts as induced changes in patterns of land use, population density or growth rate, and related effects on natural systems.

BZN is served by five airlines, two cargo carriers, and seven aircraft and helicopter charter services as well as five flight schools. The property immediately surrounding BZN is mix of agricultural, low density rural residential, urban areas (City of Belgrade), major transportation corridors with several interchanges (Interstate 90 and U.S. Hwy 10), and numerous gravel pits.

4.16.2 Analysis

Improvement recommendations to meet the facility requirements of the Preferred Alternative will not involve the relocation of any residence, divide or disrupt established communities, disrupt orderly planned development, or create an appreciable change in employment. Temporary construction effects would occur with the implementation of the Preferred Alternative. There would be short-term economic benefits related to construction employment, such as the use of hotels, restaurants, and local retail. However, this temporary increase in employment is not projected to result in any permanent changes in population in the community surrounding BZN.

The Preferred Alternative is expected to increase operational efficiency and improve safety. The project is not being completed to accommodate additional growth above that which is included in the forecasted activity for the airport discussed in Section 1.4 *Airport Forecasts*, of this document. Rather, it is proposed to accommodate the service volumes for the current and originally forecast operations discussed in Section 1.4 *Airport Forecasts*. It is not expected that the implementation of the Preferred Alternative will have a direct economic impact on flight schools and aviation business, but rather an impact on safety and efficiency. Future projects on BZN (see Section 4.21 *Cumulative Impacts*) primarily involve rehabilitation of existing pavements, equipment acquisition, and hangar/taxilane development.

According the FAA Order 1050.1E, the FAA has not identified any significance thresholds associated with Secondary (Induced) Impacts. As there are no identified impacts that result in any significance threshold being exceeded with any of the alternatives, it is not expected that any impacts to such environmental considerations as noise, land use, or direct social impacts, would exacerbate the environment to result in significant secondary (induced) impacts. There are also no projects past, existing, or planned that rely on the Preferred Alternative improvements to come to fruition.

4.16.3 Environmental Consequences

No Action Alternative

If the Preferred Alternative does not proceed, then BZN will have to utilize the existing runway system(s) to accommodate aircraft operations. With the service volumes already being exceeded at times, this has the potential to result in additional congestion, delay to aircraft on the ground and in the air, potential implications to flight schools for increased student costs for increase aircraft delay on the ground and in the air, and potential safety issues with students operating in a congested environment. As this is the current operating environment at BZN, there are no additional mitigation measures proposed outside of what is currently being done (i.e. student pilots flying to neighboring airports to train, induced delay by tower personnel, etc.).

Preferred Alternative

The analysis above identified that construction will provide a short-term and temporary economic benefit to the surrounding community. The Preferred Alternative is expected to increase operational efficiency and improve safety. No impacts to shifts in population density and growth rate, public service demands, long-term changes in business and economic activity, and related effects on air, water, and other natural systems were identified as being associated with the Preferred Alternative. Because the short-term economic impact of project construction is temporary and insignificant, no mitigation strategies were identified for this alternative.

4.16.4 Mitigation

No new mitigation techniques are suggested for the No Action Alternative as it is the existing operating condition at BZN. For the Preferred Alternative, the short-term economic impact of project construction is temporary and considered insignificant. Therefore no mitigation strategies were identified.

4.16.5 Conclusion

Keeping the existing runway system environment as it exists results in continued exceedance of ASV thresholds which may result in long term implications as forecasted growth at BZN occurs. Improvements to BZN should have a positive overall impact on the surrounding community in that indirect economic growth (use of local contractors, etc.) should be anticipated with any improvement made to the Airport facility. Therefore, it is expected that Preferred Alternative would have an insignificant impact on secondary (induced) aspects.

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

4.17.1 Affected Environment

Socioeconomic impacts include extensive relocation of residents and community businesses, disruption of local traffic patterns, and the substantial loss in community tax base. Environmental Justice concerns effects on low-income or minority populations. Children's Environmental Health and Safety Risks concerns impacts to the environment (i.e. air quality, noise, and water quality) that have the potential to lead to a disproportionate health or safety risk to children.

The following section provides information on the human population based on race, employment, and income characteristics. Information is presented from the City of Belgrade, City of Bozeman, Gallatin County, and the State of Montana in order to illustrate the general demographics and social profile of the general project area.

Population and Race

As provided by the U.S. Census Bureau, the Cities of Belgrade and Bozeman and Gallatin County experienced significant changes in population growth between 1990 and 2010, with the majority of the Gallatin County growth occurring within the last 10 years. Historical population data for Belgrade, Bozeman, Gallatin County, and the State of Montana are provided in **Table 4-11**.

Table 4-11. Historical Population (U.S. Census Bureau 2010)

Area	1990	2000	2010	Growth Rate 1990-2010
City of Belgrade	3,422	5,728	7,389	115%
City of Bozeman	22,660	27,509	37,280	65%
Gallatin County	50,463	67,831	89,513	77%
State of Montana	799,065	902,195	989,415	24%

The 2010 Demographic Profile (U.S. Census Bureau) for Gallatin County shows that 95 percent of the total population in Gallatin County, which encompasses the Cities of Belgrade, Bozeman and surrounding areas, consists of people of dominantly white ethnic decent. The largest minority of the remaining 5 percent includes American Indians and Alaska Natives. For the City of Bozeman, 93.6 percent of the population is comprised of people of white ethnic decent and for the City of Belgrade the population of people of white ethnic decent is 94.2 percent. There are no minority populations identified by the U.S. Census Bureau, local community records, or the EA for the I-90 East Belgrade Interchange (FONSI dated June 25, 2009) completed by the U.S. Department of Transportation - Federal Highway Administration, Montana Department of Transportation, Gallatin County, the City of Belgrade, and Airport Sponsor.

Employment and Income

As reflected by the U.S. Census Bureau (2010), the breakdown of employment within Gallatin County is as follows:

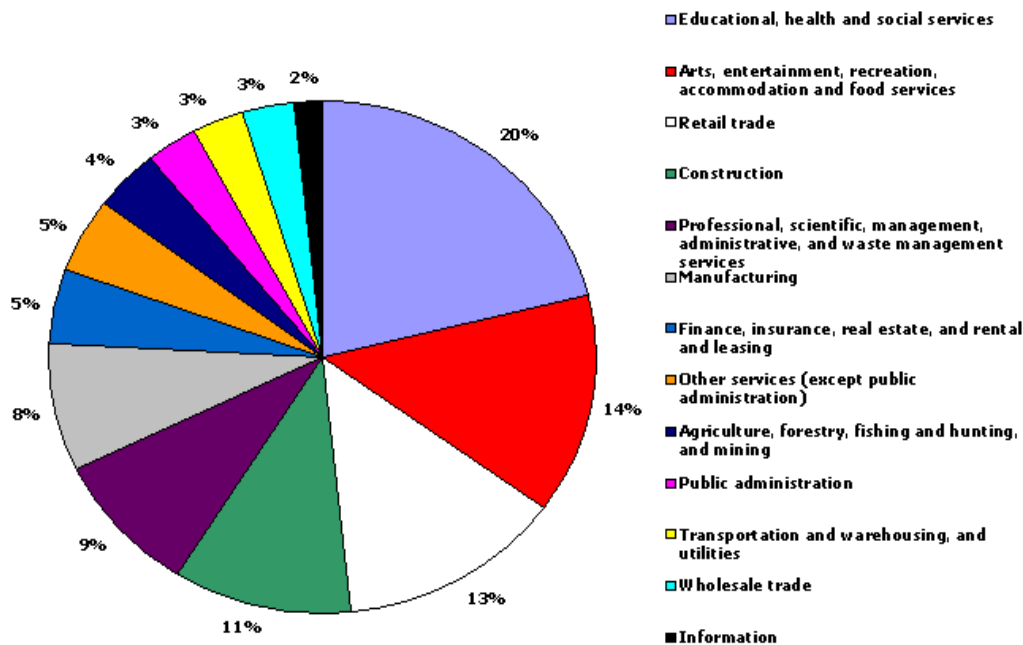


Figure 4-12: Gallatin County Employment Breakdown

The Cities of Belgrade and Bozeman are located in proximity to Montana State University and as such employment in educational, health and social service occupations make up the majority of the immediate local economy. Additionally, these communities serve as a stopping point for numerous tourist destinations including Big Sky Ski Resort, Bridger Bowl, and Yellowstone National Park. Belgrade and Bozeman also have high levels of employment in the arts, entertainment, recreation, accommodation, and food services.

Table 4-12 depicts the historical unemployment rates for the City of Bozeman, Gallatin County and the State of Montana.

Table 4-12. Historical Unemployment Rates (US Bureau of Labor Statistics 2014)

Area	1990	2000	2014
City of Bozeman	5.8%	4.3%	2.6%
Gallatin County	5.1%	3.0%	2.8%
State of Montana	6.0%	4.9%	3.8%

Per Capita Income (PCI), also known as income per person, is the mean income in an economic unit such as a county or state. It is often used to measure a country's standard of living and prosperity. Historically, the Gallatin County PCI has been higher than the State of Montana, with a higher percentage growth rate. **Table 4-13** provides an overview of the historical PCI for Gallatin County and the State of Montana. There are no low-income populations identified by the U.S. Census Bureau, local community records, or the EA for the I-90 East Belgrade Interchange (FONSI dated June 25, 2009) completed by the U.S. Department of Transportation - Federal Highway Administration, Montana Department of Transportation, Gallatin County, the City of Belgrade, and Airport Sponsor.

Table 4-13. Per Capita Income

Area	1990	2000	2010	Growth Rate 1990-2010
Gallatin County	\$15,374	\$25,502	\$35,174	129%
State of Montana	\$15,346	\$23,457	\$34,405	124%

Children's Environment

BZN is immediately adjacent to the City of Belgrade. Within the City of Belgrade there are numerous areas that children congregate on a regular basis for education or sports. The Heck/Quaw Elementary School lies approximately 1.0 mile directly west, Belgrade High School lies approximately 1.25 miles directly west, Belgrade Intermediate School lies approximately 1.35 miles directly west, and Saddle Peak Elementary School lies approximately 1.5 miles directly west of the nearest Preferred Alternative improvement. Baseball and softball fields begin approximately 0.8 miles directly west, along with urban residential to the west and southwest of the nearest Preferred Alternative improvement.

4.17.2 Analysis

Socioeconomic Impacts

According the FAA Order 1050.1E, the FAA has not established a significance threshold for Socioeconomics. Factors to be considered in determining impact in this category include, but are not limited to, the following: 1) Extensive relocation of residents is required, but sufficient replacement housing is unavailable, 2) Extensive relocation of community businesses, that would create severe economic hardship for the affected communities, 3) Disruptions of local traffic patterns that substantially reduce the levels of service of the roads serving the airport and its surrounding communities, and 4) A substantial loss in community tax base.

As the number of operations continues to increase through intrinsic growth, the amount of delay will also increase under the No Action Alternative. Economic impacts due to delay include additional costs for crew, fuel and maintenance costs for operators of air carrier and air taxi aircraft, and fuel and maintenance costs for operators of general aviation aircraft. Summit Flight School estimated that students lost \$299,000 worth of productive flight instruction due to flying circles or being delayed on the ground as stated in their letter included in **Appendix I**.

Economic impacts from the Preferred Alternative include the required capital outlay associated with construction of the improvements. The Preferred Alternative was selected through the planning process due, in part, to its requirement for less capital outlay than other development alternatives. Operation and maintenance costs would increase with the additional pavements and electrical systems, but not beyond the expected capabilities of BZN to support. The Preferred Alternative is expected to result in positive overall socioeconomic impacts to the community in the form of business activity and other ancillary support services. The majority of this activity is expected to occur during the temporary construction period, with follow on periods of maintenance and the supply of electricity for lighting and signage.

The Preferred Alternative is not projected to induce substantial economic growth in the area as construction impacts will be temporary, and the improvements are not being made to accommodate additional air traffic but rather to accommodate existing aircraft to bring BZN within service volume thresholds. The reduction in delay should result in a savings to operators

of aircraft due to reduced fuel, maintenance and crew costs. These savings could possibly be applied elsewhere in the local economy. The Preferred Alternative does not disrupt or divide the physical arrangement of an established community, or displace persons or businesses, as all improvements will occur on existing airport property. Local traffic patterns may temporarily alter as a result of construction-related vehicles accessing the Preferred Alternative area. However, this traffic increase is expected to be limited and is not anticipated to result in a negative or disruptive use of local road infrastructure beyond the current level of service. All local businesses will remain accessible during construction activities. It is expected that much of the construction will be completed by locally based contractors utilizing local labor. This will provide for continued support of the established State income and property tax base. While there may be temporary economic increases within the community from construction workers utilizing hotels, eating establishments, and general retail businesses, those impacts will be limited to the short duration of construction.

The EA for the I-90 East Belgrade Interchange (FONSI dated June 25, 2009) completed by the U.S. Department of Transportation - Federal Highway Administration, Montana Department of Transportation, Gallatin County, the City of Belgrade, and Airport Sponsor did not note any negative economic impacts, but rather that the project would complement existing economic development trends in the area. While not a one for one comparison, this does provide a basis for the economic health of the community and immediate study area as the interchange is immediately adjacent to BZN.

Neither the No Action Alternative, nor the Preferred Alternative, are projected to result in any potential to cause factors as noted at the beginning of this section. Therefore, the No Action Alternative and the Preferred Alternative are not expected to significantly impact socioeconomic factors.

Environmental Justice

According the FAA Order 1050.1E, the FAA has not established a significance threshold for Environmental Justice. Factors to consider however, would be if the alternative(s) would have the potential to lead to a disproportionately high and adverse impact to an environmental justice population (low-income or minority population) due to significant impacts in other environmental impact categories, or impacts on the physical or natural environment that affect an environmental justice population in a way that the FAA determines are unique to the environmental justice population and significant to that population. The Council on Environmental Quality (CEQ) defines a low income population as “any readily identifiable group of low-income persons who live in geographic proximity, and, if circumstances warrant, geographically dispersed/transient persons (such as migrant workers or Native Americans) who will be similarly affected by a proposed program, policy, or activity.” The CEQ also defines a minority population as “one that exceeds 50 percent of an affected area, or the population percentage is meaningfully greater than the minority population percentage in the general population or other appropriate geographic analysis.”

U.S. Census Bureau information does not indicate the presence of either low-income populations or minority populations residing in the area of BZN (US Bureau of Labor Statistics 2014). In addition, the NRCS maintains a list of Montana’s Environmental Justice Communities. There are no identified Environmental Justice communities on the list maintained by the NRCS located in Gallatin County, Montana. The EA for the I-90 East Belgrade Interchange (FONSI dated June 25, 2009) completed by the U.S. Department of Transportation - Federal Highway Administration, Montana Department of Transportation, Gallatin County, the City of Belgrade,

and Airport Sponsor also does not reflect the presence of any low-income or minority populations in the demographic composition of the community. Given that there are no identified populations, and that there are no identified actions that would cause disproportionately high and adverse effects on minority or low income populations if they did exist, it is determined that both the No Action Alternative and the Preferred Alternative would have no effect on low income or minority populations.

Children's Environmental Health and Safety Risks

According the FAA Order 1050.1E, the FAA has not established a significance threshold for Children's Environmental Health and Safety Risks. Factors to consider however, would be if the alternative(s) would have the potential to lead to a disproportionate health or safety risk to children. This may include risks to health or to safety that are attributable to products or substances that a child is likely to come in contact with or ingest, such as air, food, drinking water, recreational waters, soil, or products they might use or be exposed to.

The No Action Alternative is not expected to result in any change in the existing environment as this is a non-development alternative.

The Preferred Alternative is not projected to introduce any new physical hazards into the existing environment. Emissions from the use of fuel in the aircraft and noise will still be present with the existing condition. Section 4.2, *Air Quality* reflects that the area is not in a non-attainment area, nor maintenance area, and is not expected to exceed one or more of the NAAQS pollutants for any of the time periods analyzed for both the No Action Alternative and Preferred Alternative. Section 4.15 *Noise* notes that those areas within the DNL 65 dB contour for the No Action Alternative fall within the existing confines of airport property as it is a non-development alternative. For the Preferred Alternative, the DNL 65 dB contour remains within airport property aside from a small area along Tubb Road where the contour intersects two private properties. As noted in the noise section, mitigation is not proposed for these residences as they do not meet the significance threshold. Section 4.18 *Water Quality* does not note any existing or proposed environmental issues associated with the No Action Alternative, nor the Preferred Alternative. Review of the EA for the I-90 East Belgrade Interchange (FONSI dated June 25, 2009) completed by the U.S. Department of Transportation - Federal Highway Administration, Montana Department of Transportation, Gallatin County, the City of Belgrade, and Airport Sponsor also does not reflect the presence of any environmental issues that pose risks to the health and safety of children.

As environmental impacts are not expected to exceed significance thresholds as identified in FAA Order 1050.1E for air quality, noise, and water quality, and there no other environmental impacts were noted that may negatively impact the health and safety of children, it is expected that there will not be any significant impacts as a result of any alternative.

4.17.3 Environmental Consequences

No Action Alternative

No changes will occur with the No Action Alternative as this is a non-development alternative. Therefore, there are no mitigation measures required for this alternative.

Preferred Alternative

The analysis did not identify any significant impacts to socioeconomic impacts, environmental justice, and children's environmental health and safety risks that would occur by implementing the Preferred Alternative. Modeling of noise for the Preferred Alternative did identify an area over private property that exceeded significance thresholds, however, the homes are below the significance threshold so no mitigation is proposed.

4.17.4 Mitigation

There is no mitigation proposed for socioeconomic impacts or environmental justice as none of the alternatives are expected to result in negative impacts. There is no additional mitigation proposed beyond what is required to address significance thresholds for any individual environmental category.

4.17.5 Conclusion

According to the FAA Order 1050.1E, there are no significance thresholds for socioeconomic impacts, environmental justice, or children's environmental health and safety. There are however factors that need to be considered if any of the alternatives would have the potential to negatively impact those environmental categories. Based on the discussion and analysis above, only the impact of noise is expected for a small area outside of airport property. No mitigation is proposed as the residences in this small area are below the significance threshold. This would result in both the No Action Alternative and Preferred Alternative having no significant impact on socioeconomic impacts, environmental justice, or children's environmental health and safety.

4.18 WATER QUALITY

4.18.1 Affected Environment

There is broad legislation that addresses the development of water quality standards and management thereof to protect both surface and aquifer water supplies. Surface waters at BZN consist of the seasonal Spain-Ferris Ditch and the Belgrade wastewater treatment lagoons. Water from the Belgrade wastewater treatment lagoons is used to irrigate portions of the Airport property, including turf Runway 11-29. Storm water runoff is captured in dry wells and detention ponds and through extensive vegetative porous surfaces that occur on airport property.

Hyalite Creek and the East Gallatin River are located 0.75 and 1.75 miles, respectively, from airport property. The terrain of BZN gently slopes downhill at approximately 1% from the south to the north. With the established vegetation, any spills, erosion, or runoff is expected to be confined to airport property.

The City of Belgrade draws water for the community from several wells and stores the water in two water towers. The quality of the water is such that DEQ standards are met without any chlorine treatment, or otherwise. The well depths vary from 80' to 120' with groundwater depth varying between 40' and 60' throughout the area based on well logs and exposed water table in neighboring gravel pits. For residences outside of City of Belgrade limits, water is supplied through domestic wells or private water companies. Testing is required of the municipal water supply and private water company supplies in accordance with MDEQ requirements.

4.18.2 Analysis

When disturbed soil comes in contact with rain water, there is a potential for sediment-related pollution in surface waters. Storm water runoff from construction sites that disturb one or more acres of land is regulated by MDEQ under the General Permit for Storm Water Discharges Associated with Construction Activity – Permit Number MTR 100000. This permit requires the implementation of a sequence of construction-related Best Management Practices (BMPs) (i.e. erosion control through grading, sediment control through barriers, stabilization, materials handling, and waste management) prior to discharge of storm water runoff from the disturbed construction site.

Other activities that could potentially lead to water quality pollution include leaking hydraulic fluids, fuel, and lubrication systems associated with the use of construction equipment.

Once the project is paved, the new pavements can also attribute to water quality due to surface water runoff. The quality of runoff from pavements is impacted by vehicle and aircraft-related contaminants, such as motor oil, grease, and tire rubber. In addition, surface water runoff is impacted by herbicides and pesticides that may be used in maintained areas along the pavements.

The likelihood for any of the pollutants listed above entering a surface water body is low due to the distance of surface waters from the proposed construction site, the existing gradient, and established vegetation. The seasonal Spain-Ferris Ditch exits airport property approximately 750 feet east of the nearest Preferred Alternative improvement. A lateral from the ditch parallels the Preferred Alternative approximately 100 feet to north and terminates on airport property.

According the FAA Order 1050.1E, surface and groundwater significance thresholds would occur if water quality standards established by Federal, State, local and/or tribal regulatory agencies were exceeded, or public drinking water supplies (surface water or aquifer) were contaminated such that public health may be adversely affected. As City of Belgrade wells draw water from aquifers in the immediate vicinity of BZN and existing gravel pits without the need for treatment to meet DEQ standards the existing water sources for the community are not already compromised. The construction operations associated with the Preferred Alternative, and the mitigation proposed, are the same as have been implemented on airport property previously, within the City of Belgrade, and with the recent construction of the East Belgrade Interchange (opened June 26, 2015), all with favorable results.

4.18.3 Environmental Consequences

No Action Alternative

No changes will occur with the No Action Alternative as this is a non-development alternative. Therefore, there are no mitigation measures required for this alternative.

Preferred Alternative

Site erosion with disturbed soil, leaking fluids from construction equipment, concrete washout, refuse and trash have the potential to contribute to water quality contamination if the Preferred Alternative is implemented. The expanded area of impermeable surface produces additional surface runoff with potential to impact water quality with the presence of motor oil, grease, tire rubber, and herbicides/pesticides. However, mitigation techniques, discussed below, can

greatly minimize the potential for these contaminants to come in contact with a surface water body and cause water quality degradation.

4.18.4 Mitigation

As noted in Section 4.6, *Construction* and Section 4.11, *Hazardous Materials, Pollution Prevention and Solid Waste*, it is recommended that pollution and sedimentation resulting from construction activity and ground disturbance will be mitigated through the following measures:

- A General Permit for Stormwater Discharges Associated with Construction Activity, a Stormwater Pollution Prevention Plan (SWPPP), and any applicable dust permitting will be required for the proposed project activities by Montana Department of Environmental Quality (MDEQ). MDEQ's guidance states that "construction-related disturbances equal to or greater than one acre due to clearing, grading, excavation, stockpiling earth materials, and other placement or removal of earth material performed during construction projects through to final stabilization" will require coverage under this permit program. Surface waters will be protected by implementing best management practices (BMPs) and installing silt fencing, earthen dams, concrete washout area(s), and erosion control measures to prevent contamination from construction equipment fuels and oils or erosion from disturbed areas.
- The project will be seeded with an airport established seed mixture once final grading is completed to promote regrowth of vegetation. Establishment of vegetation that has been successful at the airport will aid in the reduction of noxious weed invasion. BZN would monitor the construction area as part of any weed management program.
- The contractor will ensure that all waste fuels, lubricating fluids, and other chemicals are stored and disposed of properly. The contractor will inspect construction equipment daily during active construction to ensure hydraulic fluids, fuel, and lubrication systems are in good condition and free of leaks. The contractor will be required to have a Spill Prevention, Control, and Countermeasure (SPCC) plan in place, as well as maintain a supply of absorbent materials on-site in the event a spill occurs with the construction of the Preferred Alternative.
- The Contractor will also be required to provide a collection area for non-recyclable waste (i.e. trash, concrete wash out, portable toilet sanitary waste, etc.) and arrange for its removal as appropriate.

4.18.5 Conclusion

There are no impacts associated with the No Action Alternative as this is a non-development alternative. It is expected that there will not be any significant impacts to water quality associated with the implementation of the Preferred Alternative as BMP's are proposed to be implemented with the project similar to successful past projects, no construction activities will take place within or in the immediate vicinity of a surface water body, minimal gradient exists across the site, and there is the presence of established vegetative buffers to slow/confine runoff.

4.19 WETLANDS

4.19.1 Affected Environment

Wetlands are complex ecosystems that are characterized by a water table at or near the ground surface for some part of the year, by soil conditions that differ from adjacent uplands, and by vegetation adapted to wet conditions. In the State of Montana, freshwater wetlands and state open waters are regulated under the jurisdiction of the US Army Corp of Engineers (USACE) and Montana Department of Environmental Quality (MDEQ). The project area was investigated for wetlands on October 16, 2013 by Morrison-Maierle, Inc. environmental personnel using the Level 2 Routine Determination Method outlined in the 1987 USACE Manual and the USACE Supplement for Western Mountains, Valleys, and Coast.

As previously discussed, the two surface water bodies on BZN include: the seasonal lateral of the Spain Ferris Ditch and the City of Belgrade sewage lagoons. These surface waters are identified on **Figure 3-1**. No wetlands or non-wetland waterways were delineated within the area of Preferred Alternative improvements.

4.19.2 Analysis

A lateral of the Spain Ferris Ditch exists on airport property within 100 feet of the Preferred Alternative area. This lateral was constructed approximately 5 years ago by BZN to replace another lateral. Water from this seasonal lateral is taken from the Spain Ferris Ditch and is used to irrigate airport-owned property leased for hay. This lateral terminates into a field on airport property and not into a water of the United States. At this time, no impact to the ditch is anticipated.

Some previously “wet” areas were identified in association with an historic but abandoned lateral of the Spain Ferris Ditch. The sites supported a small population of reed canary grass but did not reveal the presence of hydric soils to qualify as a wetland environment. Soils near the historic channels were rocky, blocky, and dry. Because no wetlands were identified on the airport property, no wetland delineation report was developed and no further coordination with USACE is anticipated.

Correspondence was received from the USACE, Omaha District in response to a solicitation for public agency comment regarding the Preferred Alternative. The USACE noted that they were “unable to ascertain if there are jurisdictional resources or regulated activities proposed”. That correspondence can be referenced in **Appendix VI** for greater detail.

The US Fish and Wildlife Service maintains the National Wetland Inventory (NWI) database that maintains a nationwide inventory of US wetlands to provide biologists and others with information on the distribution of wetlands to aid in wetland conservation efforts. NWI data cannot be used to assess regulatory compliance requirements for a project, but it can serve as a resource for information regarding the likely presence of a wetland or waterway within a project area. The USFWS NWI database was accessed on August 14, 2014. NWI data indicated likely areas of freshwater emergent wetlands associated with the Spain Ferris Ditch within and around airport property. While NWI identifies likely areas, the lack of quantifiable wetland criteria identified in the field (i.e. hydric soils) reflects an absence of wetlands in the project area. The NWI Map is available in **Appendix VIII** for review.

4.19.3 Environmental Consequences

No Action Alternative

No changes will occur with the No Action Alternative as this is a non-development alternative. Therefore, there are no mitigation measures required for this alternative.

Preferred Alternative

A seasonal lateral to the Spain Ferris ditch is located within 100 feet of the proposed project area. At this time, no impacts to the seasonal lateral are anticipated. If impacts are identified after final design is completed, the USACE will be contacted to initiate coordination. However, because this lateral is likely non-jurisdictional and terminates on airport property, no permitting is anticipated.

4.19.4 Mitigation

No impacts to the seasonal lateral of the Spain Ferris Ditch are anticipated. Therefore, no mitigation strategies have been identified. Should design or construction reflect potential impacts to the seasonal lateral, then BMP's as noted in Section 4.18, Water Quality may be implemented to reduce any potential for impacts.

4.19.5 Conclusion

Neither the No Action Alternative nor the Preferred Alternative would impact wetlands or waterways. Therefore, no mitigation measures are required and no impacts to wetlands or waterways are anticipated.

4.20 WILD AND SCENIC RIVERS

4.20.1 Affected Environment

The National Wild and Scenic Rivers System was created by Congress in 1968 to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. The Act is notable for safeguarding the special character of these rivers, while also recognizing the potential for their appropriate use and development. It encourages river management that crosses political boundaries and promotes public participation in developing goals for river protection. According to the National Wild and Scenic Rivers System website (accessed September 2014), the only two rivers in Montana that are considered Wild and Scenic are specific reaches of the Flathead River and the Missouri River. Since this resource is not present in the study area, it is not discussed further in this EA.

4.21 CUMULATIVE IMPACTS

A cumulative impact analysis provides information on impacts resulting from other actions that have occurred or that will occur within a defined time and geographic area. Cumulative impacts are evaluated on past actions, present actions, and reasonably foreseeable actions. This information is used to decide if a proposed airport project's impact to a specific resource would

cause a significant impact on that resource when added to past, present, and reasonably foreseeable actions within a specific geographic area or designated time frame.

Cumulative effects may occur when the impacts of an airport action are considered with the actions of Tribes, private developers, or the FAA, among others. The following analysis identifies past, present, and reasonably foreseeable actions that could potentially contribute to cumulative impacts in specific environmental resource categories evaluated earlier in this chapter. Additionally, this analysis highlights project-related effects that could potentially contribute to cumulative impacts in these resource categories.

4.21.1 Past, Current, and Future Project Listing

The following will address past, current, future projects at BZN, as well as projected developments that may occur in the neighboring vicinity.

Past projects that occurred at or near BZN in the last 5 years were considered for cumulative impact analysis.

1. Access road construction (2009-2014): Access roads to the terminal area have been expanded and rebuilt over the last 5 years to provide improved access to the terminal area and in support of the new Highway 10 (Frontage Road) and I-90 interchange accesses. Included was the Dry Creek Road By-Pass project that moved the north side of Belgrade access to Dry Creek Road and provided a more direct access to the new Highway 10 (Frontage Road) and I-90 interchange accesses.
2. Pay parking (2009, 2013 & 2014) has been expanded and modified over the last 5 years.
3. Commercial Apron expansion (2013): Parking apron for commercial aircraft was expanded in 2013. Design and construction for new access road(s) from the interchange through pay parking, including storm drainage, striping, signage, lighting, and parking lot entrance.
4. 2013 Land Acquisition (2013): Land acquisition, appraisal, review appraisal, and negotiation of the Cook parcels required for approach protection at BZN.
5. East Belgrade Interchange Land Acquisition (2011 and 2012): Assistance in the acquisition of land parcels required for the East Belgrade Interchange, excluding the railroad right-of-way.
6. East Belgrade Interchange (2010 – 2015): Design and construction (2013-2015) for new Interstate 90 interchange and Highway 10 (Frontage Road) accesses. Project consisted of two I-90 bridges, one railroad bridge, one signal, and three roundabouts.

Current projects (2015) at BZN were included in the cumulative impact analysis.

1. De-Icing Apron (2015): Design and construction of a north island expansion and east apron expansion contiguous to the commercial apron area for de-icing. The project involves 17,070 SY of asphalt pavement and associated storm drainage improvements, relocation and modification to lighting, and striping improvements.
2. East Ramp Expansion (2015): Design and construction of a concrete (4,167 SY) and asphalt (11,810 SY) apron in the east ramp area to complete the build out of this facility. The apron extends from existing hangars fronting the east ramp approximately 500 feet to the east to tie into FedEx apron facilities. This project includes minimal storm drainage, fencing, and striping improvements.

Future projects are listed in the current capital improvement plan (CIP) for BZN for the years 2016-2020 were reviewed to assess cumulative impacts. The following projects are being considered for design and construction on the CIP:

1. Rehabilitation of the main taxiway asphalt pavement (proposed 2016-2017).
2. Rehabilitation of the primary Runway 12-30 asphalt pavement (proposed 2018).
3. Construct north side apron and access road (proposed 2019-2020).
4. Acquire snow removal equipment (SRE) (proposed 2020).
5. Hangar/taxiway development with associated water and sewer improvements (proposed 2020).

The projects noted above were included in the 2008 Master Plan Update and reviewed with the Helena Airport District Office (ADO). The five year CIP is reviewed annually, with a copy of the current approved CIP on file with the Helena ADO.

Construction of apron or access road improvements on the north side of the airport could occur at a future, undetermined date. Such improvements may be implemented in support of relocating flight school(s) or other GA facilities to the North side of the airport. The FAA is requiring that planning for any such development be discussed in the next Master Plan update for BZN, which is currently scheduled for 2021. If projects for this development are proposed after completion of the Master Plan Update, an environmental analysis would be required before any of the project improvements could be implemented.

Four projects were identified within a 5.5 mile proximity of the Airport in the 2015-2019 State of Montana Department of Transportation (MDT) Statewide Transportation Improvement Program (May 2015). These projects include:

- 4306 - Belgrade-South Reconstruction project (MT-85)
- 8031 – SF 129 Slope flattening Belgrade (S-205)
- 8642 – Bozeman Signal Safety, MT 85, US 191
- 8829 – Baxter and Love Lane Safety Improvements

Gallatin County Planning Department does not keep track of pending subdivisions in the vicinity of the Airport. The Belgrade City Planning department was contacted to get an estimate of possible subdivision development within the planning district and near the airport. The Planning department currently has 5 major residential subdivisions that have preliminary plat approval for construction. Major subdivisions are defined as having 5 or more total lots. Two of the subdivisions, Meadow Lark Ranches and Ryen Glenn Subdivision are located in the vicinity of BZN and approximately 1 mile north of the Airport. The preliminary plats for the subdivisions contain 390 new residential lots and the Planning Department estimates they will have the infrastructure constructed and final plat approval in the 3 to 5 year time frame. All pending subdivisions and developments are subject to approval by the Belgrade Planning Department and Gallatin County in accordance with the subdivision regulations established under Montana Law.

Opening of the new East Belgrade Interchange now provides opportunity for commercial development along its corridor and adjoining BZN. While changes in zoning have been conducted in support of the East Belgrade Interchange, there are no planned developments known at this time. Actions by other entities (MDT and local developers) will have to follow local, State, and Federal regulations as appropriate.

4.21.2. Environmental Impact Category Analysis

Cumulative effects are impacts “on the environment which result from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions (40 CFR § 1508.7).” The basis for this analysis is the recognition that while the impacts of many actions may be individually small, the cumulative effects of past, present, and reasonably foreseeable actions on populations or resources can be considerable. NEPA requires that cumulative effects be evaluated along with the direct and indirect effects of the FAA Preferred Alternative. The level of analysis and scope of cumulative effect assessment are typically commensurate with the potential impacts, resources affected, project scale, and other factors. As with direct and indirect effects, the No Action Alternative serves as the baseline against which to evaluate cumulative effects.

The focuses of this cumulative impact analysis are those resources either directly or indirectly impacted by the Preferred Alternative. If the Preferred Alternative will not cause a direct or indirect impact on a resource, then it will not contribute to a cumulative impact on that resource. As detailed earlier in this chapter, the following resources will not be impacted by the Preferred Alternative and therefore, would not contribute to cumulative impacts:

- Coastal Resources
- Section 4(f)
- Floodplains
- Historical, Architectural, Archeological and Cultural Resources
- Wetlands
- Wild and Scenic Rivers

The analysis earlier in this chapter evaluated whether the implementation of the Preferred Alternative would result in impacts in the categories below which, though not significant in themselves, must be analyzed for their possible cumulative effect. Therefore, the following subsections analyze the potential cumulative impacts for each environmental resource category in which the implementation of the Preferred Alternative might contribute to cumulative impacts when considered with other past, present, and reasonably foreseeable actions.

Air Quality

Comparing the No Action Alternative to the Preferred Alternative reflects that there is no difference anticipated in the alternatives for operational emissions, as there is no change anticipated in the number of operations. The Preferred Alternative would slightly increase fuel emissions temporarily due to construction. This increase would be relatively small and would not produce enough air pollution to significantly alter the air quality with respect to the NAAQS. Past, present and future development in the vicinity of the Airport has resulted in, and will likely continue to result in, increased emissions of air pollutants; however, the increase in emissions from the Preferred Alternative improvements and their future use, when added to the emissions sources in the area would be unlikely to produce a significant cumulative impact on air quality. It is anticipated that no cumulative impacts to air quality would occur with the Preferred Alternative when combined with past, present, and reasonably foreseeable projects.

Climate

The cumulative impact of the Preferred Alternative on the global climate when added to other past, present, and reasonably foreseeable future actions is not currently scientifically predictable. Aviation has been calculated to contribute approximately 3 percent of global carbon dioxide emissions; this contribution may grow to 5 percent by 2050. The proposed airside and landside improvements would increase GHG emissions slightly during construction, but would not have any long-term impacts on GHG emissions. At present there are no calculations of the extent to which measures individually or cumulatively may affect aviation's CO₂ emissions. Moreover, there are large uncertainties regarding aviation's impact on climate. The FAA, with support from the U.S. Global Change Research Program and its participating federal agencies has developed the Aviation Climate Change Research Initiative (ACCRI) in an effort to advance scientific understanding of regional and global climate impacts of aircraft emissions, with quantified uncertainties for current and projected aviation scenarios under changing atmospheric conditions. It is anticipated that no cumulative impacts to climate would occur with the Preferred Alternative when combined with past, present, and reasonably foreseeable projects.

Compatible Land Use

According the FAA Order 1050.1E, the compatibility of existing and planned land uses in the vicinity of an airport is usually associated with the extent of the airport's noise impacts. Airport development actions to accommodate fleet mix changes or the number of aircraft operations, air traffic changes, or new approaches made possible by new navigational aids are examples of activities that can alter aviation-related noise impacts and affect land uses subjected to those impacts. None of these activities are anticipated to occur with the implementation of the Preferred Alternative.

As a result of the establishment of the AIA, noise resolution, and aviation easement requirement in the subdivision regulations, compatible land use off airport property allowing aircraft the right to flight exists and no modification is expected in the off airport land uses. For the Preferred Alternative, no additional incompatible land uses and no additional significance thresholds were identified. It is anticipated that no cumulative impacts to compatible land use would occur with the Preferred Alternative when combined with past, present, and reasonably foreseeable projects.

Construction Impacts

The implementation of the Preferred Alternative would cause additional short term and temporary impacts due to construction. A review of on-going projects at BZN does reveal the potential for concurrent construction related impacts with the rehabilitation of the main taxiway system pavements. Temporary and localized impacts from increased short-term construction-related noise, air quality, and water quality could potentially occur during the implementation of the Preferred Alternative and taxiway rehabilitation. While limited ground disturbance is proposed with the taxiway rehabilitation, the ground disturbances could increase the risk of erosion, sediment transport, and noxious weed infestation. Mitigations of these potential risks are incorporated into the design and construction-related regulatory permitting process in order to minimize or avoid these potential impacts. Mitigating construction related impacts associated with any roadwork or development projects within the vicinity of BZN would also be managed through the regulatory permitting process (ex. MDEQ Storm Water Pollution Protection Plans).

Past, present and future development in the vicinity of the Airport has resulted in, and will likely continue to result in, construction impacts. However, the cumulative effects of construction impacts would depend on the timing, project scope, duration of construction activities, and proximity of the other project areas to BZN. It is anticipated that no cumulative impacts due to construction would occur with the Preferred Alternative when combined with past, present, and reasonably foreseeable projects.

Farmlands

According the FAA Order 1050.1E, a significant impact to “Prime and Important Farmland” would occur when the total combined score on Form AD-1006 ranges between 200 and 260 points. The total score for Preferred Alternative impacts is 21, which is below the significant impact threshold.

Of those existing and planned projects noted in Section 4.21.2, the majority relate to the reconstruction or modification of existing facilities, including the four projects identified in the 2015-2019 State of Montana Department of Transportation (MDT) Statewide Transportation Improvement Program (May 2015). Reconstruction and/or modification projects are not expected to have an impact on farmlands as little to no acreage of farmland is converted from use.

Federally funded projects on airport property that are anticipated to occur within the next five years include apron, taxiway/taxilane, and access road improvements. While these projects may impact lands that qualify for designation as “prime farmland if irrigated”, or “farmland of local or statewide importance” as is identified in the footprint of the Preferred Alternative, the extent of improvements is not expected to exceed that of the Preferred Alternative. As the Preferred Alternative impacts are considerably below the significant impact threshold, it is expected that the follow on projects identified will also be below this threshold. It is anticipated that no cumulative impacts to farmlands would occur with the Preferred Alternative when combined with past, present, and reasonably foreseeable projects.

Fish, Wildlife, and Plants

There are no cumulative impacts to fisheries and surface water resources as there are no such resources present.

In reviewing general wildlife considerations, the existing airport security fence serves to restrict entry to larger wildlife such as deer and elk, but does not restrict smaller wildlife such as fox, skunks, and birds. While the Preferred Alternative will result in the permanent loss of vegetation, and small mammal species may be permanently or temporarily displaced from their burrows, suitable habitat is available in the immediate vicinity to provide refuge for displaced individuals. The property within the airport fence has been highly altered, accommodates regular and frequent air-traffic, and does not represent high-quality general wildlife habitat. The majority of the existing and planned projects noted in Section 4.21.2 relate to the reconstruction or modification of existing facilities, resulting in little to no impacts to general wildlife habitat. Given the site conditions, the availability of nearby habitat, and the types of other existing and proposed projects, it is anticipated that there are no reasonably foreseeable actions or projects in the vicinity of the Airport that would result in cumulative impacts to general wildlife with the implementation of the Preferred Alternative at BZN.

In reviewing migratory bird and eagle considerations, the operation of the commercial airport has been an on-going activity that could be potentially disturbing to eagles, yet they are still

observed within a mile of airport property. Independent of the timing or location of the existing and planned projects noted in Section 4.21.2, the threshold provided by the USFWS indicated that impact would not occur unless any bald eagle nest was closer than 0.5 mile to the Preferred Alternative. Migratory birds have also been noted in the vicinity of the airport. The airport has implemented hazing operations, including a “depredation at airports” permit that allows the lethal taking of birds, including some migratory birds that present a hazard to aircraft operations. The hazing and the lethal taking of birds will continue in accordance with the Airport’s Wildlife Hazard Management Plan, regardless of the implementation of the Preferred Alternative. Given the Preferred Alternative is not anticipated to cause more traffic in the area, the existing site conditions (i.e. no trees or migratory bird habitat), the distance to suitable eagle nesting sites, and the Airport’s continued wildlife hazard management techniques, it is anticipated that there are no reasonably foreseeable actions or projects in the vicinity of the Airport that would result in cumulative impacts to migratory birds or eagles with the implementation of the Preferred Alternative at BZN.

In reviewing threatened and endangered species, information obtained from NMHP, USFWS, and field investigation reflects that no threatened, endangered or candidate species are projected to occur within the Preferred Alternative area. Therefore, there are no cumulative impacts regarding threatened and endangered species.

In reviewing general vegetation, it is noted that the project area is sparse, previously disturbed, non-native and is regularly mowed during the active growing season in order to accommodate air traffic activities. While the Preferred Alternative is expected to impact approximately 15 acres through grading and paving improvements, the impacts will be to area that is previously disturbed. Given the site conditions and proposal to topsoil and seed disturbed areas with an established BZN seed mix, it is anticipated that there are no reasonably foreseeable actions or projects in the vicinity of the Airport that would result in cumulative impacts to general vegetation with the implementation of the Preferred Alternative at BZN.

In reviewing noxious weeds, it is proposed to topsoil and seed disturbed areas with an established BZN seed mix. In addition, the Airport will continue to implement their weed control plan (i.e. mechanical and chemical methods) to address any weeds that may occur as a result of the Preferred Alternative. It is anticipated that no cumulative impacts to fish, wildlife, or plants would occur with the Preferred Alternative when combined with past, present, and reasonably foreseeable projects.

Hazardous Materials, Pollution Prevention and Solid Waste

None of the data reviewed from MDEQ reveal danger from hazardous waste or indication of significant reductions in pollution prevention activities would occur on BZN during the implementation of the Preferred Alternative. Solid waste (i.e. asphalt, concrete washout, and other demolished and waste materials) generated by the Preferred Alternative is not anticipated to be of a volume that will produce deleterious effects to standard solid waste handling facilities, or neighboring gravel pits that are permitted to receive such waste.

According to the FAA Order 1050.1E, the FAA has not established a significance threshold for hazardous materials, solid waste, and pollution prevention. Factors to consider however, would be if the Preferred Alternative would have the potential to: 1) violate applicable Federal, State, Tribal, or local laws or regulations regarding hazardous materials and/or solid waste management, 2) involve a contaminated site listed on the National Priorities List (NPL), 3) produce an appreciably different quantity or type of hazardous waste, 4) generate an appreciably different quantity or type of solid waste or use a different method of collection or

disposal and/or would exceed local capacity, and/or 5) adversely affect human health and the environment. As the Preferred Alternative is not expected to produce any of the consideration factors above, it is anticipated that no cumulative impacts to hazardous materials, pollution prevention, or solid waste would occur with the Preferred Alternative when combined with past, present, and reasonably foreseeable projects.

Light Emissions and Visual Impacts

According the FAA Order 1050.1E, the FAA has not established a significance threshold for Light Emissions or for Visual Resources / Visual Character. Factors to consider however, would be if the Preferred Alternative would have the potential to: 1) create annoyance or interfere with normal activities from light emissions, 2) affect the nature and/or visual character of the area due to light emissions, including the importance, uniqueness, and aesthetic value of the affected visual resources, 3) contrast with the visual resources and/or visual character in the study area, and/or 4) block or obstruct the views of visual resources, including whether these resources would still be viewable from other locations.

Because BZN has existed in this area for many decades with comparable lighting features to the Preferred Alternative (Medium Intensity Runway Lights (MIRL), Precision Approach Path Indicators (PAPI), Runway End Identifier Lights (REIL), Medium Intensity Taxiway Lights (MITL), and airfield signs), these new facilities are not anticipated to create an annoyance among people or interfere with normal activities. Since the Preferred Alternative would not include vertical improvements, nor is expected to result in any of those factors noted above, it is anticipated that no cumulative impacts to light emissions and visual impacts would occur with the Preferred Alternative when combined with past, present, and reasonably foreseeable projects.

Natural Resources and Energy Supply

According the FAA Order 1050.1E, the FAA has not established a significance threshold for Natural Resources and Energy Supply. Factors to consider however, would be if the alternative(s) would have the potential to cause demand to exceed available or future supplies of these resources. While resources (fuel for construction equipment, minerals for base materials and asphalt, asphalt oil, manufactured electrical components, and energy resources for lighting, among others) will be utilized in the construction of the Preferred Alternative, the quantity is not expected to cause demand to exceed available or future supplies of resources. While existing and planned projects noted in Section 4.21.2 may utilize similar resources, supplies are prevalent and are not anticipated to be change. It is anticipated that no cumulative impacts to natural resources and energy supply would occur with the Preferred Alternative when combined with past, present, and reasonably foreseeable projects.

Noise

Detailed review of the direct noise impacts of the Preferred Alternative displayed that there are no residences near BZN that would experience a project-related increase in noise levels that would result in a significant noise impact. The past, current, and future projects listed in Section 4.21.2 do not increase the number of aircraft operations, and thereby noise from aircraft. Future airport projects are generally rehabilitation, apron, and taxiway projects which are not modeled with the FAA noise software, nor are of the type that create louder conditions (i.e. takeoff of aircraft). When considering the increase in aircraft related noise with the past, current, and future projects, it is unlikely that the cumulative noise impacts will be any greater than the direct noise impacts resulting from the Preferred Alternative.

Implementing the Preferred Alternative will not alter traffic volumes on the roadways to BZN. Tubb Road, is a paved county road that leads to commercial and residential subdivisions to the north of the Airport that can accommodate the expected traffic volumes. Any noise impact related to the alternation of surface traffic patterns is not anticipated to contribute to a significant cumulative noise impact. Given the above information, it is anticipated that no cumulative impacts to noise would occur with the Preferred Alternative when combined with past, present, and reasonably foreseeable projects.

Secondary (Induced) Impacts

The Preferred Alternative is being proposed to reduce the hourly operations experienced currently on Runway 12-30 by separating aircraft on approach and departure that have varied speed differentials. Separation of the two paved runways will allow simultaneous approaches and departures to the landing surfaces under visual flight rules (VFR). This will increase operational efficiency and provide for increased reaction times and coordination opportunities for student pilots and tower personnel. It would also provide an all-weather runway alternative for those that may otherwise utilize the existing seasonal turf Runway 11-29. The project is not being completed to accommodate increased future growth that was not established under the 2008 Master Plan Update and the Planning Update in **Appendix I**. Rather it is proposed to accommodate the service volume for the current and originally forecast operations.

In reviewing the project listing in Section 4.21.2, any future north side apron and access road may directly benefit from the Preferred Alternative. However, development of access road(s), hangars, aprons, taxilanes, and other improvements on the north side of BZN may occur with or without the implementation of the Preferred Alternative. Currently there is room for adequate growth to the east and south of the existing hangar areas. As this area is built out however, the next available development area exists on the north side of Runway 12-30. Construction of the Preferred Alternative also does not guarantee that such improvements will be developed in the future. The two projects can stand alone, or be complemented by one another.

Historical Population statistics (presented above) from the US Census Bureau indicate that the City of Belgrade, City of Bozeman and Gallatin County are growing at a rapid pace regardless of airport projects. The EA for the East Belgrade Interchange stated “While the Bozeman, Belgrade, and Greater Gallatin County areas have been experiencing rapid growth in recent years, and numerous private developments are currently planned or platted, none of the alternatives assessed would induce land use changes or promote unplanned growth. With the implementation of the East Belgrade Interchange, access to BZN and private and commercial properties would continue to be provided, although potentially modified. Access changes are not expected to adversely impact existing or future businesses.” The implementation of the Preferred Alternative and the addition of on-going and reasonably foreseeable future actions, are not projected to cause major shifts in the patterns of population movement and growth, extensive demands for public services, or substantial changes in business or economic activity beyond those that can reasonably be expected for a growing community. It is anticipated that no cumulative impacts to secondary impacts would occur with the Preferred Alternative when combined with past, present, and reasonably foreseeable projects.

Socioeconomic Impacts, Environmental Justice, and Children’s Environmental Health and Safety Risks

According the FAA Order 1050.1E, the FAA has not established a significance threshold for Socioeconomics. Factors to be considered in determining impact in this category include, but

are not limited to, the following: 1) Extensive relocation of residents is required, but sufficient replacement housing is unavailable, 2) Extensive relocation of community businesses, that would create severe economic hardship for the affected communities, 3) Disruptions of local traffic patterns that substantially reduce the levels of service of the roads serving the airport and its surrounding communities, and 4) A substantial loss in community tax base. The Preferred Alternative is not anticipated to result in any of these factors. Economic advantages are anticipated to include a lower capital outlay than other development alternatives, increased business activity, and reduced delay resulting in reduced costs for crew, fuel, and maintenance costs of aircraft. Operation and maintenance costs would increase with additional pavements and electrical systems, but not beyond the expected capabilities of BZN to support. The EA for the I-90 East Belgrade Interchange (FONSI dated June 25, 2009) completed by the U.S. Department of Transportation - Federal Highway Administration, Montana Department of Transportation, Gallatin County, the City of Belgrade, and Airport Sponsor did not note any negative economic impacts, but rather that the project would complement existing economic development trends in the area. Therefore, it is anticipated that no cumulative impacts to socioeconomic impacts would occur with the Preferred Alternative when combined with past, present, and reasonably foreseeable projects.

Review of the analysis for Environmental Justice indicates there are no low-income or minority populations residing in the area of BZN. Therefore, there are no cumulative impacts related to environmental justice because of the lack of these populations in the vicinity of BZN.

Review of the analysis for Children's Environmental Health and Safety Risks indicates the Preferred Alternative is not projected to introduce any new physical hazards to the existing environment. Implementation of the Preferred Alternative is also shown not to exceed air quality, noise, or water quality standards. Review of the EA for the I-90 East Belgrade Interchange (FONSI dated June 25, 2009) completed by the U.S. Department of Transportation - Federal Highway Administration, Montana Department of Transportation, Gallatin County, the City of Belgrade, and Airport Sponsor also does not reflect the presence of any environmental issues that pose risks to the health and safety of children. Therefore, it is anticipated that no cumulative impacts to children's environmental health and safety risks would occur with the Preferred Alternative when combined with past, present, and reasonably foreseeable projects.

Water Quality

Review of the analysis indicates that there is the potential to contribute to water quality contamination with disturbed soil, leaking fluids from construction equipment, concrete washout, refuse and trash, and expanded surface runoff from impermeable surfaces. However, established construction operations and mitigation techniques are available to reduce the probability of contamination. The construction operations associated with the Preferred Alternative, and the mitigation proposed, are the same as have been implemented on airport property previously, within the City of Belgrade, and with the recent construction of the East Belgrade Interchange (opened June 26, 2015), all with favorable results. Therefore, it is anticipated that no cumulative impacts to water quality would occur with the Preferred Alternative when combined with past, present, and reasonably foreseeable projects.

4.21.3 Conclusion

Based on the review and findings of known ongoing, planned, and proposed projects in the Belgrade area, it is concluded that the projects noted in Section 4.21.2 would not cause any cumulative impacts in association with the Preferred Alternative. This conclusion was reached due that these projects either 1) do not affect lands in the immediate vicinity of BZN, and/or 2)

the construction/implementation of the projects are occurring or have occurred on a different timeline than the proposed airport improvements, and/or 3) result in *de minimis* (so small as to be negligible or insignificant) emissions, and/or 4) the temporary nature of impacts associated with the construction activity, and/or 5) mitigation measures are proposed that result in no cumulative impacts.

Future Federal and State projects will be subject to review under NEPA and the Montana Environmental Policy Act (MEPA) to determine if significant environmental impacts are likely and identify mitigation measures for any identified adverse effects.

The City of Belgrade and Gallatin County ultimately have the ability to control many potential cumulative effects associated with any new growth and development. This occurs through the land use planning process and/or associated regulations.